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                                HAProxy
                           Configuration Manual
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                               version 1.7
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This document covers the configuration language as implemented in the version
specified above. It does not provide any hint, example or advice. For such
documentation, please refer to the Reference Manual or the Architecture Manual.
The summary below is meant to help you search sections by name and navigate
through the document.

Note to documentation contributors :
    This document is formatted with 80 columns per line, with even number of
    spaces for indentation and without tabs. Please follow these rules strictly
    so that it remains easily printable everywhere. If a line needs to be
    printed verbatim and does not fit, please end each line with a backslash
    ('\') and continue on next line, indented by two characters. It is also
    sometimes useful to prefix all output lines (logs, console outs) with 3
    closing angle brackets ('>>>') in order to help get the difference between
    inputs and outputs when it can become ambiguous. If you add sections,
    please update the summary below for easier searching.


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1. Quick reminder about HTTP
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When haproxy is running in HTTP mode, both the request and the response are
fully analyzed and indexed, thus it becomes possible to build matching criteria
on almost anything found in the contents.

However, it is important to understand how HTTP requests and responses are
formed, and how HAProxy decomposes them. It will then become easier to write
correct rules and to debug existing configurations.


1.1. The HTTP transaction model
-------------------------------

The HTTP protocol is transaction-driven. This means that each request will lead
to one and only one response. Traditionally, a TCP connection is established
from the client to the server, a request is sent by the client on the
connection, the server responds and the connection is closed. A new request
will involve a new connection :

  [CON1] [REQ1] ... [RESP1] [CLO1] [CON2] [REQ2] ... [RESP2] [CLO2] ...

In this mode, called the "HTTP close" mode, there are as many connection
```

establishments as there are HTTP transactions. Since the connection is closed by the server after the response, the client does not need to know the content length.

Due to the transactional nature of the protocol, it was possible to improve it to avoid closing a connection between two subsequent transactions. In this mode however, it is mandatory that the server indicates the content length for each response so that the client does not wait indefinitely. For this, a special header is used: "Content-length". This mode is called the "keep-alive" mode :

```
  [CON] [REQ1] ... [RESP1] [REQ2] ... [RESP2] [CLO] ...
```

Its advantages are a reduced latency between transactions, and less processing power required on the server side. It is generally better than the close mode, but not always because the clients often limit their concurrent connections to a smaller value.

A last improvement in the communications is the pipelining mode. It still uses keep-alive, but the client does not wait for the first response to send the second request. This is useful for fetching large number of images composing a page :

```
  [CON] [REQ1] [REQ2] ... [RESP1] [RESP2] [CLO] ...
```

This can obviously have a tremendous benefit on performance because the network latency is eliminated between subsequent requests. Many HTTP agents do not correctly support pipelining since there is no way to associate a response with the corresponding request in HTTP. For this reason, it is mandatory for the server to reply in the exact same order as the requests were received.

By default HAProxy operates in keep-alive mode with regards to persistent connections: for each connection it processes each request and response, and leaves the connection idle on both sides between the end of a response and the start of a new request.

HAProxy supports 5 connection modes :
  - keep alive   : all requests and responses are processed (default)
  - tunnel   : only the first request and response are processed,
                    everything else is forwarded with no analysis.
  - passive close : tunnel with "Connection: close" added in both directions.
  - server close : the server-facing connection is closed after the response.
  - forced close : the connection is actively closed after end of response.

1.2. HTTP request

First, let's consider this HTTP request :

Line number	Contents
1	GET /serv/login.php?lang=en&profile=2 HTTP/1.1
2	Host: www.mydomain.com
3	User-agent: my small browser
4	Accept: image/jpeg, image/gif
5	Accept: image/png

1.2.1. The Request line

Line 1 is the "request line". It is always composed of 3 fields :

  - a METHOD   : GET
  - a URI   : /serv/login.php?lang=en&profile=2

  - a version tag : HTTP/1.1

All of them are delimited by what the standard calls LWS (linear white spaces), which are commonly spaces, but can also be tabs or line feeds/carriage returns followed by spaces/tabs. The method itself cannot contain any colon (':') and is limited to alphabetic letters. All those various combinations make it desirable that HAProxy performs the splitting itself rather than leaving it to the user to write a complex or inaccurate regular expression.

The URI itself can have several forms :

  - A "relative URI" :

      /serv/login.php?lang=en&profile=2

    It is a complete URL without the host part. This is generally what is
    received by servers, reverse proxies and transparent proxies.

  - An "absolute URI", also called a "URL" :

      http://192.168.0.12:8080/serv/login.php?lang=en&profile=2

    It is composed of a "scheme" (the protocol name followed by '://'), a host
    name or address, optionally a colon (':') followed by a port number, then
    a relative URI beginning at the first slash ('/') after the address part.
    This is generally what proxies receive, but a server supporting HTTP/1.1
    must accept this form too.

  - a star ('*') : this form is only accepted in association with the OPTIONS
    method and is not relayable. It is used to inquiry a next hop's
    capabilities.

  - an address:port combination : 192.168.0.12:80
    This is used with the CONNECT method, which is used to establish TCP
    tunnels through HTTP proxies, generally for HTTPS, but sometimes for
    other protocols too.

In a relative URI, two sub-parts are identified. The part before the question mark is called the "path". It is typically the relative path to static objects on the server. The part after the question mark is called the "query string". It is mostly used with GET requests sent to dynamic scripts and is very specific to the language, framework or application in use.

1.2.2. The request headers

The headers start at the second line. They are composed of a name at the beginning of the line, immediately followed by a colon (':'). Traditionally, an LWS is added after the colon but that's not required. Then come the values. Multiple identical headers may be folded into one single line, delimiting the values with commas, provided that their order is respected. This is commonly encountered in the "Cookie:" field. A header may span over multiple lines if the subsequent lines begin with an LWS. In the example in 1.2, lines 4 and 5 define a total of 3 values for the "Accept:" header.

Contrary to a common mis-conception, header names are not case-sensitive, and their values are not either if they refer to other header names (such as the "Connection:" header).

The end of the headers is indicated by the first empty line. People often say that it's a double line feed, which is not exact, even if a double line feed is one valid form of empty line.

Fortunately, HAProxy takes care of all these complex combinations when indexing

headers, checking values and counting them, so there is no reason to worry
about the way they could be written, but it is important not to accuse an
application of being buggy if it does unusual, valid things.

Important note:
   As suggested by RFC2616, HAProxy normalizes headers by replacing line breaks
   in the middle of headers by LWS in order to join multi-line headers. This
   is necessary for proper analysis and helps less capable HTTP parsers to work
   correctly and not to be fooled by such complex constructs.

1.3. HTTP response

An HTTP response looks very much like an HTTP request. Both are called HTTP
messages. Let's consider this HTTP response :

  Line   Contents
  number
     1   HTTP/1.1 200 OK
     2   Content-length: 350
     3   Content-Type: text/html

As a special case, HTTP supports so called "Informational responses" as status
codes 1xx. These messages are special in that they don't convey any part of the
response, they're just used as sort of a signaling message to ask a client to
continue to post its request for instance. In the case of a status 100 response
the requested information will be carried by the next non-100 response message
following the informational one. This implies that multiple responses may be
sent to a single request, and that this only works when keep-alive is enabled
(1xx messages are HTTP/1.1 only). HAProxy handles these messages and is able to
correctly forward and skip them, and only process the next non-100 response. As
such, these messages are neither logged nor transformed, unless explicitly
state otherwise. Status 101 messages indicate that the protocol is changing
over the same connection and that haproxy must switch to tunnel mode, just as
if a CONNECT had occurred. Then the Upgrade header would contain additional
information about the type of protocol the connection is switching to.

1.3.1. The Response line

Line 1 is the "response line". It is always composed of 3 fields :

  - a version tag : HTTP/1.1
  - a status code : 200
  - a reason   : OK

The status code is always 3-digit. The first digit indicates a general status :
 - 1xx = informational message to be skipped (eg: 100, 101)
 - 2xx = OK, content is following   (eg: 200, 206)
 - 3xx = OK, no content following   (eg: 302, 304)
 - 4xx = error caused by the client (eg: 401, 403, 404)
 - 5xx = error caused by the server (eg: 500, 502, 503)

Please refer to RFC2616 for the detailed meaning of all such codes. The
"reason" field is just a hint, but is not parsed by clients. Anything can be
found there, but it's a common practice to respect the well-established
messages. It can be composed of one or multiple words, such as "OK", "Found",
or "Authentication Required".

Haproxy may emit the following status codes by itself :

  Code When / reason
   200 access to stats page, and when replying to monitoring requests

   301 when performing a redirection, depending on the configured code
   302 when performing a redirection, depending on the configured code
   303 when performing a redirection, depending on the configured code
   307 when performing a redirection, depending on the configured code
   308 when performing a redirection, depending on the configured code
   400 for an invalid or too large request
   401 when an authentication is required to perform the action (when
        accessing the stats page)
   403 when a request is forbidden by a "block" ACL or "reqdeny" filter
   408 when the request timeout strikes before the request is complete
   500 when haproxy encounters an unrecoverable internal error, such as a
        memory allocation failure, which should never happen
   502 when the server returns an empty, invalid or incomplete response, or
        when an "rspdeny" filter blocks the response.
   503 when no server was available to handle the request, or in response to
        monitoring requests which match the "monitor fail" condition
   504 when the response timeout strikes before the server responds

The error 4xx and 5xx codes above may be customized (see "errorloc" in section
4.2).

1.3.2. The response headers

Response headers work exactly like request headers, and as such, HAProxy uses
the same parsing function for both. Please refer to paragraph 1.2.2 for more
details.

2. Configuring HAProxy

2.1. Configuration file format

HAProxy's configuration process involves 3 major sources of parameters :

  - the arguments from the command-line, which always take precedence
  - the "global" section, which sets process-wide parameters
  - the proxies sections which can take form of "defaults", "listen",
    "frontend" and "backend".

The configuration file syntax consists in lines beginning with a keyword
referenced in this manual, optionally followed by one or several parameters
delimited by spaces.

2.2. Quoting and escaping

HAProxy's configuration introduces a quoting and escaping system similar to
many programming languages. The configuration file supports 3 types: escaping
with a backslash, weak quoting with double quotes, and strong quoting with
single quotes.

If spaces have to be entered in strings, then they must be escaped by preceding
them by a backslash ('\') or by quoting them. Backslashes also have to be
escaped by doubling or strong quoting them.

Escaping is achieved by preceding a special character by a backslash ('\'):

  \   to mark a space and differentiate it from a delimiter
  \#   to mark a hash and differentiate it from a comment
  \\   to use a backslash

```
   \'   to use a single quote and differentiate it from strong quoting
   \"   to use a double quote and differentiate it from weak quoting

Weak quoting is achieved by using double quotes (""). Weak quoting prevents
the interpretation of:

       space as a parameter separator
   '   single quote as a strong quoting delimiter
   #   hash as a comment start

Weak quoting permits the interpretation of variables, if you want to use a non
-interpreted dollar within a double quoted string, you should escape it with a
backslash ("\$"), it does not work outside weak quoting.

Interpretation of escaping and special characters are not prevented by weak
quoting.

Strong quoting is achieved by using single quotes (''). Inside single quotes,
nothing is interpreted, it's the efficient way to quote regexes.

Quoted and escaped strings are replaced in memory by their interpreted
equivalent, it allows you to perform concatenation.

  Example:
      # those are equivalents:
      log-format %{+Q}o\ %t\ %s\ %{-Q}r
      log-format "%{+Q}o %t %s %{-Q}r"
      log-format '%{+Q}o %t %s %{-Q}r'
      log-format "%{+Q}o %t"' %s %{-Q}r'
      log-format "%{+Q}o %t"' %s'\ %{-Q}r

      # those are equivalents:
      reqrep "^([^\ :]*)\ /static/(.*)"     \1\ /\2
      reqrep "^([^ :]*)\ /static/(.*)"     '\1 /\2'
      reqrep "^([^ :]*)\ /static/(.*)"     "\1 /\2"
      reqrep "^([^ :]*)\ /static/(.*)"     "\1\ /\2"


2.3. Environment variables
--------------------------

HAProxy's configuration supports environment variables. Those variables are
interpreted only within double quotes. Variables are expanded during the
configuration parsing. Variable names must be preceded by a dollar ("$") and
optionally enclosed with braces ("{}") similarly to what is done in Bourne
shell. Variable names can contain alphanumerical characters or the character
underscore ("_") but should not start with a digit.

  Example:

      bind "fd@${FD_APP1}"

      log "${LOCAL_SYSLOG}:514" local0 notice   # send to local server

      user "$HAPROXY_USER"


2.4. Time format
----------------

Some parameters involve values representing time, such as timeouts. These
values are generally expressed in milliseconds (unless explicitly stated
otherwise) but may be expressed in any other unit by suffixing the unit to the
numeric value. It is important to consider this because it will not be repeated
for every keyword. Supported units are :
```



```

   - us : microseconds. 1 microsecond = 1/1000000 second
   - ms : milliseconds. 1 millisecond = 1/1000 second. This is the default.
   - s  : seconds. 1s = 1000ms
   - m  : minutes. 1m = 60s = 60000ms
   - h  : hours.   1h = 60m = 3600s = 3600000ms
   - d  : days.    1d = 24h = 1440m = 86400s = 86400000ms


2.4. Examples
-------------

    # Simple configuration for an HTTP proxy listening on port 80 on all
    # interfaces and forwarding requests to a single backend "servers" with a
    # single server "server1" listening on 127.0.0.1:8000
    global
        daemon
        maxconn 256

    defaults
        mode http
        timeout connect 5000ms
        timeout client 50000ms
        timeout server 50000ms

    frontend http-in
        bind *:80
        default_backend servers

    backend servers
        server server1 127.0.0.1:8000 maxconn 32


    # The same configuration defined with a single listen block. Shorter but
    # less expressive, especially in HTTP mode.
    global
        daemon
        maxconn 256

    defaults
        mode http
        timeout connect 5000ms
        timeout client 50000ms
        timeout server 50000ms

    listen http-in
        bind *:80
        server server1 127.0.0.1:8000 maxconn 32


Assuming haproxy is in $PATH, test these configurations in a shell with:

    $ sudo haproxy -f configuration.conf -c


3. Global parameters
--------------------

Parameters in the "global" section are process-wide and often OS-specific. They
are generally set once for all and do not need being changed once correct. Some
of them have command-line equivalents.

The following keywords are supported in the "global" section :

 * Process management and security
```

```
    - ca-base
    - chroot
    - crt-base
    - cpu-map
    - daemon
    - description
    - deviceatlas-json-file
    - deviceatlas-log-level
    - deviceatlas-separator
    - deviceatlas-properties-cookie
    - external-check
    - gid
    - group
    - log
    - log-tag
    - log-send-hostname
    - lua-load
    - nbproc
    - node
    - pidfile
    - uid
    - ulimit-n
    - user
    - stats
    - ssl-default-bind-ciphers
    - ssl-default-bind-options
    - ssl-default-server-ciphers
    - ssl-default-server-options
    - ssl-dh-param-file
    - ssl-server-verify
    - unix-bind
    - 51degrees-data-file
    - 51degrees-property-name-list
    - 51degrees-property-separator
    - 51degrees-cache-size

  * Performance tuning
    - max-spread-checks
    - maxconn
    - maxconnrate
    - maxcomprate
    - maxcompcpuusage
    - maxpipes
    - maxsessrate
    - maxsslconn
    - maxsslrate
    - maxzlibmem
    - noepoll
    - nokqueue
    - nopoll
    - nosplice
    - nogetaddrinfo
    - spread-checks
    - server-state-base
    - server-state-file
    - tune.buffers.limit
    - tune.buffers.reserve
    - tune.bufsize
    - tune.chksize
    - tune.comp.maxlevel
    - tune.http.cookielen
    - tune.http.maxhdr
    - tune.idletimer
    - tune.lua.forced-yield
    - tune.lua.maxmem
```



```
    - tune.lua.session-timeout
    - tune.lua.task-timeout
    - tune.lua.service-timeout
    - tune.maxaccept
    - tune.maxpollevents
    - tune.maxrewrite
    - tune.pattern.cache-size
    - tune.pipesize
    - tune.rcvbuf.client
    - tune.rcvbuf.server
    - tune.recv_enough
    - tune.sndbuf.client
    - tune.sndbuf.server
    - tune.ssl.cachesize
    - tune.ssl.lifetime
    - tune.ssl.force-private-cache
    - tune.ssl.maxrecord
    - tune.ssl.default-dh-param
    - tune.ssl.ssl-ctx-cache-size
    - tune.vars.global-max-size
    - tune.vars.reqres-max-size
    - tune.vars.sess-max-size
    - tune.vars.txn-max-size
    - tune.zlib.memlevel
    - tune.zlib.windowsize

  * Debugging
    - debug
    - quiet


3.1. Process management and security
------------------------------------

ca-base <dir>
  Assigns a default directory to fetch SSL CA certificates and CRLs from when a
  relative path is used with "ca-file" or "crl-file" directives. Absolute
  locations specified in "ca-file" and "crl-file" prevail and ignore "ca-base".

chroot <jail dir>
  Changes current directory to <jail dir> and performs a chroot() there before
  dropping privileges. This increases the security level in case an unknown
  vulnerability would be exploited, since it would make it very hard for the
  attacker to exploit the system. This only works when the process is started
  with superuser privileges. It is important to ensure that <jail_dir> is both
  empty and unwritable to anyone.

cpu-map <"all"|"odd"|"even"|process_num> <cpu-set>...
  On Linux 2.6 and above, it is possible to bind a process to a specific CPU
  set. This means that the process will never run on other CPUs. The "cpu-map"
  directive specifies CPU sets for process sets. The first argument is the
  process number to bind. This process must have a number between 1 and 32 or
  64, depending on the machine's word size, and any process IDs above nbproc
  are ignored. It is possible to specify all processes at once using "all",
  only odd numbers using "odd" or even numbers using "even", just like with the
  "bind-process" directive. The second and forthcoming arguments are CPU sets.
  Each CPU set is either a unique number between 0 and 31 or 63 or a range with
  two such numbers delimited by a dash ('-'). Multiple CPU numbers or ranges
  may be specified, and the processes will be allowed to bind to all of them.
  Obviously, multiple "cpu-map" directives may be specified. Each "cpu-map"
  directive will replace the previous ones when they overlap.

crt-base <dir>
  Assigns a default directory to fetch SSL certificates from when a relative
  path is used with "crtfile" directives. Absolute locations specified after
```

```
   "crtfile" prevail and ignore "crt-base".

daemon
  Makes the process fork into background. This is the recommended mode of
  operation. It is equivalent to the command line "-D" argument. It can be
  disabled by the command line "-db" argument.

deviceatlas-json-file <path>
  Sets the path of the DeviceAtlas JSON data file to be loaded by the API.
  The path must be a valid JSON data file and accessible by Haproxy process.

deviceatlas-log-level <value>
  Sets the level of informations returned by the API. This directive is
  optional and set to 0 by default if not set.

deviceatlas-separator <char>
  Sets the character separator for the API properties results. This directive
  is optional and set to | by default if not set.

deviceatlas-properties-cookie <name>
  Sets the client cookie's name used for the detection if the DeviceAtlas
  Client-side component was used during the request. This directive is optional
  and set to DAPROPS by default if not set.

external-check
  Allows the use of an external agent to perform health checks.
  This is disabled by default as a security precaution.
  See "option external-check".

gid <number>
  Changes the process' group ID to <number>. It is recommended that the group
  ID is dedicated to HAProxy or to a small set of similar daemons. HAProxy must
  be started with a user belonging to this group, or with superuser privileges.
  Note that if haproxy is started from a user having supplementary groups, it
  will only be able to drop these groups if started with superuser privileges.
  See also "group" and "uid".

group <group name>
  Similar to "gid" but uses the GID of group name <group name> from /etc/group.
  See also "gid" and "user".

log <address> [len <length>] [format <format>] <facility> [max level [min level]]
  Adds a global syslog server. Up to two global servers can be defined. They
  will receive logs for startups and exits, as well as all logs from proxies
  configured with "log global".

  <address> can be one of:

        - An IPv4 address optionally followed by a colon and a UDP port. If
          no port is specified, 514 is used by default (the standard syslog
          port).

        - An IPv6 address followed by a colon and optionally a UDP port. If
          no port is specified, 514 is used by default (the standard syslog
          port).

        - A filesystem path to a UNIX domain socket, keeping in mind
          considerations for chroot (be sure the path is accessible inside
          the chroot) and uid/gid (be sure the path is appropriately
          writeable).

        You may want to reference some environment variables in the address
        parameter, see section 2.3 about environment variables.

  <length> is an optional maximum line length. Log lines larger than this value
```



```
          will be truncated before being sent. The reason is that syslog
          servers act differently on log line length. All servers support the
          default value of 1024, but some servers simply drop larger lines
          while others do log them. If a server supports long lines, it may
          make sense to set this value here in order to avoid truncating long
          lines. Similarly, if a server drops long lines, it is preferable to
          truncate them before sending them. Accepted values are 80 to 65535
          inclusive. The default value of 1024 is generally fine for all
          standard usages. Some specific cases of long captures or
          JSON-formated logs may require larger values.

  <format> is the log format used when generating syslog messages. It may be
          one of the following :

    rfc3164   The RFC3164 syslog message format. This is the default.
              (https://tools.ietf.org/html/rfc3164)

    rfc5424   The RFC5424 syslog message format.
              (https://tools.ietf.org/html/rfc5424)

  <facility> must be one of the 24 standard syslog facilities :

        kern   user   mail   daemon auth   syslog lpr    news
        uucp   cron   auth2  ftp    ntp    audit  alert  cron2
        local0 local1 local2 local3 local4 local5 local6 local7

  An optional level can be specified to filter outgoing messages. By default,
  all messages are sent. If a maximum level is specified, only messages with a
  severity at least as important as this level will be sent. An optional minimum
  level can be specified. If it is set, logs emitted with a more severe level
  than this one will be capped to this level. This is used to avoid sending
  "emerg" messages on all terminals on some default syslog configurations.
  Eight levels are known :

        emerg  alert  crit   err    warning notice info  debug

log-send-hostname [<string>]
  Sets the hostname field in the syslog header. If optional "string" parameter
  is set the header is set to the string contents, otherwise uses the hostname
  of the system. Generally used if one is not relaying logs through an
  intermediate syslog server or for simply customizing the hostname printed in
  the logs.

log-tag <string>
  Sets the tag field in the syslog header to this string. It defaults to the
  program name as launched from the command line, which usually is "haproxy".
  Sometimes it can be useful to differentiate between multiple processes
  running on the same host. See also the per-proxy "log-tag" directive.

lua-load <file>
  This global directive loads and executes a Lua file. This directive can be
  used multiple times.

nbproc <number>
  Creates <number> processes when going daemon. This requires the "daemon"
  mode. By default, only one process is created, which is the recommended mode
  of operation. For systems limited to small sets of file descriptors per
  process, it may be needed to fork multiple daemons. USING MULTIPLE PROCESSES
  IS HARDER TO DEBUG AND IS REALLY DISCOURAGED. See also "daemon".

pidfile <pidfile>
  Writes pids of all daemons into file <pidfile>. This option is equivalent to
  the "-p" command line argument. The file must be accessible to the user
  starting the process. See also "daemon".
```

```
stats bind-process [ all | odd | even | <number 1-64>[-<number 1-64>] ] ...
  Limits the stats socket to a certain set of processes numbers. By default the
  stats socket is bound to all processes, causing a warning to be emitted when
  nbproc is greater than 1 because there is no way to select the target process
  when connecting. However, by using this setting, it becomes possible to pin
  the stats socket to a specific set of processes, typically the first one. The
  warning will automatically be disabled when this setting is used, whatever
  the number of processes used. The maximum process ID depends on the machine's
  word size (32 or 64). A better option consists in using the "process" setting
  of the "stats socket" line to force the process on each line.

server-state-base <directory>
  Specifies the directory prefix to be prepended in front of all servers state
  file names which do not start with a '/'. See also "server-state-file",
  "load-server-state-from-file" and "server-state-file-name".

server-state-file <file>
  Specifies the path to the file containing state of servers. If the path starts
  with a slash ('/'), it is considered absolute, otherwise it is considered
  relative to the directory specified using "server-state-base" (if set) or to
  the current directory. Before reloading HAProxy, it is possible to save the
  servers' current state using the stats command "show servers state". The
  output of this command must be written in the file pointed by <file>. When
  starting up, before handling traffic, HAProxy will read, load and apply state
  for each server found in the file and available in its current running
  configuration. See also "server-state-base" and "show servers state",
  "load-server-state-from-file" and "server-state-file-name"

ssl-default-bind-ciphers <ciphers>
  This setting is only available when support for OpenSSL was built in. It sets
  the default string describing the list of cipher algorithms ("cipher suite")
  that are negotiated during the SSL/TLS handshake for all "bind" lines which
  do not explicitly define theirs. The format of the string is defined in
  "man 1 ciphers" from OpenSSL man pages, and can be for instance a string such
  as "AES:ALL:!aNULL:!eNULL:+RC4:@STRENGTH" (without quotes). Please check the
  "bind" keyword for more information.

ssl-default-bind-options [<option>]...
  This setting is only available when support for OpenSSL was built in. It sets
  default ssl-options to force on all "bind" lines. Please check the "bind"
  keyword to see available options.

  Example:
        global
           ssl-default-bind-options no-sslv3 no-tls-tickets

ssl-default-server-ciphers <ciphers>
  This setting is only available when support for OpenSSL was built in. It
  sets the default string describing the list of cipher algorithms that are
  negotiated during the SSL/TLS handshake with the server, for all "server"
  lines which do not explicitly define theirs. The format of the string is
  defined in "man 1 ciphers". Please check the "server" keyword for more
  information.

ssl-default-server-options [<option>]...
  This setting is only available when support for OpenSSL was built in. It sets
  default ssl-options to force on all "server" lines. Please check the "server"
  keyword to see available options.

ssl-dh-param-file <file>
  This setting is only available when support for OpenSSL was built in. It sets
  the default DH parameters that are used during the SSL/TLS handshake when
  ephemeral Diffie-Hellman (DHE) key exchange is used, for all "bind" lines
  which do not explicitely define theirs. It will be overridden by custom DH
  parameters found in a bind certificate file if any. If custom DH parameters
```



```
  are not specified either by using ssl-dh-param-file or by setting them
  directly in the certificate file, pre-generated DH parameters of the size
  specified by tune.ssl.default-dh-param will be used. Custom parameters are
  known to be more secure and therefore their use is recommended.
  Custom DH parameters may be generated by using the OpenSSL command
  "openssl dhparam <size>", where size should be at least 2048, as 1024-bit DH
  parameters should not be considered secure anymore.

ssl-server-verify [none|required]
  The default behavior for SSL verify on servers side. If specified to 'none',
  servers certificates are not verified. The default is 'required' except if
  forced using cmdline option '-dV'.

stats socket [<address:port>|<path>] [param*]
  Binds a UNIX socket to <path> or a TCPv4/v6 address to <address:port>.
  Connections to this socket will return various statistics outputs and even
  allow some commands to be issued to change some runtime settings. Please
  consult section 9.2 "Unix Socket commands" of Management Guide for more
  details.

  All parameters supported by "bind" lines are supported, for instance to
  restrict access to some users or their access rights. Please consult
  section 5.1 for more information.

stats timeout <timeout, in milliseconds>
  The default timeout on the stats socket is set to 10 seconds. It is possible
  to change this value with "stats timeout". The value must be passed in
  milliseconds, or be suffixed by a time unit among { us, ms, s, m, h, d }.

stats maxconn <connections>
  By default, the stats socket is limited to 10 concurrent connections. It is
  possible to change this value with "stats maxconn".

uid <number>
  Changes the process' user ID to <number>. It is recommended that the user ID
  is dedicated to HAProxy or to a small set of similar daemons. HAProxy must
  be started with superuser privileges in order to be able to switch to another
  one. See also "gid" and "user".

ulimit-n <number>
  Sets the maximum number of per-process file-descriptors to <number>. By
  default, it is automatically computed, so it is recommended not to use this
  option.

unix-bind [ prefix <prefix> ] [ mode <mode> ] [ user <user> ] [ uid <uid> ]
          [ group <group> ] [ gid <gid> ]

  Fixes common settings to UNIX listening sockets declared in "bind" statements.
  This is mainly used to simplify declaration of those UNIX sockets and reduce
  the risk of errors, since those settings are most commonly required but are
  also process-specific. The <prefix> setting can be used to force all socket
  path to be relative to that directory. This might be needed to access another
  component's chroot. Note that those paths are resolved before haproxy chroots
  itself, so they are absolute. The <mode>, <user>, <uid>, <group> and <gid>
  all have the same meaning as their homonyms used by the "bind" statement. If
  both are specified, the "bind" statement has priority, meaning that the
  "unix-bind" settings may be seen as process-wide default settings.

user <user name>
  Similar to "uid" but uses the UID of user name <user name> from /etc/passwd.
  See also "uid" and "group".

node <name>
  Only letters, digits, hyphen and underscore are allowed, like in DNS names.
```

```
   This statement is useful in HA configurations where two or more processes or
   servers share the same IP address. By setting a different node-name on all
   nodes, it becomes easy to immediately spot what server is handling the
   traffic.

description <text>
   Add a text that describes the instance.

   Please note that it is required to escape certain characters (# for example)
   and this text is inserted into a html page so you should avoid using
   "<" and ">" characters.

51degrees-data-file <file path>
   The path of the 51Degrees data file to provide device detection services. The
   file should be unzipped and accessible by HAProxy with relevavnt permissions.

   Please note that this option is only available when haproxy has been
   compiled with USE_51DEGREES.

51degrees-property-name-list [<string>]
   A list of 51Degrees property names to be load from the dataset. A full list
   of names is available on the 51Degrees website:
   https://51degrees.com/resources/property-dictionary

   Please note that this option is only available when haproxy has been
   compiled with USE_51DEGREES.

51degrees-property-separator <char>
   A char that will be appended to every property value in a response header
   containing 51Degrees results. If not set that will be set as ','.

   Please note that this option is only available when haproxy has been
   compiled with USE_51DEGREES.

51degrees-cache-size <number>
   Sets the size of the 51Degrees converter cache to <number> entries. This
   is an LRU cache which reminds previous device detections and their results.
   By default, this cache is disabled.

   Please note that this option is only available when haproxy has been
   compiled with USE_51DEGREES.


3.2. Performance tuning
-----------------------

max-spread-checks <delay in milliseconds>
   By default, haproxy tries to spread the start of health checks across the
   smallest health check interval of all the servers in a farm. The principle is
   to avoid hammering services running on the same server. But when using large
   check intervals (10 seconds or more), the last servers in the farm take some
   time before starting to be tested, which can be a problem. This parameter is
   used to enforce an upper bound on delay between the first and the last check,
   even if the servers' check intervals are larger. When servers run with
   shorter intervals, their intervals will be respected though.

maxconn <number>
   Sets the maximum per-process number of concurrent connections to <number>. It
   is equivalent to the command-line argument "-n". Proxies will stop accepting
   connections when this limit is reached. The "ulimit-n" parameter is
   automatically adjusted according to this value. See also "ulimit-n". Note:
   the "select" poller cannot reliably use more than 1024 file descriptors on
   some platforms. If your platform only supports select and reports "select
   FAILED" on startup, you need to reduce maxconn until it works (slightly
   below 500 in general). If this value is not set, it will default to the value
```



```
   set in DEFAULT_MAXCONN at build time (reported in haproxy -vv) if no memory
   limit is enforced, or will be computed based on the memory limit, the buffer
   size, memory allocated to compression, SSL cache size, and use or not of SSL
   and the associated maxsslconn (which can also be automatic).

maxconnrate <number>
   Sets the maximum per-process number of connections per second to <number>.
   Proxies will stop accepting connections when this limit is reached. It can be
   used to limit the global capacity regardless of each frontend capacity. It is
   important to note that this can only be used as a service protection measure,
   as there will not necessarily be a fair share between frontends when the
   limit is reached, so it's a good idea to also limit each frontend to some
   value close to its expected share. Also, lowering tune.maxaccept can improve
   fairness.

maxcomprate <number>
   Sets the maximum per-process input compression rate to <number> kilobytes
   per second.  For each session, if the maximum is reached, the compression
   level will be decreased during the session. If the maximum is reached at the
   beginning of a session, the session will not compress at all. If the maximum
   is not reached, the compression level will be increased up to
   tune.comp.maxlevel.  A value of zero means there is no limit, this is the
   default value.

maxcompcpuusage <number>
   Sets the maximum CPU usage HAProxy can reach before stopping the compression
   for new requests or decreasing the compression level of current requests.
   It works like 'maxcomprate' but measures CPU usage instead of incoming data
   bandwidth. The value is expressed in percent of the CPU used by haproxy. In
   case of multiple processes (nbproc > 1), each process manages its individual
   usage. A value of 100 disable the limit. The default value is 100. Setting
   a lower value will prevent the compression work from slowing the whole
   process down and from introducing high latencies.

maxpipes <number>
   Sets the maximum per-process number of pipes to <number>. Currently, pipes
   are only used by kernel-based tcp splicing. Since a pipe contains two file
   descriptors, the "ulimit-n" value will be increased accordingly. The default
   value is maxconn/4, which seems to be more than enough for most heavy usages.
   The splice code dynamically allocates and releases pipes, and can fall back
   to standard copy, so setting this value too low may only impact performance.

maxsessrate <number>
   Sets the maximum per-process number of sessions per second to <number>.
   Proxies will stop accepting connections when this limit is reached. It can be
   used to limit the global capacity regardless of each frontend capacity. It is
   important to note that this can only be used as a service protection measure,
   as there will not necessarily be a fair share between frontends when the
   limit is reached, so it's a good idea to also limit each frontend to some
   value close to its expected share. Also, lowering tune.maxaccept can improve
   fairness.

maxsslconn <number>
   Sets the maximum per-process number of concurrent SSL connections to
   <number>. By default there is no SSL-specific limit, which means that the
   global maxconn setting will apply to all connections. Setting this limit
   avoids having openssl use too much memory and crash when malloc returns NULL
   (since it unfortunately does not reliably check for such conditions). Note
   that the limit applies both to incoming and outgoing connections, so one
   connection which is deciphered then ciphered accounts for 2 SSL connections.
   If this value is not set, but a memory limit is enforced, this value will be
   automatically computed based on the memory limit, maxconn,  the buffer size,
   memory allocated to compression, SSL cache size, and use of SSL in either
   frontends, backends or both. If neither maxconn nor maxsslconn are specified
   when there is a memory limit, haproxy will automatically adjust these values
```

```
   so that 100% of the connections can be made over SSL with no risk, and will
   consider the sides where it is enabled (frontend, backend, both).

maxsslrate <number>
   Sets the maximum per-process number of SSL sessions per second to <number>.
   SSL listeners will stop accepting connections when this limit is reached. It
   can be used to limit the global SSL CPU usage regardless of each frontend
   capacity. It is important to note that this can only be used as a service
   protection measure, as there will not necessarily be a fair share between
   frontends when the limit is reached, so it's a good idea to also limit each
   frontend to some value close to its expected share. It is also important to
   note that the sessions are accounted before they enter the SSL stack and not
   after, which also protects the stack against bad handshakes. Also, lowering
   tune.maxaccept can improve fairness.

maxzlibmem <number>
   Sets the maximum amount of RAM in megabytes per process usable by the zlib.
   When the maximum amount is reached, future sessions will not compress as long
   as RAM is unavailable. When sets to 0, there is no limit.
   The default value is 0. The value is available in bytes on the UNIX socket
   with "show info" on the line "MaxZlibMemUsage", the memory used by zlib is
   "ZlibMemUsage" in bytes.

noepoll
   Disables the use of the "epoll" event polling system on Linux. It is
   equivalent to the command-line argument "-de". The next polling system
   used will generally be "poll". See also "nopoll".

nokqueue
   Disables the use of the "kqueue" event polling system on BSD. It is
   equivalent to the command-line argument "-dk". The next polling system
   used will generally be "poll". See also "nopoll".

nopoll
   Disables the use of the "poll" event polling system. It is equivalent to the
   command-line argument "-dp". The next polling system used will be "select".
   It should never be needed to disable "poll" since it's available on all
   platforms supported by HAProxy. See also "nokqueue" and "noepoll".

nosplice
   Disables the use of kernel tcp splicing between sockets on Linux. It is
   equivalent to the command line argument "-dS".  Data will then be copied
   using conventional and more portable recv/send calls. Kernel tcp splicing is
   limited to some very recent instances of kernel 2.6. Most versions between
   2.6.25 and 2.6.28 are buggy and will forward corrupted data, so they must not
   be used. This option makes it easier to globally disable kernel splicing in
   case of doubt. See also "option splice-auto", "option splice-request" and
   "option splice-response".

nogetaddrinfo
   Disables the use of getaddrinfo(3) for name resolving. It is equivalent to
   the command line argument "-dG". Deprecated gethostbyname(3) will be used.

spread-checks <0..50, in percent>
   Sometimes it is desirable to avoid sending agent and health checks to
   servers at exact intervals, for instance when many logical servers are
   located on the same physical server. With the help of this parameter, it
   becomes possible to add some randomness in the check interval between 0
   and +/- 50%. A value between 2 and 5 seems to show good results. The
   default value remains at 0.

tune.buffers.limit <number>
   Sets a hard limit on the number of buffers which may be allocated per process.
   The default value is zero which means unlimited. The minimum non-zero value
   will always be greater than "tune.buffers.reserve" and should ideally always
```



```
   be about twice as large. Forcing this value can be particularly useful to
   limit the amount of memory a process may take, while retaining a sane
   behaviour. When this limit is reached, sessions which need a buffer wait for
   another one to be released by another session. Since buffers are dynamically
   allocated and released, the waiting time is very short and not perceptible
   provided that limits remain reasonable. In fact sometimes reducing the limit
   may even increase performance by increasing the CPU cache's efficiency. Tests
   have shown good results on average HTTP traffic with a limit to 1/10 of the
   expected global maxconn setting, which also significantly reduces memory
   usage. The memory savings come from the fact that a number of connections
   will not allocate 2*tune.bufsize. It is best not to touch this value unless
   advised to do so by an haproxy core developer.

tune.buffers.reserve <number>
   Sets the number of buffers which are pre-allocated and reserved for use only
   during memory shortage conditions resulting in failed memory allocations. The
   minimum value is 2 and is also the default. There is no reason a user would
   want to change this value, it's mostly aimed at haproxy core developers.

tune.bufsize <number>
   Sets the buffer size to this size (in bytes). Lower values allow more
   sessions to coexist in the same amount of RAM, and higher values allow some
   applications with very large cookies to work. The default value is 16384 and
   can be changed at build time. It is strongly recommended not to change this
   from the default value, as very low values will break some services such as
   statistics, and values larger than default size will increase memory usage,
   possibly causing the system to run out of memory. At least the global maxconn
   parameter should be decreased by the same factor as this one is increased.
   If HTTP request is larger than (tune.bufsize - tune.maxrewrite), haproxy will
   return HTTP 400 (Bad Request) error. Similarly if an HTTP response is larger
   than this size, haproxy will return HTTP 502 (Bad Gateway).

tune.chksize <number>
   Sets the check buffer size to this size (in bytes). Higher values may help
   find string or regex patterns in very large pages, though doing so may imply
   more memory and CPU usage. The default value is 16384 and can be changed at
   build time. It is not recommended to change this value, but to use better
   checks whenever possible.

tune.comp.maxlevel <number>
   Sets the maximum compression level. The compression level affects CPU
   usage during compression. This value affects CPU usage during compression.
   Each session using compression initializes the compression algorithm with
   this value. The default value is 1.

tune.http.cookielen <number>
   Sets the maximum length of captured cookies. This is the maximum value that
   the "capture cookie xxx len yyy" will be allowed to take, and any upper value
   will automatically be truncated to this one. It is important not to set too
   high a value because all cookie captures still allocate this size whatever
   their configured value (they share a same pool). This value is per request
   per response, so the memory allocated is twice this value per connection.
   When not specified, the limit is set to 63 characters. It is recommended not
   to change this value.

tune.http.maxhdr <number>
   Sets the maximum number of headers in a request. When a request comes with a
   number of headers greater than this value (including the first line), it is
   rejected with a "400 Bad Request" status code. Similarly, too large responses
   are blocked with "502 Bad Gateway". The default value is 101, which is enough
   for all usages, considering that the widely deployed Apache server uses the
   same limit. It can be useful to push this limit further to temporarily allow
   a buggy application to work by the time it gets fixed. Keep in mind that each
   new header consumes 32bits of memory for each session, so don't push this
   limit too high.
```

```
1171
1172  tune.idletimer <timeout>
1173    Sets the duration after which haproxy will consider that an empty buffer is
1174    probably associated with an idle stream. This is used to optimally adjust
1175    some packet sizes while forwarding large and small data alternatively. The
1176    decision to use splice() or to send large buffers in SSL is modulated by this
1177    parameter. The value is in milliseconds between 0 and 65535. A value of zero
1178    means that haproxy will not try to detect idle streams. The default is 1000,
1179    which seems to correctly detect end user pauses (eg: read a page before
1180    clicking). There should be not reason for changing this value. Please check
1181    tune.ssl.maxrecord below.
1182
1183  tune.lua.forced-yield <number>
1184    This directive forces the Lua engine to execute a yield each <number> of
1185    instructions executed. This permits interruptng a long script and allows the
1186    HAProxy scheduler to process other tasks like accepting connections or
1187    forwarding traffic. The default value is 10000 instructions. If HAProxy often
1188    executes some Lua code but more reactivity is required, this value can be
1189    lowered. If the Lua code is quite long and its result is absolutely required
1190    to process the data, the <number> can be increased.
1191
1192  tune.lua.maxmem
1193    Sets the maximum amount of RAM in megabytes per process usable by Lua. By
1194    default it is zero which means unlimited. It is important to set a limit to
1195    ensure that a bug in a script will not result in the system running out of
1196    memory.
1197
1198  tune.lua.session-timeout <timeout>
1199    This is the execution timeout for the Lua sessions. This is useful for
1200    preventing infinite loops or spending too much time in Lua. This timeout
1201    counts only the pure Lua runtime. If the Lua does a sleep, the sleep is
1202    not taked in account. The default timeout is 4s.
1203
1204  tune.lua.task-timeout <timeout>
1205    Purpose is the same as "tune.lua.session-timeout", but this timeout is
1206    dedicated to the tasks. By default, this timeout isn't set because a task may
1207    remain alive during of the lifetime of HAProxy. For example, a task used to
1208    check servers.
1209
1210  tune.lua.service-timeout <timeout>
1211    This is the execution timeout for the Lua services. This is useful for
1212    preventing infinite loops or spending too much time in Lua. This timeout
1213    counts only the pure Lua runtime. If the Lua does a sleep, the sleep is
1214    not taked in account. The default timeout is 4s.
1215
1216  tune.maxaccept <number>
1217    Sets the maximum number of consecutive connections a process may accept in a
1218    row before switching to other work. In single process mode, higher numbers
1219    give better performance at high connection rates. However in multi-process
1220    modes, keeping a bit of fairness between processes generally is better to
1221    increase performance. This value applies individually to each listener, so
1222    that the number of processes a listener is bound to is taken into account.
1223    This value defaults to 64. In multi-process mode, it is divided by twice
1224    the number of processes the listener is bound to. Setting this value to -1
1225    completely disables the limitation. It should normally not be needed to tweak
1226    this value.
1227
1228  tune.maxpollevents <number>
1229    Sets the maximum amount of events that can be processed at once in a call to
1230    the polling system. The default value is adapted to the operating system. It
1231    has been noticed that reducing it below 200 tends to slightly decrease
1232    latency at the expense of network bandwidth, and increasing it above 200
1233    tends to trade latency for slightly increased bandwidth.
1234
1235  tune.maxrewrite <number>
```



```
1236    Sets the reserved buffer space to this size in bytes. The reserved space is
1237    used for header rewriting or appending. The first reads on sockets will never
1238    fill more than bufsize-maxrewrite. Historically it has defaulted to half of
1239    bufsize, though that does not make much sense since there are rarely large
1240    numbers of headers to add. Setting it too high prevents processing of large
1241    requests or responses. Setting it too low prevents addition of new headers
1242    to already large requests or to POST requests. It is generally wise to set it
1243    to about 1024. It is automatically readjusted to half of bufsize if it is
1244    larger than that. This means you don't have to worry about it when changing
1245    bufsize.
1246
1247  tune.pattern.cache-size <number>
1248    Sets the size of the pattern lookup cache to <number> entries. This is an LRU
1249    cache which reminds previous lookups and their results. It is used by ACLs
1250    and maps on slow pattern lookups, namely the ones using the "sub", "reg",
1251    "dir", "dom", "end", "bin" match methods as well as the case-insensitive
1252    strings. It applies to pattern expressions which means that it will be able
1253    to memorize the result of a lookup among all the patterns specified on a
1254    configuration line (including all those loaded from files). It automatically
1255    invalidates entries which are updated using HTTP actions or on the CLI. The
1256    default cache size is set to 10000 entries, which limits its footprint to
1257    about 5 MB on 32-bit systems and 8 MB on 64-bit systems. There is a very low
1258    risk of collision in this cache, which is in the order of the size of the
1259    cache divided by 2^64. Typically, at 10000 requests per second with the
1260    default cache size of 10000 entries, there's 1% chance that a brute force
1261    attack could cause a single collision after 60 years, or 0.1% after 6 years.
1262    This is considered much lower than the risk of a memory corruption caused by
1263    aging components. If this is not acceptable, the cache can be disabled by
1264    setting this parameter to 0.
1265
1266  tune.pipesize <number>
1267    Sets the kernel pipe buffer size to this size (in bytes). By default, pipes
1268    are the default size for the system. But sometimes when using TCP splicing,
1269    it can improve performance to increase pipe sizes, especially if it is
1270    suspected that pipes are not filled and that many calls to splice() are
1271    performed. This has an impact on the kernel's memory footprint, so this must
1272    not be changed if impacts are not understood.
1273
1274  tune.rcvbuf.client <number>
1275  tune.rcvbuf.server <number>
1276    Forces the kernel socket receive buffer size on the client or the server side
1277    to the specified value in bytes. This value applies to all TCP/HTTP frontends
1278    and backends. It should normally never be set, and the default size (0) lets
1279    the kernel autotune this value depending on the amount of available memory.
1280    However it can sometimes help to set it to very low values (eg: 4096) in
1281    order to save kernel memory by preventing it from buffering too large amounts
1282    of received data. Lower values will significantly increase CPU usage though.
1283
1284  tune.recv_enough <number>
1285    Haproxy uses some hints to detect that a short read indicates the end of the
1286    socket buffers. One of them is that a read returns more than <recv_enough>
1287    bytes, which defaults to 10136 (7 segments of 1448 each). This default value
1288    may be changed by this setting to better deal with workloads involving lots
1289    of short messages such as telnet or SSH sessions.
1290
1291  tune.sndbuf.client <number>
1292  tune.sndbuf.server <number>
1293    Forces the kernel socket send buffer size on the client or the server side to
1294    the specified value in bytes. This value applies to all TCP/HTTP frontends
1295    and backends. It should normally never be set, and the default size (0) lets
1296    the kernel autotune this value depending on the amount of available memory.
1297    However it can sometimes help to set it to very low values (eg: 4096) in
1298    order to save kernel memory by preventing it from buffering too large amounts
1299    of received data. Lower values will significantly increase CPU usage though.
1300    Another use case is to prevent write timeouts with extremely slow clients due
```

```
1301    to the kernel waiting for a large part of the buffer to be read before
1302    notifying haproxy again.
1303
1304  tune.ssl.cachesize <number>
1305    Sets the size of the global SSL session cache, in a number of blocks. A block
1306    is large enough to contain an encoded session without peer certificate.
1307    An encoded session with peer certificate is stored in multiple blocks
1308    depending on the size of the peer certificate. A block uses approximately
1309    200 bytes of memory. The default value may be forced at build time, otherwise
1310    defaults to 20000.  When the cache is full, the most idle entries are purged
1311    and reassigned. Higher values reduce the occurrence of such a purge, hence
1312    the number of CPU-intensive SSL handshakes by ensuring that all users keep
1313    their session as long as possible. All entries are pre-allocated upon startup
1314    and are shared between all processes if "nbproc" is greater than 1. Setting
1315    this value to 0 disables the SSL session cache.
1316
1317  tune.ssl.force-private-cache
1318    This boolean disables SSL session cache sharing between all processes. It
1319    should normally not be used since it will force many renegotiations due to
1320    clients hitting a random process. But it may be required on some operating
1321    systems where none of the SSL cache synchronization method may be used. In
1322    this case, adding a first layer of hash-based load balancing before the SSL
1323    layer might limit the impact of the lack of session sharing.
1324
1325  tune.ssl.lifetime <timeout>
1326    Sets how long a cached SSL session may remain valid. This time is expressed
1327    in seconds and defaults to 300 (5 min). It is important to understand that it
1328    does not guarantee that sessions will last that long, because if the cache is
1329    full, the longest idle sessions will be purged despite their configured
1330    lifetime. The real usefulness of this setting is to prevent sessions from
1331    being used for too long.
1332
1333  tune.ssl.maxrecord <number>
1334    Sets the maximum amount of bytes passed to SSL_write() at a time. Default
1335    value 0 means there is no limit. Over SSL/TLS, the client can decipher the
1336    data only once it has received a full record. With large records, it means
1337    that clients might have to download up to 16kB of data before starting to
1338    process them. Limiting the value can improve page load times on browsers
1339    located over high latency or low bandwidth networks. It is suggested to find
1340    optimal values which fit into 1 or 2 TCP segments (generally 1448 bytes over
1341    Ethernet with TCP timestamps enabled, or 1460 when timestamps are disabled),
1342    keeping in mind that SSL/TLS add some overhead. Typical values of 1419 and
1343    2859 gave good results during tests. Use "strace -e trace=write" to find the
1344    best value. Haproxy will automatically switch to this setting after an idle
1345    stream has been detected (see tune.idletimer above).
1346
1347  tune.ssl.default-dh-param <number>
1348    Sets the maximum size of the Diffie-Hellman parameters used for generating
1349    the ephemeral/temporary Diffie-Hellman key in case of DHE key exchange. The
1350    final size will try to match the size of the server's RSA (or DSA) key (e.g,
1351    a 2048 bits temporary DH key for a 2048 bits RSA key), but will not exceed
1352    this maximum value. Default value if 1024. Only 1024 or higher values are
1353    allowed. Higher values will increase the CPU load, and values greater than
1354    1024 bits are not supported by Java 7 and earlier clients. This value is not
1355    used if static Diffie-Hellman parameters are supplied either directly
1356    in the certificate file or by using the ssl-dh-param-file parameter.
1357
1358  tune.ssl.ssl-ctx-cache-size <number>
1359    Sets the size of the cache used to store generated certificates to <number>
1360    entries. This is a LRU cache. Because generating a SSL certificate
1361    dynamically is expensive, they are cached. The default cache size is set to
1362    1000 entries.
1363
1364  tune.vars.global-max-size <size>
1365  tune.vars.reqres-max-size <size>
```



```
1366  tune.vars.sess-max-size <size>
1367  tune.vars.txn-max-size <size>
1368    These four tunes helps to manage the allowed amount of memory used by the
1369    variables system. "global" limits the memory for all the systems. "sess" limit
1370    the memory by session, "txn" limits the memory by transaction and "reqres"
1371    limits the memory for each request or response processing. during the
1372    accounting, "sess" embbed "txn" and "txn" embed "reqres".
1373
1374    By example, we considers that "tune.vars.sess-max-size" is fixed to 100,
1375    "tune.vars.txn-max-size" is fixed to 100, "tune.vars.reqres-max-size" is
1376    also fixed to 100. If we create a variable "txn.var" that contains 100 bytes,
1377    we cannot create any more variable in the other contexts.
1378
1379  tune.zlib.memlevel <number>
1380    Sets the memLevel parameter in zlib initialization for each session. It
1381    defines how much memory should be allocated for the internal compression
1382    state. A value of 1 uses minimum memory but is slow and reduces compression
1383    ratio, a value of 9 uses maximum memory for optimal speed.  Can be a value
1384    between 1 and 9. The default value is 8.
1385
1386  tune.zlib.windowsize <number>
1387    Sets the window size (the size of the history buffer) as a parameter of the
1388    zlib initialization for each session. Larger values of this parameter result
1389    in better compression at the expense of memory usage.  Can be a value between
1390    8 and 15.  The default value is 15.
1391
1392  3.3. Debugging
1393  --------------
1394
1395  debug
1396    Enables debug mode which dumps to stdout all exchanges, and disables forking
1397    into background. It is the equivalent of the command-line argument "-d". It
1398    should never be used in a production configuration since it may prevent full
1399    system startup.
1400
1401  quiet
1402    Do not display any message during startup. It is equivalent to the command-
1403    line argument "-q".
1404
1405
1406  3.4. Userlists
1407  --------------
1408  It is possible to control access to frontend/backend/listen sections or to
1409  http stats by allowing only authenticated and authorized users. To do this,
1410  it is required to create at least one userlist and to define users.
1411
1412  userlist <listname>
1413    Creates new userlist with name <listname>. Many independent userlists can be
1414    used to store authentication & authorization data for independent customers.
1415
1416  group <groupname> [users <user>,<user>,(...)]
1417    Adds group <groupname> to the current userlist. It is also possible to
1418    attach users to this group by using a comma separated list of names
1419    proceeded by "users" keyword.
1420
1421  user <username> [password|insecure-password <password>]
1422                  [groups <group>,<group>,(...)]
1423    Adds user <username> to the current userlist. Both secure (encrypted) and
1424    insecure (unencrypted) passwords can be used. Encrypted passwords are
1425    evaluated using the crypt(3) function so depending of the system's
1426    capabilities, different algorithms are supported. For example modern Glibc
1427    based Linux system supports MD5, SHA-256, SHA-512 and of course classic,
1428    DES-based method of encrypting passwords.
1429
1430
```

```
   Example:
         userlist L1
           group G1 users tiger,scott
           group G2 users xdb,scott

           user tiger password $6$k6y3o.eP$JlKBx9za9667qe4(...)xHSwRv6J.C0/D7cV91
           user scott insecure-password elgato
           user xdb insecure-password hello

         userlist L2
           group G1
           group G2

           user tiger password $6$k6y3o.eP$JlKBx(...)xHSwRv6J.C0/D7cV91 groups G1
           user scott insecure-password elgato groups G1,G2
           user xdb insecure-password hello groups G2

   Please note that both lists are functionally identical.


3.5. Peers
----------
It is possible to propagate entries of any data-types in stick-tables between
several haproxy instances over TCP connections in a multi-master fashion. Each
instance pushes its local updates and insertions to remote peers. The pushed
values overwrite remote ones without aggregation. Interrupted exchanges are
automatically detected and recovered from the last known point.
In addition, during a soft restart, the old process connects to the new one
using such a TCP connection to push all its entries before the new process
tries to connect to other peers. That ensures very fast replication during a
reload, it typically takes a fraction of a second even for large tables.
Note that Server IDs are used to identify servers remotely, so it is important
that configurations look similar or at least that the same IDs are forced on
each server on all participants.

peers <peersect>
  Creates a new peer list with name <peersect>. It is an independent section,
  which is referenced by one or more stick-tables.

disabled
  Disables a peers section. It disables both listening and any synchronization
  related to this section. This is provided to disable synchronization of stick
  tables without having to comment out all "peers" references.

enable
  This re-enables a disabled peers section which was previously disabled.

peer <peername> <ip>:<port>
  Defines a peer inside a peers section.
  If <peername> is set to the local peer name (by default hostname, or forced
  using "-L" command line option), haproxy will listen for incoming remote peer
  connection on <ip>:<port>. Otherwise, <ip>:<port> defines where to connect to
  to join the remote peer, and <peername> is used at the protocol level to
  identify and validate the remote peer on the server side.

  During a soft restart, local peer <ip>:<port> is used by the old instance to
  connect the new one and initiate a complete replication (teaching process).

  It is strongly recommended to have the exact same peers declaration on all
  peers and to only rely on the "-L" command line argument to change the local
  peer name. This makes it easier to maintain coherent configuration files
  across all peers.

  You may want to reference some environment variables in the address
  parameter, see section 2.3 about environment variables.
```



```

  Example:
    peers mypeers
        peer haproxy1 192.168.0.1:1024
        peer haproxy2 192.168.0.2:1024
        peer haproxy3 10.2.0.1:1024

    backend mybackend
        mode tcp
        balance roundrobin
        stick-table type ip size 20k peers mypeers
        stick on src

        server srv1 192.168.0.30:80
        server srv2 192.168.0.31:80


3.6. Mailers
------------
It is possible to send email alerts when the state of servers changes.
If configured email alerts are sent to each mailer that is configured
in a mailers section. Email is sent to mailers using SMTP.

mailers <mailersect>
  Creates a new mailer list with the name <mailersect>. It is an
  independent section which is referenced by one or more proxies.

mailer <mailername> <ip>:<port>
  Defines a mailer inside a mailers section.

  Example:
    mailers mymailers
        mailer smtp1 192.168.0.1:587
        mailer smtp2 192.168.0.2:587

    backend mybackend
        mode tcp
        balance roundrobin

        email-alert mailers mymailers
        email-alert from test1@horms.org
        email-alert to test2@horms.org

        server srv1 192.168.0.30:80
        server srv2 192.168.0.31:80


4. Proxies
----------

Proxy configuration can be located in a set of sections :
 - defaults [<name>]
 - frontend <name>
 - backend  <name>
 - listen   <name>

A "defaults" section sets default parameters for all other sections following
its declaration. Those default parameters are reset by the next "defaults"
section. See below for the list of parameters which can be set in a "defaults"
section. The name is optional but its use is encouraged for better readability.

A "frontend" section describes a set of listening sockets accepting client
connections.

A "backend" section describes a set of servers to which the proxy will connect
```

to forward incoming connections.

A "listen" section defines a complete proxy with its frontend and backend parts combined in one section. It is generally useful for TCP-only traffic.

All proxy names must be formed from upper and lower case letters, digits, '-' (dash), '_' (underscore) , '.' (dot) and ':' (colon). ACL names are case-sensitive, which means that "www" and "WWW" are two different proxies.

Historically, all proxy names could overlap, it just caused troubles in the logs. Since the introduction of content switching, it is mandatory that two proxies with overlapping capabilities (frontend/backend) have different names. However, it is still permitted that a frontend and a backend share the same name, as this configuration seems to be commonly encountered.

Right now, two major proxy modes are supported : "tcp", also known as layer 4, and "http", also known as layer 7. In layer 4 mode, HAProxy simply forwards bidirectional traffic between two sides. In layer 7 mode, HAProxy analyzes the protocol, and can interact with it by allowing, blocking, switching, adding, modifying, or removing arbitrary contents in requests or responses, based on arbitrary criteria.

In HTTP mode, the processing applied to requests and responses flowing over a connection depends in the combination of the frontend's HTTP options and the backend's. HAProxy supports 5 connection modes :

  - KAL : keep alive ("option http-keep-alive") which is the default mode : all
    requests and responses are processed, and connections remain open but idle
    between responses and new requests.

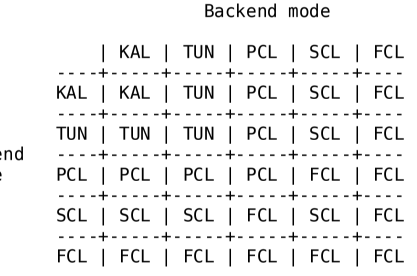
  - TUN: tunnel ("option http-tunnel") : this was the default mode for versions
    1.0 to 1.5-dev21 : only the first request and response are processed, and
    everything else is forwarded with no analysis at all. This mode should not
    be used as it creates lots of trouble with logging and HTTP processing.

  - PCL: passive close ("option httpclose") : exactly the same as tunnel mode,
    but with "Connection: close" appended in both directions to try to make
    both ends close after the first request/response exchange.

  - SCL: server close ("option http-server-close") : the server-facing
    connection is closed after the end of the response is received, but the
    client-facing connection remains open.

  - FCL: forced close ("option forceclose") : the connection is actively closed
    after the end of the response.

The effective mode that will be applied to a connection passing through a frontend and a backend can be determined by both proxy modes according to the following matrix, but in short, the modes are symmetric, keep-alive is the weakest option and force close is the strongest.



4.1. Proxy keywords matrix

The following list of keywords is supported. Most of them may only be used in a limited set of section types. Some of them are marked as "deprecated" because they are inherited from an old syntax which may be confusing or functionally limited, and there are new recommended keywords to replace them. Keywords marked with "(*)" can be optionally inverted using the "no" prefix, eg. "no option contstats". This makes sense when the option has been enabled by default and must be disabled for a specific instance. Such options may also be prefixed with "default" in order to restore default settings regardless of what has been specified in a previous "defaults" section.

keyword		defaults	frontend	listen	backend
acl		-	X	X	X
appsession		-	-	-	-
backlog		X	X	X	-
balance		X	-	X	X
bind		-	X	X	-
bind-process		X	X	X	X
block		-	X	X	X
capture cookie		-	X	X	-
capture request header		-	X	X	-
capture response header		-	X	X	-
clitimeout	(deprecated)	X	X	X	-
compression		X	X	X	X
contimeout	(deprecated)	X	-	X	X
cookie		X	-	X	X
declare capture		-	X	X	-
default-server		X	-	X	X
default_backend		X	X	X	-
description		-	X	X	X
disabled		X	X	X	X
dispatch		-	-	X	X
email-alert from		X	X	X	X
email-alert level		X	X	X	X
email-alert mailers		X	X	X	X
email-alert myhostname		X	X	X	X
email-alert to		X	X	X	X
enabled		X	X	X	X
errorfile		X	X	X	X
errorloc		X	X	X	X
errorloc302		X	X	X	X
-- keyword -------------------------		defaults	- frontend	- listen	-- backend -
errorloc303		X	X	X	X
force-persist		-	X	X	X
fullconn		X	-	X	X
grace		X	X	X	X
hash-type		X	-	X	X
http-check disable-on-404		X	-	X	X
http-check expect		-	-	X	X
http-check send-state		X	-	X	X
http-request		-	X	X	X
http-response		-	X	X	X
http-reuse		X	-	X	X
http-send-name-header		-	-	X	X
id		-	X	X	X
ignore-persist		-	X	X	X
load-server-state-from-file		X	-	X	X
log	(*)	X	X	X	X
log-format		X	X	X	-

```
log-format-sd                              X          X         X         -
log-tag                                    X          X         X         X
max-keep-alive-queue                       X          -         X         X
maxconn                                    X          X         X         -
mode                                       X          X         X         X
monitor fail                               -          X         X         -
monitor-net                                X          X         X         -
monitor-uri                                X          X         X         -
option abortonclose                  (*)   X          -         X         X
option accept-invalid-http-request   (*)   X          X         X         -
option accept-invalid-http-response  (*)   X          -         X         X
option allbackups                    (*)   X          -         X         X
option checkcache                    (*)   X          -         X         X
option clitcpka                      (*)   X          X         X         -
option contstats                     (*)   X          X         X         -
option dontlog-normal                (*)   X          X         X         -
option dontlognull                   (*)   X          X         X         -
option forceclose                    (*)   X          X         X         X
-- keyword -------------------------- defaults - frontend - listen -- backend -
option forwardfor                          X          X         X         X
option http-buffer-request           (*)   X          X         X         X
option http-ignore-probes            (*)   X          X         X         -
option http-keep-alive               (*)   X          X         X         X
option http-no-delay                 (*)   X          X         X         X
option http-pretend-keepalive        (*)   X          X         X         X
option http-server-close             (*)   X          X         X         X
option http-tunnel                   (*)   X          X         X         X
option http-use-proxy-header         (*)   X          X         X         -
option httpchk                             X          -         X         X
option httpclose                     (*)   X          X         X         X
option httplog                             X          X         X         X
option http_proxy                    (*)   X          X         X         X
option independent-streams           (*)   X          X         X         X
option ldap-check                          X          -         X         X
option external-check                      X          -         X         X
option log-health-checks             (*)   X          -         X         X
option log-separate-errors           (*)   X          X         X         -
option logasap                       (*)   X          X         X         -
option mysql-check                         X          -         X         X
option nolinger                      (*)   X          X         X         X
option originalto                          X          X         X         X
option persist                       (*)   X          -         X         X
option pgsql-check                         X          -         X         X
option prefer-last-server            (*)   X          -         X         X
option redispatch                    (*)   X          -         X         X
option redis-check                         X          -         X         X
option smtpchk                             X          -         X         X
option socket-stats                  (*)   X          X         X         -
option splice-auto                   (*)   X          X         X         X
option splice-request                (*)   X          X         X         X
option splice-response               (*)   X          X         X         X
option srvtcpka                      (*)   X          -         X         X
option ssl-hello-chk                       X          -         X         X
-- keyword -------------------------- defaults - frontend - listen -- backend -
option tcp-check                           X          -         X         X
option tcp-smart-accept              (*)   X          X         X         -
option tcp-smart-connect             (*)   X          -         X         X
option tcpka                               X          X         X         X
option tcplog                              X          X         X         X
option transparent                   (*)   X          -         X         X
external-check command                     X          -         X         X
external-check path                        X          -         X         X
persist rdp-cookie                         X          -         X         X
rate-limit sessions                        X          X         X         -
redirect                                   -          X         X         X
```



```
redisp                       (deprecated)  X          -         X         X
redispatch                   (deprecated)  X          -         X         X
reqadd                                     -          X         X         X
reqallow                                   -          X         X         X
reqdel                                     -          X         X         X
reqdeny                                    -          X         X         X
reqiallow                                  -          X         X         X
reqidel                                    -          X         X         X
reqideny                                   -          X         X         X
reqipass                                   -          X         X         X
reqirep                                    -          X         X         X
reqitarpit                                 -          X         X         X
reqpass                                    -          X         X         X
reqrep                                     -          X         X         X
-- keyword -------------------------- defaults - frontend - listen -- backend -
reqtarpit                                  -          X         X         X
retries                                    X          -         X         X
rspadd                                     -          X         X         X
rspdel                                     -          X         X         X
rspdeny                                    -          X         X         X
rspidel                                    -          X         X         X
rspideny                                   -          X         X         X
rspirep                                    -          X         X         X
rsprep                                     -          X         X         X
server                                     -          -         X         X
server-state-file-name                     X          -         X         X
source                                     X          -         X         X
srvtimeout                   (deprecated)  X          -         X         X
stats admin                                -          X         X         X
stats auth                                 X          X         X         X
stats enable                               X          X         X         X
stats hide-version                         X          X         X         X
stats http-request                         -          X         X         X
stats realm                                X          X         X         X
stats refresh                              X          X         X         X
stats scope                                X          X         X         X
stats show-desc                            X          X         X         X
stats show-legends                         X          X         X         X
stats show-node                            X          X         X         X
stats uri                                  X          X         X         X
-- keyword -------------------------- defaults - frontend - listen -- backend -
stick match                                -          -         X         X
stick on                                   -          -         X         X
stick store-request                        -          -         X         X
stick store-response                       -          -         X         X
stick-table                                -          -         X         X
tcp-check connect                          -          -         X         X
tcp-check expect                           -          -         X         X
tcp-check send                             -          -         X         X
tcp-check send-binary                      -          -         X         X
tcp-request connection                     -          X         X         -
tcp-request content                        -          X         X         X
tcp-request inspect-delay                  -          X         X         X
tcp-response content                       -          -         X         X
tcp-response inspect-delay                 -          -         X         X
timeout check                              X          -         X         X
timeout client                             X          X         X         -
timeout client-fin                         X          X         X         -
timeout clitimeout           (deprecated)  X          X         X         -
timeout connect                            X          -         X         X
timeout contimeout           (deprecated)  X          -         X         X
timeout http-keep-alive                    X          X         X         X
timeout http-request                       X          X         X         X
timeout queue                              X          -         X         X
timeout server                             X          -         X         X
```

```
timeout server-fin                      X          -         X         X
timeout srvtimeout          (deprecated)  X          -         X         X
timeout tarpit                          X          X         X         X
timeout tunnel                          X          -         X         X
transparent                 (deprecated)  X          -         X         X
unique-id-format                        X          X         X         -
unique-id-header                        X          X         X         -
use_backend                             -          X         X         -
use-server                              -          -         X         X
-----------------------------------+----------+----------+---------+---------
 keyword                             defaults   frontend   listen    backend


4.2. Alphabetically sorted keywords reference
---------------------------------------------

This section provides a description of each keyword and its usage.


acl <aclname> <criterion> [flags] [operator] <value> ...
  Declare or complete an access list.
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Example:
        acl invalid_src  src          0.0.0.0/7 224.0.0.0/3
        acl invalid_src  src_port     0:1023
        acl local_dst    hdr(host) -i localhost

  See section 7 about ACL usage.


appsession <cookie> len <length> timeout <holdtime>
           [request-learn] [prefix] [mode <path-parameters|query-string>]
  Define session stickiness on an existing application cookie.
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    no    |   yes  |   yes
  Arguments :
    <cookie>   this is the name of the cookie used by the application and which
               HAProxy will have to learn for each new session.

    <length>   this is the max number of characters that will be memorized and
               checked in each cookie value.

    <holdtime> this is the time after which the cookie will be removed from
               memory if unused. If no unit is specified, this time is in
               milliseconds.

    request-learn
               If this option is specified, then haproxy will be able to learn
               the cookie found in the request in case the server does not
               specify any in response. This is typically what happens with
               PHPSESSID cookies, or when haproxy's session expires before
               the application's session and the correct server is selected.
               It is recommended to specify this option to improve reliability.

    prefix     When this option is specified, haproxy will match on the cookie
               prefix (or URL parameter prefix). The appsession value is the
               data following this prefix.

               Example :
               appsession ASPSESSIONID len 64 timeout 3h prefix

               This will match the cookie ASPSESSIONIDXXXX=XXXXX,
               the appsession value will be XXXX=XXXXX.
```



```
    mode       This option allows to change the URL parser mode.
               2 modes are currently supported :
               - path-parameters :
                 The parser looks for the appsession in the path parameters
                 part (each parameter is separated by a semi-colon), which is
                 convenient for JSESSIONID for example.
                 This is the default mode if the option is not set.
               - query-string :
                 In this mode, the parser will look for the appsession in the
                 query string.

  As of version 1.6, appsessions was removed. It is more flexible and more
  convenient to use stick-tables instead, and stick-tables support multi-master
  replication and data conservation across reloads, which appsessions did not.

  See also : "cookie", "capture cookie", "balance", "stick", "stick-table",
             "ignore-persist", "nbproc" and "bind-process".


backlog <conns>
  Give hints to the system about the approximate listen backlog desired size
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
  Arguments :
    <conns>   is the number of pending connections. Depending on the operating
              system, it may represent the number of already acknowledged
              connections, of non-acknowledged ones, or both.

  In order to protect against SYN flood attacks, one solution is to increase
  the system's SYN backlog size. Depending on the system, sometimes it is just
  tunable via a system parameter, sometimes it is not adjustable at all, and
  sometimes the system relies on hints given by the application at the time of
  the listen() syscall. By default, HAProxy passes the frontend's maxconn value
  to the listen() syscall. On systems which can make use of this value, it can
  sometimes be useful to be able to specify a different value, hence this
  backlog parameter.

  On Linux 2.4, the parameter is ignored by the system. On Linux 2.6, it is
  used as a hint and the system accepts up to the smallest greater power of
  two, and never more than some limits (usually 32768).

  See also : "maxconn" and the target operating system's tuning guide.


balance <algorithm> [ <arguments> ]
balance url_param <param> [check_post]
  Define the load balancing algorithm to be used in a backend.
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments :
    <algorithm> is the algorithm used to select a server when doing load
                balancing. This only applies when no persistence information
                is available, or when a connection is redispatched to another
                server. <algorithm> may be one of the following :

      roundrobin  Each server is used in turns, according to their weights.
                  This is the smoothest and fairest algorithm when the server's
                  processing time remains equally distributed. This algorithm
                  is dynamic, which means that server weights may be adjusted
                  on the fly for slow starts for instance. It is limited by
                  design to 4095 active servers per backend. Note that in some
                  large farms, when a server becomes up after having been down
                  for a very short time, it may sometimes take a few hundreds
                  requests for it to be re-integrated into the farm and start
                  receiving traffic. This is normal, though very rare. It is
```

indicated here in case you would have the chance to observe
it, so that you don't worry.

static-rr Each server is used in turns, according to their weights.
This algorithm is as similar to roundrobin except that it is
static, which means that changing a server's weight on the
fly will have no effect. On the other hand, it has no design
limitation on the number of servers, and when a server goes
up, it is always immediately reintroduced into the farm, once
the full map is recomputed. It also uses slightly less CPU to
run (around -1%).

leastconn The server with the lowest number of connections receives the
connection. Round-robin is performed within groups of servers
of the same load to ensure that all servers will be used. Use
of this algorithm is recommended where very long sessions are
expected, such as LDAP, SQL, TSE, etc... but is not very well
suited for protocols using short sessions such as HTTP. This
algorithm is dynamic, which means that server weights may be
adjusted on the fly for slow starts for instance.

first The first server with available connection slots receives the
connection. The servers are chosen from the lowest numeric
identifier to the highest (see server parameter "id"), which
defaults to the server's position in the farm. Once a server
reaches its maxconn value, the next server is used. It does
not make sense to use this algorithm without setting maxconn.
The purpose of this algorithm is to always use the smallest
number of servers so that extra servers can be powered off
during non-intensive hours. This algorithm ignores the server
weight, and brings more benefit to long session such as RDP
or IMAP than HTTP, though it can be useful there too. In
order to use this algorithm efficiently, it is recommended
that a cloud controller regularly checks server usage to turn
them off when unused, and regularly checks backend queue to
turn new servers on when the queue inflates. Alternatively,
using "http-check send-state" may inform servers on the load.

source The source IP address is hashed and divided by the total
weight of the running servers to designate which server will
receive the request. This ensures that the same client IP
address will always reach the same server as long as no
server goes down or up. If the hash result changes due to the
number of running servers changing, many clients will be
directed to a different server. This algorithm is generally
used in TCP mode where no cookie may be inserted. It may also
be used on the Internet to provide a best-effort stickiness
to clients which refuse session cookies. This algorithm is
static by default, which means that changing a server's
weight on the fly will have no effect, but this can be
changed using "hash-type".

uri This algorithm hashes either the left part of the URI (before
the question mark) or the whole URI (if the "whole" parameter
is present) and divides the hash value by the total weight of
the running servers. The result designates which server will
receive the request. This ensures that the same URI will
always be directed to the same server as long as no server
goes up or down. This is used with proxy caches and
anti-virus proxies in order to maximize the cache hit rate.
Note that this algorithm may only be used in an HTTP backend.
This algorithm is static by default, which means that
changing a server's weight on the fly will have no effect,
but this can be changed using "hash-type".

This algorithm supports two optional parameters "len" and
"depth", both followed by a positive integer number. These
options may be helpful when it is needed to balance servers
based on the beginning of the URI only. The "len" parameter
indicates that the algorithm should only consider that many
characters at the beginning of the URI to compute the hash.
Note that having "len" set to 1 rarely makes sense since most
URIs start with a leading "/".

The "depth" parameter indicates the maximum directory depth
to be used to compute the hash. One level is counted for each
slash in the request. If both parameters are specified, the
evaluation stops when either is reached.

url_param The URL parameter specified in argument will be looked up in
the query string of each HTTP GET request.

If the modifier "check_post" is used, then an HTTP POST
request entity will be searched for the parameter argument,
when it is not found in a query string after a question mark
('?') in the URL. The message body will only start to be
analyzed once either the advertised amount of data has been
received or the request buffer is full. In the unlikely event
that chunked encoding is used, only the first chunk is
scanned. Parameter values separated by a chunk boundary, may
be randomly balanced if at all. This keyword used to support
an optional <max_wait> parameter which is now ignored.

If the parameter is found followed by an equal sign ('=') and
a value, then the value is hashed and divided by the total
weight of the running servers. The result designates which
server will receive the request.

This is used to track user identifiers in requests and ensure
that a same user ID will always be sent to the same server as
long as no server goes up or down. If no value is found or if
the parameter is not found, then a round robin algorithm is
applied. Note that this algorithm may only be used in an HTTP
backend. This algorithm is static by default, which means
that changing a server's weight on the fly will have no
effect, but this can be changed using "hash-type".

hdr(<name>) The HTTP header <name> will be looked up in each HTTP
request. Just as with the equivalent ACL 'hdr()' function,
the header name in parenthesis is not case sensitive. If the
header is absent or if it does not contain any value, the
roundrobin algorithm is applied instead.

An optional 'use_domain_only' parameter is available, for
reducing the hash algorithm to the main domain part with some
specific headers such as 'Host'. For instance, in the Host
value "haproxy.1wt.eu", only "1wt" will be considered.

This algorithm is static by default, which means that
changing a server's weight on the fly will have no effect,
but this can be changed using "hash-type".

rdp-cookie
rdp-cookie(<name>)
The RDP cookie <name> (or "mstshash" if omitted) will be
looked up and hashed for each incoming TCP request. Just as
with the equivalent ACL 'req_rdp_cookie()' function, the name
is not case-sensitive. This mechanism is useful as a degraded
persistence mode, as it makes it possible to always send the
same user (or the same session ID) to the same server. If the

```
                  cookie is not found, the normal roundrobin algorithm is
                  used instead.

                  Note that for this to work, the frontend must ensure that an
                  RDP cookie is already present in the request buffer. For this
                  you must use 'tcp-request content accept' rule combined with
                  a 'req_rdp_cookie_cnt' ACL.

                  This algorithm is static by default, which means that
                  changing a server's weight on the fly will have no effect,
                  but this can be changed using "hash-type".

                  See also the rdp_cookie pattern fetch function.

    <arguments> is an optional list of arguments which may be needed by some
                algorithms. Right now, only "url_param" and "uri" support an
                optional argument.

  The load balancing algorithm of a backend is set to roundrobin when no other
  algorithm, mode nor option have been set. The algorithm may only be set once
  for each backend.

  Examples :
        balance roundrobin
        balance url_param userid
        balance url_param session_id check_post 64
        balance hdr(User-Agent)
        balance hdr(host)
        balance hdr(Host) use_domain_only

  Note: the following caveats and limitations on using the "check_post"
  extension with "url_param" must be considered :

    - all POST requests are eligible for consideration, because there is no way
      to determine if the parameters will be found in the body or entity which
      may contain binary data. Therefore another method may be required to
      restrict consideration of POST requests that have no URL parameters in
      the body. (see acl reqideny http_end)

    - using a <max_wait> value larger than the request buffer size does not
      make sense and is useless. The buffer size is set at build time, and
      defaults to 16 kB.

    - Content-Encoding is not supported, the parameter search will probably
      fail; and load balancing will fall back to Round Robin.

    - Expect: 100-continue is not supported, load balancing will fall back to
      Round Robin.

    - Transfer-Encoding (RFC2616 3.6.1) is only supported in the first chunk.
      If the entire parameter value is not present in the first chunk, the
      selection of server is undefined (actually, defined by how little
      actually appeared in the first chunk).

    - This feature does not support generation of a 100, 411 or 501 response.

    - In some cases, requesting "check_post" MAY attempt to scan the entire
      contents of a message body. Scanning normally terminates when linear
      white space or control characters are found, indicating the end of what
      might be a URL parameter list. This is probably not a concern with SGML
      type message bodies.

  See also : "dispatch", "cookie", "transparent", "hash-type" and "http_proxy".
```



```
  bind [<address>]:<port_range> [, ...] [param*]
  bind /<path> [, ...] [param*]
    Define one or several listening addresses and/or ports in a frontend.
    May be used in sections :   defaults | frontend | listen | backend
                                    no   |    yes   |   yes  |   no
    Arguments :
      <address>     is optional and can be a host name, an IPv4 address, an IPv6
                    address, or '*'. It designates the address the frontend will
                    listen on. If unset, all IPv4 addresses of the system will be
                    listened on. The same will apply for '*' or the system's
                    special address "0.0.0.0". The IPv6 equivalent is '::'.
                    Optionally, an address family prefix may be used before the
                    address to force the family regardless of the address format,
                    which can be useful to specify a path to a unix socket with
                    no slash ('/'). Currently supported prefixes are :
                      - 'ipv4@'  -> address is always IPv4
                      - 'ipv6@'  -> address is always IPv6
                      - 'unix@'  -> address is a path to a local unix socket
                      - 'abns@'  -> address is in abstract namespace (Linux only).
                        Note: since abstract sockets are not "rebindable", they
                              do not cope well with multi-process mode during
                              soft-restart, so it is better to avoid them if
                              nbproc is greater than 1. The effect is that if the
                              new process fails to start, only one of the old ones
                              will be able to rebind to the socket.
                      - 'fd@<n>' -> use file descriptor <n> inherited from the
                        parent. The fd must be bound and may or may not already
                        be listening.
                    You may want to reference some environment variables in the
                    address parameter, see section 2.3 about environment
                    variables.

      <port_range>  is either a unique TCP port, or a port range for which the
                    proxy will accept connections for the IP address specified
                    above. The port is mandatory for TCP listeners. Note that in
                    the case of an IPv6 address, the port is always the number
                    after the last colon (':'). A range can either be :
                     - a numerical port (ex: '80')
                     - a dash-delimited ports range explicitly stating the lower
                       and upper bounds (ex: '2000-2100') which are included in
                       the range.

                    Particular care must be taken against port ranges, because
                    every <address:port> couple consumes one socket (= a file
                    descriptor), so it's easy to consume lots of descriptors
                    with a simple range, and to run out of sockets. Also, each
                    <address:port> couple must be used only once among all
                    instances running on a same system. Please note that binding
                    to ports lower than 1024 generally require particular
                    privileges to start the program, which are independent of
                    the 'uid' parameter.

      <path>        is a UNIX socket path beginning with a slash ('/'). This is
                    alternative to the TCP listening port. Haproxy will then
                    receive UNIX connections on the socket located at this place.
                    The path must begin with a slash and by default is absolute.
                    It can be relative to the prefix defined by "unix-bind" in
                    the global section. Note that the total length of the prefix
                    followed by the socket path cannot exceed some system limits
                    for UNIX sockets, which commonly are set to 107 characters.

      <param*>      is a list of parameters common to all sockets declared on the
                    same line. These numerous parameters depend on OS and build
                    options and have a complete section dedicated to them. Please
                    refer to section 5 to for more details.
```

```
2211
2212    It is possible to specify a list of address:port combinations delimited by
2213    commas. The frontend will then listen on all of these addresses. There is no
2214    fixed limit to the number of addresses and ports which can be listened on in
2215    a frontend, as well as there is no limit to the number of "bind" statements
2216    in a frontend.
2217
2218    Example :
2219          listen http_proxy
2220              bind :80,:443
2221              bind 10.0.0.1:10080,10.0.0.1:10443
2222              bind /var/run/ssl-frontend.sock user root mode 600 accept-proxy
2223
2224          listen http_https_proxy
2225              bind :80
2226              bind :443 ssl crt /etc/haproxy/site.pem
2227
2228          listen http_https_proxy_explicit
2229              bind ipv6@:80
2230              bind ipv4@public_ssl:443 ssl crt /etc/haproxy/site.pem
2231              bind unix@ssl-frontend.sock user root mode 600 accept-proxy
2232
2233          listen external_bind_app1
2234              bind "fd@${FD_APP1}"
2235
2236    Note: regarding Linux's abstract namespace sockets, HAProxy uses the whole
2237          sun_path length is used for the address length. Some other programs
2238          such as socat use the string length only by default. Pass the option
2239          ",unix-tightsocklen=0" to any abstract socket definition in socat to
2240          make it compatible with HAProxy's.
2241
2242    See also : "source", "option forwardfor", "unix-bind" and the PROXY protocol
2243               documentation, and section 5 about bind options.
2244
2245
2246  bind-process [ all | odd | even | <number 1-64>[-<number 1-64>] ] ...
2247    Limit visibility of an instance to a certain set of processes numbers.
2248    May be used in sections :   defaults | frontend | listen | backend
2249                                   yes   |    yes   |   yes  |   yes
2250    Arguments :
2251      all           All process will see this instance. This is the default. It
2252                    may be used to override a default value.
2253
2254      odd           This instance will be enabled on processes 1,3,5,...63. This
2255                    option may be combined with other numbers.
2256
2257      even          This instance will be enabled on processes 2,4,6,...64. This
2258                    option may be combined with other numbers. Do not use it
2259                    with less than 2 processes otherwise some instances might be
2260                    missing from all processes.
2261
2262      number        The instance will be enabled on this process number or range,
2263                    whose values must all be between 1 and 32 or 64 depending on
2264                    the machine's word size. If a proxy is bound to process
2265                    numbers greater than the configured global.nbproc, it will
2266                    either be forced to process #1 if a single process was
2267                    specified, or to all processes otherwise.
2268
2269    This keyword limits binding of certain instances to certain processes. This
2270    is useful in order not to have too many processes listening to the same
2271    ports. For instance, on a dual-core machine, it might make sense to set
2272    'nbproc 2' in the global section, then distributes the listeners among 'odd'
2273    and 'even' instances.
2274
2275    At the moment, it is not possible to reference more than 32 or 64 processes
```



```
2276    using this keyword, but this should be more than enough for most setups.
2277    Please note that 'all' really means all processes regardless of the machine's
2278    word size, and is not limited to the first 32 or 64.
2279
2280    Each "bind" line may further be limited to a subset of the proxy's processes,
2281    please consult the "process" bind keyword in section 5.1.
2282
2283    When a frontend has no explicit "bind-process" line, it tries to bind to all
2284    the processes referenced by its "bind" lines. That means that frontends can
2285    easily adapt to their listeners' processes.
2286
2287    If some backends are referenced by frontends bound to other processes, the
2288    backend automatically inherits the frontend's processes.
2289
2290    Example :
2291          listen app_ip1
2292              bind 10.0.0.1:80
2293              bind-process odd
2294
2295          listen app_ip2
2296              bind 10.0.0.2:80
2297              bind-process even
2298
2299          listen management
2300              bind 10.0.0.3:80
2301              bind-process 1 2 3 4
2302
2303          listen management
2304              bind 10.0.0.4:80
2305              bind-process 1-4
2306
2307    See also : "nbproc" in global section, and "process" in section 5.1.
2308
2309
2310  block { if | unless } <condition>
2311    Block a layer 7 request if/unless a condition is matched
2312    May be used in sections :   defaults | frontend | listen | backend
2313                                   no    |    yes   |   yes  |   yes
2314
2315    The HTTP request will be blocked very early in the layer 7 processing
2316    if/unless <condition> is matched. A 403 error will be returned if the request
2317    is blocked. The condition has to reference ACLs (see section 7). This is
2318    typically used to deny access to certain sensitive resources if some
2319    conditions are met or not met. There is no fixed limit to the number of
2320    "block" statements per instance.
2321
2322    Example:
2323          acl invalid_src  src          0.0.0.0/7 224.0.0.0/3
2324          acl invalid_src  src_port     0:1023
2325          acl local_dst    hdr(host) -i localhost
2326          block if invalid_src || local_dst
2327
2328    See section 7 about ACL usage.
2329
2330
2331  capture cookie <name> len <length>
2332    Capture and log a cookie in the request and in the response.
2333    May be used in sections :   defaults | frontend | listen | backend
2334                                   no    |    yes   |   yes  |   no
2335    Arguments :
2336      <name>    is the beginning of the name of the cookie to capture. In order
2337                to match the exact name, simply suffix the name with an equal
2338                sign ('='). The full name will appear in the logs, which is
2339                useful with application servers which adjust both the cookie name
2340                and value (eg: ASPSESSIONXXXXX).
```

```
2341
2342      <length>  is the maximum number of characters to report in the logs, which
2343                include the cookie name, the equal sign and the value, all in the
2344                standard "name=value" form. The string will be truncated on the
2345                right if it exceeds <length>.
2346
2347    Only the first cookie is captured. Both the "cookie" request headers and the
2348    "set-cookie" response headers are monitored. This is particularly useful to
2349    check for application bugs causing session crossing or stealing between
2350    users, because generally the user's cookies can only change on a login page.
2351
2352    When the cookie was not presented by the client, the associated log column
2353    will report "-". When a request does not cause a cookie to be assigned by the
2354    server, a "-" is reported in the response column.
2355
2356    The capture is performed in the frontend only because it is necessary that
2357    the log format does not change for a given frontend depending on the
2358    backends. This may change in the future. Note that there can be only one
2359    "capture cookie" statement in a frontend. The maximum capture length is set
2360    by the global "tune.http.cookielen" setting and defaults to 63 characters. It
2361    is not possible to specify a capture in a "defaults" section.
2362
2363    Example:
2364          capture cookie ASPSESSION len 32
2365
2366    See also : "capture request header", "capture response header" as well as
2367               section 8 about logging.
2368
2369
2370  capture request header <name> len <length>
2371    Capture and log the last occurrence of the specified request header.
2372    May be used in sections :   defaults | frontend | listen | backend
2373                                   no   |    yes   |   yes  |   no
2374    Arguments :
2375      <name>    is the name of the header to capture. The header names are not
2376                case-sensitive, but it is a common practice to write them as they
2377                appear in the requests, with the first letter of each word in
2378                upper case. The header name will not appear in the logs, only the
2379                value is reported, but the position in the logs is respected.
2380
2381      <length>  is the maximum number of characters to extract from the value and
2382                report in the logs. The string will be truncated on the right if
2383                it exceeds <length>.
2384
2385    The complete value of the last occurrence of the header is captured. The
2386    value will be added to the logs between braces ('{}'). If multiple headers
2387    are captured, they will be delimited by a vertical bar ('|') and will appear
2388    in the same order they were declared in the configuration. Non-existent
2389    headers will be logged just as an empty string. Common uses for request
2390    header captures include the "Host" field in virtual hosting environments, the
2391    "Content-length" when uploads are supported, "User-agent" to quickly
2392    differentiate between real users and robots, and "X-Forwarded-For" in proxied
2393    environments to find where the request came from.
2394
2395    Note that when capturing headers such as "User-agent", some spaces may be
2396    logged, making the log analysis more difficult. Thus be careful about what
2397    you log if you know your log parser is not smart enough to rely on the
2398    braces.
2399
2400    There is no limit to the number of captured request headers nor to their
2401    length, though it is wise to keep them low to limit memory usage per session.
2402    In order to keep log format consistent for a same frontend, header captures
2403    can only be declared in a frontend. It is not possible to specify a capture
2404    in a "defaults" section.
2405
```



```
2406    Example:
2407          capture request header Host len 15
2408          capture request header X-Forwarded-For len 15
2409          capture request header Referer len 15
2410
2411    See also : "capture cookie", "capture response header" as well as section 8
2412               about logging.
2413
2414
2415  capture response header <name> len <length>
2416    Capture and log the last occurrence of the specified response header.
2417    May be used in sections :   defaults | frontend | listen | backend
2418                                   no   |    yes   |   yes  |   no
2419    Arguments :
2420      <name>    is the name of the header to capture. The header names are not
2421                case-sensitive, but it is a common practice to write them as they
2422                appear in the response, with the first letter of each word in
2423                upper case. The header name will not appear in the logs, only the
2424                value is reported, but the position in the logs is respected.
2425
2426      <length>  is the maximum number of characters to extract from the value and
2427                report in the logs. The string will be truncated on the right if
2428                it exceeds <length>.
2429
2430    The complete value of the last occurrence of the header is captured. The
2431    result will be added to the logs between braces ('{}') after the captured
2432    request headers. If multiple headers are captured, they will be delimited by
2433    a vertical bar ('|') and will appear in the same order they were declared in
2434    the configuration. Non-existent headers will be logged just as an empty
2435    string. Common uses for response header captures include the "Content-length"
2436    header which indicates how many bytes are expected to be returned, the
2437    "Location" header to track redirections.
2438
2439    There is no limit to the number of captured response headers nor to their
2440    length, though it is wise to keep them low to limit memory usage per session.
2441    In order to keep log format consistent for a same frontend, header captures
2442    can only be declared in a frontend. It is not possible to specify a capture
2443    in a "defaults" section.
2444
2445    Example:
2446          capture response header Content-length len 9
2447          capture response header Location len 15
2448
2449    See also : "capture cookie", "capture request header" as well as section 8
2450               about logging.
2451
2452
2453  clitimeout <timeout> (deprecated)
2454    Set the maximum inactivity time on the client side.
2455    May be used in sections :   defaults | frontend | listen | backend
2456                                   yes   |    yes   |   yes  |   no
2457    Arguments :
2458      <timeout> is the timeout value is specified in milliseconds by default, but
2459                can be in any other unit if the number is suffixed by the unit,
2460                as explained at the top of this document.
2461
2462    The inactivity timeout applies when the client is expected to acknowledge or
2463    send data. In HTTP mode, this timeout is particularly important to consider
2464    during the first phase, when the client sends the request, and during the
2465    response while it is reading data sent by the server. The value is specified
2466    in milliseconds by default, but can be in any other unit if the number is
2467    suffixed by the unit, as specified at the top of this document. In TCP mode
2468    (and to a lesser extent, in HTTP mode), it is highly recommended that the
2469    client timeout remains equal to the server timeout in order to avoid complex
2470    situations to debug. It is a good practice to cover one or several TCP packet
```

```
   losses by specifying timeouts that are slightly above multiples of 3 seconds
   (eg: 4 or 5 seconds).

   This parameter is specific to frontends, but can be specified once for all in
   "defaults" sections. This is in fact one of the easiest solutions not to
   forget about it. An unspecified timeout results in an infinite timeout, which
   is not recommended. Such a usage is accepted and works but reports a warning
   during startup because it may results in accumulation of expired sessions in
   the system if the system's timeouts are not configured either.

   This parameter is provided for compatibility but is currently deprecated.
   Please use "timeout client" instead.

   See also : "timeout client", "timeout http-request", "timeout server", and
              "srvtimeout".

compression algo <algorithm> ...
compression type <mime type> ...
compression offload
  Enable HTTP compression.
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments :
    algo     is followed by the list of supported compression algorithms.
    type     is followed by the list of MIME types that will be compressed.
    offload  makes haproxy work as a compression offloader only (see notes).

  The currently supported algorithms are :
    identity     this is mostly for debugging, and it was useful for developing
                 the compression feature. Identity does not apply any change on
                 data.

    gzip         applies gzip compression. This setting is only available when
                 support for zlib was built in.

    deflate      same as "gzip", but with deflate algorithm and zlib format.
                 Note that this algorithm has ambiguous support on many
                 browsers and no support at all from recent ones. It is
                 strongly recommended not to use it for anything else than
                 experimentation. This setting is only available when support
                 for zlib was built in.

    raw-deflate  same as "deflate" without the zlib wrapper, and used as an
                 alternative when the browser wants "deflate". All major
                 browsers understand it and despite violating the standards,
                 it is known to work better than "deflate", at least on MSIE
                 and some versions of Safari. Do not use it in conjunction
                 with "deflate", use either one or the other since both react
                 to the same Accept-Encoding token. This setting is only
                 available when support for zlib was built in.

  Compression will be activated depending on the Accept-Encoding request
  header. With identity, it does not take care of that header.
  If backend servers support HTTP compression, these directives
  will be no-op: haproxy will see the compressed response and will not
  compress again. If backend servers do not support HTTP compression and
  there is Accept-Encoding header in request, haproxy will compress the
  matching response.

  The "offload" setting makes haproxy remove the Accept-Encoding header to
  prevent backend servers from compressing responses. It is strongly
  recommended not to do this because this means that all the compression work
  will be done on the single point where haproxy is located. However in some
  deployment scenarios, haproxy may be installed in front of a buggy gateway
  with broken HTTP compression implementation which can't be turned off.
```



```
  In that case haproxy can be used to prevent that gateway from emitting
  invalid payloads. In this case, simply removing the header in the
  configuration does not work because it applies before the header is parsed,
  so that prevents haproxy from compressing. The "offload" setting should
  then be used for such scenarios. Note: for now, the "offload" setting is
  ignored when set in a defaults section.

  Compression is disabled when:
    * the request does not advertise a supported compression algorithm in the
      "Accept-Encoding" header
    * the response message is not HTTP/1.1
    * HTTP status code is not 200
    * response header "Transfer-Encoding" contains "chunked" (Temporary
      Workaround)
    * response contain neither a "Content-Length" header nor a
      "Transfer-Encoding" whose last value is "chunked"
    * response contains a "Content-Type" header whose first value starts with
      "multipart"
    * the response contains the "no-transform" value in the "Cache-control"
      header
    * User-Agent matches "Mozilla/4" unless it is MSIE 6 with XP SP2, or MSIE 7
      and later
    * The response contains a "Content-Encoding" header, indicating that the
      response is already compressed (see compression offload)

  Note: The compression does not rewrite Etag headers, and does not emit the
        Warning header.

  Examples :
        compression algo gzip
        compression type text/html text/plain

contimeout <timeout> (deprecated)
  Set the maximum time to wait for a connection attempt to a server to succeed.
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments :
    <timeout> is the timeout value is specified in milliseconds by default, but
              can be in any other unit if the number is suffixed by the unit,
              as explained at the top of this document.

  If the server is located on the same LAN as haproxy, the connection should be
  immediate (less than a few milliseconds). Anyway, it is a good practice to
  cover one or several TCP packet losses by specifying timeouts that are
  slightly above multiples of 3 seconds (eg: 4 or 5 seconds). By default, the
  connect timeout also presets the queue timeout to the same value if this one
  has not been specified. Historically, the contimeout was also used to set the
  tarpit timeout in a listen section, which is not possible in a pure frontend.

  This parameter is specific to backends, but can be specified once for all in
  "defaults" sections. This is in fact one of the easiest solutions not to
  forget about it. An unspecified timeout results in an infinite timeout, which
  is not recommended. Such a usage is accepted and works but reports a warning
  during startup because it may results in accumulation of failed sessions in
  the system if the system's timeouts are not configured either.

  This parameter is provided for backwards compatibility but is currently
  deprecated. Please use "timeout connect", "timeout queue" or "timeout tarpit"
  instead.

  See also : "timeout connect", "timeout queue", "timeout tarpit",
             "timeout server", "contimeout".


cookie <name> [ rewrite | insert | prefix ] [ indirect ] [ nocache ]
```

```
2601                [ postonly ] [ preserve ] [ httponly ] [ secure ]
2602                [ domain <domain> ]* [ maxidle <idle> ] [ maxlife <life> ]
2603    Enable cookie-based persistence in a backend.
2604    May be used in sections :   defaults | frontend | listen | backend
2605                                  yes   |    no    |   yes  |   yes
2606    Arguments :
2607      <name>    is the name of the cookie which will be monitored, modified or
2608                inserted in order to bring persistence. This cookie is sent to
2609                the client via a "Set-Cookie" header in the response, and is
2610                brought back by the client in a "Cookie" header in all requests.
2611                Special care should be taken to choose a name which does not
2612                conflict with any likely application cookie. Also, if the same
2613                backends are subject to be used by the same clients (eg:
2614                HTTP/HTTPS), care should be taken to use different cookie names
2615                between all backends if persistence between them is not desired.
2616
2617      rewrite   This keyword indicates that the cookie will be provided by the
2618                server and that haproxy will have to modify its value to set the
2619                server's identifier in it. This mode is handy when the management
2620                of complex combinations of "Set-cookie" and "Cache-control"
2621                headers is left to the application. The application can then
2622                decide whether or not it is appropriate to emit a persistence
2623                cookie. Since all responses should be monitored, this mode only
2624                works in HTTP close mode. Unless the application behaviour is
2625                very complex and/or broken, it is advised not to start with this
2626                mode for new deployments. This keyword is incompatible with
2627                "insert" and "prefix".
2628
2629      insert    This keyword indicates that the persistence cookie will have to
2630                be inserted by haproxy in server responses if the client did not
2631
2632                already have a cookie that would have permitted it to access this
2633                server. When used without the "preserve" option, if the server
2634                emits a cookie with the same name, it will be remove before
2635                processing.  For this reason, this mode can be used to upgrade
2636                existing configurations running in the "rewrite" mode. The cookie
2637                will only be a session cookie and will not be stored on the
2638                client's disk. By default, unless the "indirect" option is added,
2639                the server will see the cookies emitted by the client. Due to
2640                caching effects, it is generally wise to add the "nocache" or
2641                "postonly" keywords (see below). The "insert" keyword is not
2642                compatible with "rewrite" and "prefix".
2643
2644      prefix    This keyword indicates that instead of relying on a dedicated
2645                cookie for the persistence, an existing one will be completed.
2646                This may be needed in some specific environments where the client
2647                does not support more than one single cookie and the application
2648                already needs it. In this case, whenever the server sets a cookie
2649                named <name>, it will be prefixed with the server's identifier
2650                and a delimiter. The prefix will be removed from all client
2651                requests so that the server still finds the cookie it emitted.
2652                Since all requests and responses are subject to being modified,
2653                this mode requires the HTTP close mode. The "prefix" keyword is
2654                not compatible with "rewrite" and "insert". Note: it is highly
2655                recommended not to use "indirect" with "prefix", otherwise server
2656                cookie updates would not be sent to clients.
2657
2658      indirect  When this option is specified, no cookie will be emitted to a
2659                client which already has a valid one for the server which has
2660                processed the request. If the server sets such a cookie itself,
2661                it will be removed, unless the "preserve" option is also set. In
2662                "insert" mode, this will additionally remove cookies from the
2663                requests transmitted to the server, making the persistence
2664                mechanism totally transparent from an application point of view.
2665                Note: it is highly recommended not to use "indirect" with
```



```
2666                "prefix", otherwise server cookie updates would not be sent to
2667                clients.
2668
2669      nocache   This option is recommended in conjunction with the insert mode
2670                when there is a cache between the client and HAProxy, as it
2671                ensures that a cacheable response will be tagged non-cacheable if
2672                a cookie needs to be inserted. This is important because if all
2673                persistence cookies are added on a cacheable home page for
2674                instance, then all customers will then fetch the page from an
2675                outer cache and will all share the same persistence cookie,
2676                leading to one server receiving much more traffic than others.
2677                See also the "insert" and "postonly" options.
2678
2679      postonly  This option ensures that cookie insertion will only be performed
2680                on responses to POST requests. It is an alternative to the
2681                "nocache" option, because POST responses are not cacheable, so
2682                this ensures that the persistence cookie will never get cached.
2683                Since most sites do not need any sort of persistence before the
2684                first POST which generally is a login request, this is a very
2685                efficient method to optimize caching without risking to find a
2686                persistence cookie in the cache.
2687                See also the "insert" and "nocache" options.
2688
2689      preserve  This option may only be used with "insert" and/or "indirect". It
2690                allows the server to emit the persistence cookie itself. In this
2691                case, if a cookie is found in the response, haproxy will leave it
2692                untouched. This is useful in order to end persistence after a
2693                logout request for instance. For this, the server just has to
2694                emit a cookie with an invalid value (eg: empty) or with a date in
2695                the past. By combining this mechanism with the "disable-on-404"
2696                check option, it is possible to perform a completely graceful
2697                shutdown because users will definitely leave the server after
2698                they logout.
2699
2700      httponly  This option tells haproxy to add an "HttpOnly" cookie attribute
2701                when a cookie is inserted. This attribute is used so that a
2702                user agent doesn't share the cookie with non-HTTP components.
2703                Please check RFC6265 for more information on this attribute.
2704
2705      secure    This option tells haproxy to add a "Secure" cookie attribute when
2706                a cookie is inserted. This attribute is used so that a user agent
2707                never emits this cookie over non-secure channels, which means
2708                that a cookie learned with this flag will be presented only over
2709                SSL/TLS connections. Please check RFC6265 for more information on
2710                this attribute.
2711
2712      domain    This option allows to specify the domain at which a cookie is
2713                inserted. It requires exactly one parameter: a valid domain
2714                name. If the domain begins with a dot, the browser is allowed to
2715                use it for any host ending with that name. It is also possible to
2716                specify several domain names by invoking this option multiple
2717                times. Some browsers might have small limits on the number of
2718                domains, so be careful when doing that. For the record, sending
2719                10 domains to MSIE 6 or Firefox 2 works as expected.
2720
2721      maxidle   This option allows inserted cookies to be ignored after some idle
2722                time. It only works with insert-mode cookies. When a cookie is
2723                sent to the client, the date this cookie was emitted is sent too.
2724                Upon further presentations of this cookie, if the date is older
2725                than the delay indicated by the parameter (in seconds), it will
2726                be ignored. Otherwise, it will be refreshed if needed when the
2727                response is sent to the client. This is particularly useful to
2728                prevent users who never close their browsers from remaining for
2729                too long on the same server (eg: after a farm size change). When
2730                this option is set and a cookie has no date, it is always
```

```
2731                accepted, but gets refreshed in the response. This maintains the
2732                ability for admins to access their sites. Cookies that have a
2733                date in the future further than 24 hours are ignored. Doing so
2734                lets admins fix timezone issues without risking kicking users off
2735                the site.
2736
2737      maxlife   This option allows inserted cookies to be ignored after some life
2738                time, whether they're in use or not. It only works with insert
2739                mode cookies. When a cookie is first sent to the client, the date
2740                this cookie was emitted is sent too. Upon further presentations
2741                of this cookie, if the date is older than the delay indicated by
2742                the parameter (in seconds), it will be ignored. If the cookie in
2743                the request has no date, it is accepted and a date will be set.
2744                Cookies that have a date in the future further than 24 hours are
2745                ignored. Doing so lets admins fix timezone issues without risking
2746                kicking users off the site. Contrary to maxidle, this value is
2747                not refreshed, only the first visit date counts. Both maxidle and
2748                maxlife may be used at the time. This is particularly useful to
2749                prevent users who never close their browsers from remaining for
2750                too long on the same server (eg: after a farm size change). This
2751                is stronger than the maxidle method in that it forces a
2752                redispatch after some absolute delay.
2753
2754    There can be only one persistence cookie per HTTP backend, and it can be
2755    declared in a defaults section. The value of the cookie will be the value
2756    indicated after the "cookie" keyword in a "server" statement. If no cookie
2757    is declared for a given server, the cookie is not set.
2758
2759    Examples :
2760          cookie JSESSIONID prefix
2761          cookie SRV insert indirect nocache
2762          cookie SRV insert postonly indirect
2763          cookie SRV insert indirect nocache maxidle 30m maxlife 8h
2764
2765    See also : "balance source", "capture cookie", "server" and "ignore-persist".
2766
2767
2768  declare capture [ request | response ] len <length>
2769    Declares a capture slot.
2770    May be used in sections :   defaults | frontend | listen | backend
2771                                   no    |    yes   |   yes  |   no
2772    Arguments:
2773      <length> is the length allowed for the capture.
2774
2775    This declaration is only available in the frontend or listen section, but the
2776    reserved slot can be used in the backends. The "request" keyword allocates a
2777    capture slot for use in the request, and "response" allocates a capture slot
2778    for use in the response.
2779
2780    See also: "capture-req", "capture-res" (sample converters),
2781              "capture.req.hdr", "capture.res.hdr" (sample fetches),
2782              "http-request capture" and "http-response capture".
2783
2784
2785  default-server [param*]
2786    Change default options for a server in a backend
2787    May be used in sections :   defaults | frontend | listen | backend
2788                                   yes   |    no    |   yes  |   yes
2789    Arguments:
2790      <param*>  is a list of parameters for this server. The "default-server"
2791                keyword accepts an important number of options and has a complete
2792                section dedicated to it. Please refer to section 5 for more
2793                details.
2794
2795    Example :
```



```
2796          default-server inter 1000 weight 13
2797
2798    See also: "server" and section 5 about server options
2799
2800
2801  default_backend <backend>
2802    Specify the backend to use when no "use_backend" rule has been matched.
2803    May be used in sections :   defaults | frontend | listen | backend
2804                                   yes   |    yes   |   yes  |   no
2805    Arguments :
2806      <backend> is the name of the backend to use.
2807
2808    When doing content-switching between frontend and backends using the
2809    "use_backend" keyword, it is often useful to indicate which backend will be
2810    used when no rule has matched. It generally is the dynamic backend which
2811    will catch all undetermined requests.
2812
2813    Example :
2814
2815          use_backend     dynamic  if  url_dyn
2816          use_backend     static   if  url_css url_img extension_img
2817          default_backend dynamic
2818
2819    See also : "use_backend"
2820
2821
2822  description <string>
2823    Describe a listen, frontend or backend.
2824    May be used in sections :   defaults | frontend | listen | backend
2825                                   no    |    yes   |   yes  |   yes
2826    Arguments : string
2827
2828    Allows to add a sentence to describe the related object in the HAProxy HTML
2829    stats page. The description will be printed on the right of the object name
2830    it describes.
2831    No need to backslash spaces in the <string> arguments.
2832
2833
2834  disabled
2835    Disable a proxy, frontend or backend.
2836    May be used in sections :   defaults | frontend | listen | backend
2837                                   yes   |    yes   |   yes  |   yes
2838    Arguments : none
2839
2840    The "disabled" keyword is used to disable an instance, mainly in order to
2841    liberate a listening port or to temporarily disable a service. The instance
2842    will still be created and its configuration will be checked, but it will be
2843    created in the "stopped" state and will appear as such in the statistics. It
2844    will not receive any traffic nor will it send any health-checks or logs. It
2845    is possible to disable many instances at once by adding the "disabled"
2846    keyword in a "defaults" section.
2847
2848    See also : "enabled"
2849
2850
2851  dispatch <address>:<port>
2852    Set a default server address
2853    May be used in sections :   defaults | frontend | listen | backend
2854                                   no    |    no    |   yes  |   yes
2855    Arguments :
2856
2857      <address> is the IPv4 address of the default server. Alternatively, a
2858                resolvable hostname is supported, but this name will be resolved
2859                during start-up.
2860
```

```
      <ports>   is a mandatory port specification. All connections will be sent
                to this port, and it is not permitted to use port offsets as is
                possible with normal servers.

  The "dispatch" keyword designates a default server for use when no other
  server can take the connection. In the past it was used to forward non
  persistent connections to an auxiliary load balancer. Due to its simple
  syntax, it has also been used for simple TCP relays. It is recommended not to
  use it for more clarity, and to use the "server" directive instead.

  See also : "server"


enabled
  Enable a proxy, frontend or backend.
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  The "enabled" keyword is used to explicitly enable an instance, when the
  defaults has been set to "disabled". This is very rarely used.

  See also : "disabled"


errorfile <code> <file>
  Return a file contents instead of errors generated by HAProxy
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments :
    <code>    is the HTTP status code. Currently, HAProxy is capable of
              generating codes 200, 400, 403, 405, 408, 429, 500, 502, 503, and
              504.

    <file>    designates a file containing the full HTTP response. It is
              recommended to follow the common practice of appending ".http" to
              the filename so that people do not confuse the response with HTML
              error pages, and to use absolute paths, since files are read
              before any chroot is performed.

  It is important to understand that this keyword is not meant to rewrite
  errors returned by the server, but errors detected and returned by HAProxy.
  This is why the list of supported errors is limited to a small set.

  Code 200 is emitted in response to requests matching a "monitor-uri" rule.

  The files are returned verbatim on the TCP socket. This allows any trick such
  as redirections to another URL or site, as well as tricks to clean cookies,
  force enable or disable caching, etc... The package provides default error
  files returning the same contents as default errors.

  The files should not exceed the configured buffer size (BUFSIZE), which
  generally is 8 or 16 kB, otherwise they will be truncated. It is also wise
  not to put any reference to local contents (eg: images) in order to avoid
  loops between the client and HAProxy when all servers are down, causing an
  error to be returned instead of an image. For better HTTP compliance, it is
  recommended that all header lines end with CR-LF and not LF alone.

  The files are read at the same time as the configuration and kept in memory.
  For this reason, the errors continue to be returned even when the process is
  chrooted, and no file change is considered while the process is running. A
  simple method for developing those files consists in associating them to the
  403 status code and interrogating a blocked URL.

  See also : "errorloc", "errorloc302", "errorloc303"
```



```

  Example :
        errorfile 400 /etc/haproxy/errorfiles/400badreq.http
        errorfile 408 /dev/null  # workaround Chrome pre-connect bug
        errorfile 403 /etc/haproxy/errorfiles/403forbid.http
        errorfile 503 /etc/haproxy/errorfiles/503sorry.http


errorloc <code> <url>
errorloc302 <code> <url>
  Return an HTTP redirection to a URL instead of errors generated by HAProxy
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments :
    <code>    is the HTTP status code. Currently, HAProxy is capable of
              generating codes 200, 400, 403, 408, 500, 502, 503, and 504.

    <url>     it is the exact contents of the "Location" header. It may contain
              either a relative URI to an error page hosted on the same site,
              or an absolute URI designating an error page on another site.
              Special care should be given to relative URIs to avoid redirect
              loops if the URI itself may generate the same error (eg: 500).

  It is important to understand that this keyword is not meant to rewrite
  errors returned by the server, but errors detected and returned by HAProxy.
  This is why the list of supported errors is limited to a small set.

  Code 200 is emitted in response to requests matching a "monitor-uri" rule.

  Note that both keyword return the HTTP 302 status code, which tells the
  client to fetch the designated URL using the same HTTP method. This can be
  quite problematic in case of non-GET methods such as POST, because the URL
  sent to the client might not be allowed for something other than GET. To
  workaround this problem, please use "errorloc303" which send the HTTP 303
  status code, indicating to the client that the URL must be fetched with a GET
  request.

  See also : "errorfile", "errorloc303"


errorloc303 <code> <url>
  Return an HTTP redirection to a URL instead of errors generated by HAProxy
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments :
    <code>    is the HTTP status code. Currently, HAProxy is capable of
              generating codes 400, 403, 408, 500, 502, 503, and 504.

    <url>     it is the exact contents of the "Location" header. It may contain
              either a relative URI to an error page hosted on the same site,
              or an absolute URI designating an error page on another site.
              Special care should be given to relative URIs to avoid redirect
              loops if the URI itself may generate the same error (eg: 500).

  It is important to understand that this keyword is not meant to rewrite
  errors returned by the server, but errors detected and returned by HAProxy.
  This is why the list of supported errors is limited to a small set.

  Code 200 is emitted in response to requests matching a "monitor-uri" rule.

  Note that both keyword return the HTTP 303 status code, which tells the
  client to fetch the designated URL using the same HTTP GET method. This
  solves the usual problems associated with "errorloc" and the 302 code. It is
  possible that some very old browsers designed before HTTP/1.1 do not support
  it, but no such problem has been reported till now.
```

```
2991
2992    See also : "errorfile", "errorloc", "errorloc302"
2993
2994
2995  email-alert from <emailaddr>
2996    Declare the from email address to be used in both the envelope and header
2997    of email alerts.  This is the address that email alerts are sent from.
2998    May be used in sections:    defaults | frontend | listen | backend
2999                                   yes   |    yes   |   yes  |   yes
3000
3001    Arguments :
3002
3003      <emailaddr> is the from email address to use when sending email alerts
3004
3005    Also requires "email-alert mailers" and "email-alert to" to be set
3006    and if so sending email alerts is enabled for the proxy.
3007
3008    See also : "email-alert level", "email-alert mailers",
3009               "email-alert myhostname", "email-alert to", section 3.6 about
3010               mailers.
3011
3012
3013  email-alert level <level>
3014    Declare the maximum log level of messages for which email alerts will be
3015    sent. This acts as a filter on the sending of email alerts.
3016    May be used in sections:    defaults | frontend | listen | backend
3017                                   yes   |    yes   |   yes  |   yes
3018
3019    Arguments :
3020
3021      <level> One of the 8 syslog levels:
3022                emerg alert crit err warning notice info  debug
3023               The above syslog levels are ordered from lowest to highest.
3024
3025    By default level is alert
3026
3027    Also requires "email-alert from", "email-alert mailers" and
3028    "email-alert to" to be set and if so sending email alerts is enabled
3029    for the proxy.
3030
3031    Alerts are sent when :
3032
3033    * An un-paused server is marked as down and <level> is alert or lower
3034    * A paused server is marked as down and <level> is notice or lower
3035    * A server is marked as up or enters the drain state and <level>
3036      is notice or lower
3037    * "option log-health-checks" is enabled, <level> is info or lower,
3038       and a health check status update occurs
3039
3040    See also : "email-alert from", "email-alert mailers",
3041               "email-alert myhostname", "email-alert to",
3042               section 3.6 about mailers.
3043
3044
3045  email-alert mailers <mailersect>
3046    Declare the mailers to be used when sending email alerts
3047    May be used in sections:    defaults | frontend | listen | backend
3048                                   yes   |    yes   |   yes  |   yes
3049
3050    Arguments :
3051
3052      <mailersect> is the name of the mailers section to send email alerts.
3053
3054    Also requires "email-alert from" and "email-alert to" to be set
3055    and if so sending email alerts is enabled for the proxy.
```



```
3056
3057    See also : "email-alert from", "email-alert level", "email-alert myhostname",
3058               "email-alert to", section 3.6 about mailers.
3059
3060
3061  email-alert myhostname <hostname>
3062    Declare the to hostname address to be used when communicating with
3063    mailers.
3064    May be used in sections:    defaults | frontend | listen | backend
3065                                   yes   |    yes   |   yes  |   yes
3066
3067    Arguments :
3068
3069      <emailaddr> is the to email address to use when sending email alerts
3070
3071    By default the systems hostname is used.
3072
3073    Also requires "email-alert from", "email-alert mailers" and
3074    "email-alert to" to be set and if so sending email alerts is enabled
3075    for the proxy.
3076
3077    See also : "email-alert from", "email-alert level", "email-alert mailers",
3078               "email-alert to", section 3.6 about mailers.
3079
3080
3081  email-alert to <emailaddr>
3082    Declare both the recipent address in the envelope and to address in the
3083    header of email alerts. This is the address that email alerts are sent to.
3084    May be used in sections:    defaults | frontend | listen | backend
3085                                   yes   |    yes   |   yes  |   yes
3086
3087    Arguments :
3088
3089      <emailaddr> is the to email address to use when sending email alerts
3090
3091    Also requires "email-alert mailers" and "email-alert to" to be set
3092    and if so sending email alerts is enabled for the proxy.
3093
3094    See also : "email-alert from", "email-alert level", "email-alert mailers",
3095               "email-alert myhostname", section 3.6 about mailers.
3096
3097
3098  force-persist { if | unless } <condition>
3099    Declare a condition to force persistence on down servers
3100    May be used in sections:    defaults | frontend | listen | backend
3101                                   no    |    yes   |   yes  |   yes
3102
3103    By default, requests are not dispatched to down servers. It is possible to
3104    force this using "option persist", but it is unconditional and redispatches
3105    to a valid server if "option redispatch" is set. That leaves with very little
3106    possibilities to force some requests to reach a server which is artificially
3107    marked down for maintenance operations.
3108
3109    The "force-persist" statement allows one to declare various ACL-based
3110    conditions which, when met, will cause a request to ignore the down status of
3111    a server and still try to connect to it. That makes it possible to start a
3112    server, still replying an error to the health checks, and run a specially
3113    configured browser to test the service. Among the handy methods, one could
3114    use a specific source IP address, or a specific cookie. The cookie also has
3115    the advantage that it can easily be added/removed on the browser from a test
3116    page. Once the service is validated, it is then possible to open the service
3117    to the world by returning a valid response to health checks.
3118
3119    The forced persistence is enabled when an "if" condition is met, or unless an
3120    "unless" condition is met. The final redispatch is always disabled when this
```

```
   is used.

   See also : "option redispatch", "ignore-persist", "persist",
              and section 7 about ACL usage.


fullconn <conns>
  Specify at what backend load the servers will reach their maxconn
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments :
    <conns>   is the number of connections on the backend which will make the
              servers use the maximal number of connections.

  When a server has a "maxconn" parameter specified, it means that its number
  of concurrent connections will never go higher. Additionally, if it has a
  "minconn" parameter, it indicates a dynamic limit following the backend's
  load. The server will then always accept at least <minconn> connections,
  never more than <maxconn>, and the limit will be on the ramp between both
  values when the backend has less than <conns> concurrent connections. This
  makes it possible to limit the load on the servers during normal loads, but
  push it further for important loads without overloading the servers during
  exceptional loads.

  Since it's hard to get this value right, haproxy automatically sets it to
  10% of the sum of the maxconns of all frontends that may branch to this
  backend (based on "use_backend" and "default_backend" rules). That way it's
  safe to leave it unset. However, "use_backend" involving dynamic names are
  not counted since there is no way to know if they could match or not.

  Example :
     # The servers will accept between 100 and 1000 concurrent connections each
     # and the maximum of 1000 will be reached when the backend reaches 10000
     # connections.
     backend dynamic
        fullconn   10000
        server     srv1   dyn1:80 minconn 100 maxconn 1000
        server     srv2   dyn2:80 minconn 100 maxconn 1000

  See also : "maxconn", "server"


grace <time>
  Maintain a proxy operational for some time after a soft stop
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments :
    <time>    is the time (by default in milliseconds) for which the instance
              will remain operational with the frontend sockets still listening
              when a soft-stop is received via the SIGUSR1 signal.

  This may be used to ensure that the services disappear in a certain order.
  This was designed so that frontends which are dedicated to monitoring by an
  external equipment fail immediately while other ones remain up for the time
  needed by the equipment to detect the failure.

  Note that currently, there is very little benefit in using this parameter,
  and it may in fact complicate the soft-reconfiguration process more than
  simplify it.


hash-type <method> <function> <modifier>
  Specify a method to use for mapping hashes to servers
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
```



```
  Arguments :
    <method> is the method used to select a server from the hash computed by
             the <function> :

      map-based   the hash table is a static array containing all alive servers.
                  The hashes will be very smooth, will consider weights, but
                  will be static in that weight changes while a server is up
                  will be ignored. This means that there will be no slow start.
                  Also, since a server is selected by its position in the array,
                  most mappings are changed when the server count changes. This
                  means that when a server goes up or down, or when a server is
                  added to a farm, most connections will be redistributed to
                  different servers. This can be inconvenient with caches for
                  instance.

      consistent  the hash table is a tree filled with many occurrences of each
                  server. The hash key is looked up in the tree and the closest
                  server is chosen. This hash is dynamic, it supports changing
                  weights while the servers are up, so it is compatible with the
                  slow start feature. It has the advantage that when a server
                  goes up or down, only its associations are moved. When a
                  server is added to the farm, only a few part of the mappings
                  are redistributed, making it an ideal method for caches.
                  However, due to its principle, the distribution will never be
                  very smooth and it may sometimes be necessary to adjust a
                  server's weight or its ID to get a more balanced distribution.
                  In order to get the same distribution on multiple load
                  balancers, it is important that all servers have the exact
                  same IDs. Note: consistent hash uses sdbm and avalanche if no
                  hash function is specified.

    <function> is the hash function to be used :

       sdbm   this function was created initially for sdbm (a public-domain
              reimplementation of ndbm) database library. It was found to do
              well in scrambling bits, causing better distribution of the keys
              and fewer splits. It also happens to be a good general hashing
              function with good distribution, unless the total server weight
              is a multiple of 64, in which case applying the avalanche
              modifier may help.

       djb2   this function was first proposed by Dan Bernstein many years ago
              on comp.lang.c. Studies have shown that for certain workload this
              function provides a better distribution than sdbm. It generally
              works well with text-based inputs though it can perform extremely
              poorly with numeric-only input or when the total server weight is
              a multiple of 33, unless the avalanche modifier is also used.

       wt6    this function was designed for haproxy while testing other
              functions in the past. It is not as smooth as the other ones, but
              is much less sensible to the input data set or to the number of
              servers. It can make sense as an alternative to sdbm+avalanche or
              djb2+avalanche for consistent hashing or when hashing on numeric
              data such as a source IP address or a visitor identifier in a URL
              parameter.

       crc32  this is the most common CRC32 implementation as used in Ethernet,
              gzip, PNG, etc. It is slower than the other ones but may provide
              a better distribution or less predictable results especially when
              used on strings.

    <modifier> indicates an optional method applied after hashing the key :

       avalanche   This directive indicates that the result from the hash
                   function above should not be used in its raw form but that
```

```
                    a 4-byte full avalanche hash must be applied first. The
                    purpose of this step is to mix the resulting bits from the
                    previous hash in order to avoid any undesired effect when
                    the input contains some limited values or when the number of
                    servers is a multiple of one of the hash's components (64
                    for SDBM, 33 for DJB2). Enabling avalanche tends to make the
                    result less predictable, but it's also not as smooth as when
                    using the original function. Some testing might be needed
                    with some workloads. This hash is one of the many proposed
                    by Bob Jenkins.

  The default hash type is "map-based" and is recommended for most usages. The
  default function is "sdbm", the selection of a function should be based on
  the range of the values being hashed.

  See also : "balance", "server"


http-check disable-on-404
  Enable a maintenance mode upon HTTP/404 response to health-checks
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none

  When this option is set, a server which returns an HTTP code 404 will be
  excluded from further load-balancing, but will still receive persistent
  connections. This provides a very convenient method for Web administrators
  to perform a graceful shutdown of their servers. It is also important to note
  that a server which is detected as failed while it was in this mode will not
  generate an alert, just a notice. If the server responds 2xx or 3xx again, it
  will immediately be reinserted into the farm. The status on the stats page
  reports "NOLB" for a server in this mode. It is important to note that this
  option only works in conjunction with the "httpchk" option. If this option
  is used with "http-check expect", then it has precedence over it so that 404
  responses will still be considered as soft-stop.

  See also : "option httpchk", "http-check expect"


http-check expect [!] <match> <pattern>
  Make HTTP health checks consider response contents or specific status codes
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments :
    <match>   is a keyword indicating how to look for a specific pattern in the
              response. The keyword may be one of "status", "rstatus",
              "string", or "rstring". The keyword may be preceded by an
              exclamation mark ("!") to negate the match. Spaces are allowed
              between the exclamation mark and the keyword. See below for more
              details on the supported keywords.

    <pattern> is the pattern to look for. It may be a string or a regular
              expression. If the pattern contains spaces, they must be escaped
              with the usual backslash ('\').

  By default, "option httpchk" considers that response statuses 2xx and 3xx
  are valid, and that others are invalid. When "http-check expect" is used,
  it defines what is considered valid or invalid. Only one "http-check"
  statement is supported in a backend. If a server fails to respond or times
  out, the check obviously fails. The available matches are :

    status <string> : test the exact string match for the HTTP status code.
                      A health check response will be considered valid if the
                      response's status code is exactly this string. If the
                      "status" keyword is prefixed with "!", then the response
```



```
                      will be considered invalid if the status code matches.

    rstatus <regex> : test a regular expression for the HTTP status code.
                      A health check response will be considered valid if the
                      response's status code matches the expression. If the
                      "rstatus" keyword is prefixed with "!", then the response
                      will be considered invalid if the status code matches.
                      This is mostly used to check for multiple codes.

    string <string> : test the exact string match in the HTTP response body.
                      A health check response will be considered valid if the
                      response's body contains this exact string. If the
                      "string" keyword is prefixed with "!", then the response
                      will be considered invalid if the body contains this
                      string. This can be used to look for a mandatory word at
                      the end of a dynamic page, or to detect a failure when a
                      specific error appears on the check page (eg: a stack
                      trace).

    rstring <regex> : test a regular expression on the HTTP response body.
                      A health check response will be considered valid if the
                      response's body matches this expression. If the "rstring"
                      keyword is prefixed with "!", then the response will be
                      considered invalid if the body matches the expression.
                      This can be used to look for a mandatory word at the end
                      of a dynamic page, or to detect a failure when a specific
                      error appears on the check page (eg: a stack trace).

  It is important to note that the responses will be limited to a certain size
  defined by the global "tune.chksize" option, which defaults to 16384 bytes.
  Thus, too large responses may not contain the mandatory pattern when using
  "string" or "rstring". If a large response is absolutely required, it is
  possible to change the default max size by setting the global variable.
  However, it is worth keeping in mind that parsing very large responses can
  waste some CPU cycles, especially when regular expressions are used, and that
  it is always better to focus the checks on smaller resources.

  Also "http-check expect" doesn't support HTTP keep-alive. Keep in mind that it
  will automatically append a "Connection: close" header, meaning that this
  header should not be present in the request provided by "option httpchk".

  Last, if "http-check expect" is combined with "http-check disable-on-404",
  then this last one has precedence when the server responds with 404.

  Examples :
        # only accept status 200 as valid
        http-check expect status 200

        # consider SQL errors as errors
        http-check expect ! string SQL\ Error

        # consider status 5xx only as errors
        http-check expect ! rstatus ^5

        # check that we have a correct hexadecimal tag before /html
        http-check expect rstring <!--tag:[0-9a-f]*</html>

  See also : "option httpchk", "http-check disable-on-404"


http-check send-state
  Enable emission of a state header with HTTP health checks
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none
```

```
3381
3382    When this option is set, haproxy will systematically send a special header
3383    "X-Haproxy-Server-State" with a list of parameters indicating to each server
3384    how they are seen by haproxy. This can be used for instance when a server is
3385    manipulated without access to haproxy and the operator needs to know whether
3386    haproxy still sees it up or not, or if the server is the last one in a farm.
3387
3388    The header is composed of fields delimited by semi-colons, the first of which
3389    is a word ("UP", "DOWN", "NOLB"), possibly followed by a number of valid
3390    checks on the total number before transition, just as appears in the stats
3391    interface. Next headers are in the form "<variable>=<value>", indicating in
3392    no specific order some values available in the stats interface :
3393      - a variable "address", containing the address of the backend server.
3394        This corresponds to the <address> field in the server declaration. For
3395        unix domain sockets, it will read "unix".
3396
3397      - a variable "port", containing the port of the backend server. This
3398        corresponds to the <port> field in the server declaration. For unix
3399        domain sockets, it will read "unix".
3400
3401      - a variable "name", containing the name of the backend followed by a slash
3402        ("/") then the name of the server. This can be used when a server is
3403        checked in multiple backends.
3404
3405      - a variable "node" containing the name of the haproxy node, as set in the
3406        global "node" variable, otherwise the system's hostname if unspecified.
3407
3408      - a variable "weight" indicating the weight of the server, a slash ("/")
3409        and the total weight of the farm (just counting usable servers). This
3410        helps to know if other servers are available to handle the load when this
3411        one fails.
3412
3413      - a variable "scur" indicating the current number of concurrent connections
3414        on the server, followed by a slash ("/") then the total number of
3415        connections on all servers of the same backend.
3416
3417      - a variable "qcur" indicating the current number of requests in the
3418        server's queue.
3419
3420    Example of a header received by the application server :
3421      >>>  X-Haproxy-Server-State: UP 2/3; name=bck/srv2; node=lb1; weight=1/2; \
3422           scur=13/22; qcur=0
3423
3424    See also : "option httpchk", "http-check disable-on-404"
3425
3426  http-request { allow | deny | tarpit | auth [realm <realm>] | redirect <rule> |
3427                 add-header <name> <fmt> | set-header <name> <fmt> |
3428                 capture <sample> [ len <length> | id <id> ] |
3429                 del-header <name> | set-nice <nice> | set-log-level <level> |
3430                 replace-header <name> <match-regex> <replace-fmt> |
3431                 replace-value <name> <match-regex> <replace-fmt> |
3432                 set-method <fmt> | set-path <fmt> | set-query <fmt> |
3433                 set-uri <fmt> | set-tos <tos> | set-mark <mark> |
3434                 add-acl(<file name>) <key fmt> |
3435                 del-acl(<file name>) <key fmt> |
3436                 del-map(<file name>) <key fmt> |
3437                 set-map(<file name>) <key fmt> <value fmt> |
3438                 set-var(<var name>) <expr> |
3439                 { track-sc0 | track-sc1 | track-sc2 } <key> [table <table>] |
3440                 sc-inc-gpc0(<sc-id>) |
3441                 sc-set-gpt0(<sc-id>) <int> |
3442                 silent-drop |
3443                }
3444                [ { if | unless } <condition> ]
3445    Access control for Layer 7 requests
```



```
3446
3447    May be used in sections:   defaults | frontend | listen | backend
3448                                  no    |    yes   |   yes  |   yes
3449
3450    The http-request statement defines a set of rules which apply to layer 7
3451    processing. The rules are evaluated in their declaration order when they are
3452    met in a frontend, listen or backend section. Any rule may optionally be
3453    followed by an ACL-based condition, in which case it will only be evaluated
3454    if the condition is true.
3455
3456    The first keyword is the rule's action. Currently supported actions include :
3457      - "allow" : this stops the evaluation of the rules and lets the request
3458        pass the check. No further "http-request" rules are evaluated.
3459
3460      - "deny" : this stops the evaluation of the rules and immediately rejects
3461        the request and emits an HTTP 403 error. No further "http-request" rules
3462        are evaluated.
3463
3464      - "tarpit" : this stops the evaluation of the rules and immediately blocks
3465        the request without responding for a delay specified by "timeout tarpit"
3466        or "timeout connect" if the former is not set. After that delay, if the
3467        client is still connected, an HTTP error 500 is returned so that the
3468        client does not suspect it has been tarpitted. Logs will report the flags
3469        "PT". The goal of the tarpit rule is to slow down robots during an attack
3470        when they're limited on the number of concurrent requests. It can be very
3471        efficient against very dumb robots, and will significantly reduce the
3472        load on firewalls compared to a "deny" rule. But when facing "correctly"
3473        developed robots, it can make things worse by forcing haproxy and the
3474        front firewall to support insane number of concurrent connections. See
3475        also the "silent-drop" action below.
3476
3477      - "auth" : this stops the evaluation of the rules and immediately responds
3478        with an HTTP 401 or 407 error code to invite the user to present a valid
3479        user name and password. No further "http-request" rules are evaluated. An
3480        optional "realm" parameter is supported, it sets the authentication realm
3481        that is returned with the response (typically the application's name).
3482
3483      - "redirect" : this performs an HTTP redirection based on a redirect rule.
3484        This is exactly the same as the "redirect" statement except that it
3485        inserts a redirect rule which can be processed in the middle of other
3486        "http-request" rules and that these rules use the "log-format" strings.
3487        See the "redirect" keyword for the rule's syntax.
3488
3489      - "add-header" appends an HTTP header field whose name is specified in
3490        <name> and whose value is defined by <fmt> which follows the log-format
3491        rules (see Custom Log Format in section 8.2.4). This is particularly
3492        useful to pass connection-specific information to the server (eg: the
3493        client's SSL certificate), or to combine several headers into one. This
3494        rule is not final, so it is possible to add other similar rules. Note
3495        that header addition is performed immediately, so one rule might reuse
3496        the resulting header from a previous rule.
3497
3498      - "set-header" does the same as "add-header" except that the header name
3499        is first removed if it existed. This is useful when passing security
3500        information to the server, where the header must not be manipulated by
3501        external users. Note that the new value is computed before the removal so
3502        it is possible to concatenate a value to an existing header.
3503
3504      - "del-header" removes all HTTP header fields whose name is specified in
3505        <name>.
3506
3507      - "replace-header" matches the regular expression in all occurrences of
3508        header field <name> according to <match-regex>, and replaces them with
3509        the <replace-fmt> argument. Format characters are allowed in replace-fmt
3510        and work like in <fmt> arguments in "add-header". The match is only
```

```
3511        case-sensitive. It is important to understand that this action only
3512        considers whole header lines, regardless of the number of values they
3513        may contain. This usage is suited to headers naturally containing commas
3514        in their value, such as If-Modified-Since and so on.
3515
3516        Example:
3517
3518          http-request replace-header Cookie foo=([^;]*);(.*) foo=\1;ip=%bi;\2
3519
3520        applied to:
3521
3522          Cookie: foo=foobar; expires=Tue, 14-Jun-2016 01:40:45 GMT;
3523
3524        outputs:
3525
3526          Cookie: foo=foobar;ip=192.168.1.20; expires=Tue, 14-Jun-2016 01:40:45 GMT;
3527
3528        assuming the backend IP is 192.168.1.20
3529
3530      - "replace-value" works like "replace-header" except that it matches the
3531        regex against every comma-delimited value of the header field <name>
3532        instead of the entire header. This is suited for all headers which are
3533        allowed to carry more than one value. An example could be the Accept
3534        header.
3535
3536        Example:
3537
3538          http-request replace-value X-Forwarded-For ^192\.168\.(.*)$ 172.16.\1
3539
3540        applied to:
3541
3542          X-Forwarded-For: 192.168.10.1, 192.168.13.24, 10.0.0.37
3543
3544        outputs:
3545
3546          X-Forwarded-For: 172.16.10.1, 172.16.13.24, 10.0.0.37
3547
3548      - "set-method" rewrites the request method with the result of the
3549        evaluation of format string <fmt>. There should be very few valid reasons
3550        for having to do so as this is more likely to break something than to fix
3551        it.
3552
3553      - "set-path" rewrites the request path with the result of the evaluation of
3554        format string <fmt>. The query string, if any, is left intact. If a
3555        scheme and authority is found before the path, they are left intact as
3556        well. If the request doesn't have a path ("*"), this one is replaced with
3557        the format. This can be used to prepend a directory component in front of
3558        a path for example. See also "set-query" and "set-uri".
3559
3560        Example :
3561            # prepend the host name before the path
3562            http-request set-path /%[hdr(host)]%[path]
3563
3564      - "set-query" rewrites the request's query string which appears after the
3565        first question mark ("?") with the result of the evaluation of format
3566        string <fmt>. The part prior to the question mark is left intact. If the
3567        request doesn't contain a question mark and the new value is not empty,
3568        then one is added at the end of the URI, followed by the new value. If
3569        a question mark was present, it will never be removed even if the value
3570        is empty. This can be used to add or remove parameters from the query
3571        string. See also "set-query" and "set-uri".
3572
3573        Example :
3574            # replace "%3D" with "=" in the query string
3575            http-request set-query %[query,regsub(%3D,=,g)]
```



```
3576
3577      - "set-uri" rewrites the request URI with the result of the evaluation of
3578        format string <fmt>. The scheme, authority, path and query string are all
3579        replaced at once. This can be used to rewrite hosts in front of proxies,
3580        or to perform complex modifications to the URI such as moving parts
3581        between the path and the query string. See also "set-path" and
3582        "set-query".
3583
3584      - "set-nice" sets the "nice" factor of the current request being processed.
3585        It only has effect against the other requests being processed at the same
3586        time. The default value is 0, unless altered by the "nice" setting on the
3587        "bind" line. The accepted range is -1024..1024. The higher the value, the
3588        nicest the request will be. Lower values will make the request more
3589        important than other ones. This can be useful to improve the speed of
3590        some requests, or lower the priority of non-important requests. Using
3591        this setting without prior experimentation can cause some major slowdown.
3592
3593      - "set-log-level" is used to change the log level of the current request
3594        when a certain condition is met. Valid levels are the 8 syslog levels
3595        (see the "log" keyword) plus the special level "silent" which disables
3596        logging for this request. This rule is not final so the last matching
3597        rule wins. This rule can be useful to disable health checks coming from
3598        another equipment.
3599
3600      - "set-tos" is used to set the TOS or DSCP field value of packets sent to
3601        the client to the value passed in <tos> on platforms which support this.
3602        This value represents the whole 8 bits of the IP TOS field, and can be
3603        expressed both in decimal or hexadecimal format (prefixed by "0x"). Note
3604        that only the 6 higher bits are used in DSCP or TOS, and the two lower
3605        bits are always 0. This can be used to adjust some routing behaviour on
3606        border routers based on some information from the request. See RFC 2474,
3607        2597, 3260 and 4594 for more information.
3608
3609      - "set-mark" is used to set the Netfilter MARK on all packets sent to the
3610        client to the value passed in <mark> on platforms which support it. This
3611        value is an unsigned 32 bit value which can be matched by netfilter and
3612        by the routing table. It can be expressed both in decimal or hexadecimal
3613        format (prefixed by "0x"). This can be useful to force certain packets to
3614        take a different route (for example a cheaper network path for bulk
3615        downloads). This works on Linux kernels 2.6.32 and above and requires
3616        admin privileges.
3617
3618      - "add-acl" is used to add a new entry into an ACL. The ACL must be loaded
3619        from a file (even a dummy empty file). The file name of the ACL to be
3620        updated is passed between parentheses. It takes one argument: <key fmt>,
3621        which follows log-format rules, to collect content of the new entry. It
3622        performs a lookup in the ACL before insertion, to avoid duplicated (or
3623        more) values. This lookup is done by a linear search and can be expensive
3624        with large lists! It is the equivalent of the "add acl" command from the
3625        stats socket, but can be triggered by an HTTP request.
3626
3627      - "del-acl" is used to delete an entry from an ACL. The ACL must be loaded
3628        from a file (even a dummy empty file). The file name of the ACL to be
3629        updated is passed between parentheses. It takes one argument: <key fmt>,
3630        which follows log-format rules, to collect content of the entry to delete.
3631        It is the equivalent of the "del acl" command from the stats socket, but
3632        can be triggered by an HTTP request.
3633
3634      - "del-map" is used to delete an entry from a MAP. The MAP must be loaded
3635        from a file (even a dummy empty file). The file name of the MAP to be
3636        updated is passed between parentheses. It takes one argument: <key fmt>,
3637        which follows log-format rules, to collect content of the entry to delete.
3638        It takes one argument: "file name" It is the equivalent of the "del map"
3639        command from the stats socket, but can be triggered by an HTTP request.
3640
```

```
3641      - "set-map" is used to add a new entry into a MAP. The MAP must be loaded
3642        from a file (even a dummy empty file). The file name of the MAP to be
3643        updated is passed between parentheses. It takes 2 arguments: <key fmt>,
3644        which follows log-format rules, used to collect MAP key, and <value fmt>,
3645        which follows log-format rules, used to collect content for the new entry.
3646        It performs a lookup in the MAP before insertion, to avoid duplicated (or
3647        more) values. This lookup is done by a linear search and can be expensive
3648        with large lists! It is the equivalent of the "set map" command from the
3649        stats socket, but can be triggered by an HTTP request.
3650
3651      - capture <sample> [ len <length> | id <id> ] :
3652        captures sample expression <sample> from the request buffer, and converts
3653        it to a string of at most <len> characters. The resulting string is
3654        stored into the next request "capture" slot, so it will possibly appear
3655        next to some captured HTTP headers. It will then automatically appear in
3656        the logs, and it will be possible to extract it using sample fetch rules
3657        to feed it into headers or anything. The length should be limited given
3658        that this size will be allocated for each capture during the whole
3659        session life. Please check section 7.3 (Fetching samples) and "capture
3660        request header" for more information.
3661
3662        If the keyword "id" is used instead of "len", the action tries to store
3663        the captured string in a previously declared capture slot. This is useful
3664        to run captures in backends. The slot id can be declared by a previous
3665        directive "http-request capture" or with the "declare capture" keyword.
3666        If the slot <id> doesn't exist, then HAProxy fails parsing the
3667        configuration to prevent unexpected behavior at run time.
3668
3669      - { track-sc0 | track-sc1 | track-sc2 } <key> [table <table>] :
3670        enables tracking of sticky counters from current request. These rules
3671        do not stop evaluation and do not change default action. Three sets of
3672        counters may be simultaneously tracked by the same connection. The first
3673        "track-sc0" rule executed enables tracking of the counters of the
3674        specified table as the first set. The first "track-sc1" rule executed
3675        enables tracking of the counters of the specified table as the second
3676        set. The first "track-sc2" rule executed enables tracking of the
3677        counters of the specified table as the third set. It is a recommended
3678        practice to use the first set of counters for the per-frontend counters
3679        and the second set for the per-backend ones. But this is just a
3680        guideline, all may be used everywhere.
3681
3682        These actions take one or two arguments :
3683          <key>   is mandatory, and is a sample expression rule as described
3684                  in section 7.3. It describes what elements of the incoming
3685                  request or connection will be analysed, extracted, combined,
3686                  and used to select which table entry to update the counters.
3687
3688          <table> is an optional table to be used instead of the default one,
3689                  which is the stick-table declared in the current proxy. All
3690                  the counters for the matches and updates for the key will
3691                  then be performed in that table until the session ends.
3692
3693        Once a "track-sc*" rule is executed, the key is looked up in the table
3694        and if it is not found, an entry is allocated for it. Then a pointer to
3695        that entry is kept during all the session's life, and this entry's
3696        counters are updated as often as possible, every time the session's
3697        counters are updated, and also systematically when the session ends.
3698        Counters are only updated for events that happen after the tracking has
3699        been started. As an exception, connection counters and request counters
3700        are systematically updated so that they reflect useful information.
3701
3702        If the entry tracks concurrent connection counters, one connection is
3703        counted for as long as the entry is tracked, and the entry will not
3704        expire during that time. Tracking counters also provides a performance
3705        advantage over just checking the keys, because only one table lookup is
```



```
3706        performed for all ACL checks that make use of it.
3707
3708      - sc-set-gpt0(<sc-id>) <int> :
3709        This action sets the GPT0 tag according to the sticky counter designated
3710        by <sc-id> and the value of <int>. The expected result is a boolean. If
3711        an error occurs, this action silently fails and the actions evaluation
3712        continues.
3713
3714      - sc-inc-gpc0(<sc-id>):
3715        This action increments the GPC0 counter according with the sticky counter
3716        designated by <sc-id>. If an error occurs, this action silently fails and
3717        the actions evaluation continues.
3718
3719      - set-var(<var-name>) <expr> :
3720        Is used to set the contents of a variable. The variable is declared
3721        inline.
3722
3723          <var-name> The name of the variable starts by an indication about its
3724                     scope. The allowed scopes are:
3725                       "sess" : the variable is shared with all the session,
3726                       "txn"  : the variable is shared with all the transaction
3727                                (request and response)
3728                       "req"  : the variable is shared only during the request
3729                                processing
3730                       "res"  : the variable is shared only during the response
3731                                processing.
3732                     This prefix is followed by a name. The separator is a '.'.
3733                     The name may only contain characters 'a-z', 'A-Z', '0-9',
3734                     and '_'.
3735
3736            <expr>   Is a standard HAProxy expression formed by a sample-fetch
3737                     followed by some converters.
3738
3739        Example:
3740
3741           http-request set-var(req.my_var) req.fhdr(user-agent),lower
3742
3743      - set-src <expr> :
3744        Is used to set the source IP address to the value of specified
3745        expression. Useful when a proxy in front of HAProxy rewrites source IP,
3746        but provides the correct IP in a HTTP header; or you want to mask
3747        source IP for privacy.
3748
3749           <expr>   Is a standard HAProxy expression formed by a sample-fetch
3750                    followed by some converters.
3751
3752        Example:
3753
3754           http-request set-src hdr(x-forwarded-for)
3755           http-request set-src src,ipmask(24)
3756
3757        When set-src is successful, the source port is set to 0.
3758
3759      - "silent-drop" : this stops the evaluation of the rules and makes the
3760        client-facing connection suddenly disappear using a system-dependant way
3761        that tries to prevent the client from being notified. The effect it then
3762        that the client still sees an established connection while there's none
3763        on HAProxy. The purpose is to achieve a comparable effect to "tarpit"
3764        except that it doesn't use any local resource at all on the machine
3765        running HAProxy. It can resist much higher loads than "tarpit", and slow
3766        down stronger attackers. It is important to undestand the impact of using
3767        this mechanism. All stateful equipments placed between the client and
3768        HAProxy (firewalls, proxies, load balancers) will also keep the
3769        established connection for a long time and may suffer from this action.
3770        On modern Linux systems running with enough privileges, the TCP_REPAIR
```

```
3771        socket option is used to block the emission of a TCP reset. On other
3772        systems, the socket's TTL is reduced to 1 so that the TCP reset doesn't
3773        pass the first router, though it's still delivered to local networks. Do
3774        not use it unless you fully understand how it works.
3775
3776    There is no limit to the number of http-request statements per instance.
3777
3778    It is important to know that http-request rules are processed very early in
3779    the HTTP processing, just after "block" rules and before "reqdel" or "reqrep"
3780    or "reqadd" rules. That way, headers added by "add-header"/"set-header" are
3781    visible by almost all further ACL rules.
3782
3783    Using "reqadd"/"reqdel"/"reqrep" to manipulate request headers is discouraged
3784    in newer versions (>= 1.5). But if you need to use regular expression to
3785    delete headers, you can still use "reqdel". Also please use
3786    "http-request deny/allow/tarpit" instead of "reqdeny"/"reqpass"/"reqtarpit".
3787
3788    Example:
3789          acl nagios src 192.168.129.3
3790          acl local_net src 192.168.0.0/16
3791          acl auth_ok http_auth(L1)
3792
3793          http-request allow if nagios
3794          http-request allow if local_net auth_ok
3795          http-request auth realm Gimme if local_net auth_ok
3796          http-request deny
3797
3798    Example:
3799          acl auth_ok http_auth_group(L1) G1
3800          http-request auth unless auth_ok
3801
3802    Example:
3803          http-request set-header X-Haproxy-Current-Date %T
3804          http-request set-header X-SSL                  %[ssl_fc]
3805          http-request set-header X-SSL-Session_ID       %[ssl_fc_session_id,hex]
3806          http-request set-header X-SSL-Client-Verify    %[ssl_c_verify]
3807          http-request set-header X-SSL-Client-DN        %{+Q}[ssl_c_s_dn]
3808          http-request set-header X-SSL-Client-CN        %{+Q}[ssl_c_s_dn(cn)]
3809          http-request set-header X-SSL-Issuer           %{+Q}[ssl_c_i_dn]
3810          http-request set-header X-SSL-Client-NotBefore %{+Q}[ssl_c_notbefore]
3811          http-request set-header X-SSL-Client-NotAfter  %{+Q}[ssl_c_notafter]
3812
3813    Example:
3814          acl key req.hdr(X-Add-Acl-Key) -m found
3815          acl add path /addacl
3816          acl del path /delacl
3817
3818          acl myhost hdr(Host) -f myhost.lst
3819
3820          http-request add-acl(myhost.lst) %[req.hdr(X-Add-Acl-Key)] if key add
3821          http-request del-acl(myhost.lst) %[req.hdr(X-Add-Acl-Key)] if key del
3822
3823    Example:
3824          acl value  req.hdr(X-Value) -m found
3825          acl setmap path /setmap
3826          acl delmap path /delmap
3827
3828          use_backend bk_appli if { hdr(Host),map_str(map.lst) -m found }
3829
3830          http-request set-map(map.lst) %[src] %[req.hdr(X-Value)] if setmap value
3831          http-request del-map(map.lst) %[src]                     if delmap
3832
3833    See also : "stats http-request", section 3.4 about userlists and section 7
3834               about ACL usage.
3835
```



```
3836  http-response { allow | deny | add-header <name> <fmt> | set-nice <nice> |
3837                  capture <sample> id <id> | redirect <rule> |
3838                  set-header <name> <fmt> | del-header <name> |
3839                  replace-header <name> <regex-match> <replace-fmt> |
3840                  replace-value <name> <regex-match> <replace-fmt> |
3841                  set-status <status> |
3842                  set-log-level <level> | set-mark <mark> | set-tos <tos> |
3843                  add-acl(<file name>) <key fmt> |
3844                  del-acl(<file name>) <key fmt> |
3845                  del-map(<file name>) <key fmt> |
3846                  set-map(<file name>) <key fmt> <value fmt> |
3847                  set-var(<var-name>) <expr> |
3848                  sc-inc-gpc0(<sc-id>) |
3849                  sc-set-gpt0(<sc-id>) <int> |
3850                  silent-drop |
3851                }
3852                [ { if | unless } <condition> ]
3853    Access control for Layer 7 responses
3854
3855    May be used in sections:   defaults | frontend | listen | backend
3856                                  no    |    yes   |   yes  |   yes
3857
3858    The http-response statement defines a set of rules which apply to layer 7
3859    processing. The rules are evaluated in their declaration order when they are
3860    met in a frontend, listen or backend section. Any rule may optionally be
3861    followed by an ACL-based condition, in which case it will only be evaluated
3862    if the condition is true. Since these rules apply on responses, the backend
3863    rules are applied first, followed by the frontend's rules.
3864
3865    The first keyword is the rule's action. Currently supported actions include :
3866      - "allow" : this stops the evaluation of the rules and lets the response
3867        pass the check. No further "http-response" rules are evaluated for the
3868        current section.
3869
3870      - "deny" : this stops the evaluation of the rules and immediately rejects
3871        the response and emits an HTTP 502 error. No further "http-response"
3872        rules are evaluated.
3873
3874      - "add-header" appends an HTTP header field whose name is specified in
3875        <name> and whose value is defined by <fmt> which follows the log-format
3876        rules (see Custom Log Format in section 8.2.4). This may be used to send
3877        a cookie to a client for example, or to pass some internal information.
3878        This rule is not final, so it is possible to add other similar rules.
3879        Note that header addition is performed immediately, so one rule might
3880        reuse the resulting header from a previous rule.
3881
3882      - "set-header" does the same as "add-header" except that the header name
3883        is first removed if it existed. This is useful when passing security
3884        information to the server, where the header must not be manipulated by
3885        external users.
3886
3887      - "del-header" removes all HTTP header fields whose name is specified in
3888        <name>.
3889
3890      - "replace-header" matches the regular expression in all occurrences of
3891        header field <name> according to <match-regex>, and replaces them with
3892        the <replace-fmt> argument. Format characters are allowed in replace-fmt
3893        and work like in <fmt> arguments in "add-header". The match is only
3894        case-sensitive. It is important to understand that this action only
3895        considers whole header lines, regardless of the number of values they
3896        may contain. This usage is suited to headers naturally containing commas
3897        in their value, such as Set-Cookie, Expires and so on.
3898
3899        Example:
3900
```

```
3901          http-response replace-header Set-Cookie (C=[^;]*);(.*) \1;ip=%bi;\2
3902
3903        applied to:
3904
3905          Set-Cookie: C=1; expires=Tue, 14-Jun-2016 01:40:45 GMT
3906
3907        outputs:
3908
3909          Set-Cookie: C=1;ip=192.168.1.20; expires=Tue, 14-Jun-2016 01:40:45 GMT
3910
3911        assuming the backend IP is 192.168.1.20.
3912
3913      - "replace-value" works like "replace-header" except that it matches the
3914        regex against every comma-delimited value of the header field <name>
3915        instead of the entire header. This is suited for all headers which are
3916        allowed to carry more than one value. An example could be the Accept
3917        header.
3918
3919        Example:
3920
3921          http-response replace-value Cache-control ^public$ private
3922
3923        applied to:
3924
3925          Cache-Control: max-age=3600, public
3926
3927        outputs:
3928
3929          Cache-Control: max-age=3600, private
3930
3931      - "set-status" replaces the response status code with <status> which must
3932        be an integer between 100 and 999. Note that the reason is automatically
3933        adapted to the new code.
3934
3935        Example:
3936
3937          # return "431 Request Header Fields Too Large"
3938          http-response set-status 431
3939
3940      - "set-nice" sets the "nice" factor of the current request being processed.
3941        It only has effect against the other requests being processed at the same
3942        time. The default value is 0, unless altered by the "nice" setting on the
3943        "bind" line. The accepted range is -1024..1024. The higher the value, the
3944        nicest the request will be. Lower values will make the request more
3945        important than other ones. This can be useful to improve the speed of
3946        some requests, or lower the priority of non-important requests. Using
3947        this setting without prior experimentation can cause some major slowdown.
3948
3949      - "set-log-level" is used to change the log level of the current request
3950        when a certain condition is met. Valid levels are the 8 syslog levels
3951        (see the "log" keyword) plus the special level "silent" which disables
3952        logging for this request. This rule is not final so the last matching
3953        rule wins. This rule can be useful to disable health checks coming from
3954        another equipment.
3955
3956      - "set-tos" is used to set the TOS or DSCP field value of packets sent to
3957        the client to the value passed in <tos> on platforms which support this.
3958        This value represents the whole 8 bits of the IP TOS field, and can be
3959        expressed both in decimal or hexadecimal format (prefixed by "0x"). Note
3960        that only the 6 higher bits are used in DSCP or TOS, and the two lower
3961        bits are always 0. This can be used to adjust some routing behaviour on
3962        border routers based on some information from the request. See RFC 2474,
3963        2597, 3260 and 4594 for more information.
3964
3965      - "set-mark" is used to set the Netfilter MARK on all packets sent to the
```



```
3966        client to the value passed in <mark> on platforms which support it. This
3967        value is an unsigned 32 bit value which can be matched by netfilter and
3968        by the routing table. It can be expressed both in decimal or hexadecimal
3969        format (prefixed by "0x"). This can be useful to force certain packets to
3970        take a different route (for example a cheaper network path for bulk
3971        downloads). This works on Linux kernels 2.6.32 and above and requires
3972        admin privileges.
3973
3974      - "add-acl" is used to add a new entry into an ACL. The ACL must be loaded
3975        from a file (even a dummy empty file). The file name of the ACL to be
3976        updated is passed between parentheses. It takes one argument: <key fmt>,
3977        which follows log-format rules, to collect content of the new entry. It
3978        performs a lookup in the ACL before insertion, to avoid duplicated (or
3979        more) values. This lookup is done by a linear search and can be expensive
3980        with large lists! It is the equivalent of the "add acl" command from the
3981        stats socket, but can be triggered by an HTTP response.
3982
3983      - "del-acl" is used to delete an entry from an ACL. The ACL must be loaded
3984        from a file (even a dummy empty file). The file name of the ACL to be
3985        updated is passed between parentheses. It takes one argument: <key fmt>,
3986        which follows log-format rules, to collect content of the entry to delete.
3987        It is the equivalent of the "del acl" command from the stats socket, but
3988        can be triggered by an HTTP response.
3989
3990      - "del-map" is used to delete an entry from a MAP. The MAP must be loaded
3991        from a file (even a dummy empty file). The file name of the MAP to be
3992        updated is passed between parentheses. It takes one argument: <key fmt>,
3993        which follows log-format rules, to collect content of the entry to delete.
3994        It takes one argument: "file name" It is the equivalent of the "del map"
3995        command from the stats socket, but can be triggered by an HTTP response.
3996
3997      - "set-map" is used to add a new entry into a MAP. The MAP must be loaded
3998        from a file (even a dummy empty file). The file name of the MAP to be
3999        updated is passed between parentheses. It takes 2 arguments: <key fmt>,
4000        which follows log-format rules, used to collect MAP key, and <value fmt>,
4001        which follows log-format rules, used to collect content for the new entry.
4002        It performs a lookup in the MAP before insertion, to avoid duplicated (or
4003        more) values. This lookup is done by a linear search and can be expensive
4004        with large lists! It is the equivalent of the "set map" command from the
4005        stats socket, but can be triggered by an HTTP response.
4006
4007      - capture <sample> id <id> :
4008        captures sample expression <sample> from the response buffer, and converts
4009        it to a string. The resulting string is stored into the next request
4010        "capture" slot, so it will possibly appear next to some captured HTTP
4011        headers. It will then automatically appear in the logs, and it will be
4012        possible to extract it using sample fetch rules to feed it into headers or
4013        anything. Please check section 7.3 (Fetching samples) and "capture
4014        response header" for more information.
4015
4016        The keyword "id" is the id of the capture slot which is used for storing
4017        the string. The capture slot must be defined in an associated frontend.
4018        This is useful to run captures in backends. The slot id can be declared by
4019        a previous directive "http-response capture" or with the "declare capture"
4020        keyword.
4021        If the slot <id> doesn't exist, then HAProxy fails parsing the
4022        configuration to prevent unexpected behavior at run time.
4023
4024      - "redirect" : this performs an HTTP redirection based on a redirect rule.
4025        This supports a format string similarly to "http-request redirect" rules,
4026        with the exception that only the "location" type of redirect is possible
4027        on the response. See the "redirect" keyword for the rule's syntax. When
4028        a redirect rule is applied during a response, connections to the server
4029        are closed so that no data can be forwarded from the server to the client.
4030
```

```
4031      - set-var(<var-name>) expr:
4032        Is used to set the contents of a variable. The variable is declared
4033        inline.
4034
4035          <var-name> The name of the variable starts by an indication about its
4036                     scope. The allowed scopes are:
4037                       "sess" : the variable is shared with all the session,
4038                       "txn"  : the variable is shared with all the transaction
4039                                (request and response)
4040                       "req"  : the variable is shared only during the request
4041                                processing
4042                       "res"  : the variable is shared only during the response
4043                                processing.
4044                     This prefix is followed by a name. The separator is a '.'.
4045                     The name may only contain characters 'a-z', 'A-Z', '0-9',
4046                     and '_'.
4047
4048             <expr>  Is a standard HAProxy expression formed by a sample-fetch
4049                     followed by some converters.
4050
4051        Example:
4052
4053           http-response set-var(sess.last_redir) res.hdr(location)
4054
4055      - sc-set-gpt0(<sc-id>) <int> :
4056        This action sets the GPT0 tag according to the sticky counter designated
4057        by <sc-id> and the value of <int>. The expected result is a boolean. If
4058        an error occurs, this action silently fails and the actions evaluation
4059        continues.
4060
4061      - sc-inc-gpc0(<sc-id>):
4062        This action increments the GPC0 counter according with the sticky counter
4063        designated by <sc-id>. If an error occurs, this action silently fails and
4064        the actions evaluation continues.
4065
4066      - "silent-drop" : this stops the evaluation of the rules and makes the
4067        client-facing connection suddenly disappear using a system-dependant way
4068        that tries to prevent the client from being notified. The effect it then
4069        that the client still sees an established connection while there's none
4070        on HAProxy. The purpose is to achieve a comparable effect to "tarpit"
4071        except that it doesn't use any local resource at all on the machine
4072        running HAProxy. It can resist much higher loads than "tarpit", and slow
4073        down stronger attackers. It is important to undestand the impact of using
4074        this mechanism. All stateful equipments placed between the client and
4075        HAProxy (firewalls, proxies, load balancers) will also keep the
4076        established connection for a long time and may suffer from this action.
4077        On modern Linux systems running with enough privileges, the TCP_REPAIR
4078        socket option is used to block the emission of a TCP reset. On other
4079        systems, the socket's TTL is reduced to 1 so that the TCP reset doesn't
4080        pass the first router, though it's still delivered to local networks. Do
4081        not use it unless you fully understand how it works.
4082
4083    There is no limit to the number of http-response statements per instance.
4084
4085    It is important to know that http-response rules are processed very early in
4086    the HTTP processing, before "rspdel" or "rsprep" or "rspadd" rules. That way,
4087    headers added by "add-header"/"set-header" are visible by almost all further ACL
4088    rules.
4089
4090    Using "rspadd"/"rspdel"/"rsprep" to manipulate request headers is discouraged
4091    in newer versions (>= 1.5). But if you need to use regular expression to
4092    delete headers, you can still use "rspdel". Also please use
4093    "http-response deny" instead of "rspdeny".
4094
4095    Example:
```



```
4096           acl key_acl res.hdr(X-Acl-Key) -m found
4097
4098           acl myhost hdr(Host) -f myhost.lst
4099
4100           http-response add-acl(myhost.lst) %[res.hdr(X-Acl-Key)] if key_acl
4101           http-response del-acl(myhost.lst) %[res.hdr(X-Acl-Key)] if key_acl
4102
4103    Example:
4104           acl value  res.hdr(X-Value) -m found
4105
4106           use_backend bk_appli if { hdr(Host),map_str(map.lst) -m found }
4107
4108           http-response set-map(map.lst) %[src] %[res.hdr(X-Value)] if value
4109           http-response del-map(map.lst) %[src]                     if ! value
4110
4111    See also : "http-request", section 3.4 about userlists and section 7 about
4112               ACL usage.
4113
4114
4115  http-reuse { never | safe | aggressive | always }
4116    Declare how idle HTTP connections may be shared between requests
4117
4118    May be used in sections:   defaults | frontend | listen | backend
4119                                  yes    |    no    |   yes  |   yes
4120
4121    By default, a connection established between haproxy and the backend server
4122    belongs to the session that initiated it. The downside is that between the
4123    response and the next request, the connection remains idle and is not used.
4124    In many cases for performance reasons it is desirable to make it possible to
4125    reuse these idle connections to serve other requests from different sessions.
4126    This directive allows to tune this behaviour.
4127
4128    The argument indicates the desired connection reuse strategy :
4129
4130      - "never"  : idle connections are never shared between sessions. This is
4131                   the default choice. It may be enforced to cancel a different
4132                   strategy inherited from a defaults section or for
4133                   troubleshooting. For example, if an old bogus application
4134                   considers that multiple requests over the same connection come
4135                   from the same client and it is not possible to fix the
4136                   application, it may be desirable to disable connection sharing
4137                   in a single backend. An example of such an application could
4138                   be an old haproxy using cookie insertion in tunnel mode and
4139                   not checking any request past the first one.
4140
4141      - "safe"   : this is the recommended strategy. The first request of a
4142                   session is always sent over its own connection, and only
4143                   subsequent requests may be dispatched over other existing
4144                   connections. This ensures that in case the server closes the
4145                   connection when the request is being sent, the browser can
4146                   decide to silently retry it. Since it is exactly equivalent to
4147                   regular keep-alive, there should be no side effects.
4148
4149      - "aggressive" : this mode may be useful in webservices environments where
4150                   all servers are not necessarily known and where it would be
4151                   appreciable to deliver most first requests over existing
4152                   connections. In this case, first requests are only delivered
4153                   over existing connections that have been reused at least once,
4154                   proving that the server correctly supports connection reuse.
4155                   It should only be used when it's sure that the client can
4156                   retry a failed request once in a while and where the benefit
4157                   of aggressive connection reuse significantly outweights the
4158                   downsides of rare connection failures.
4159
4160      - "always" : this mode is only recommended when the path to the server is
```

```
                  known for never breaking existing connections quickly after
                  releasing them. It allows the first request of a session to be
                  sent to an existing connection. This can provide a significant
                  performance increase over the "safe" strategy when the backend
                  is a cache farm, since such components tend to show a
                  consistent behaviour and will benefit from the connection
                  sharing. It is recommended that the "http-keep-alive" timeout
                  remains low in this mode so that no dead connections remain
                  usable. In most cases, this will lead to the same performance
                  gains as "aggressive" but with more risks. It should only be
                  used when it improves the situation over "aggressive".

    When http connection sharing is enabled, a great care is taken to respect the
    connection properties and compatiblities. Specifically :
      - connections made with "usesrc" followed by a client-dependant value
        ("client", "clientip", "hdr_ip") are marked private and never shared ;

      - connections sent to a server with a TLS SNI extension are marked private
        and are never shared ;

      - connections receiving a status code 401 or 407 expect some authentication
        to be sent in return. Due to certain bogus authentication schemes (such
        as NTLM) relying on the connection, these connections are marked private
        and are never shared ;

    No connection pool is involved, once a session dies, the last idle connection
    it was attached to is deleted at the same time. This ensures that connections
    may not last after all sessions are closed.

    Note: connection reuse improves the accuracy of the "server maxconn" setting,
    because almost no new connection will be established while idle connections
    remain available. This is particularly true with the "always" strategy.

    See also : "option http-keep-alive", "server maxconn"


  http-send-name-header [<header>]
    Add the server name to a request. Use the header string given by <header>

    May be used in sections:   defaults | frontend | listen | backend
                                  yes    |    no    |   yes  |   yes

    Arguments :

      <header>  The header string to use to send the server name

    The "http-send-name-header" statement causes the name of the target
    server to be added to the headers of an HTTP request.  The name
    is added with the header string proved.

    See also : "server"

  id <value>
    Set a persistent ID to a proxy.
    May be used in sections :   defaults | frontend | listen | backend
                                   no    |    yes   |   yes  |   yes
    Arguments : none

    Set a persistent ID for the proxy. This ID must be unique and positive.
    An unused ID will automatically be assigned if unset. The first assigned
    value will be 1. This ID is currently only returned in statistics.


  ignore-persist { if | unless } <condition>
    Declare a condition to ignore persistence
```



```
    May be used in sections:    defaults | frontend | listen | backend
                                    no   |    yes   |   yes  |   yes

    By default, when cookie persistence is enabled, every requests containing
    the cookie are unconditionally persistent (assuming the target server is up
    and running).

    The "ignore-persist" statement allows one to declare various ACL-based
    conditions which, when met, will cause a request to ignore persistence.
    This is sometimes useful to load balance requests for static files, which
    often don't require persistence. This can also be used to fully disable
    persistence for a specific User-Agent (for example, some web crawler bots).

    The persistence is ignored when an "if" condition is met, or unless an
    "unless" condition is met.

    See also : "force-persist", "cookie", and section 7 about ACL usage.

  load-server-state-from-file { global | local | none }
    Allow seamless reload of HAProxy
    May be used in sections:    defaults | frontend | listen | backend
                                    yes   |    no    |   yes  |   yes

    This directive points HAProxy to a file where server state from previous
    running process has been saved. That way, when starting up, before handling
    traffic, the new process can apply old states to servers exactly has if no
    reload occured. The purpose of the "load-server-state-from-file" directive is
    to tell haproxy which file to use. For now, only 2 arguments to either prevent
    loading state or load states from a file containing all backends and servers.
    The state file can be generated by running the command "show servers state"
    over the stats socket and redirect output.

    The format of the file is versionned and is very specific. To understand it,
    please read the documentation of the "show servers state" command (chapter
    9.2 of Management Guide).

    Arguments:
      global     load the content of the file pointed by the global directive
                 named "server-state-file".

      local      load the content of the file pointed by the directive
                 "server-state-file-name" if set. If not set, then the backend
                 name is used as a file name.

      none       don't load any stat for this backend

    Notes:
      - server's IP address is not updated unless DNS resolution is enabled on
        the server. It means that if a server IP address has been changed using
        the stat socket, this information won't be re-applied after reloading.

      - server's weight is applied from previous running process unless it has
        has changed between previous and new configuration files.

    Example 1:

    Minimal configuration:

      global
       stats socket /tmp/socket
       server-state-file /tmp/server_state

      defaults
       load-server-state-from-file global
```

```
4291      backend bk
4292       server s1 127.0.0.1:22 check weight 11
4293       server s2 127.0.0.1:22 check weight 12
4294
4295    Then one can run :
4296
4297      socat /tmp/socket - <<< "show servers state" > /tmp/server_state
4298
4299    Content of the file /tmp/server_state would be like this:
4300
4301      1
4302      # <field names skipped for the doc example>
4303      1 bk 1 s1 127.0.0.1 2 0 11 11 4 6 3 4 6 0 0
4304      1 bk 2 s2 127.0.0.1 2 0 12 12 4 6 3 4 6 0 0
4305
4306    Example 2:
4307
4308    Minimal configuration:
4309
4310      global
4311       stats socket /tmp/socket
4312       server-state-base /etc/haproxy/states
4313
4314      defaults
4315       load-server-state-from-file local
4316
4317      backend bk
4318       server s1 127.0.0.1:22 check weight 11
4319       server s2 127.0.0.1:22 check weight 12
4320
4321    Then one can run :
4322
4323      socat /tmp/socket - <<< "show servers state bk" > /etc/haproxy/states/bk
4324
4325    Content of the file /etc/haproxy/states/bk would be like this:
4326
4327      1
4328      # <field names skipped for the doc example>
4329      1 bk 1 s1 127.0.0.1 2 0 11 11 4 6 3 4 6 0 0
4330      1 bk 2 s2 127.0.0.1 2 0 12 12 4 6 3 4 6 0 0
4331
4332    See also: "server-state-file", "server-state-file-name", and
4333    "show servers state"
4334
4335
4336  log global
4337  log <address> [len <length>] <facility> [<level> [<minlevel>]]
4338  no log
4339    Enable per-instance logging of events and traffic.
4340    May be used in sections :   defaults | frontend | listen | backend
4341                                   yes   |    yes   |   yes  |   yes
4342
4343    Prefix :
4344      no         should be used when the logger list must be flushed. For example,
4345                 if you don't want to inherit from the default logger list. This
4346                 prefix does not allow arguments.
4347
4348    Arguments :
4349      global     should be used when the instance's logging parameters are the
4350                 same as the global ones. This is the most common usage. "global"
4351                 replaces <address>, <facility> and <level> with those of the log
4352                 entries found in the "global" section. Only one "log global"
4353                 statement may be used per instance, and this form takes no other
4354                 parameter.
4355
```



```
4356      <address>  indicates where to send the logs. It takes the same format as
4357                 for the "global" section's logs, and can be one of :
4358
4359                 - An IPv4 address optionally followed by a colon (':') and a UDP
4360                   port. If no port is specified, 514 is used by default (the
4361                   standard syslog port).
4362
4363                 - An IPv6 address followed by a colon (':') and optionally a UDP
4364                   port. If no port is specified, 514 is used by default (the
4365                   standard syslog port).
4366
4367                 - A filesystem path to a UNIX domain socket, keeping in mind
4368                   considerations for chroot (be sure the path is accessible
4369                   inside the chroot) and uid/gid (be sure the path is
4370                   appropriately writeable).
4371
4372                You may want to reference some environment variables in the
4373                address parameter, see section 2.3 about environment variables.
4374
4375      <length>   is an optional maximum line length. Log lines larger than this
4376                 value will be truncated before being sent. The reason is that
4377                 syslog servers act differently on log line length. All servers
4378                 support the default value of 1024, but some servers simply drop
4379                 larger lines while others do log them. If a server supports long
4380                 lines, it may make sense to set this value here in order to avoid
4381                 truncating long lines. Similarly, if a server drops long lines,
4382                 it is preferable to truncate them before sending them. Accepted
4383                 values are 80 to 65535 inclusive. The default value of 1024 is
4384                 generally fine for all standard usages. Some specific cases of
4385                 long captures or JSON-formated logs may require larger values.
4386
4387      <facility> must be one of the 24 standard syslog facilities :
4388
4389                   kern   user   mail   daemon auth   syslog lpr    news
4390                   uucp   cron   auth2  ftp    ntp    audit  alert  cron2
4391                   local0 local1 local2 local3 local4 local5 local6 local7
4392
4393      <level>    is optional and can be specified to filter outgoing messages. By
4394                 default, all messages are sent. If a level is specified, only
4395                 messages with a severity at least as important as this level
4396                 will be sent. An optional minimum level can be specified. If it
4397                 is set, logs emitted with a more severe level than this one will
4398                 be capped to this level. This is used to avoid sending "emerg"
4399                 messages on all terminals on some default syslog configurations.
4400                 Eight levels are known :
4401
4402                   emerg  alert  crit   err    warning notice info  debug
4403
4404    It is important to keep in mind that it is the frontend which decides what to
4405    log from a connection, and that in case of content switching, the log entries
4406    from the backend will be ignored. Connections are logged at level "info".
4407
4408    However, backend log declaration define how and where servers status changes
4409    will be logged. Level "notice" will be used to indicate a server going up,
4410    "warning" will be used for termination signals and definitive service
4411    termination, and "alert" will be used for when a server goes down.
4412
4413    Note : According to RFC3164, messages are truncated to 1024 bytes before
4414           being emitted.
4415
4416    Example :
4417      log global
4418      log 127.0.0.1:514 local0 notice         # only send important events
4419      log 127.0.0.1:514 local0 notice notice  # same but limit output level
4420      log "${LOCAL_SYSLOG}:514" local0 notice   # send to local server
```

```
4421
4422
4423  log-format <string>
4424    Specifies the log format string to use for traffic logs
4425    May be used in sections:    defaults | frontend | listen | backend
4426                                   yes   |    yes   |   yes  |    no
4427
4428    This directive specifies the log format string that will be used for all logs
4429    resulting from traffic passing through the frontend using this line. If the
4430    directive is used in a defaults section, all subsequent frontends will use
4431    the same log format. Please see section 8.2.4 which covers the log format
4432    string in depth.
4433
4434  log-format-sd <string>
4435    Specifies the RFC5424 structured-data log format string
4436    May be used in sections:    defaults | frontend | listen | backend
4437                                   yes   |    yes   |   yes  |    no
4438
4439    This directive specifies the RFC5424 structured-data log format string that
4440    will be used for all logs resulting from traffic passing through the frontend
4441    using this line. If the directive is used in a defaults section, all
4442    subsequent frontends will use the same log format. Please see section 8.2.4
4443    which covers the log format string in depth.
4444
4445    See https://tools.ietf.org/html/rfc5424#section-6.3 for more information
4446    about the RFC5424 structured-data part.
4447
4448    Note : This log format string will be used only for loggers that have set
4449           log format to "rfc5424".
4450
4451    Example :
4452      log-format-sd [exampleSDID@1234\ bytes=\"%B\"\ status=\"%ST\"]
4453
4454
4455  log-tag <string>
4456    Specifies the log tag to use for all outgoing logs
4457    May be used in sections:    defaults | frontend | listen | backend
4458                                   yes   |    yes   |   yes  |   yes
4459
4460    Sets the tag field in the syslog header to this string. It defaults to the
4461    log-tag set in the global section, otherwise the program name as launched
4462    from the command line, which usually is "haproxy". Sometimes it can be useful
4463    to differentiate between multiple processes running on the same host, or to
4464    differentiate customer instances running in the same process. In the backend,
4465    logs about servers up/down will use this tag. As a hint, it can be convenient
4466    to set a log-tag related to a hosted customer in a defaults section then put
4467    all the frontends and backends for that customer, then start another customer
4468    in a new defaults section. See also the global "log-tag" directive.
4469
4470  max-keep-alive-queue <value>
4471    Set the maximum server queue size for maintaining keep-alive connections
4472    May be used in sections:    defaults | frontend | listen | backend
4473                                   yes   |     no   |   yes  |   yes
4474
4475    HTTP keep-alive tries to reuse the same server connection whenever possible,
4476    but sometimes it can be counter-productive, for example if a server has a lot
4477    of connections while other ones are idle. This is especially true for static
4478    servers.
4479
4480    The purpose of this setting is to set a threshold on the number of queued
4481    connections at which haproxy stops trying to reuse the same server and prefers
4482    to find another one. The default value, -1, means there is no limit. A value
4483    of zero means that keep-alive requests will never be queued. For very close
4484    servers which can be reached with a low latency and which are not sensible to
4485    breaking keep-alive, a low value is recommended (eg: local static server can
```



```
4486    use a value of 10 or less). For remote servers suffering from a high latency,
4487    higher values might be needed to cover for the latency and/or the cost of
4488    picking a different server.
4489
4490    Note that this has no impact on responses which are maintained to the same
4491    server consecutively to a 401 response. They will still go to the same server
4492    even if they have to be queued.
4493
4494    See also : "option http-server-close", "option prefer-last-server", server
4495               "maxconn" and cookie persistence.
4496
4497
4498  maxconn <conns>
4499    Fix the maximum number of concurrent connections on a frontend
4500    May be used in sections :   defaults | frontend | listen | backend
4501                                   yes   |    yes   |   yes  |   no
4502    Arguments :
4503      <conns>   is the maximum number of concurrent connections the frontend will
4504                accept to serve. Excess connections will be queued by the system
4505                in the socket's listen queue and will be served once a connection
4506                closes.
4507
4508    If the system supports it, it can be useful on big sites to raise this limit
4509    very high so that haproxy manages connection queues, instead of leaving the
4510    clients with unanswered connection attempts. This value should not exceed the
4511    global maxconn. Also, keep in mind that a connection contains two buffers
4512    of 8kB each, as well as some other data resulting in about 17 kB of RAM being
4513    consumed per established connection. That means that a medium system equipped
4514    with 1GB of RAM can withstand around 40000-50000 concurrent connections if
4515    properly tuned.
4516
4517    Also, when <conns> is set to large values, it is possible that the servers
4518    are not sized to accept such loads, and for this reason it is generally wise
4519    to assign them some reasonable connection limits.
4520
4521    By default, this value is set to 2000.
4522
4523    See also : "server", global section's "maxconn", "fullconn"
4524
4525
4526  mode { tcp|http|health }
4527    Set the running mode or protocol of the instance
4528    May be used in sections :   defaults | frontend | listen | backend
4529                                   yes   |    yes   |   yes  |   yes
4530    Arguments :
4531      tcp       The instance will work in pure TCP mode. A full-duplex connection
4532                will be established between clients and servers, and no layer 7
4533                examination will be performed. This is the default mode. It
4534                should be used for SSL, SSH, SMTP, ...
4535
4536      http      The instance will work in HTTP mode. The client request will be
4537                analyzed in depth before connecting to any server. Any request
4538                which is not RFC-compliant will be rejected. Layer 7 filtering,
4539                processing and switching will be possible. This is the mode which
4540                brings HAProxy most of its value.
4541
4542      health    The instance will work in "health" mode. It will just reply "OK"
4543                to incoming connections and close the connection. Alternatively,
4544                If the "httpchk" option is set, "HTTP/1.0 200 OK" will be sent
4545                instead. Nothing will be logged in either case. This mode is used
4546                to reply to external components health checks. This mode is
4547                deprecated and should not be used anymore as it is possible to do
4548                the same and even better by combining TCP or HTTP modes with the
4549                "monitor" keyword.
4550
```

```
   When doing content switching, it is mandatory that the frontend and the
   backend are in the same mode (generally HTTP), otherwise the configuration
   will be refused.

   Example :
      defaults http_instances
          mode http

   See also : "monitor", "monitor-net"


monitor fail { if | unless } <condition>
   Add a condition to report a failure to a monitor HTTP request.
   May be used in sections :   defaults | frontend | listen | backend
                                  no    |    yes   |   yes  |   no
   Arguments :
     if <cond>     the monitor request will fail if the condition is satisfied,
                   and will succeed otherwise. The condition should describe a
                   combined test which must induce a failure if all conditions
                   are met, for instance a low number of servers both in a
                   backend and its backup.

     unless <cond> the monitor request will succeed only if the condition is
                   satisfied, and will fail otherwise. Such a condition may be
                   based on a test on the presence of a minimum number of active
                   servers in a list of backends.

   This statement adds a condition which can force the response to a monitor
   request to report a failure. By default, when an external component queries
   the URI dedicated to monitoring, a 200 response is returned. When one of the
   conditions above is met, haproxy will return 503 instead of 200. This is
   very useful to report a site failure to an external component which may base
   routing advertisements between multiple sites on the availability reported by
   haproxy. In this case, one would rely on an ACL involving the "nbsrv"
   criterion. Note that "monitor fail" only works in HTTP mode. Both status
   messages may be tweaked using "errorfile" or "errorloc" if needed.

   Example:
      frontend www
         mode http
         acl site_dead nbsrv(dynamic) lt 2
         acl site_dead nbsrv(static)  lt 2
         monitor-uri   /site_alive
         monitor fail  if site_dead

   See also : "monitor-net", "monitor-uri", "errorfile", "errorloc"


monitor-net <source>
   Declare a source network which is limited to monitor requests
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    yes   |   yes  |   no
   Arguments :
     <source>  is the source IPv4 address or network which will only be able to
               get monitor responses to any request. It can be either an IPv4
               address, a host name, or an address followed by a slash ('/')
               followed by a mask.

   In TCP mode, any connection coming from a source matching <source> will cause
   the connection to be immediately closed without any log. This allows another
   equipment to probe the port and verify that it is still listening, without
   forwarding the connection to a remote server.

   In HTTP mode, a connection coming from a source matching <source> will be
   accepted, the following response will be sent without waiting for a request,
```



```
   then the connection will be closed : "HTTP/1.0 200 OK". This is normally
   enough for any front-end HTTP probe to detect that the service is UP and
   running without forwarding the request to a backend server. Note that this
   response is sent in raw format, without any transformation. This is important
   as it means that it will not be SSL-encrypted on SSL listeners.

   Monitor requests are processed very early, just after tcp-request connection
   ACLs which are the only ones able to block them. These connections are short
   lived and never wait for any data from the client. They cannot be logged, and
   it is the intended purpose. They are only used to report HAProxy's health to
   an upper component, nothing more. Please note that "monitor fail" rules do
   not apply to connections intercepted by "monitor-net".

   Last, please note that only one "monitor-net" statement can be specified in
   a frontend. If more than one is found, only the last one will be considered.

   Example :
     # addresses .252 and .253 are just probing us.
     frontend www
         monitor-net 192.168.0.252/31

   See also : "monitor fail", "monitor-uri"


monitor-uri <uri>
   Intercept a URI used by external components' monitor requests
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    yes   |   yes  |   no
   Arguments :
     <uri>     is the exact URI which we want to intercept to return HAProxy's
               health status instead of forwarding the request.

   When an HTTP request referencing <uri> will be received on a frontend,
   HAProxy will not forward it nor log it, but instead will return either
   "HTTP/1.0 200 OK" or "HTTP/1.0 503 Service unavailable", depending on failure
   conditions defined with "monitor fail". This is normally enough for any
   front-end HTTP probe to detect that the service is UP and running without
   forwarding the request to a backend server. Note that the HTTP method, the
   version and all headers are ignored, but the request must at least be valid
   at the HTTP level. This keyword may only be used with an HTTP-mode frontend.

   Monitor requests are processed very early. It is not possible to block nor
   divert them using ACLs. They cannot be logged either, and it is the intended
   purpose. They are only used to report HAProxy's health to an upper component,
   nothing more. However, it is possible to add any number of conditions using
   "monitor fail" and ACLs so that the result can be adjusted to whatever check
   can be imagined (most often the number of available servers in a backend).

   Example :
     # Use /haproxy_test to report haproxy's status
     frontend www
         mode http
         monitor-uri /haproxy_test

   See also : "monitor fail", "monitor-net"


option abortonclose
no option abortonclose
   Enable or disable early dropping of aborted requests pending in queues.
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |     no   |   yes  |   yes
   Arguments : none

   In presence of very high loads, the servers will take some time to respond.
```

```
   The per-instance connection queue will inflate, and the response time will
   increase respective to the size of the queue times the average per-session
   response time. When clients will wait for more than a few seconds, they will
   often hit the "STOP" button on their browser, leaving a useless request in
   the queue, and slowing down other users, and the servers as well, because the
   request will eventually be served, then aborted at the first error
   encountered while delivering the response.

   As there is no way to distinguish between a full STOP and a simple output
   close on the client side, HTTP agents should be conservative and consider
   that the client might only have closed its output channel while waiting for
   the response. However, this introduces risks of congestion when lots of users
   do the same, and is completely useless nowadays because probably no client at
   all will close the session while waiting for the response. Some HTTP agents
   support this behaviour (Squid, Apache, HAProxy), and others do not (TUX, most
   hardware-based load balancers). So the probability for a closed input channel
   to represent a user hitting the "STOP" button is close to 100%, and the risk
   of being the single component to break rare but valid traffic is extremely
   low, which adds to the temptation to be able to abort a session early while
   still not served and not pollute the servers.

   In HAProxy, the user can choose the desired behaviour using the option
   "abortonclose". By default (without the option) the behaviour is HTTP
   compliant and aborted requests will be served. But when the option is
   specified, a session with an incoming channel closed will be aborted while
   it is still possible, either pending in the queue for a connection slot, or
   during the connection establishment if the server has not yet acknowledged
   the connection request. This considerably reduces the queue size and the load
   on saturated servers when users are tempted to click on STOP, which in turn
   reduces the response time for other users.

   If this option has been enabled in a "defaults" section, it can be disabled
   in a specific instance by prepending the "no" keyword before it.

   See also : "timeout queue" and server's "maxconn" and "maxqueue" parameters


option accept-invalid-http-request
no option accept-invalid-http-request
  Enable or disable relaxing of HTTP request parsing
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
  Arguments : none

  By default, HAProxy complies with RFC7230 in terms of message parsing. This
  means that invalid characters in header names are not permitted and cause an
  error to be returned to the client. This is the desired behaviour as such
  forbidden characters are essentially used to build attacks exploiting server
  weaknesses, and bypass security filtering. Sometimes, a buggy browser or
  server will emit invalid header names for whatever reason (configuration,
  implementation) and the issue will not be immediately fixed. In such a case,
  it is possible to relax HAProxy's header name parser to accept any character
  even if that does not make sense, by specifying this option. Similarly, the
  list of characters allowed to appear in a URI is well defined by RFC3986, and
  chars 0-31, 32 (space), 34 ('"'), 60 ('<'), 62 ('>'), 92 ('\'), 94 ('^'), 96
  ('`'), 123 ('{'), 124 ('|'), 125 ('}'), 127 (delete) and anything above are
  not allowed at all. Haproxy always blocks a number of them (0..32, 127). The
  remaining ones are blocked by default unless this option is enabled. This
  option also relaxes the test on the HTTP version, it allows HTTP/0.9 requests
  to pass through (no version specified) and multiple digits for both the major
  and the minor version.

  This option should never be enabled by default as it hides application bugs
  and open security breaches. It should only be deployed after a problem has
  been confirmed.
```



```

  When this option is enabled, erroneous header names will still be accepted in
  requests, but the complete request will be captured in order to permit later
  analysis using the "show errors" request on the UNIX stats socket. Similarly,
  requests containing invalid chars in the URI part will be logged. Doing this
  also helps confirming that the issue has been solved.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option accept-invalid-http-response" and "show errors" on the
             stats socket.


option accept-invalid-http-response
no option accept-invalid-http-response
  Enable or disable relaxing of HTTP response parsing
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none

  By default, HAProxy complies with RFC7230 in terms of message parsing. This
  means that invalid characters in header names are not permitted and cause an
  error to be returned to the client. This is the desired behaviour as such
  forbidden characters are essentially used to build attacks exploiting server
  weaknesses, and bypass security filtering. Sometimes, a buggy browser or
  server will emit invalid header names for whatever reason (configuration,
  implementation) and the issue will not be immediately fixed. In such a case,
  it is possible to relax HAProxy's header name parser to accept any character
  even if that does not make sense, by specifying this option. This option also
  relaxes the test on the HTTP version format, it allows multiple digits for
  both the major and the minor version.

  This option should never be enabled by default as it hides application bugs
  and open security breaches. It should only be deployed after a problem has
  been confirmed.

  When this option is enabled, erroneous header names will still be accepted in
  responses, but the complete response will be captured in order to permit
  later analysis using the "show errors" request on the UNIX stats socket.
  Doing this also helps confirming that the issue has been solved.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option accept-invalid-http-request" and "show errors" on the
             stats socket.


option allbackups
no option allbackups
  Use either all backup servers at a time or only the first one
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none

  By default, the first operational backup server gets all traffic when normal
  servers are all down. Sometimes, it may be preferred to use multiple backups
  at once, because one will not be enough. When "option allbackups" is enabled,
  the load balancing will be performed among all backup servers when all normal
  ones are unavailable. The same load balancing algorithm will be used and the
  servers' weights will be respected. Thus, there will not be any priority
  order between the backup servers anymore.

  This option is mostly used with static server farms dedicated to return a
```

```
   "sorry" page when an application is completely offline.

   If this option has been enabled in a "defaults" section, it can be disabled
   in a specific instance by prepending the "no" keyword before it.


option checkcache
no option checkcache
  Analyze all server responses and block responses with cacheable cookies
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |     no   |   yes  |   yes
  Arguments : none

   Some high-level frameworks set application cookies everywhere and do not
   always let enough control to the developer to manage how the responses should
   be cached. When a session cookie is returned on a cacheable object, there is a
   high risk of session crossing or stealing between users traversing the same
   caches. In some situations, it is better to block the response than to let
   some sensitive session information go in the wild.

   The option "checkcache" enables deep inspection of all server responses for
   strict compliance with HTTP specification in terms of cacheability. It
   carefully checks "Cache-control", "Pragma" and "Set-cookie" headers in server
   response to check if there's a risk of caching a cookie on a client-side
   proxy. When this option is enabled, the only responses which can be delivered
   to the client are :
     - all those without "Set-Cookie" header ;
     - all those with a return code other than 200, 203, 206, 300, 301, 410,
       provided that the server has not set a "Cache-control: public" header ;
     - all those that come from a POST request, provided that the server has not
       set a 'Cache-Control: public' header ;
     - those with a 'Pragma: no-cache' header
     - those with a 'Cache-control: private' header
     - those with a 'Cache-control: no-store' header
     - those with a 'Cache-control: max-age=0' header
     - those with a 'Cache-control: s-maxage=0' header
     - those with a 'Cache-control: no-cache' header
     - those with a 'Cache-control: no-cache="set-cookie"' header
     - those with a 'Cache-control: no-cache="set-cookie,' header
       (allowing other fields after set-cookie)

   If a response doesn't respect these requirements, then it will be blocked
   just as if it was from an "rspdeny" filter, with an "HTTP 502 bad gateway".
   The session state shows "PH--" meaning that the proxy blocked the response
   during headers processing. Additionally, an alert will be sent in the logs so
   that admins are informed that there's something to be fixed.

   Due to the high impact on the application, the application should be tested
   in depth with the option enabled before going to production. It is also a
   good practice to always activate it during tests, even if it is not used in
   production, as it will report potentially dangerous application behaviours.

   If this option has been enabled in a "defaults" section, it can be disabled
   in a specific instance by prepending the "no" keyword before it.


option clitcpka
no option clitcpka
  Enable or disable the sending of TCP keepalive packets on the client side
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
  Arguments : none

   When there is a firewall or any session-aware component between a client and
   a server, and when the protocol involves very long sessions with long idle
```



```
   periods (eg: remote desktops), there is a risk that one of the intermediate
   components decides to expire a session which has remained idle for too long.

   Enabling socket-level TCP keep-alives makes the system regularly send packets
   to the other end of the connection, leaving it active. The delay between
   keep-alive probes is controlled by the system only and depends both on the
   operating system and its tuning parameters.

   It is important to understand that keep-alive packets are neither emitted nor
   received at the application level. It is only the network stacks which sees
   them. For this reason, even if one side of the proxy already uses keep-alives
   to maintain its connection alive, those keep-alive packets will not be
   forwarded to the other side of the proxy.

   Please note that this has nothing to do with HTTP keep-alive.

   Using option "clitcpka" enables the emission of TCP keep-alive probes on the
   client side of a connection, which should help when session expirations are
   noticed between HAProxy and a client.

   If this option has been enabled in a "defaults" section, it can be disabled
   in a specific instance by prepending the "no" keyword before it.

   See also : "option srvtcpka", "option tcpka"


option contstats
  Enable continuous traffic statistics updates
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
  Arguments : none

   By default, counters used for statistics calculation are incremented
   only when a session finishes. It works quite well when serving small
   objects, but with big ones (for example large images or archives) or
   with A/V streaming, a graph generated from haproxy counters looks like
   a hedgehog. With this option enabled counters get incremented continuously,
   during a whole session. Recounting touches a hotpath directly so
   it is not enabled by default, as it has small performance impact (~0.5%).


option dontlog-normal
no option dontlog-normal
  Enable or disable logging of normal, successful connections
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
  Arguments : none

   There are large sites dealing with several thousand connections per second
   and for which logging is a major pain. Some of them are even forced to turn
   logs off and cannot debug production issues. Setting this option ensures that
   normal connections, those which experience no error, no timeout, no retry nor
   redispatch, will not be logged. This leaves disk space for anomalies. In HTTP
   mode, the response status code is checked and return codes 5xx will still be
   logged.

   It is strongly discouraged to use this option as most of the time, the key to
   complex issues is in the normal logs which will not be logged here. If you
   need to separate logs, see the "log-separate-errors" option instead.

   See also : "log", "dontlognull", "log-separate-errors" and section 8 about
              logging.


option dontlognull
```

```
no option dontlognull
  Enable or disable logging of null connections
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
  Arguments : none

  In certain environments, there are components which will regularly connect to
  various systems to ensure that they are still alive. It can be the case from
  another load balancer as well as from monitoring systems. By default, even a
  simple port probe or scan will produce a log. If those connections pollute
  the logs too much, it is possible to enable option "dontlognull" to indicate
  that a connection on which no data has been transferred will not be logged,
  which typically corresponds to those probes. Note that errors will still be
  returned to the client and accounted for in the stats. If this is not what is
  desired, option http-ignore-probes can be used instead.

  It is generally recommended not to use this option in uncontrolled
  environments (eg: internet), otherwise scans and other malicious activities
  would not be logged.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "log", "http-ignore-probes", "monitor-net", "monitor-uri", and
             section 8 about logging.


option forceclose
no option forceclose
  Enable or disable active connection closing after response is transferred.
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  Some HTTP servers do not necessarily close the connections when they receive
  the "Connection: close" set by "option httpclose", and if the client does not
  close either, then the connection remains open till the timeout expires. This
  causes high number of simultaneous connections on the servers and shows high
  global session times in the logs.

  When this happens, it is possible to use "option forceclose". It will
  actively close the outgoing server channel as soon as the server has finished
  to respond and release some resources earlier than with "option httpclose".

  This option may also be combined with "option http-pretend-keepalive", which
  will disable sending of the "Connection: close" header, but will still cause
  the connection to be closed once the whole response is received.

  This option disables and replaces any previous "option httpclose", "option
  http-server-close", "option http-keep-alive", or "option http-tunnel".

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option httpclose" and "option http-pretend-keepalive"


option forwardfor [ except <network> ] [ header <name> ] [ if-none ]
  Enable insertion of the X-Forwarded-For header to requests sent to servers
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments :
    <network> is an optional argument used to disable this option for sources
              matching <network>
    <name>    an optional argument to specify a different "X-Forwarded-For"
```



```
              header name.

  Since HAProxy works in reverse-proxy mode, the servers see its IP address as
  their client address. This is sometimes annoying when the client's IP address
  is expected in server logs. To solve this problem, the well-known HTTP header
  "X-Forwarded-For" may be added by HAProxy to all requests sent to the server.
  This header contains a value representing the client's IP address. Since this
  header is always appended at the end of the existing header list, the server
  must be configured to always use the last occurrence of this header only. See
  the server's manual to find how to enable use of this standard header. Note
  that only the last occurrence of the header must be used, since it is really
  possible that the client has already brought one.

  The keyword "header" may be used to supply a different header name to replace
  the default "X-Forwarded-For". This can be useful where you might already
  have a "X-Forwarded-For" header from a different application (eg: stunnel),
  and you need preserve it. Also if your backend server doesn't use the
  "X-Forwarded-For" header and requires different one (eg: Zeus Web Servers
  require "X-Cluster-Client-IP").

  Sometimes, a same HAProxy instance may be shared between a direct client
  access and a reverse-proxy access (for instance when an SSL reverse-proxy is
  used to decrypt HTTPS traffic). It is possible to disable the addition of the
  header for a known source address or network by adding the "except" keyword
  followed by the network address. In this case, any source IP matching the
  network will not cause an addition of this header. Most common uses are with
  private networks or 127.0.0.1.

  Alternatively, the keyword "if-none" states that the header will only be
  added if it is not present. This should only be used in perfectly trusted
  environment, as this might cause a security issue if headers reaching haproxy
  are under the control of the end-user.

  This option may be specified either in the frontend or in the backend. If at
  least one of them uses it, the header will be added. Note that the backend's
  setting of the header subargument takes precedence over the frontend's if
  both are defined. In the case of the "if-none" argument, if at least one of
  the frontend or the backend does not specify it, it wants the addition to be
  mandatory, so it wins.

  Examples :
    # Public HTTP address also used by stunnel on the same machine
    frontend www
        mode http
        option forwardfor except 127.0.0.1  # stunnel already adds the header

    # Those servers want the IP Address in X-Client
    backend www
        mode http
        option forwardfor header X-Client

  See also : "option httpclose", "option http-server-close",
             "option forceclose", "option http-keep-alive"


option http-buffer-request
no option http-buffer-request
  Enable or disable waiting for whole HTTP request body before proceeding
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  It is sometimes desirable to wait for the body of an HTTP request before
  taking a decision. This is what is being done by "balance url_param" for
  example. The first use case is to buffer requests from slow clients before
```

```
   connecting to the server. Another use case consists in taking the routing
   decision based on the request body's contents. This option placed in a
   frontend or backend forces the HTTP processing to wait until either the whole
   body is received, or the request buffer is full, or the first chunk is
   complete in case of chunked encoding. It can have undesired side effects with
   some applications abusing HTTP by expecting unbufferred transmissions between
   the frontend and the backend, so this should definitely not be used by
   default.

   See also : "option http-no-delay", "timeout http-request"


option http-ignore-probes
no option http-ignore-probes
  Enable or disable logging of null connections and request timeouts
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
  Arguments : none

  Recently some browsers started to implement a "pre-connect" feature
  consisting in speculatively connecting to some recently visited web sites
  just in case the user would like to visit them. This results in many
  connections being established to web sites, which end up in 408 Request
  Timeout if the timeout strikes first, or 400 Bad Request when the browser
  decides to close them first. These ones pollute the log and feed the error
  counters. There was already "option dontlognull" but it's insufficient in
  this case. Instead, this option does the following things :
     - prevent any 400/408 message from being sent to the client if nothing
       was received over a connection before it was closed ;
     - prevent any log from being emitted in this situation ;
     - prevent any error counter from being incremented

  That way the empty connection is silently ignored. Note that it is better
  not to use this unless it is clear that it is needed, because it will hide
  real problems. The most common reason for not receiving a request and seeing
  a 408 is due to an MTU inconsistency between the client and an intermediary
  element such as a VPN, which blocks too large packets. These issues are
  generally seen with POST requests as well as GET with large cookies. The logs
  are often the only way to detect them.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "log", "dontlognull", "errorfile", and section 8 about logging.


option http-keep-alive
no option http-keep-alive
  Enable or disable HTTP keep-alive from client to server
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  By default HAProxy operates in keep-alive mode with regards to persistent
  connections: for each connection it processes each request and response, and
  leaves the connection idle on both sides between the end of a response and the
  start of a new request. This mode may be changed by several options such as
  "option http-server-close", "option forceclose", "option httpclose" or
  "option http-tunnel". This option allows to set back the keep-alive mode,
  which can be useful when another mode was used in a defaults section.

  Setting "option http-keep-alive" enables HTTP keep-alive mode on the client-
  and server- sides. This provides the lowest latency on the client side (slow
  network) and the fastest session reuse on the server side at the expense
  of maintaining idle connections to the servers. In general, it is possible
```



```
  with this option to achieve approximately twice the request rate that the
  "http-server-close" option achieves on small objects. There are mainly two
  situations where this option may be useful :

    - when the server is non-HTTP compliant and authenticates the connection
      instead of requests (eg: NTLM authentication)

    - when the cost of establishing the connection to the server is significant
      compared to the cost of retrieving the associated object from the server.

  This last case can happen when the server is a fast static server of cache.
  In this case, the server will need to be properly tuned to support high enough
  connection counts because connections will last until the client sends another
  request.

  If the client request has to go to another backend or another server due to
  content switching or the load balancing algorithm, the idle connection will
  immediately be closed and a new one re-opened. Option "prefer-last-server" is
  available to try optimize server selection so that if the server currently
  attached to an idle connection is usable, it will be used.

  In general it is preferred to use "option http-server-close" with application
  servers, and some static servers might benefit from "option http-keep-alive".

  At the moment, logs will not indicate whether requests came from the same
  session or not. The accept date reported in the logs corresponds to the end
  of the previous request, and the request time corresponds to the time spent
  waiting for a new request. The keep-alive request time is still bound to the
  timeout defined by "timeout http-keep-alive" or "timeout http-request" if
  not set.

  This option disables and replaces any previous "option httpclose", "option
  http-server-close", "option forceclose" or "option http-tunnel". When backend
  and frontend options differ, all of these 4 options have precedence over
  "option http-keep-alive".

  See also : "option forceclose", "option http-server-close",
             "option prefer-last-server", "option http-pretend-keepalive",
             "option httpclose", and "1.1. The HTTP transaction model".


option http-no-delay
no option http-no-delay
  Instruct the system to favor low interactive delays over performance in HTTP
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  In HTTP, each payload is unidirectional and has no notion of interactivity.
  Any agent is expected to queue data somewhat for a reasonably low delay.
  There are some very rare server-to-server applications that abuse the HTTP
  protocol and expect the payload phase to be highly interactive, with many
  interleaved data chunks in both directions within a single request. This is
  absolutely not supported by the HTTP specification and will not work across
  most proxies or servers. When such applications attempt to do this through
  haproxy, it works but they will experience high delays due to the network
  optimizations which favor performance by instructing the system to wait for
  enough data to be available in order to only send full packets. Typical
  delays are around 200 ms per round trip. Note that this only happens with
  abnormal uses. Normal uses such as CONNECT requests nor WebSockets are not
  affected.

  When "option http-no-delay" is present in either the frontend or the backend
  used by a connection, all such optimizations will be disabled in order to
  make the exchanges as fast as possible. Of course this offers no guarantee on
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   the functionality, as it may break at any other place. But if it works via
   HAProxy, it will work as fast as possible. This option should never be used
   by default, and should never be used at all unless such a buggy application
   is discovered. The impact of using this option is an increase of bandwidth
   usage and CPU usage, which may significantly lower performance in high
   latency environments.

   See also : "option http-buffer-request"


option http-pretend-keepalive
no option http-pretend-keepalive
  Define whether haproxy will announce keepalive to the server or not
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  When running with "option http-server-close" or "option forceclose", haproxy
  adds a "Connection: close" header to the request forwarded to the server.
  Unfortunately, when some servers see this header, they automatically refrain
  from using the chunked encoding for responses of unknown length, while this
  is totally unrelated. The immediate effect is that this prevents haproxy from
  maintaining the client connection alive. A second effect is that a client or
  a cache could receive an incomplete response without being aware of it, and
  consider the response complete.

  By setting "option http-pretend-keepalive", haproxy will make the server
  believe it will keep the connection alive. The server will then not fall back
  to the abnormal undesired above. When haproxy gets the whole response, it
  will close the connection with the server just as it would do with the
  "forceclose" option. That way the client gets a normal response and the
  connection is correctly closed on the server side.

  It is recommended not to enable this option by default, because most servers
  will more efficiently close the connection themselves after the last packet,
  and release its buffers slightly earlier. Also, the added packet on the
  network could slightly reduce the overall peak performance. However it is
  worth noting that when this option is enabled, haproxy will have slightly
  less work to do. So if haproxy is the bottleneck on the whole architecture,
  enabling this option might save a few CPU cycles.

  This option may be set both in a frontend and in a backend. It is enabled if
  at least one of the frontend or backend holding a connection has it enabled.
  This option may be combined with "option httpclose", which will cause
  keepalive to be announced to the server and close to be announced to the
  client. This practice is discouraged though.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option forceclose", "option http-server-close", and
             "option http-keep-alive"


option http-server-close
no option http-server-close
  Enable or disable HTTP connection closing on the server side
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  By default HAProxy operates in keep-alive mode with regards to persistent
  connections: for each connection it processes each request and response, and
  leaves the connection idle on both sides between the end of a response and
  the start of a new request. This mode may be changed by several options such
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  as "option http-server-close", "option forceclose", "option httpclose" or
  "option http-tunnel". Setting "option http-server-close" enables HTTP
  connection-close mode on the server side while keeping the ability to support
  HTTP keep-alive and pipelining on the client side.  This provides the lowest
  latency on the client side (slow network) and the fastest session reuse on
  the server side to save server resources, similarly to "option forceclose".
  It also permits non-keepalive capable servers to be served in keep-alive mode
  to the clients if they conform to the requirements of RFC2616. Please note
  that some servers do not always conform to those requirements when they see
  "Connection: close" in the request. The effect will be that keep-alive will
  never be used. A workaround consists in enabling "option
  http-pretend-keepalive".

  At the moment, logs will not indicate whether requests came from the same
  session or not. The accept date reported in the logs corresponds to the end
  of the previous request, and the request time corresponds to the time spent
  waiting for a new request. The keep-alive request time is still bound to the
  timeout defined by "timeout http-keep-alive" or "timeout http-request" if
  not set.

  This option may be set both in a frontend and in a backend. It is enabled if
  at least one of the frontend or backend holding a connection has it enabled.
  It disables and replaces any previous "option httpclose", "option forceclose",
  "option http-tunnel" or "option http-keep-alive". Please check section 4
  ("Proxies") to see how this option combines with others when frontend and
  backend options differ.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option forceclose", "option http-pretend-keepalive",
             "option httpclose", "option http-keep-alive", and
             "1.1. The HTTP transaction model".


option http-tunnel
no option http-tunnel
  Disable or enable HTTP connection processing after first transaction
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  By default HAProxy operates in keep-alive mode with regards to persistent
  connections: for each connection it processes each request and response, and
  leaves the connection idle on both sides between the end of a response and
  the start of a new request. This mode may be changed by several options such
  as "option http-server-close", "option forceclose", "option httpclose" or
  "option http-tunnel".

  Option "http-tunnel" disables any HTTP processing past the first request and
  the first response. This is the mode which was used by default in versions
  1.0 to 1.5-dev21. It is the mode with the lowest processing overhead, which
  is normally not needed anymore unless in very specific cases such as when
  using an in-house protocol that looks like HTTP but is not compatible, or
  just to log one request per client in order to reduce log size. Note that
  everything which works at the HTTP level, including header parsing/addition,
  cookie processing or content switching will only work for the first request
  and will be ignored after the first response.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option forceclose", "option http-server-close",
             "option httpclose", "option http-keep-alive", and
             "1.1. The HTTP transaction model".
```

```
5331
5332
5333  option http-use-proxy-header
5334  no option http-use-proxy-header
5335    Make use of non-standard Proxy-Connection header instead of Connection
5336    May be used in sections :   defaults | frontend | listen | backend
5337                                   yes   |    yes   |   yes  |   no
5338    Arguments : none
5339
5340    While RFC2616 explicitly states that HTTP/1.1 agents must use the
5341    Connection header to indicate their wish of persistent or non-persistent
5342    connections, both browsers and proxies ignore this header for proxied
5343    connections and make use of the undocumented, non-standard Proxy-Connection
5344    header instead. The issue begins when trying to put a load balancer between
5345    browsers and such proxies, because there will be a difference between what
5346    haproxy understands and what the client and the proxy agree on.
5347
5348    By setting this option in a frontend, haproxy can automatically switch to use
5349    that non-standard header if it sees proxied requests. A proxied request is
5350    defined here as one where the URI begins with neither a '/' nor a '*'. The
5351    choice of header only affects requests passing through proxies making use of
5352    one of the "httpclose", "forceclose" and "http-server-close" options. Note
5353    that this option can only be specified in a frontend and will affect the
5354    request along its whole life.
5355
5356    Also, when this option is set, a request which requires authentication will
5357    automatically switch to use proxy authentication headers if it is itself a
5358    proxied request. That makes it possible to check or enforce authentication in
5359    front of an existing proxy.
5360
5361    This option should normally never be used, except in front of a proxy.
5362
5363    See also : "option httpclose", "option forceclose" and "option
5364               http-server-close".
5365
5366
5367  option httpchk
5368  option httpchk <uri>
5369  option httpchk <method> <uri>
5370  option httpchk <method> <uri> <version>
5371    Enable HTTP protocol to check on the servers health
5372    May be used in sections :   defaults | frontend | listen | backend
5373                                   yes   |    no    |   yes  |   yes
5374    Arguments :
5375      <method>  is the optional HTTP method used with the requests. When not set,
5376                the "OPTIONS" method is used, as it generally requires low server
5377                processing and is easy to filter out from the logs. Any method
5378                may be used, though it is not recommended to invent non-standard
5379                ones.
5380
5381      <uri>     is the URI referenced in the HTTP requests. It defaults to " / "
5382                which is accessible by default on almost any server, but may be
5383                changed to any other URI. Query strings are permitted.
5384
5385      <version> is the optional HTTP version string. It defaults to "HTTP/1.0"
5386                but some servers might behave incorrectly in HTTP 1.0, so turning
5387                it to HTTP/1.1 may sometimes help. Note that the Host field is
5388                mandatory in HTTP/1.1, and as a trick, it is possible to pass it
5389                after "\r\n" following the version string.
5390
5391    By default, server health checks only consist in trying to establish a TCP
5392    connection. When "option httpchk" is specified, a complete HTTP request is
5393    sent once the TCP connection is established, and responses 2xx and 3xx are
5394    considered valid, while all other ones indicate a server failure, including
5395    the lack of any response.
```



```
5396
5397    The port and interval are specified in the server configuration.
5398
5399    This option does not necessarily require an HTTP backend, it also works with
5400    plain TCP backends. This is particularly useful to check simple scripts bound
5401    to some dedicated ports using the inetd daemon.
5402
5403    Examples :
5404        # Relay HTTPS traffic to Apache instance and check service availability
5405        # using HTTP request "OPTIONS * HTTP/1.1" on port 80.
5406        backend https_relay
5407            mode tcp
5408            option httpchk OPTIONS * HTTP/1.1\r\nHost:\ www
5409            server apache1 192.168.1.1:443 check port 80
5410
5411    See also : "option ssl-hello-chk", "option smtpchk", "option mysql-check",
5412               "option pgsql-check", "http-check" and the "check", "port" and
5413               "inter" server options.
5414
5415
5416  option httpclose
5417  no option httpclose
5418    Enable or disable passive HTTP connection closing
5419    May be used in sections :   defaults | frontend | listen | backend
5420                                   yes   |    yes   |   yes  |   yes
5421    Arguments : none
5422
5423    By default HAProxy operates in keep-alive mode with regards to persistent
5424    connections: for each connection it processes each request and response, and
5425    leaves the connection idle on both sides between the end of a response and
5426    the start of a new request. This mode may be changed by several options such
5427    as "option http-server-close", "option forceclose", "option httpclose" or
5428    "option http-tunnel".
5429
5430    If "option httpclose" is set, HAProxy will work in HTTP tunnel mode and check
5431    if a "Connection: close" header is already set in each direction, and will
5432    add one if missing. Each end should react to this by actively closing the TCP
5433    connection after each transfer, thus resulting in a switch to the HTTP close
5434    mode. Any "Connection" header different from "close" will also be removed.
5435    Note that this option is deprecated since what it does is very cheap but not
5436    reliable. Using "option http-server-close" or "option forceclose" is strongly
5437    recommended instead.
5438
5439    It seldom happens that some servers incorrectly ignore this header and do not
5440    close the connection even though they reply "Connection: close". For this
5441    reason, they are not compatible with older HTTP 1.0 browsers. If this happens
5442    it is possible to use the "option forceclose" which actively closes the
5443    request connection once the server responds. Option "forceclose" also
5444    releases the server connection earlier because it does not have to wait for
5445    the client to acknowledge it.
5446
5447    This option may be set both in a frontend and in a backend. It is enabled if
5448    at least one of the frontend or backend holding a connection has it enabled.
5449    It disables and replaces any previous "option http-server-close",
5450    "option forceclose", "option http-keep-alive" or "option http-tunnel". Please
5451    check section 4 ("Proxies") to see how this option combines with others when
5452    frontend and backend options differ.
5453
5454    If this option has been enabled in a "defaults" section, it can be disabled
5455    in a specific instance by prepending the "no" keyword before it.
5456
5457    See also : "option forceclose", "option http-server-close" and
5458               "1.1. The HTTP transaction model".
5459
5460
```

```
option httplog [ clf ]
  Enable logging of HTTP request, session state and timers
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments :
    clf       if the "clf" argument is added, then the output format will be
              the CLF format instead of HAProxy's default HTTP format. You can
              use this when you need to feed HAProxy's logs through a specific
              log analyser which only support the CLF format and which is not
              extensible.

  By default, the log output format is very poor, as it only contains the
  source and destination addresses, and the instance name. By specifying
  "option httplog", each log line turns into a much richer format including,
  but not limited to, the HTTP request, the connection timers, the session
  status, the connections numbers, the captured headers and cookies, the
  frontend, backend and server name, and of course the source address and
  ports.

  This option may be set either in the frontend or the backend.

  Specifying only "option httplog" will automatically clear the 'clf' mode
  if it was set by default.

  See also :  section 8 about logging.


option http_proxy
no option http_proxy
  Enable or disable plain HTTP proxy mode
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  It sometimes happens that people need a pure HTTP proxy which understands
  basic proxy requests without caching nor any fancy feature. In this case,
  it may be worth setting up an HAProxy instance with the "option http_proxy"
  set. In this mode, no server is declared, and the connection is forwarded to
  the IP address and port found in the URL after the "http://" scheme.

  No host address resolution is performed, so this only works when pure IP
  addresses are passed. Since this option's usage perimeter is rather limited,
  it will probably be used only by experts who know they need exactly it. Last,
  if the clients are susceptible of sending keep-alive requests, it will be
  needed to add "option httpclose" to ensure that all requests will correctly
  be analyzed.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  Example :
    # this backend understands HTTP proxy requests and forwards them directly.
    backend direct_forward
        option httpclose
        option http_proxy

  See also : "option httpclose"


option independent-streams
no option independent-streams
  Enable or disable independent timeout processing for both directions
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |  yes
  Arguments : none
```



```

  By default, when data is sent over a socket, both the write timeout and the
  read timeout for that socket are refreshed, because we consider that there is
  activity on that socket, and we have no other means of guessing if we should
  receive data or not.

  While this default behaviour is desirable for almost all applications, there
  exists a situation where it is desirable to disable it, and only refresh the
  read timeout if there are incoming data. This happens on sessions with large
  timeouts and low amounts of exchanged data such as telnet session. If the
  server suddenly disappears, the output data accumulates in the system's
  socket buffers, both timeouts are correctly refreshed, and there is no way
  to know the server does not receive them, so we don't timeout. However, when
  the underlying protocol always echoes sent data, it would be enough by itself
  to detect the issue using the read timeout. Note that this problem does not
  happen with more verbose protocols because data won't accumulate long in the
  socket buffers.

  When this option is set on the frontend, it will disable read timeout updates
  on data sent to the client. There probably is little use of this case. When
  the option is set on the backend, it will disable read timeout updates on
  data sent to the server. Doing so will typically break large HTTP posts from
  slow lines, so use it with caution.

  Note: older versions used to call this setting "option independent-streams"
        with a spelling mistake. This spelling is still supported but
        deprecated.

  See also : "timeout client", "timeout server" and "timeout tunnel"


option ldap-check
  Use LDAPv3 health checks for server testing
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none

  It is possible to test that the server correctly talks LDAPv3 instead of just
  testing that it accepts the TCP connection. When this option is set, an
  LDAPv3 anonymous simple bind message is sent to the server, and the response
  is analyzed to find an LDAPv3 bind response message.

  The server is considered valid only when the LDAP response contains success
  resultCode (http://tools.ietf.org/html/rfc4511#section-4.1.9).

  Logging of bind requests is server dependent see your documentation how to
  configure it.

  Example :
        option ldap-check

  See also : "option httpchk"


option external-check
  Use external processes for server health checks
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes

  It is possible to test the health of a server using an external command.
  This is achieved by running the executable set using "external-check
  command".

  Requires the "external-check" global to be set.

```

```
   See also : "external-check", "external-check command", "external-check path"


option log-health-checks
no option log-health-checks
  Enable or disable logging of health checks status updates
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |  yes
  Arguments : none

  By default, failed health check are logged if server is UP and successful
  health checks are logged if server is DOWN, so the amount of additional
  information is limited.

  When this option is enabled, any change of the health check status or to
  the server's health will be logged, so that it becomes possible to know
  that a server was failing occasional checks before crashing, or exactly when
  it failed to respond a valid HTTP status, then when the port started to
  reject connections, then when the server stopped responding at all.

  Note that status changes not caused by health checks (eg: enable/disable on
  the CLI) are intentionally not logged by this option.

  See also: "option httpchk", "option ldap-check", "option mysql-check",
            "option pgsql-check", "option redis-check", "option smtpchk",
            "option tcp-check", "log" and section 8 about logging.


option log-separate-errors
no option log-separate-errors
  Change log level for non-completely successful connections
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
  Arguments : none

  Sometimes looking for errors in logs is not easy. This option makes haproxy
  raise the level of logs containing potentially interesting information such
  as errors, timeouts, retries, redispatches, or HTTP status codes 5xx. The
  level changes from "info" to "err". This makes it possible to log them
  separately to a different file with most syslog daemons. Be careful not to
  remove them from the original file, otherwise you would lose ordering which
  provides very important information.

  Using this option, large sites dealing with several thousand connections per
  second may log normal traffic to a rotating buffer and only archive smaller
  error logs.

  See also : "log", "dontlognull", "dontlog-normal" and section 8 about
             logging.


option logasap
no option logasap
  Enable or disable early logging of HTTP requests
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
  Arguments : none

  By default, HTTP requests are logged upon termination so that the total
  transfer time and the number of bytes appear in the logs. When large objects
  are being transferred, it may take a while before the request appears in the
  logs. Using "option logasap", the request gets logged as soon as the server
  sends the complete headers. The only missing information in the logs will be
  the total number of bytes which will indicate everything except the amount
  of data transferred, and the total time which will not take the transfer
```



```
  time into account. In such a situation, it's a good practice to capture the
  "Content-Length" response header so that the logs at least indicate how many
  bytes are expected to be transferred.

  Examples :
      listen http_proxy 0.0.0.0:80
          mode http
          option httplog
          option logasap
          log 192.168.2.200 local3

    >>> Feb  6 12:14:14 localhost \
          haproxy[14389]: 10.0.1.2:33317 [06/Feb/2009:12:14:14.655] http-in \
          static/srv1 9/10/7/14/+30 200 +243 - - ---- 3/1/1/1/0 1/0 \
          "GET /image.iso HTTP/1.0"

  See also : "option httplog", "capture response header", and section 8 about
             logging.


option mysql-check [ user <username> [ post-41 ] ]
  Use MySQL health checks for server testing
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments :
    <username> This is the username which will be used when connecting to MySQL
               server.
    post-41    Send post v4.1 client compatible checks

  If you specify a username, the check consists of sending two MySQL packet,
  one Client Authentication packet, and one QUIT packet, to correctly close
  MySQL session. We then parse the MySQL Handshake Initialisation packet and/or
  Error packet. It is a basic but useful test which does not produce error nor
  aborted connect on the server. However, it requires adding an authorization
  in the MySQL table, like this :

      USE mysql;
      INSERT INTO user (Host,User) values ('<ip_of_haproxy>','<username>');
      FLUSH PRIVILEGES;

  If you don't specify a username (it is deprecated and not recommended), the
  check only consists in parsing the Mysql Handshake Initialisation packet or
  Error packet, we don't send anything in this mode. It was reported that it
  can generate lockout if check is too frequent and/or if there is not enough
  traffic. In fact, you need in this case to check MySQL "max_connect_errors"
  value as if a connection is established successfully within fewer than MySQL
  "max_connect_errors" attempts after a previous connection was interrupted,
  the error count for the host is cleared to zero. If HAProxy's server get
  blocked, the "FLUSH HOSTS" statement is the only way to unblock it.

  Remember that this does not check database presence nor database consistency.
  To do this, you can use an external check with xinetd for example.

  The check requires MySQL >=3.22, for older version, please use TCP check.

  Most often, an incoming MySQL server needs to see the client's IP address for
  various purposes, including IP privilege matching and connection logging.
  When possible, it is often wise to masquerade the client's IP address when
  connecting to the server using the "usesrc" argument of the "source" keyword,
  which requires the transparent proxy feature to be compiled in, and the MySQL
  server to route the client via the machine hosting haproxy.

  See also: "option httpchk"
```

```
option nolinger
no option nolinger
  Enable or disable immediate session resource cleaning after close
  May be used in sections:    defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  When clients or servers abort connections in a dirty way (eg: they are
  physically disconnected), the session timeouts triggers and the session is
  closed. But it will remain in FIN_WAIT1 state for some time in the system,
  using some resources and possibly limiting the ability to establish newer
  connections.

  When this happens, it is possible to activate "option nolinger" which forces
  the system to immediately remove any socket's pending data on close. Thus,
  the session is instantly purged from the system's tables. This usually has
  side effects such as increased number of TCP resets due to old retransmits
  getting immediately rejected. Some firewalls may sometimes complain about
  this too.

  For this reason, it is not recommended to use this option when not absolutely
  needed. You know that you need it when you have thousands of FIN_WAIT1
  sessions on your system (TIME_WAIT ones do not count).

  This option may be used both on frontends and backends, depending on the side
  where it is required. Use it on the frontend for clients, and on the backend
  for servers.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.


option originalto [ except <network> ] [ header <name> ]
  Enable insertion of the X-Original-To header to requests sent to servers
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments :
    <network> is an optional argument used to disable this option for sources
              matching <network>
    <name>    an optional argument to specify a different "X-Original-To"
              header name.

  Since HAProxy can work in transparent mode, every request from a client can
  be redirected to the proxy and HAProxy itself can proxy every request to a
  complex SQUID environment and the destination host from SO_ORIGINAL_DST will
  be lost. This is annoying when you want access rules based on destination ip
  addresses. To solve this problem, a new HTTP header "X-Original-To" may be
  added by HAProxy to all requests sent to the server. This header contains a
  value representing the original destination IP address. Since this must be
  configured to always use the last occurrence of this header only. Note that
  only the last occurrence of the header must be used, since it is really
  possible that the client has already brought one.

  The keyword "header" may be used to supply a different header name to replace
  the default "X-Original-To". This can be useful where you might already
  have a "X-Original-To" header from a different application, and you need
  preserve it. Also if your backend server doesn't use the "X-Original-To"
  header and requires different one.

  Sometimes, a same HAProxy instance may be shared between a direct client
  access and a reverse-proxy access (for instance when an SSL reverse-proxy is
  used to decrypt HTTPS traffic). It is possible to disable the addition of the
  header for a known source address or network by adding the "except" keyword
  followed by the network address. In this case, any source IP matching the
  network will not cause an addition of this header. Most common uses are with
```



```
  private networks or 127.0.0.1.

  This option may be specified either in the frontend or in the backend. If at
  least one of them uses it, the header will be added. Note that the backend's
  setting of the header subargument takes precedence over the frontend's if
  both are defined.

  Examples :
    # Original Destination address
    frontend www
        mode http
        option originalto except 127.0.0.1

    # Those servers want the IP Address in X-Client-Dst
    backend www
        mode http
        option originalto header X-Client-Dst

  See also : "option httpclose", "option http-server-close",
             "option forceclose"


option persist
no option persist
  Enable or disable forced persistence on down servers
  May be used in sections:    defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none

  When an HTTP request reaches a backend with a cookie which references a dead
  server, by default it is redispatched to another server. It is possible to
  force the request to be sent to the dead server first using "option persist"
  if absolutely needed. A common use case is when servers are under extreme
  load and spend their time flapping. In this case, the users would still be
  directed to the server they opened the session on, in the hope they would be
  correctly served. It is recommended to use "option redispatch" in conjunction
  with this option so that in the event it would not be possible to connect to
  the server at all (server definitely dead), the client would finally be
  redirected to another valid server.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option redispatch", "retries", "force-persist"


option pgsql-check [ user <username> ]
  Use PostgreSQL health checks for server testing
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments :
    <username> This is the username which will be used when connecting to
               PostgreSQL server.

  The check sends a PostgreSQL StartupMessage and waits for either
  Authentication request or ErrorResponse message. It is a basic but useful
  test which does not produce error nor aborted connect on the server.
  This check is identical with the "mysql-check".

  See also: "option httpchk"


option prefer-last-server
no option prefer-last-server
  Allow multiple load balanced requests to remain on the same server
```

```
   May be used in sections:    defaults | frontend | listen | backend
                                  yes   |    no    |   yes  |   yes
   Arguments : none

   When the load balancing algorithm in use is not deterministic, and a previous
   request was sent to a server to which haproxy still holds a connection, it is
   sometimes desirable that subsequent requests on a same session go to the same
   server as much as possible. Note that this is different from persistence, as
   we only indicate a preference which haproxy tries to apply without any form
   of warranty. The real use is for keep-alive connections sent to servers. When
   this option is used, haproxy will try to reuse the same connection that is
   attached to the server instead of rebalancing to another server, causing a
   close of the connection. This can make sense for static file servers. It does
   not make much sense to use this in combination with hashing algorithms. Note,
   haproxy already automatically tries to stick to a server which sends a 401 or
   to a proxy which sends a 407 (authentication required). This is mandatory for
   use with the broken NTLM authentication challenge, and significantly helps in
   troubleshooting some faulty applications. Option prefer-last-server might be
   desirable in these environments as well, to avoid redistributing the traffic
   after every other response.

   If this option has been enabled in a "defaults" section, it can be disabled
   in a specific instance by prepending the "no" keyword before it.

   See also: "option http-keep-alive"


option redispatch
option redispatch <interval>
no option redispatch
  Enable or disable session redistribution in case of connection failure
  May be used in sections:    defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments :
    <interval> The optional integer value that controls how often redispatches
               occur when retrying connections. Positive value P indicates a
               redispatch is desired on every Pth retry, and negative value
               N indicate a redispath is desired on the Nth retry prior to the
               last retry. For example, the default of -1 preserves the
               historical behaviour of redispatching on the last retry, a
               positive value of 1 would indicate a redispatch on every retry,
               and a positive value of 3 would indicate a redispatch on every
               third retry. You can disable redispatches with a value of 0.


  In HTTP mode, if a server designated by a cookie is down, clients may
  definitely stick to it because they cannot flush the cookie, so they will not
  be able to access the service anymore.

  Specifying "option redispatch" will allow the proxy to break their
  persistence and redistribute them to a working server.

  It also allows to retry connections to another server in case of multiple
  connection failures. Of course, it requires having "retries" set to a nonzero
  value.

  This form is the preferred form, which replaces both the "redispatch" and
  "redisp" keywords.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "redispatch", "retries", "force-persist"
```



```
option redis-check
  Use redis health checks for server testing
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none

  It is possible to test that the server correctly talks REDIS protocol instead
  of just testing that it accepts the TCP connection. When this option is set,
  a PING redis command is sent to the server, and the response is analyzed to
  find the "+PONG" response message.

  Example :
        option redis-check

  See also : "option httpchk"


option smtpchk
option smtpchk <hello> <domain>
  Use SMTP health checks for server testing
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments :
    <hello>   is an optional argument. It is the "hello" command to use. It can
              be either "HELO" (for SMTP) or "EHLO" (for ESTMP). All other
              values will be turned into the default command ("HELO").

    <domain>  is the domain name to present to the server. It may only be
              specified (and is mandatory) if the hello command has been
              specified. By default, "localhost" is used.

  When "option smtpchk" is set, the health checks will consist in TCP
  connections followed by an SMTP command. By default, this command is
  "HELO localhost". The server's return code is analyzed and only return codes
  starting with a "2" will be considered as valid. All other responses,
  including a lack of response will constitute an error and will indicate a
  dead server.

  This test is meant to be used with SMTP servers or relays. Depending on the
  request, it is possible that some servers do not log each connection attempt,
  so you may want to experiment to improve the behaviour. Using telnet on port
  25 is often easier than adjusting the configuration.

  Most often, an incoming SMTP server needs to see the client's IP address for
  various purposes, including spam filtering, anti-spoofing and logging. When
  possible, it is often wise to masquerade the client's IP address when
  connecting to the server using the "usesrc" argument of the "source" keyword,
  which requires the transparent proxy feature to be compiled in.

  Example :
        option smtpchk HELO mydomain.org

  See also : "option httpchk", "source"


option socket-stats
no option socket-stats

  Enable or disable collecting & providing separate statistics for each socket.
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no

  Arguments : none
```

```
option splice-auto
no option splice-auto
  Enable or disable automatic kernel acceleration on sockets in both directions
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  When this option is enabled either on a frontend or on a backend, haproxy
  will automatically evaluate the opportunity to use kernel tcp splicing to
  forward data between the client and the server, in either direction. Haproxy
  uses heuristics to estimate if kernel splicing might improve performance or
  not. Both directions are handled independently. Note that the heuristics used
  are not much aggressive in order to limit excessive use of splicing. This
  option requires splicing to be enabled at compile time, and may be globally
  disabled with the global option "nosplice". Since splice uses pipes, using it
  requires that there are enough spare pipes.

  Important note: kernel-based TCP splicing is a Linux-specific feature which
  first appeared in kernel 2.6.25. It offers kernel-based acceleration to
  transfer data between sockets without copying these data to user-space, thus
  providing noticeable performance gains and CPU cycles savings. Since many
  early implementations are buggy, corrupt data and/or are inefficient, this
  feature is not enabled by default, and it should be used with extreme care.
  While it is not possible to detect the correctness of an implementation,
  2.6.29 is the first version offering a properly working implementation. In
  case of doubt, splicing may be globally disabled using the global "nosplice"
  keyword.

  Example :
        option splice-auto

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option splice-request", "option splice-response", and global
             options "nosplice" and "maxpipes"


option splice-request
no option splice-request
  Enable or disable automatic kernel acceleration on sockets for requests
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  When this option is enabled either on a frontend or on a backend, haproxy
  will use kernel tcp splicing whenever possible to forward data going from
  the client to the server. It might still use the recv/send scheme if there
  are no spare pipes left. This option requires splicing to be enabled at
  compile time, and may be globally disabled with the global option "nosplice".
  Since splice uses pipes, using it requires that there are enough spare pipes.

  Important note: see "option splice-auto" for usage limitations.

  Example :
        option splice-request

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option splice-auto", "option splice-response", and global options
             "nosplice" and "maxpipes"


option splice-response
```



```
no option splice-response
  Enable or disable automatic kernel acceleration on sockets for responses
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  When this option is enabled either on a frontend or on a backend, haproxy
  will use kernel tcp splicing whenever possible to forward data going from
  the server to the client. It might still use the recv/send scheme if there
  are no spare pipes left. This option requires splicing to be enabled at
  compile time, and may be globally disabled with the global option "nosplice".
  Since splice uses pipes, using it requires that there are enough spare pipes.

  Important note: see "option splice-auto" for usage limitations.

  Example :
        option splice-response

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option splice-auto", "option splice-request", and global options
             "nosplice" and "maxpipes"


option srvtcpka
no option srvtcpka
  Enable or disable the sending of TCP keepalive packets on the server side
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none

  When there is a firewall or any session-aware component between a client and
  a server, and when the protocol involves very long sessions with long idle
  periods (eg: remote desktops), there is a risk that one of the intermediate
  components decides to expire a session which has remained idle for too long.

  Enabling socket-level TCP keep-alives makes the system regularly send packets
  to the other end of the connection, leaving it active. The delay between
  keep-alive probes is controlled by the system only and depends both on the
  operating system and its tuning parameters.

  It is important to understand that keep-alive packets are neither emitted nor
  received at the application level. It is only the network stacks which sees
  them. For this reason, even if one side of the proxy already uses keep-alives
  to maintain its connection alive, those keep-alive packets will not be
  forwarded to the other side of the proxy.

  Please note that this has nothing to do with HTTP keep-alive.

  Using option "srvtcpka" enables the emission of TCP keep-alive probes on the
  server side of a connection, which should help when session expirations are
  noticed between HAProxy and a server.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option clitcpka", "option tcpka"


option ssl-hello-chk
  Use SSLv3 client hello health checks for server testing
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none
```

```
6111
6112    When some SSL-based protocols are relayed in TCP mode through HAProxy, it is
6113    possible to test that the server correctly talks SSL instead of just testing
6114    that it accepts the TCP connection. When "option ssl-hello-chk" is set, pure
6115    SSLv3 client hello messages are sent once the connection is established to
6116    the server, and the response is analyzed to find an SSL server hello message.
6117    The server is considered valid only when the response contains this server
6118    hello message.
6119
6120    All servers tested till there correctly reply to SSLv3 client hello messages,
6121    and most servers tested do not even log the requests containing only hello
6122    messages, which is appreciable.
6123
6124    Note that this check works even when SSL support was not built into haproxy
6125    because it forges the SSL message. When SSL support is available, it is best
6126    to use native SSL health checks instead of this one.
6127
6128    See also: "option httpchk", "check-ssl"
6129
6130
6131  option tcp-check
6132    Perform health checks using tcp-check send/expect sequences
6133    May be used in sections:   defaults | frontend | listen | backend
6134                                  yes    |    no    |   yes  |   yes
6135
6136    This health check method is intended to be combined with "tcp-check" command
6137    lists in order to support send/expect types of health check sequences.
6138
6139    TCP checks currently support 4 modes of operations :
6140      - no "tcp-check" directive : the health check only consists in a connection
6141        attempt, which remains the default mode.
6142
6143      - "tcp-check send" or "tcp-check send-binary" only is mentioned : this is
6144        used to send a string along with a connection opening. With some
6145        protocols, it helps sending a "QUIT" message for example that prevents
6146        the server from logging a connection error for each health check. The
6147        check result will still be based on the ability to open the connection
6148        only.
6149
6150      - "tcp-check expect" only is mentioned : this is used to test a banner.
6151        The connection is opened and haproxy waits for the server to present some
6152        contents which must validate some rules. The check result will be based
6153        on the matching between the contents and the rules. This is suited for
6154        POP, IMAP, SMTP, FTP, SSH, TELNET.
6155
6156      - both "tcp-check send" and "tcp-check expect" are mentioned : this is
6157        used to test a hello-type protocol. Haproxy sends a message, the server
6158        responds and its response is analysed. the check result will be based on
6159        the matching between the response contents and the rules. This is often
6160        suited for protocols which require a binding or a request/response model.
6161        LDAP, MySQL, Redis and SSL are example of such protocols, though they
6162        already all have their dedicated checks with a deeper understanding of
6163        the respective protocols.
6164        In this mode, many questions may be sent and many answers may be
6165        analysed.
6166
6167      A fifth mode can be used to insert comments in different steps of the
6168      script.
6169
6170      For each tcp-check rule you create, you can add a "comment" directive,
6171      followed by a string. This string will be reported in the log and stderr
6172      in debug mode. It is useful to make user-friendly error reporting.
6173      The "comment" is of course optional.
6174
6175
```



```
6176    Examples :
6177           # perform a POP check (analyse only server's banner)
6178           option tcp-check
6179           tcp-check expect string +OK\ POP3\ ready comment POP\ protocol
6180
6181           # perform an IMAP check (analyse only server's banner)
6182           option tcp-check
6183           tcp-check expect string *\ OK\ IMAP4\ ready comment IMAP\ protocol
6184
6185           # look for the redis master server after ensuring it speaks well
6186           # redis protocol, then it exits properly.
6187           # (send a command then analyse the response 3 times)
6188           option tcp-check
6189           tcp-check comment PING\ phase
6190           tcp-check send PING\r\n
6191           tcp-check expect string +PONG
6192           tcp-check comment role\ check
6193           tcp-check send info\ replication\r\n
6194           tcp-check expect string role:master
6195           tcp-check comment QUIT\ phase
6196           tcp-check send QUIT\r\n
6197           tcp-check expect string +OK
6198
6199           forge a HTTP request, then analyse the response
6200           (send many headers before analyzing)
6201           option tcp-check
6202           tcp-check comment forge\ and\ send\ HTTP\ request
6203           tcp-check send HEAD\ /\ HTTP/1.1\r\n
6204           tcp-check send Host:\ www.mydomain.com\r\n
6205           tcp-check send User-Agent:\ HAProxy\ tcpcheck\r\n
6206           tcp-check send \r\n
6207           tcp-check expect rstring HTTP/1\..\ (2..|3..) comment check\ HTTP\ response
6208
6209
6210    See also : "tcp-check expect", "tcp-check send"
6211
6212
6213  option tcp-smart-accept
6214  no option tcp-smart-accept
6215    Enable or disable the saving of one ACK packet during the accept sequence
6216    May be used in sections :   defaults | frontend | listen | backend
6217                                   yes   |    yes   |   yes  |    no
6218    Arguments : none
6219
6220    When an HTTP connection request comes in, the system acknowledges it on
6221    behalf of HAProxy, then the client immediately sends its request, and the
6222    system acknowledges it too while it is notifying HAProxy about the new
6223    connection. HAProxy then reads the request and responds. This means that we
6224    have one TCP ACK sent by the system for nothing, because the request could
6225    very well be acknowledged by HAProxy when it sends its response.
6226
6227    For this reason, in HTTP mode, HAProxy automatically asks the system to avoid
6228    sending this useless ACK on platforms which support it (currently at least
6229    Linux). It must not cause any problem, because the system will send it anyway
6230    after 40 ms if the response takes more time than expected to come.
6231
6232    During complex network debugging sessions, it may be desirable to disable
6233    this optimization because delayed ACKs can make troubleshooting more complex
6234    when trying to identify where packets are delayed. It is then possible to
6235    fall back to normal behaviour by specifying "no option tcp-smart-accept".
6236
6237    It is also possible to force it for non-HTTP proxies by simply specifying
6238    "option tcp-smart-accept". For instance, it can make sense with some services
6239    such as SMTP where the server speaks first.
6240
```

```
   It is recommended to avoid forcing this option in a defaults section. In case
   of doubt, consider setting it back to automatic values by prepending the
   "default" keyword before it, or disabling it using the "no" keyword.

   See also : "option tcp-smart-connect"


option tcp-smart-connect
no option tcp-smart-connect
  Enable or disable the saving of one ACK packet during the connect sequence
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none

  On certain systems (at least Linux), HAProxy can ask the kernel not to
  immediately send an empty ACK upon a connection request, but to directly
  send the buffer request instead. This saves one packet on the network and
  thus boosts performance. It can also be useful for some servers, because they
  immediately get the request along with the incoming connection.

  This feature is enabled when "option tcp-smart-connect" is set in a backend.
  It is not enabled by default because it makes network troubleshooting more
  complex.

  It only makes sense to enable it with protocols where the client speaks first
  such as HTTP. In other situations, if there is no data to send in place of
  the ACK, a normal ACK is sent.

  If this option has been enabled in a "defaults" section, it can be disabled
  in a specific instance by prepending the "no" keyword before it.

  See also : "option tcp-smart-accept"


option tcpka
  Enable or disable the sending of TCP keepalive packets on both sides
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  When there is a firewall or any session-aware component between a client and
  a server, and when the protocol involves very long sessions with long idle
  periods (eg: remote desktops), there is a risk that one of the intermediate
  components decides to expire a session which has remained idle for too long.

  Enabling socket-level TCP keep-alives makes the system regularly send packets
  to the other end of the connection, leaving it active. The delay between
  keep-alive probes is controlled by the system only and depends both on the
  operating system and its tuning parameters.

  It is important to understand that keep-alive packets are neither emitted nor
  received at the application level. It is only the network stacks which sees
  them. For this reason, even if one side of the proxy already uses keep-alives
  to maintain its connection alive, those keep-alive packets will not be
  forwarded to the other side of the proxy.

  Please note that this has nothing to do with HTTP keep-alive.

  Using option "tcpka" enables the emission of TCP keep-alive probes on both
  the client and server sides of a connection. Note that this is meaningful
  only in "defaults" or "listen" sections. If this option is used in a
  frontend, only the client side will get keep-alives, and if this option is
  used in a backend, only the server side will get keep-alives. For this
  reason, it is strongly recommended to explicitly use "option clitcpka" and
  "option srvtcpka" when the configuration is split between frontends and
```



```
  backends.

  See also : "option clitcpka", "option srvtcpka"


option tcplog
  Enable advanced logging of TCP connections with session state and timers
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments : none

  By default, the log output format is very poor, as it only contains the
  source and destination addresses, and the instance name. By specifying
  "option tcplog", each log line turns into a much richer format including, but
  not limited to, the connection timers, the session status, the connections
  numbers, the frontend, backend and server name, and of course the source
  address and ports. This option is useful for pure TCP proxies in order to
  find which of the client or server disconnects or times out. For normal HTTP
  proxies, it's better to use "option httplog" which is even more complete.

  This option may be set either in the frontend or the backend.

  See also :  "option httplog", and section 8 about logging.


option transparent
no option transparent
  Enable client-side transparent proxying
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments : none

  This option was introduced in order to provide layer 7 persistence to layer 3
  load balancers. The idea is to use the OS's ability to redirect an incoming
  connection for a remote address to a local process (here HAProxy), and let
  this process know what address was initially requested. When this option is
  used, sessions without cookies will be forwarded to the original destination
  IP address of the incoming request (which should match that of another
  equipment), while requests with cookies will still be forwarded to the
  appropriate server.

  Note that contrary to a common belief, this option does NOT make HAProxy
  present the client's IP to the server when establishing the connection.

  See also: the "usesrc" argument of the "source" keyword, and the
            "transparent" option of the "bind" keyword.


external-check command <command>
  Executable to run when performing an external-check
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes

  Arguments :
    <command> is the external command to run

  The arguments passed to the to the command are:

  <proxy_address> <proxy_port> <server_address> <server_port>

  The <proxy_address> and <proxy_port> are derived from the first listener
  that is either IPv4, IPv6 or a UNIX socket. In the case of a UNIX socket
  listener the proxy_address will be the path of the socket and the
  <proxy_port> will be the string "NOT_USED". In a backend section, it's not
  possible to determine a listener, and both <proxy_address> and <proxy_port>
```

```
   will have the string value "NOT_USED".

   Some values are also provided through environment variables.

   Environment variables :
     HAPROXY_PROXY_ADDR      The first bind address if available (or empty if not
                             applicable, for example in a "backend" section).

     HAPROXY_PROXY_ID        The backend id.

     HAPROXY_PROXY_NAME      The backend name.

     HAPROXY_PROXY_PORT      The first bind port if available (or empty if not
                             applicable, for example in a "backend" section or
                             for a UNIX socket).

     HAPROXY_SERVER_ADDR     The server address.

     HAPROXY_SERVER_CURCONN  The current number of connections on the server.

     HAPROXY_SERVER_ID       The server id.

     HAPROXY_SERVER_MAXCONN  The server max connections.

     HAPROXY_SERVER_NAME     The server name.

     HAPROXY_SERVER_PORT     The server port if available (or empty for a UNIX
                             socket).

     PATH                    The PATH environment variable used when executing
                             the command may be set using "external-check path".

   If the command executed and exits with a zero status then the check is
   considered to have passed, otherwise the check is considered to have
   failed.

   Example :
         external-check command /bin/true

   See also : "external-check", "option external-check", "external-check path"


 external-check path <path>
   The value of the PATH environment variable used when running an external-check
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    no    |   yes  |   yes

   Arguments :
     <path> is the path used when executing external command to run

   The default path is "".

   Example :
         external-check path "/usr/bin:/bin"

   See also : "external-check", "option external-check",
              "external-check command"


 persist rdp-cookie
 persist rdp-cookie(<name>)
   Enable RDP cookie-based persistence
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    no    |   yes  |   yes
   Arguments :
```



```
     <name>    is the optional name of the RDP cookie to check. If omitted, the
               default cookie name "msts" will be used. There currently is no
               valid reason to change this name.

   This statement enables persistence based on an RDP cookie. The RDP cookie
   contains all information required to find the server in the list of known
   servers. So when this option is set in the backend, the request is analysed
   and if an RDP cookie is found, it is decoded. If it matches a known server
   which is still UP (or if "option persist" is set), then the connection is
   forwarded to this server.

   Note that this only makes sense in a TCP backend, but for this to work, the
   frontend must have waited long enough to ensure that an RDP cookie is present
   in the request buffer. This is the same requirement as with the "rdp-cookie"
   load-balancing method. Thus it is highly recommended to put all statements in
   a single "listen" section.

   Also, it is important to understand that the terminal server will emit this
   RDP cookie only if it is configured for "token redirection mode", which means
   that the "IP address redirection" option is disabled.

   Example :
         listen tse-farm
             bind :3389
             # wait up to 5s for an RDP cookie in the request
             tcp-request inspect-delay 5s
             tcp-request content accept if RDP_COOKIE
             # apply RDP cookie persistence
             persist rdp-cookie
             # if server is unknown, let's balance on the same cookie.
             # alternatively, "balance leastconn" may be useful too.
             balance rdp-cookie
             server srv1 1.1.1.1:3389
             server srv2 1.1.1.2:3389

   See also : "balance rdp-cookie", "tcp-request", the "req_rdp_cookie" ACL and
   the rdp_cookie pattern fetch function.


 rate-limit sessions <rate>
   Set a limit on the number of new sessions accepted per second on a frontend
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    yes   |   yes  |   no
   Arguments :
     <rate>    The <rate> parameter is an integer designating the maximum number
               of new sessions per second to accept on the frontend.

   When the frontend reaches the specified number of new sessions per second, it
   stops accepting new connections until the rate drops below the limit again.
   During this time, the pending sessions will be kept in the socket's backlog
   (in system buffers) and haproxy will not even be aware that sessions are
   pending. When applying very low limit on a highly loaded service, it may make
   sense to increase the socket's backlog using the "backlog" keyword.

   This feature is particularly efficient at blocking connection-based attacks
   or service abuse on fragile servers. Since the session rate is measured every
   millisecond, it is extremely accurate. Also, the limit applies immediately,
   no delay is needed at all to detect the threshold.

   Example : limit the connection rate on SMTP to 10 per second max
         listen smtp
             mode tcp
             bind :25
             rate-limit sessions 10
             server 127.0.0.1:1025
```

```
6501
6502    Note : when the maximum rate is reached, the frontend's status is not changed
6503           but its sockets appear as "WAITING" in the statistics if the
6504           "socket-stats" option is enabled.
6505
6506    See also : the "backlog" keyword and the "fe_sess_rate" ACL criterion.
6507
6508
6509  redirect location <loc> [code <code>] <option> [{if | unless} <condition>]
6510  redirect prefix   <pfx> [code <code>] <option> [{if | unless} <condition>]
6511  redirect scheme   <sch> [code <code>] <option> [{if | unless} <condition>]
6512    Return an HTTP redirection if/unless a condition is matched
6513    May be used in sections :   defaults | frontend | listen | backend
6514                                   no    |    yes   |   yes  |   yes
6515
6516    If/unless the condition is matched, the HTTP request will lead to a redirect
6517    response. If no condition is specified, the redirect applies unconditionally.
6518
6519    Arguments :
6520      <loc>     With "redirect location", the exact value in <loc> is placed into
6521                the HTTP "Location" header. When used in an "http-request" rule,
6522                <loc> value follows the log-format rules and can include some
6523                dynamic values (see Custom Log Format in section 8.2.4).
6524
6525      <pfx>     With "redirect prefix", the "Location" header is built from the
6526                concatenation of <pfx> and the complete URI path, including the
6527                query string, unless the "drop-query" option is specified (see
6528                below). As a special case, if <pfx> equals exactly "/", then
6529                nothing is inserted before the original URI. It allows one to
6530                redirect to the same URL (for instance, to insert a cookie). When
6531                used in an "http-request" rule, <pfx> value follows the log-format
6532                rules and can include some dynamic values (see Custom Log Format
6533                in section 8.2.4).
6534
6535      <sch>     With "redirect scheme", then the "Location" header is built by
6536                concatenating <sch> with "://" then the first occurrence of the
6537                "Host" header, and then the URI path, including the query string
6538                unless the "drop-query" option is specified (see below). If no
6539                path is found or if the path is "*", then "/" is used instead. If
6540                no "Host" header is found, then an empty host component will be
6541                returned, which most recent browsers interpret as redirecting to
6542                the same host. This directive is mostly used to redirect HTTP to
6543                HTTPS. When used in an "http-request" rule, <sch> value follows
6544                the log-format rules and can include some dynamic values (see
6545                Custom Log Format in section 8.2.4).
6546
6547      <code>    The code is optional. It indicates which type of HTTP redirection
6548                is desired. Only codes 301, 302, 303, 307 and 308 are supported,
6549                with 302 used by default if no code is specified. 301 means
6550                "Moved permanently", and a browser may cache the Location. 302
6551                means "Moved temporarily" and means that the browser should not
6552                cache the redirection. 303 is equivalent to 302 except that the
6553                browser will fetch the location with a GET method. 307 is just
6554                like 302 but makes it clear that the same method must be reused.
6555                Likewise, 308 replaces 301 if the same method must be used.
6556
6557      <option>  There are several options which can be specified to adjust the
6558                expected behaviour of a redirection :
6559
6560        - "drop-query"
6561          When this keyword is used in a prefix-based redirection, then the
6562          location will be set without any possible query-string, which is useful
6563          for directing users to a non-secure page for instance. It has no effect
6564          with a location-type redirect.
6565
```



```
6566        - "append-slash"
6567          This keyword may be used in conjunction with "drop-query" to redirect
6568          users who use a URL not ending with a '/' to the same one with the '/'.
6569          It can be useful to ensure that search engines will only see one URL.
6570          For this, a return code 301 is preferred.
6571
6572        - "set-cookie NAME[=value]"
6573          A "Set-Cookie" header will be added with NAME (and optionally "=value")
6574          to the response. This is sometimes used to indicate that a user has
6575          been seen, for instance to protect against some types of DoS. No other
6576          cookie option is added, so the cookie will be a session cookie. Note
6577          that for a browser, a sole cookie name without an equal sign is
6578          different from a cookie with an equal sign.
6579
6580        - "clear-cookie NAME[=]"
6581          A "Set-Cookie" header will be added with NAME (and optionally "="), but
6582          with the "Max-Age" attribute set to zero. This will tell the browser to
6583          delete this cookie. It is useful for instance on logout pages. It is
6584          important to note that clearing the cookie "NAME" will not remove a
6585          cookie set with "NAME=value". You have to clear the cookie "NAME=" for
6586          that, because the browser makes the difference.
6587
6588    Example: move the login URL only to HTTPS.
6589          acl clear      dst_port  80
6590          acl secure     dst_port  8080
6591          acl login_page url_beg   /login
6592          acl logout     url_beg   /logout
6593          acl uid_given  url_reg   /login?userid=[^&]+
6594          acl cookie_set hdr_sub(cookie) SEEN=1
6595
6596          redirect prefix   https://mysite.com set-cookie SEEN=1 if !cookie_set
6597          redirect prefix   https://mysite.com           if login_page !secure
6598          redirect prefix   http://mysite.com drop-query if login_page !uid_given
6599          redirect location http://mysite.com/           if !login_page secure
6600          redirect location / clear-cookie USERID=       if logout
6601
6602    Example: send redirects for request for articles without a '/'.
6603          acl missing_slash path_reg ^/article/[^/]*$
6604          redirect code 301 prefix / drop-query append-slash if missing_slash
6605
6606    Example: redirect all HTTP traffic to HTTPS when SSL is handled by haproxy.
6607          redirect scheme https if !{ ssl_fc }
6608
6609    Example: append 'www.' prefix in front of all hosts not having it
6610          http-request redirect code 301 location www.%[hdr(host)]%[req.uri] \
6611            unless { hdr_beg(host) -i www }
6612
6613    See section 7 about ACL usage.
6614
6615
6616  redisp (deprecated)
6617  redispatch (deprecated)
6618    Enable or disable session redistribution in case of connection failure
6619    May be used in sections:    defaults | frontend | listen | backend
6620                                   yes   |    no    |   yes  |   yes
6621    Arguments : none
6622
6623    In HTTP mode, if a server designated by a cookie is down, clients may
6624    definitely stick to it because they cannot flush the cookie, so they will not
6625    be able to access the service anymore.
6626
6627    Specifying "redispatch" will allow the proxy to break their persistence and
6628    redistribute them to a working server.
6629
6630    It also allows to retry last connection to another server in case of multiple
```

```
   connection failures. Of course, it requires having "retries" set to a nonzero
   value.

   This form is deprecated, do not use it in any new configuration, use the new
   "option redispatch" instead.

   See also : "option redispatch"


reqadd  <string> [{if | unless} <cond>]
  Add a header at the end of the HTTP request
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
    <string>  is the complete line to be added. Any space or known delimiter
              must be escaped using a backslash ('\'). Please refer to section
              6 about HTTP header manipulation for more information.

    <cond>    is an optional matching condition built from ACLs. It makes it
              possible to ignore this rule when other conditions are not met.

  A new line consisting in <string> followed by a line feed will be added after
  the last header of an HTTP request.

  Header transformations only apply to traffic which passes through HAProxy,
  and not to traffic generated by HAProxy, such as health-checks or error
  responses.

  Example : add "X-Proto: SSL" to requests coming via port 81
     acl is-ssl  dst_port       81
     reqadd      X-Proto:\ SSL  if is-ssl

  See also: "rspadd", "http-request", section 6 about HTTP header manipulation,
            and section 7 about ACLs.


reqallow  <search> [{if | unless} <cond>]
reqiallow <search> [{if | unless} <cond>] (ignore case)
  Definitely allow an HTTP request if a line matches a regular expression
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
    <search>  is the regular expression applied to HTTP headers and to the
              request line. This is an extended regular expression. Parenthesis
              grouping is supported and no preliminary backslash is required.
              Any space or known delimiter must be escaped using a backslash
              ('\'). The pattern applies to a full line at a time. The
              "reqallow" keyword strictly matches case while "reqiallow"
              ignores case.

    <cond>    is an optional matching condition built from ACLs. It makes it
              possible to ignore this rule when other conditions are not met.

  A request containing any line which matches extended regular expression
  <search> will mark the request as allowed, even if any later test would
  result in a deny. The test applies both to the request line and to request
  headers. Keep in mind that URLs in request line are case-sensitive while
  header names are not.

  It is easier, faster and more powerful to use ACLs to write access policies.
  Reqdeny, reqallow and reqpass should be avoided in new designs.

  Example :
     # allow www.* but refuse *.local
     reqiallow ^Host:\ www\.
```



```
     reqideny  ^Host:\ .*\.local

  See also: "reqdeny", "block", "http-request",  section 6 about HTTP header
            manipulation, and section 7 about ACLs.


reqdel  <search> [{if | unless} <cond>]
reqidel <search> [{if | unless} <cond>]  (ignore case)
  Delete all headers matching a regular expression in an HTTP request
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
    <search>  is the regular expression applied to HTTP headers and to the
              request line. This is an extended regular expression. Parenthesis
              grouping is supported and no preliminary backslash is required.
              Any space or known delimiter must be escaped using a backslash
              ('\'). The pattern applies to a full line at a time. The "reqdel"
              keyword strictly matches case while "reqidel" ignores case.

    <cond>    is an optional matching condition built from ACLs. It makes it
              possible to ignore this rule when other conditions are not met.

  Any header line matching extended regular expression <search> in the request
  will be completely deleted. Most common use of this is to remove unwanted
  and/or dangerous headers or cookies from a request before passing it to the
  next servers.

  Header transformations only apply to traffic which passes through HAProxy,
  and not to traffic generated by HAProxy, such as health-checks or error
  responses. Keep in mind that header names are not case-sensitive.

  Example :
     # remove X-Forwarded-For header and SERVER cookie
     reqidel ^X-Forwarded-For:.*
     reqidel ^Cookie:.*SERVER=

  See also: "reqadd", "reqrep", "rspdel", "http-request", section 6 about
            HTTP header manipulation, and section 7 about ACLs.


reqdeny  <search> [{if | unless} <cond>]
reqideny <search> [{if | unless} <cond>]  (ignore case)
  Deny an HTTP request if a line matches a regular expression
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
    <search>  is the regular expression applied to HTTP headers and to the
              request line. This is an extended regular expression. Parenthesis
              grouping is supported and no preliminary backslash is required.
              Any space or known delimiter must be escaped using a backslash
              ('\'). The pattern applies to a full line at a time. The
              "reqdeny" keyword strictly matches case while "reqideny" ignores
              case.

    <cond>    is an optional matching condition built from ACLs. It makes it
              possible to ignore this rule when other conditions are not met.

  A request containing any line which matches extended regular expression
  <search> will mark the request as denied, even if any later test would
  result in an allow. The test applies both to the request line and to request
  headers. Keep in mind that URLs in request line are case-sensitive while
  header names are not.

  A denied request will generate an "HTTP 403 forbidden" response once the
  complete request has been parsed. This is consistent with what is practiced
```

```
   using ACLs.

   It is easier, faster and more powerful to use ACLs to write access policies.
   Reqdeny, reqallow and reqpass should be avoided in new designs.

   Example :
      # refuse *.local, then allow www.*
      reqideny  ^Host:\ .*\.local
      reqiallow ^Host:\ www\.

   See also: "reqallow", "rspdeny", "block", "http-request", section 6 about
             HTTP header manipulation, and section 7 about ACLs.


reqpass  <search> [{if | unless} <cond>]
reqipass <search> [{if | unless} <cond>]  (ignore case)
  Ignore any HTTP request line matching a regular expression in next rules
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
    <search>  is the regular expression applied to HTTP headers and to the
              request line. This is an extended regular expression. Parenthesis
              grouping is supported and no preliminary backslash is required.
              Any space or known delimiter must be escaped using a backslash
              ('\'). The pattern applies to a full line at a time. The
              "reqpass" keyword strictly matches case while "reqipass" ignores
              case.

    <cond>    is an optional matching condition built from ACLs. It makes it
              possible to ignore this rule when other conditions are not met.

   A request containing any line which matches extended regular expression
   <search> will skip next rules, without assigning any deny or allow verdict.
   The test applies both to the request line and to request headers. Keep in
   mind that URLs in request line are case-sensitive while header names are not.

   It is easier, faster and more powerful to use ACLs to write access policies.
   Reqdeny, reqallow and reqpass should be avoided in new designs.

   Example :
      # refuse *.local, then allow www.*, but ignore "www.private.local"
      reqipass  ^Host:\ www.private\.local
      reqideny  ^Host:\ .*\.local
      reqiallow ^Host:\ www\.

   See also: "reqallow", "reqdeny", "block", "http-request", section 6 about
             HTTP header manipulation, and section 7 about ACLs.


reqrep  <search> <string> [{if | unless} <cond>]
reqirep <search> <string> [{if | unless} <cond>]   (ignore case)
  Replace a regular expression with a string in an HTTP request line
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
    <search>  is the regular expression applied to HTTP headers and to the
              request line. This is an extended regular expression. Parenthesis
              grouping is supported and no preliminary backslash is required.
              Any space or known delimiter must be escaped using a backslash
              ('\'). The pattern applies to a full line at a time. The "reqrep"
              keyword strictly matches case while "reqirep" ignores case.

    <string>  is the complete line to be added. Any space or known delimiter
              must be escaped using a backslash ('\'). References to matched
              pattern groups are possible using the common \N form, with N
```



```
              being a single digit between 0 and 9. Please refer to section
              6 about HTTP header manipulation for more information.

    <cond>    is an optional matching condition built from ACLs. It makes it
              possible to ignore this rule when other conditions are not met.

  Any line matching extended regular expression <search> in the request (both
  the request line and header lines) will be completely replaced with <string>.
  Most common use of this is to rewrite URLs or domain names in "Host" headers.

  Header transformations only apply to traffic which passes through HAProxy,
  and not to traffic generated by HAProxy, such as health-checks or error
  responses. Note that for increased readability, it is suggested to add enough
  spaces between the request and the response. Keep in mind that URLs in
  request line are case-sensitive while header names are not.

  Example :
     # replace "/static/" with "/" at the beginning of any request path.
     reqrep ^([^\ :]*)\ /static/(.*)     \1\ /\2
     # replace "www.mydomain.com" with "www" in the host name.
     reqirep ^Host:\ www.mydomain.com   Host:\ www

  See also: "reqadd", "reqdel", "rsprep", "tune.bufsize", "http-request",
            section 6 about HTTP header manipulation, and section 7 about ACLs.


reqtarpit  <search> [{if | unless} <cond>]
reqitarpit <search> [{if | unless} <cond>]  (ignore case)
  Tarpit an HTTP request containing a line matching a regular expression
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
    <search>  is the regular expression applied to HTTP headers and to the
              request line. This is an extended regular expression. Parenthesis
              grouping is supported and no preliminary backslash is required.
              Any space or known delimiter must be escaped using a backslash
              ('\'). The pattern applies to a full line at a time. The
              "reqtarpit" keyword strictly matches case while "reqitarpit"
              ignores case.

    <cond>    is an optional matching condition built from ACLs. It makes it
              possible to ignore this rule when other conditions are not met.

  A request containing any line which matches extended regular expression
  <search> will be tarpitted, which means that it will connect to nowhere, will
  be kept open for a pre-defined time, then will return an HTTP error 500 so
  that the attacker does not suspect it has been tarpitted. The status 500 will
  be reported in the logs, but the completion flags will indicate "PT". The
  delay is defined by "timeout tarpit", or "timeout connect" if the former is
  not set.

  The goal of the tarpit is to slow down robots attacking servers with
  identifiable requests. Many robots limit their outgoing number of connections
  and stay connected waiting for a reply which can take several minutes to
  come. Depending on the environment and attack, it may be particularly
  efficient at reducing the load on the network and firewalls.

  Examples :
     # ignore user-agents reporting any flavour of "Mozilla" or "MSIE", but
     # block all others.
     reqipass   ^User-Agent:\.*(Mozilla|MSIE)
     reqitarpit ^User-Agent:

     # block bad guys
     acl badguys src 10.1.0.3 172.16.13.20/28
```

```
      reqitarpit . if badguys

  See also: "reqallow", "reqdeny", "reqpass", "http-request",  section 6
            about HTTP header manipulation, and section 7 about ACLs.


retries <value>
  Set the number of retries to perform on a server after a connection failure
  May be used in sections:    defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments :
    <value>   is the number of times a connection attempt should be retried on
              a server when a connection either is refused or times out. The
              default value is 3.

  It is important to understand that this value applies to the number of
  connection attempts, not full requests. When a connection has effectively
  been established to a server, there will be no more retry.

  In order to avoid immediate reconnections to a server which is restarting,
  a turn-around timer of min("timeout connect", one second) is applied before
  a retry occurs.

  When "option redispatch" is set, the last retry may be performed on another
  server even if a cookie references a different server.

  See also : "option redispatch"


rspadd <string> [{if | unless} <cond>]
  Add a header at the end of the HTTP response
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
    <string>  is the complete line to be added. Any space or known delimiter
              must be escaped using a backslash ('\'). Please refer to section
              6 about HTTP header manipulation for more information.

    <cond>    is an optional matching condition built from ACLs. It makes it
              possible to ignore this rule when other conditions are not met.

  A new line consisting in <string> followed by a line feed will be added after
  the last header of an HTTP response.

  Header transformations only apply to traffic which passes through HAProxy,
  and not to traffic generated by HAProxy, such as health-checks or error
  responses.

  See also: "rspdel" "reqadd", "http-response", section 6 about HTTP header
            manipulation, and section 7 about ACLs.


rspdel  <search> [{if | unless} <cond>]
rspidel <search> [{if | unless} <cond>]  (ignore case)
  Delete all headers matching a regular expression in an HTTP response
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
    <search>  is the regular expression applied to HTTP headers and to the
              response line. This is an extended regular expression, so
              parenthesis grouping is supported and no preliminary backslash
              is required. Any space or known delimiter must be escaped using
              a backslash ('\'). The pattern applies to a full line at a time.
              The "rspdel" keyword strictly matches case while "rspidel"
              ignores case.
```



```

    <cond>    is an optional matching condition built from ACLs. It makes it
              possible to ignore this rule when other conditions are not met.

  Any header line matching extended regular expression <search> in the response
  will be completely deleted. Most common use of this is to remove unwanted
  and/or sensitive headers or cookies from a response before passing it to the
  client.

  Header transformations only apply to traffic which passes through HAProxy,
  and not to traffic generated by HAProxy, such as health-checks or error
  responses. Keep in mind that header names are not case-sensitive.

  Example :
     # remove the Server header from responses
     rspidel ^Server:.*

  See also: "rspadd", "rsprep", "reqdel", "http-response",  section 6 about
            HTTP header manipulation, and section 7 about ACLs.


rspdeny  <search> [{if | unless} <cond>]
rspideny <search> [{if | unless} <cond>]  (ignore case)
  Block an HTTP response if a line matches a regular expression
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
    <search>  is the regular expression applied to HTTP headers and to the
              response line. This is an extended regular expression, so
              parenthesis grouping is supported and no preliminary backslash
              is required. Any space or known delimiter must be escaped using
              a backslash ('\'). The pattern applies to a full line at a time.
              The "rspdeny" keyword strictly matches case while "rspideny"
              ignores case.

    <cond>    is an optional matching condition built from ACLs. It makes it
              possible to ignore this rule when other conditions are not met.

  A response containing any line which matches extended regular expression
  <search> will mark the request as denied. The test applies both to the
  response line and to response headers. Keep in mind that header names are not
  case-sensitive.

  Main use of this keyword is to prevent sensitive information leak and to
  block the response before it reaches the client. If a response is denied, it
  will be replaced with an HTTP 502 error so that the client never retrieves
  any sensitive data.

  It is easier, faster and more powerful to use ACLs to write access policies.
  Rspdeny should be avoided in new designs.

  Example :
     # Ensure that no content type matching ms-word will leak
     rspideny  ^Content-type:\.*/ms-word

  See also: "reqdeny", "acl", "block", "http-response",  section 6 about
            HTTP header manipulation and section 7 about ACLs.


rsprep  <search> <string> [{if | unless} <cond>]
rspirep <search> <string> [{if | unless} <cond>]  (ignore case)
  Replace a regular expression with a string in an HTTP response line
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes
  Arguments :
```

```
      <search>  is the regular expression applied to HTTP headers and to the
                response line. This is an extended regular expression, so
                parenthesis grouping is supported and no preliminary backslash
                is required. Any space or known delimiter must be escaped using
                a backslash ('\'). The pattern applies to a full line at a time.
                The "rsprep" keyword strictly matches case while "rspirep"
                ignores case.

      <string>  is the complete line to be added. Any space or known delimiter
                must be escaped using a backslash ('\'). References to matched
                pattern groups are possible using the common \N form, with N
                being a single digit between 0 and 9. Please refer to section
                6 about HTTP header manipulation for more information.

      <cond>    is an optional matching condition built from ACLs. It makes it
                possible to ignore this rule when other conditions are not met.

    Any line matching extended regular expression <search> in the response (both
    the response line and header lines) will be completely replaced with
    <string>. Most common use of this is to rewrite Location headers.

    Header transformations only apply to traffic which passes through HAProxy,
    and not to traffic generated by HAProxy, such as health-checks or error
    responses. Note that for increased readability, it is suggested to add enough
    spaces between the request and the response. Keep in mind that header names
    are not case-sensitive.

    Example :
       # replace "Location: 127.0.0.1:8080" with "Location: www.mydomain.com"
       rspirep ^Location:\ 127.0.0.1:8080    Location:\ www.mydomain.com

    See also: "rspadd", "rspdel", "reqrep", "http-response", section 6 about
              HTTP header manipulation, and section 7 about ACLs.


  server <name> <address>[:[port]] [param*]
    Declare a server in a backend
    May be used in sections :   defaults | frontend | listen | backend
                                   no    |    no    |   yes  |   yes
    Arguments :
      <name>    is the internal name assigned to this server. This name will
                appear in logs and alerts.  If "http-send-name-header" is
                set, it will be added to the request header sent to the server.

      <address> is the IPv4 or IPv6 address of the server. Alternatively, a
                resolvable hostname is supported, but this name will be resolved
                during start-up. Address "0.0.0.0" or "*" has a special meaning.
                It indicates that the connection will be forwarded to the same IP
                address as the one from the client connection. This is useful in
                transparent proxy architectures where the client's connection is
                intercepted and haproxy must forward to the original destination
                address. This is more or less what the "transparent" keyword does
                except that with a server it's possible to limit concurrency and
                to report statistics. Optionally, an address family prefix may be
                used before the address to force the family regardless of the
                address format, which can be useful to specify a path to a unix
                socket with no slash ('/'). Currently supported prefixes are :
                      - 'ipv4@'  -> address is always IPv4
                      - 'ipv6@'  -> address is always IPv6
                      - 'unix@'  -> address is a path to a local unix socket
                      - 'abns@'  -> address is in abstract namespace (Linux only)
                You may want to reference some environment variables in the
                address parameter, see section 2.3 about environment
                variables.
```



```
      <port>    is an optional port specification. If set, all connections will
                be sent to this port. If unset, the same port the client
                connected to will be used. The port may also be prefixed by a "+"
                or a "-". In this case, the server's port will be determined by
                adding this value to the client's port.

      <param*>  is a list of parameters for this server. The "server" keywords
                accepts an important number of options and has a complete section
                dedicated to it. Please refer to section 5 for more details.

    Examples :
          server first  10.1.1.1:1080 cookie first  check inter 1000
          server second 10.1.1.2:1080 cookie second check inter 1000
          server transp ipv4@
          server backup "${SRV_BACKUP}:1080" backup
          server www1_dc1 "${LAN_DC1}.101:80"
          server www1_dc2 "${LAN_DC2}.101:80"

    Note: regarding Linux's abstract namespace sockets, HAProxy uses the whole
          sun_path length is used for the address length. Some other programs
          such as socat use the string length only by default. Pass the option
          ",unix-tightsocklen=0" to any abstract socket definition in socat to
          make it compatible with HAProxy's.

    See also: "default-server", "http-send-name-header" and section 5 about
              server options

  server-state-file-name [<file>]
    Set the server state file to read, load and apply to servers available in
    this backend. It only applies when the directive "load-server-state-from-file"
    is set to "local". When <file> is not provided or if this directive is not
    set, then backend name is used. If <file> starts with a slash '/', then it is
    considered as an absolute path. Otherwise, <file> is concatenated to the
    global directive "server-state-file-base".

    Example: the minimal configuration below would make HAProxy look for the
             state server file '/etc/haproxy/states/bk':

      global
        server-state-file-base /etc/haproxy/states

     backend bk
        load-server-state-from-file

    See also: "server-state-file-base", "load-server-state-from-file", and
    "show servers state"

  source <addr>[:<port>] [usesrc { <addr2>[:<port2>] | client | clientip } ]
  source <addr>[:<port>] [usesrc { <addr2>[:<port2>] | hdr_ip(<hdr>[,<occ>]) } ]
  source <addr>[:<port>] [interface <name>]
    Set the source address for outgoing connections
    May be used in sections :   defaults | frontend | listen | backend
                                   yes   |    no    |   yes  |   yes
    Arguments :
      <addr>    is the IPv4 address HAProxy will bind to before connecting to a
                server. This address is also used as a source for health checks.

                The default value of 0.0.0.0 means that the system will select
                the most appropriate address to reach its destination. Optionally
                an address family prefix may be used before the address to force
                the family regardless of the address format, which can be useful
                to specify a path to a unix socket with no slash ('/'). Currently
                supported prefixes are :
                  - 'ipv4@' -> address is always IPv4
                  - 'ipv6@' -> address is always IPv6
```

```
                  - 'unix@' -> address is a path to a local unix socket
                  - 'abns@' -> address is in abstract namespace (Linux only)
               You may want to reference some environment variables in the
               address parameter, see section 2.3 about environment variables.

      <port>   is an optional port. It is normally not needed but may be useful
               in some very specific contexts. The default value of zero means
               the system will select a free port. Note that port ranges are not
               supported in the backend. If you want to force port ranges, you
               have to specify them on each "server" line.

      <addr2>  is the IP address to present to the server when connections are
               forwarded in full transparent proxy mode. This is currently only
               supported on some patched Linux kernels. When this address is
               specified, clients connecting to the server will be presented
               with this address, while health checks will still use the address
               <addr>.

      <port2>  is the optional port to present to the server when connections
               are forwarded in full transparent proxy mode (see <addr2> above).
               The default value of zero means the system will select a free
               port.

      <hdr>    is the name of a HTTP header in which to fetch the IP to bind to.
               This is the name of a comma-separated header list which can
               contain multiple IP addresses. By default, the last occurrence is
               used. This is designed to work with the X-Forwarded-For header
               and to automatically bind to the client's IP address as seen
               by previous proxy, typically Stunnel. In order to use another
               occurrence from the last one, please see the <occ> parameter
               below. When the header (or occurrence) is not found, no binding
               is performed so that the proxy's default IP address is used. Also
               keep in mind that the header name is case insensitive, as for any
               HTTP header.

      <occ>    is the occurrence number of a value to be used in a multi-value
               header. This is to be used in conjunction with "hdr_ip(<hdr>)",
               in order to specify which occurrence to use for the source IP
               address. Positive values indicate a position from the first
               occurrence, 1 being the first one. Negative values indicate
               positions relative to the last one, -1 being the last one. This
               is helpful for situations where an X-Forwarded-For header is set
               at the entry point of an infrastructure and must be used several
               proxy layers away. When this value is not specified, -1 is
               assumed. Passing a zero here disables the feature.

      <name>   is an optional interface name to which to bind to for outgoing
               traffic. On systems supporting this features (currently, only
               Linux), this allows one to bind all traffic to the server to
               this interface even if it is not the one the system would select
               based on routing tables. This should be used with extreme care.
               Note that using this option requires root privileges.

   The "source" keyword is useful in complex environments where a specific
   address only is allowed to connect to the servers. It may be needed when a
   private address must be used through a public gateway for instance, and it is
   known that the system cannot determine the adequate source address by itself.

   An extension which is available on certain patched Linux kernels may be used
   through the "usesrc" optional keyword. It makes it possible to connect to the
   servers with an IP address which does not belong to the system itself. This
   is called "full transparent proxy mode". For this to work, the destination
   servers have to route their traffic back to this address through the machine
   running HAProxy, and IP forwarding must generally be enabled on this machine.

```



```
   In this "full transparent proxy" mode, it is possible to force a specific IP
   address to be presented to the servers. This is not much used in fact. A more
   common use is to tell HAProxy to present the client's IP address. For this,
   there are two methods :

     - present the client's IP and port addresses. This is the most transparent
       mode, but it can cause problems when IP connection tracking is enabled on
       the machine, because a same connection may be seen twice with different
       states. However, this solution presents the huge advantage of not
       limiting the system to the 64k outgoing address+port couples, because all
       of the client ranges may be used.

     - present only the client's IP address and select a spare port. This
       solution is still quite elegant but slightly less transparent (downstream
       firewalls logs will not match upstream's). It also presents the downside
       of limiting the number of concurrent connections to the usual 64k ports.
       However, since the upstream and downstream ports are different, local IP
       connection tracking on the machine will not be upset by the reuse of the
       same session.

   This option sets the default source for all servers in the backend. It may
   also be specified in a "defaults" section. Finer source address specification
   is possible at the server level using the "source" server option. Refer to
   section 5 for more information.

   In order to work, "usesrc" requires root privileges.

   Examples :
         backend private
             # Connect to the servers using our 192.168.1.200 source address
             source 192.168.1.200

         backend transparent_ssl1
             # Connect to the SSL farm from the client's source address
             source 192.168.1.200 usesrc clientip

         backend transparent_ssl2
             # Connect to the SSL farm from the client's source address and port
             # not recommended if IP conntrack is present on the local machine.
             source 192.168.1.200 usesrc client

         backend transparent_ssl3
             # Connect to the SSL farm from the client's source address. It
             # is more conntrack-friendly.
             source 192.168.1.200 usesrc clientip

         backend transparent_smtp
             # Connect to the SMTP farm from the client's source address/port
             # with Tproxy version 4.
             source 0.0.0.0 usesrc clientip

         backend transparent_http
             # Connect to the servers using the client's IP as seen by previous
             # proxy.
             source 0.0.0.0 usesrc hdr_ip(x-forwarded-for,-1)

   See also : the "source" server option in section 5, the Tproxy patches for
              the Linux kernel on www.balabit.com, the "bind" keyword.


srvtimeout <timeout> (deprecated)
   Set the maximum inactivity time on the server side.
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    no    |   yes  |   yes
   Arguments :
```

```
      <timeout> is the timeout value specified in milliseconds by default, but
                can be in any other unit if the number is suffixed by the unit,
                as explained at the top of this document.

   The inactivity timeout applies when the server is expected to acknowledge or
   send data. In HTTP mode, this timeout is particularly important to consider
   during the first phase of the server's response, when it has to send the
   headers, as it directly represents the server's processing time for the
   request. To find out what value to put there, it's often good to start with
   what would be considered as unacceptable response times, then check the logs
   to observe the response time distribution, and adjust the value accordingly.

   The value is specified in milliseconds by default, but can be in any other
   unit if the number is suffixed by the unit, as specified at the top of this
   document. In TCP mode (and to a lesser extent, in HTTP mode), it is highly
   recommended that the client timeout remains equal to the server timeout in
   order to avoid complex situations to debug. Whatever the expected server
   response times, it is a good practice to cover at least one or several TCP
   packet losses by specifying timeouts that are slightly above multiples of 3
   seconds (eg: 4 or 5 seconds minimum).

   This parameter is specific to backends, but can be specified once for all in
   "defaults" sections. This is in fact one of the easiest solutions not to
   forget about it. An unspecified timeout results in an infinite timeout, which
   is not recommended. Such a usage is accepted and works but reports a warning
   during startup because it may results in accumulation of expired sessions in
   the system if the system's timeouts are not configured either.

   This parameter is provided for compatibility but is currently deprecated.
   Please use "timeout server" instead.

   See also : "timeout server", "timeout tunnel", "timeout client" and
              "clitimeout".


stats admin { if | unless } <cond>
  Enable statistics admin level if/unless a condition is matched
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   yes

  This statement enables the statistics admin level if/unless a condition is
  matched.

  The admin level allows to enable/disable servers from the web interface. By
  default, statistics page is read-only for security reasons.

  Note : Consider not using this feature in multi-process mode (nbproc > 1)
         unless you know what you do : memory is not shared between the
         processes, which can result in random behaviours.

  Currently, the POST request is limited to the buffer size minus the reserved
  buffer space, which means that if the list of servers is too long, the
  request won't be processed. It is recommended to alter few servers at a
  time.

  Example :
    # statistics admin level only for localhost
    backend stats_localhost
        stats enable
        stats admin if LOCALHOST

  Example :
    # statistics admin level always enabled because of the authentication
    backend stats_auth
        stats enable
```



```
        stats auth  admin:AdMiN123
        stats admin if TRUE

  Example :
    # statistics admin level depends on the authenticated user
    userlist stats-auth
        group admin    users admin
        user  admin    insecure-password AdMiN123
        group readonly users haproxy
        user  haproxy  insecure-password haproxy

    backend stats_auth
        stats enable
        acl AUTH       http_auth(stats-auth)
        acl AUTH_ADMIN http_auth_group(stats-auth) admin
        stats http-request auth unless AUTH
        stats admin if AUTH_ADMIN

  See also : "stats enable", "stats auth", "stats http-request", "nbproc",
             "bind-process", section 3.4 about userlists and section 7 about
             ACL usage.


stats auth <user>:<passwd>
  Enable statistics with authentication and grant access to an account
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments :
    <user>    is a user name to grant access to

    <passwd>  is the cleartext password associated to this user

  This statement enables statistics with default settings, and restricts access
  to declared users only. It may be repeated as many times as necessary to
  allow as many users as desired. When a user tries to access the statistics
  without a valid account, a "401 Forbidden" response will be returned so that
  the browser asks the user to provide a valid user and password. The real
  which will be returned to the browser is configurable using "stats realm".

  Since the authentication method is HTTP Basic Authentication, the passwords
  circulate in cleartext on the network. Thus, it was decided that the
  configuration file would also use cleartext passwords to remind the users
  that those ones should not be sensitive and not shared with any other account.

  It is also possible to reduce the scope of the proxies which appear in the
  report using "stats scope".

  Though this statement alone is enough to enable statistics reporting, it is
  recommended to set all other settings in order to avoid relying on default
  unobvious parameters.

  Example :
    # public access (limited to this backend only)
    backend public_www
        server srv1 192.168.0.1:80
        stats enable
        stats hide-version
        stats scope   .
        stats uri     /admin?stats
        stats realm   Haproxy\ Statistics
        stats auth    admin1:AdMiN123
        stats auth    admin2:AdMiN321

    # internal monitoring access (unlimited)
    backend private_monitoring
```

```
          stats enable
          stats uri     /admin?stats
          stats refresh 5s

    See also : "stats enable", "stats realm", "stats scope", "stats uri"


  stats enable
    Enable statistics reporting with default settings
    May be used in sections :   defaults | frontend | listen | backend
                                   yes   |    yes   |   yes  |   yes
    Arguments : none

    This statement enables statistics reporting with default settings defined
    at build time. Unless stated otherwise, these settings are used :
      - stats uri   : /haproxy?stats
      - stats realm : "HAProxy Statistics"
      - stats auth  : no authentication
      - stats scope : no restriction

    Though this statement alone is enough to enable statistics reporting, it is
    recommended to set all other settings in order to avoid relying on default
    unobvious parameters.

    Example :
      # public access (limited to this backend only)
      backend public_www
          server srv1 192.168.0.1:80
          stats enable
          stats hide-version
          stats scope   .
          stats uri     /admin?stats
          stats realm   Haproxy\ Statistics
          stats auth    admin1:AdMiN123
          stats auth    admin2:AdMiN321

      # internal monitoring access (unlimited)
      backend private_monitoring
          stats enable
          stats uri     /admin?stats
          stats refresh 5s

    See also : "stats auth", "stats realm", "stats uri"


  stats hide-version
    Enable statistics and hide HAProxy version reporting
    May be used in sections :   defaults | frontend | listen | backend
                                   yes   |    yes   |   yes  |   yes
    Arguments : none

    By default, the stats page reports some useful status information along with
    the statistics. Among them is HAProxy's version. However, it is generally
    considered dangerous to report precise version to anyone, as it can help them
    target known weaknesses with specific attacks. The "stats hide-version"
    statement removes the version from the statistics report. This is recommended
    for public sites or any site with a weak login/password.

    Though this statement alone is enough to enable statistics reporting, it is
    recommended to set all other settings in order to avoid relying on default
    unobvious parameters.

    Example :
      # public access (limited to this backend only)
      backend public_www
```



```
          server srv1 192.168.0.1:80
          stats enable
          stats hide-version
          stats scope   .
          stats uri     /admin?stats
          stats realm   Haproxy\ Statistics
          stats auth    admin1:AdMiN123
          stats auth    admin2:AdMiN321

      # internal monitoring access (unlimited)
      backend private_monitoring
          stats enable
          stats uri     /admin?stats
          stats refresh 5s

    See also : "stats auth", "stats enable", "stats realm", "stats uri"


  stats http-request { allow | deny | auth [realm <realm>] }
                [ { if | unless } <condition> ]
    Access control for statistics

    May be used in sections:   defaults | frontend | listen | backend
                                  no    |    no    |   yes  |   yes

    As "http-request", these set of options allow to fine control access to
    statistics. Each option may be followed by if/unless and acl.
    First option with matched condition (or option without condition) is final.
    For "deny" a 403 error will be returned, for "allow" normal processing is
    performed, for "auth" a 401/407 error code is returned so the client
    should be asked to enter a username and password.

    There is no fixed limit to the number of http-request statements per
    instance.

    See also : "http-request", section 3.4 about userlists and section 7
               about ACL usage.


  stats realm <realm>
    Enable statistics and set authentication realm
    May be used in sections :   defaults | frontend | listen | backend
                                   yes   |    yes   |   yes  |   yes
    Arguments :
      <realm>   is the name of the HTTP Basic Authentication realm reported to
                the browser. The browser uses it to display it in the pop-up
                inviting the user to enter a valid username and password.

    The realm is read as a single word, so any spaces in it should be escaped
    using a backslash ('\').

    This statement is useful only in conjunction with "stats auth" since it is
    only related to authentication.

    Though this statement alone is enough to enable statistics reporting, it is
    recommended to set all other settings in order to avoid relying on default
    unobvious parameters.

    Example :
      # public access (limited to this backend only)
      backend public_www
          server srv1 192.168.0.1:80
          stats enable
          stats hide-version
          stats scope   .
```

```
7541          stats uri     /admin?stats
7542          stats realm   Haproxy\ Statistics
7543          stats auth    admin1:AdMiN123
7544          stats auth    admin2:AdMiN321
7545
7546      # internal monitoring access (unlimited)
7547      backend private_monitoring
7548          stats enable
7549          stats uri     /admin?stats
7550          stats refresh 5s
7551
7552    See also : "stats auth", "stats enable", "stats uri"
7553
7554
7555  stats refresh <delay>
7556    Enable statistics with automatic refresh
7557    May be used in sections :   defaults | frontend | listen | backend
7558                                   yes   |    yes   |   yes  |   yes
7559    Arguments :
7560      <delay>   is the suggested refresh delay, specified in seconds, which will
7561                be returned to the browser consulting the report page. While the
7562                browser is free to apply any delay, it will generally respect it
7563                and refresh the page this every seconds. The refresh interval may
7564                be specified in any other non-default time unit, by suffixing the
7565                unit after the value, as explained at the top of this document.
7566
7567    This statement is useful on monitoring displays with a permanent page
7568    reporting the load balancer's activity. When set, the HTML report page will
7569    include a link "refresh"/"stop refresh" so that the user can select whether
7570    he wants automatic refresh of the page or not.
7571
7572    Though this statement alone is enough to enable statistics reporting, it is
7573    recommended to set all other settings in order to avoid relying on default
7574    unobvious parameters.
7575
7576    Example :
7577      # public access (limited to this backend only)
7578      backend public_www
7579          server srv1 192.168.0.1:80
7580          stats enable
7581          stats hide-version
7582          stats scope   .
7583          stats uri     /admin?stats
7584          stats realm   Haproxy\ Statistics
7585          stats auth    admin1:AdMiN123
7586          stats auth    admin2:AdMiN321
7587
7588      # internal monitoring access (unlimited)
7589      backend private_monitoring
7590          stats enable
7591          stats uri     /admin?stats
7592          stats refresh 5s
7593
7594    See also : "stats auth", "stats enable", "stats realm", "stats uri"
7595
7596
7597  stats scope { <name> | "." }
7598    Enable statistics and limit access scope
7599    May be used in sections :   defaults | frontend | listen | backend
7600                                   yes   |    yes   |   yes  |   yes
7601    Arguments :
7602      <name>    is the name of a listen, frontend or backend section to be
7603                reported. The special name "." (a single dot) designates the
7604                section in which the statement appears.
7605
```



```
7606    When this statement is specified, only the sections enumerated with this
7607    statement will appear in the report. All other ones will be hidden. This
7608    statement may appear as many times as needed if multiple sections need to be
7609    reported. Please note that the name checking is performed as simple string
7610    comparisons, and that it is never checked that a give section name really
7611    exists.
7612
7613    Though this statement alone is enough to enable statistics reporting, it is
7614    recommended to set all other settings in order to avoid relying on default
7615    unobvious parameters.
7616
7617    Example :
7618      # public access (limited to this backend only)
7619      backend public_www
7620          server srv1 192.168.0.1:80
7621          stats enable
7622          stats hide-version
7623          stats scope   .
7624          stats uri     /admin?stats
7625          stats realm   Haproxy\ Statistics
7626          stats auth    admin1:AdMiN123
7627          stats auth    admin2:AdMiN321
7628
7629      # internal monitoring access (unlimited)
7630      backend private_monitoring
7631          stats enable
7632          stats uri     /admin?stats
7633          stats refresh 5s
7634
7635    See also : "stats auth", "stats enable", "stats realm", "stats uri"
7636
7637
7638  stats show-desc [ <desc> ]
7639    Enable reporting of a description on the statistics page.
7640    May be used in sections :   defaults | frontend | listen | backend
7641                                   yes   |    yes   |   yes  |   yes
7642
7643      <desc>    is an optional description to be reported. If unspecified, the
7644                description from global section is automatically used instead.
7645
7646    This statement is useful for users that offer shared services to their
7647    customers, where node or description should be different for each customer.
7648
7649    Though this statement alone is enough to enable statistics reporting, it is
7650    recommended to set all other settings in order to avoid relying on default
7651    unobvious parameters.  By default description is not shown.
7652
7653    Example :
7654      # internal monitoring access (unlimited)
7655      backend private_monitoring
7656          stats enable
7657          stats show-desc Master node for Europe, Asia, Africa
7658          stats uri       /admin?stats
7659          stats refresh   5s
7660
7661    See also: "show-node", "stats enable", "stats uri" and "description" in
7662              global section.
7663
7664
7665  stats show-legends
7666    Enable reporting additional information on the statistics page
7667    May be used in sections :   defaults | frontend | listen | backend
7668                                   yes   |    yes   |   yes  |   yes
7669    Arguments : none
7670
```

```
   Enable reporting additional information on the statistics page :
     - cap: capabilities (proxy)
     - mode: one of tcp, http or health (proxy)
     - id: SNMP ID (proxy, socket, server)
     - IP (socket, server)
     - cookie (backend, server)

   Though this statement alone is enough to enable statistics reporting, it is
   recommended to set all other settings in order to avoid relying on default
   unobvious parameters.  Default behaviour is not to show this information.

   See also: "stats enable", "stats uri".


stats show-node [ <name> ]
   Enable reporting of a host name on the statistics page.
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    yes   |   yes  |   yes
   Arguments:
     <name>    is an optional name to be reported. If unspecified, the
               node name from global section is automatically used instead.

   This statement is useful for users that offer shared services to their
   customers, where node or description might be different on a stats page
   provided for each customer.  Default behaviour is not to show host name.

   Though this statement alone is enough to enable statistics reporting, it is
   recommended to set all other settings in order to avoid relying on default
   unobvious parameters.

   Example:
     # internal monitoring access (unlimited)
     backend private_monitoring
         stats enable
         stats show-node Europe-1
         stats uri       /admin?stats
         stats refresh   5s

   See also: "show-desc", "stats enable", "stats uri", and "node" in global
             section.


stats uri <prefix>
   Enable statistics and define the URI prefix to access them
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    yes   |   yes  |   yes
   Arguments :
     <prefix>  is the prefix of any URI which will be redirected to stats. This
               prefix may contain a question mark ('?') to indicate part of a
               query string.

   The statistics URI is intercepted on the relayed traffic, so it appears as a
   page within the normal application. It is strongly advised to ensure that the
   selected URI will never appear in the application, otherwise it will never be
   possible to reach it in the application.

   The default URI compiled in haproxy is "/haproxy?stats", but this may be
   changed at build time, so it's better to always explicitly specify it here.
   It is generally a good idea to include a question mark in the URI so that
   intermediate proxies refrain from caching the results. Also, since any string
   beginning with the prefix will be accepted as a stats request, the question
   mark helps ensuring that no valid URI will begin with the same words.

   It is sometimes very convenient to use "/" as the URI prefix, and put that
   statement in a "listen" instance of its own. That makes it easy to dedicate
```



```
   an address or a port to statistics only.

   Though this statement alone is enough to enable statistics reporting, it is
   recommended to set all other settings in order to avoid relying on default
   unobvious parameters.

   Example :
     # public access (limited to this backend only)
     backend public_www
         server srv1 192.168.0.1:80
         stats enable
         stats hide-version
         stats scope   .
         stats uri     /admin?stats
         stats realm   Haproxy\ Statistics
         stats auth    admin1:AdMiN123
         stats auth    admin2:AdMiN321

     # internal monitoring access (unlimited)
     backend private_monitoring
         stats enable
         stats uri     /admin?stats
         stats refresh 5s

   See also : "stats auth", "stats enable", "stats realm"


stick match <pattern> [table <table>] [{if | unless} <cond>]
   Define a request pattern matching condition to stick a user to a server
   May be used in sections :   defaults | frontend | listen | backend
                                  no    |    no    |   yes  |   yes

   Arguments :
     <pattern>  is a sample expression rule as described in section 7.3. It
                describes what elements of the incoming request or connection
                will be analysed in the hope to find a matching entry in a
                stickiness table. This rule is mandatory.

     <table>    is an optional stickiness table name. If unspecified, the same
                backend's table is used. A stickiness table is declared using
                the "stick-table" statement.

     <cond>     is an optional matching condition. It makes it possible to match
                on a certain criterion only when other conditions are met (or
                not met). For instance, it could be used to match on a source IP
                address except when a request passes through a known proxy, in
                which case we'd match on a header containing that IP address.

   Some protocols or applications require complex stickiness rules and cannot
   always simply rely on cookies nor hashing. The "stick match" statement
   describes a rule to extract the stickiness criterion from an incoming request
   or connection. See section 7 for a complete list of possible patterns and
   transformation rules.

   The table has to be declared using the "stick-table" statement. It must be of
   a type compatible with the pattern. By default it is the one which is present
   in the same backend. It is possible to share a table with other backends by
   referencing it using the "table" keyword. If another table is referenced,
   the server's ID inside the backends are used. By default, all server IDs
   start at 1 in each backend, so the server ordering is enough. But in case of
   doubt, it is highly recommended to force server IDs using their "id" setting.

   It is possible to restrict the conditions where a "stick match" statement
   will apply, using "if" or "unless" followed by a condition. See section 7 for
   ACL based conditions.
```

```
7801
7802    There is no limit on the number of "stick match" statements. The first that
7803    applies and matches will cause the request to be directed to the same server
7804    as was used for the request which created the entry. That way, multiple
7805    matches can be used as fallbacks.
7806
7807    The stick rules are checked after the persistence cookies, so they will not
7808    affect stickiness if a cookie has already been used to select a server. That
7809    way, it becomes very easy to insert cookies and match on IP addresses in
7810    order to maintain stickiness between HTTP and HTTPS.
7811
7812    Note : Consider not using this feature in multi-process mode (nbproc > 1)
7813           unless you know what you do : memory is not shared between the
7814           processes, which can result in random behaviours.
7815
7816    Example :
7817      # forward SMTP users to the same server they just used for POP in the
7818      # last 30 minutes
7819      backend pop
7820          mode tcp
7821          balance roundrobin
7822          stick store-request src
7823          stick-table type ip size 200k expire 30m
7824          server s1 192.168.1.1:110
7825          server s2 192.168.1.1:110
7826
7827      backend smtp
7828          mode tcp
7829          balance roundrobin
7830          stick match src table pop
7831          server s1 192.168.1.1:25
7832          server s2 192.168.1.1:25
7833
7834    See also : "stick-table", "stick on", "nbproc", "bind-process" and section 7
7835               about ACLs and samples fetching.
7836
7837
7838  stick on <pattern> [table <table>] [{if | unless} <condition>]
7839    Define a request pattern to associate a user to a server
7840    May be used in sections :   defaults | frontend | listen | backend
7841                                   no    |    no    |   yes  |   yes
7842
7843    Note : This form is exactly equivalent to "stick match" followed by
7844           "stick store-request", all with the same arguments. Please refer
7845           to both keywords for details. It is only provided as a convenience
7846           for writing more maintainable configurations.
7847
7848    Note : Consider not using this feature in multi-process mode (nbproc > 1)
7849           unless you know what you do : memory is not shared between the
7850           processes, which can result in random behaviours.
7851
7852    Examples :
7853      # The following form ...
7854      stick on src table pop if !localhost
7855
7856      # ...is strictly equivalent to this one :
7857      stick match src table pop if !localhost
7858      stick store-request src table pop if !localhost
7859
7860
7861      # Use cookie persistence for HTTP, and stick on source address for HTTPS as
7862      # well as HTTP without cookie. Share the same table between both accesses.
7863      backend http
7864          mode http
7865          balance roundrobin
```



```
7866          stick on src table https
7867          cookie SRV insert indirect nocache
7868          server s1 192.168.1.1:80 cookie s1
7869          server s2 192.168.1.1:80 cookie s2
7870
7871      backend https
7872          mode tcp
7873          balance roundrobin
7874          stick-table type ip size 200k expire 30m
7875          stick on src
7876          server s1 192.168.1.1:443
7877          server s2 192.168.1.1:443
7878
7879    See also : "stick match", "stick store-request", "nbproc" and "bind-process".
7880
7881
7882  stick store-request <pattern> [table <table>] [{if | unless} <condition>]
7883    Define a request pattern used to create an entry in a stickiness table
7884    May be used in sections :   defaults | frontend | listen | backend
7885                                   no    |    no    |   yes  |   yes
7886
7887    Arguments :
7888      <pattern>  is a sample expression rule as described in section 7.3. It
7889                 describes what elements of the incoming request or connection
7890                 will be analysed, extracted and stored in the table once a
7891                 server is selected.
7892
7893      <table>    is an optional stickiness table name. If unspecified, the same
7894                 backend's table is used. A stickiness table is declared using
7895                 the "stick-table" statement.
7896
7897      <cond>     is an optional storage condition. It makes it possible to store
7898                 certain criteria only when some conditions are met (or not met).
7899                 For instance, it could be used to store the source IP address
7900                 except when the request passes through a known proxy, in which
7901                 case we'd store a converted form of a header containing that IP
7902                 address.
7903
7904    Some protocols or applications require complex stickiness rules and cannot
7905    always simply rely on cookies nor hashing. The "stick store-request" statement
7906    describes a rule to decide what to extract from the request and when to do
7907    it, in order to store it into a stickiness table for further requests to
7908    match it using the "stick match" statement. Obviously the extracted part must
7909    make sense and have a chance to be matched in a further request. Storing a
7910    client's IP address for instance often makes sense. Storing an ID found in a
7911    URL parameter also makes sense. Storing a source port will almost never make
7912    any sense because it will be randomly matched. See section 7 for a complete
7913    list of possible patterns and transformation rules.
7914
7915    The table has to be declared using the "stick-table" statement. It must be of
7916    a type compatible with the pattern. By default it is the one which is present
7917    in the same backend. It is possible to share a table with other backends by
7918    referencing it using the "table" keyword. If another table is referenced,
7919    the server's ID inside the backends are used. By default, all server IDs
7920    start at 1 in each backend, so the server ordering is enough. But in case of
7921    doubt, it is highly recommended to force server IDs using their "id" setting.
7922
7923    It is possible to restrict the conditions where a "stick store-request"
7924    statement will apply, using "if" or "unless" followed by a condition. This
7925    condition will be evaluated while parsing the request, so any criteria can be
7926    used. See section 7 for ACL based conditions.
7927
7928    There is no limit on the number of "stick store-request" statements, but
7929    there is a limit of 8 simultaneous stores per request or response. This
7930    makes it possible to store up to 8 criteria, all extracted from either the
```

```
   request or the response, regardless of the number of rules. Only the 8 first
   ones which match will be kept. Using this, it is possible to feed multiple
   tables at once in the hope to increase the chance to recognize a user on
   another protocol or access method. Using multiple store-request rules with
   the same table is possible and may be used to find the best criterion to rely
   on, by arranging the rules by decreasing preference order. Only the first
   extracted criterion for a given table will be stored. All subsequent store-
   request rules referencing the same table will be skipped and their ACLs will
   not be evaluated.

   The "store-request" rules are evaluated once the server connection has been
   established, so that the table will contain the real server that processed
   the request.

   Note : Consider not using this feature in multi-process mode (nbproc > 1)
          unless you know what you do : memory is not shared between the
          processes, which can result in random behaviours.

   Example :
     # forward SMTP users to the same server they just used for POP in the
     # last 30 minutes
     backend pop
         mode tcp
         balance roundrobin
         stick store-request src
         stick-table type ip size 200k expire 30m
         server s1 192.168.1.1:110
         server s2 192.168.1.1:110

     backend smtp
         mode tcp
         balance roundrobin
         stick match src table pop
         server s1 192.168.1.1:25
         server s2 192.168.1.1:25

   See also : "stick-table", "stick on", "nbproc", "bind-process" and section 7
              about ACLs and sample fetching.


stick-table type {ip | integer | string [len <length>] | binary [len <length>]}
            size <size> [expire <expire>] [nopurge] [peers <peersect>]
            [store <data_type>]*
   Configure the stickiness table for the current section
   May be used in sections :   defaults | frontend | listen | backend
                                  no    |    yes   |   yes  |   yes

   Arguments :
     ip         a table declared with "type ip" will only store IPv4 addresses.
                This form is very compact (about 50 bytes per entry) and allows
                very fast entry lookup and stores with almost no overhead. This
                is mainly used to store client source IP addresses.

     ipv6       a table declared with "type ipv6" will only store IPv6 addresses.
                This form is very compact (about 60 bytes per entry) and allows
                very fast entry lookup and stores with almost no overhead. This
                is mainly used to store client source IP addresses.

     integer    a table declared with "type integer" will store 32bit integers
                which can represent a client identifier found in a request for
                instance.

     string     a table declared with "type string" will store substrings of up
                to <len> characters. If the string provided by the pattern
                extractor is larger than <len>, it will be truncated before
```



```
                being stored. During matching, at most <len> characters will be
                compared between the string in the table and the extracted
                pattern. When not specified, the string is automatically limited
                to 32 characters.

     binary     a table declared with "type binary" will store binary blocks
                of <len> bytes. If the block provided by the pattern
                extractor is larger than <len>, it will be truncated before
                being stored. If the block provided by the sample expression
                is shorter than <len>, it will be padded by 0. When not
                specified, the block is automatically limited to 32 bytes.

     <length>   is the maximum number of characters that will be stored in a
                "string" type table (See type "string" above). Or the number
                of bytes of the block in "binary" type table. Be careful when
                changing this parameter as memory usage will proportionally
                increase.

     <size>     is the maximum number of entries that can fit in the table. This
                value directly impacts memory usage. Count approximately
                50 bytes per entry, plus the size of a string if any. The size
                supports suffixes "k", "m", "g" for 2^10, 2^20 and 2^30 factors.

     [nopurge]  indicates that we refuse to purge older entries when the table
                is full. When not specified and the table is full when haproxy
                wants to store an entry in it, it will flush a few of the oldest
                entries in order to release some space for the new ones. This is
                most often the desired behaviour. In some specific cases, it
                be desirable to refuse new entries instead of purging the older
                ones. That may be the case when the amount of data to store is
                far above the hardware limits and we prefer not to offer access
                to new clients than to reject the ones already connected. When
                using this parameter, be sure to properly set the "expire"
                parameter (see below).

     <peersect> is the name of the peers section to use for replication. Entries
                which associate keys to server IDs are kept synchronized with
                the remote peers declared in this section. All entries are also
                automatically learned from the local peer (old process) during a
                soft restart.

                NOTE : each peers section may be referenced only by tables
                       belonging to the same unique process.

     <expire>   defines the maximum duration of an entry in the table since it
                was last created, refreshed or matched. The expiration delay is
                defined using the standard time format, similarly as the various
                timeouts. The maximum duration is slightly above 24 days. See
                section 2.2 for more information. If this delay is not specified,
                the session won't automatically expire, but older entries will
                be removed once full. Be sure not to use the "nopurge" parameter
                if not expiration delay is specified.

    <data_type> is used to store additional information in the stick-table. This
                may be used by ACLs in order to control various criteria related
                to the activity of the client matching the stick-table. For each
                item specified here, the size of each entry will be inflated so
                that the additional data can fit. Several data types may be
                stored with an entry. Multiple data types may be specified after
                the "store" keyword, as a comma-separated list. Alternatively,
                it is possible to repeat the "store" keyword followed by one or
                several data types. Except for the "server_id" type which is
                automatically detected and enabled, all data types must be
                explicitly declared to be stored. If an ACL references a data
                type which is not stored, the ACL will simply not match. Some
```

```
8061                data types require an argument which must be passed just after
8062                the type between parenthesis. See below for the supported data
8063                types and their arguments.
8064
8065    The data types that can be stored with an entry are the following :
8066      - server_id : this is an integer which holds the numeric ID of the server a
8067        request was assigned to. It is used by the "stick match", "stick store",
8068        and "stick on" rules. It is automatically enabled when referenced.
8069
8070      - gpc0 : first General Purpose Counter. It is a positive 32-bit integer
8071        integer which may be used for anything. Most of the time it will be used
8072        to put a special tag on some entries, for instance to note that a
8073        specific behaviour was detected and must be known for future matches.
8074
8075      - gpc0_rate(<period>) : increment rate of the first General Purpose Counter
8076        over a period. It is a positive 32-bit integer integer which may be used
8077        for anything. Just like <gpc0>, it counts events, but instead of keeping
8078        a cumulative count, it maintains the rate at which the counter is
8079        incremented. Most of the time it will be used to measure the frequency of
8080        occurrence of certain events (eg: requests to a specific URL).
8081
8082      - conn_cnt : Connection Count. It is a positive 32-bit integer which counts
8083        the absolute number of connections received from clients which matched
8084        this entry. It does not mean the connections were accepted, just that
8085        they were received.
8086
8087      - conn_cur : Current Connections. It is a positive 32-bit integer which
8088        stores the concurrent connection counts for the entry. It is incremented
8089        once an incoming connection matches the entry, and decremented once the
8090        connection leaves. That way it is possible to know at any time the exact
8091        number of concurrent connections for an entry.
8092
8093      - conn_rate(<period>) : frequency counter (takes 12 bytes). It takes an
8094        integer parameter <period> which indicates in milliseconds the length
8095        of the period over which the average is measured. It reports the average
8096        incoming connection rate over that period, in connections per period. The
8097        result is an integer which can be matched using ACLs.
8098
8099      - sess_cnt : Session Count. It is a positive 32-bit integer which counts
8100        the absolute number of sessions received from clients which matched this
8101        entry. A session is a connection that was accepted by the layer 4 rules.
8102
8103      - sess_rate(<period>) : frequency counter (takes 12 bytes). It takes an
8104        integer parameter <period> which indicates in milliseconds the length
8105        of the period over which the average is measured. It reports the average
8106        incoming session rate over that period, in sessions per period. The
8107        result is an integer which can be matched using ACLs.
8108
8109      - http_req_cnt : HTTP request Count. It is a positive 32-bit integer which
8110        counts the absolute number of HTTP requests received from clients which
8111        matched this entry. It does not matter whether they are valid requests or
8112        not. Note that this is different from sessions when keep-alive is used on
8113        the client side.
8114
8115      - http_req_rate(<period>) : frequency counter (takes 12 bytes). It takes an
8116        integer parameter <period> which indicates in milliseconds the length
8117        of the period over which the average is measured. It reports the average
8118        HTTP request rate over that period, in requests per period. The result is
8119        an integer which can be matched using ACLs. It does not matter whether
8120        they are valid requests or not. Note that this is different from sessions
8121        when keep-alive is used on the client side.
8122
8123      - http_err_cnt : HTTP Error Count. It is a positive 32-bit integer which
8124        counts the absolute number of HTTP requests errors induced by clients
8125        which matched this entry. Errors are counted on invalid and truncated
```



```
8126        requests, as well as on denied or tarpitted requests, and on failed
8127        authentications. If the server responds with 4xx, then the request is
8128        also counted as an error since it's an error triggered by the client
8129        (eg: vulnerability scan).
8130
8131      - http_err_rate(<period>) : frequency counter (takes 12 bytes). It takes an
8132        integer parameter <period> which indicates in milliseconds the length
8133        of the period over which the average is measured. It reports the average
8134        HTTP request error rate over that period, in requests per period (see
8135        http_err_cnt above for what is accounted as an error). The result is an
8136        integer which can be matched using ACLs.
8137
8138      - bytes_in_cnt : client to server byte count. It is a positive 64-bit
8139        integer which counts the cumulated amount of bytes received from clients
8140        which matched this entry. Headers are included in the count. This may be
8141        used to limit abuse of upload features on photo or video servers.
8142
8143      - bytes_in_rate(<period>) : frequency counter (takes 12 bytes). It takes an
8144        integer parameter <period> which indicates in milliseconds the length
8145        of the period over which the average is measured. It reports the average
8146        incoming bytes rate over that period, in bytes per period. It may be used
8147        to detect users which upload too much and too fast. Warning: with large
8148        uploads, it is possible that the amount of uploaded data will be counted
8149        once upon termination, thus causing spikes in the average transfer speed
8150        instead of having a smooth one. This may partially be smoothed with
8151        "option contstats" though this is not perfect yet. Use of byte_in_cnt is
8152        recommended for better fairness.
8153
8154      - bytes_out_cnt : server to client byte count. It is a positive 64-bit
8155        integer which counts the cumulated amount of bytes sent to clients which
8156        matched this entry. Headers are included in the count. This may be used
8157        to limit abuse of bots sucking the whole site.
8158
8159      - bytes_out_rate(<period>) : frequency counter (takes 12 bytes). It takes
8160        an integer parameter <period> which indicates in milliseconds the length
8161        of the period over which the average is measured. It reports the average
8162        outgoing bytes rate over that period, in bytes per period. It may be used
8163        to detect users which download too much and too fast. Warning: with large
8164        transfers, it is possible that the amount of transferred data will be
8165        counted once upon termination, thus causing spikes in the average
8166        transfer speed instead of having a smooth one. This may partially be
8167        smoothed with "option contstats" though this is not perfect yet. Use of
8168        byte_out_cnt is recommended for better fairness.
8169
8170    There is only one stick-table per proxy. At the moment of writing this doc,
8171    it does not seem useful to have multiple tables per proxy. If this happens
8172    to be required, simply create a dummy backend with a stick-table in it and
8173    reference it.
8174
8175    It is important to understand that stickiness based on learning information
8176    has some limitations, including the fact that all learned associations are
8177    lost upon restart. In general it can be good as a complement but not always
8178    as an exclusive stickiness.
8179
8180    Last, memory requirements may be important when storing many data types.
8181    Indeed, storing all indicators above at once in each entry requires 116 bytes
8182    per entry, or 116 MB for a 1-million entries table. This is definitely not
8183    something that can be ignored.
8184
8185    Example:
8186          # Keep track of counters of up to 1 million IP addresses over 5 minutes
8187          # and store a general purpose counter and the average connection rate
8188          # computed over a sliding window of 30 seconds.
8189          stick-table type ip size 1m expire 5m store gpc0,conn_rate(30s)
8190
```

```
   See also : "stick match", "stick on", "stick store-request", section 2.2
              about time format and section 7 about ACLs.


stick store-response <pattern> [table <table>] [{if | unless} <condition>]
  Define a request pattern used to create an entry in a stickiness table
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    no    |   yes  |   yes

  Arguments :
    <pattern>  is a sample expression rule as described in section 7.3. It
               describes what elements of the response or connection will
               be analysed, extracted and stored in the table once a
               server is selected.

    <table>    is an optional stickiness table name. If unspecified, the same
               backend's table is used. A stickiness table is declared using
               the "stick-table" statement.

    <cond>     is an optional storage condition. It makes it possible to store
               certain criteria only when some conditions are met (or not met).
               For instance, it could be used to store the SSL session ID only
               when the response is a SSL server hello.

  Some protocols or applications require complex stickiness rules and cannot
  always simply rely on cookies nor hashing. The "stick store-response"
  statement  describes a rule to decide what to extract from the response and
  when to do it, in order to store it into a stickiness table for further
  requests to match it using the "stick match" statement. Obviously the
  extracted part must make sense and have a chance to be matched in a further
  request. Storing an ID found in a header of a response makes sense.
  See section 7 for a complete list of possible patterns and transformation
  rules.

  The table has to be declared using the "stick-table" statement. It must be of
  a type compatible with the pattern. By default it is the one which is present
  in the same backend. It is possible to share a table with other backends by
  referencing it using the "table" keyword. If another table is referenced,
  the server's ID inside the backends are used. By default, all server IDs
  start at 1 in each backend, so the server ordering is enough. But in case of
  doubt, it is highly recommended to force server IDs using their "id" setting.

  It is possible to restrict the conditions where a "stick store-response"
  statement will apply, using "if" or "unless" followed by a condition. This
  condition will be evaluated while parsing the response, so any criteria can
  be used. See section 7 for ACL based conditions.

  There is no limit on the number of "stick store-response" statements, but
  there is a limit of 8 simultaneous stores per request or response. This
  makes it possible to store up to 8 criteria, all extracted from either the
  request or the response, regardless of the number of rules. Only the 8 first
  ones which match will be kept. Using this, it is possible to feed multiple
  tables at once in the hope to increase the chance to recognize a user on
  another protocol or access method. Using multiple store-response rules with
  the same table is possible and may be used to find the best criterion to rely
  on, by arranging the rules by decreasing preference order. Only the first
  extracted criterion for a given table will be stored. All subsequent store-
  response rules referencing the same table will be skipped and their ACLs will
  not be evaluated. However, even if a store-request rule references a table, a
  store-response rule may also use the same table. This means that each table
  may learn exactly one element from the request and one element from the
  response at once.

  The table will contain the real server that processed the request.

```



```
  Example :
    # Learn SSL session ID from both request and response and create affinity.
    backend https
        mode tcp
        balance roundrobin
        # maximum SSL session ID length is 32 bytes.
        stick-table type binary len 32 size 30k expire 30m

        acl clienthello req_ssl_hello_type 1
        acl serverhello rep_ssl_hello_type 2

        # use tcp content accepts to detects ssl client and server hello.
        tcp-request inspect-delay 5s
        tcp-request content accept if clienthello

        # no timeout on response inspect delay by default.
        tcp-response content accept if serverhello

        # SSL session ID (SSLID) may be present on a client or server hello.
        # Its length is coded on 1 byte at offset 43 and its value starts
        # at offset 44.

        # Match and learn on request if client hello.
        stick on payload_lv(43,1) if clienthello

        # Learn on response if server hello.
        stick store-response payload_lv(43,1) if serverhello

        server s1 192.168.1.1:443
        server s2 192.168.1.1:443

  See also : "stick-table", "stick on", and section 7 about ACLs and pattern
             extraction.


tcp-check connect [params*]
  Opens a new connection
  May be used in sections:   defaults | frontend | listen | backend
                                no     |    no    |   yes  |   yes

  When an application lies on more than a single TCP port or when HAProxy
  load-balance many services in a single backend, it makes sense to probe all
  the services individually before considering a server as operational.

  When there are no TCP port configured on the server line neither server port
  directive, then the 'tcp-check connect port <port>' must be the first step
  of the sequence.

  In a tcp-check ruleset a 'connect' is required, it is also mandatory to start
  the ruleset with a 'connect' rule. Purpose is to ensure admin know what they
  do.

  Parameters :
    They are optional and can be used to describe how HAProxy should open and
    use the TCP connection.

    port      if not set, check port or server port is used.
              It tells HAProxy where to open the connection to.
              <port> must be a valid TCP port source integer, from 1 to 65535.

    send-proxy   send a PROXY protocol string

    ssl          opens a ciphered connection

    Examples:
```

```
8321           # check HTTP and HTTPs services on a server.
8322           # first open port 80 thanks to server line port directive, then
8323           # tcp-check opens port 443, ciphered and run a request on it:
8324           option tcp-check
8325           tcp-check connect
8326           tcp-check send GET\ /\ HTTP/1.0\r\n
8327           tcp-check send Host:\ haproxy.1wt.eu\r\n
8328           tcp-check send \r\n
8329           tcp-check expect rstring (2..|3..)
8330           tcp-check connect port 443 ssl
8331           tcp-check send GET\ /\ HTTP/1.0\r\n
8332           tcp-check send Host:\ haproxy.1wt.eu\r\n
8333           tcp-check send \r\n
8334           tcp-check expect rstring (2..|3..)
8335           server www 10.0.0.1 check port 80
8336
8337           # check both POP and IMAP from a single server:
8338           option tcp-check
8339           tcp-check connect port 110
8340           tcp-check expect string +OK\ POP3\ ready
8341           tcp-check connect port 143
8342           tcp-check expect string *\ OK\ IMAP4\ ready
8343           server mail 10.0.0.1 check
8344
8345     See also : "option tcp-check", "tcp-check send", "tcp-check expect"
8346
8347
8348   tcp-check expect [!] <match> <pattern>
8349     Specify data to be collected and analysed during a generic health check
8350     May be used in sections:   defaults | frontend | listen | backend
8351                                   no     |    no    |   yes  |   yes
8352
8353     Arguments :
8354       <match>   is a keyword indicating how to look for a specific pattern in the
8355                 response. The keyword may be one of "string", "rstring" or
8356                 binary.
8357                 The keyword may be preceded by an exclamation mark ("!") to negate
8358                 the match. Spaces are allowed between the exclamation mark and the
8359                 keyword. See below for more details on the supported keywords.
8360
8361       <pattern> is the pattern to look for. It may be a string or a regular
8362                 expression. If the pattern contains spaces, they must be escaped
8363                 with the usual backslash ('\').
8364                 If the match is set to binary, then the pattern must be passed as
8365                 a serie of hexadecimal digits in an even number. Each sequence of
8366                 two digits will represent a byte. The hexadecimal digits may be
8367                 used upper or lower case.
8368
8369
8370     The available matches are intentionally similar to their http-check cousins :
8371
8372       string <string> : test the exact string matches in the response buffer.
8373                         A health check response will be considered valid if the
8374                         response's buffer contains this exact string. If the
8375                         "string" keyword is prefixed with "!", then the response
8376                         will be considered invalid if the body contains this
8377                         string. This can be used to look for a mandatory pattern
8378                         in a protocol response, or to detect a failure when a
8379                         specific error appears in a protocol banner.
8380
8381       rstring <regex> : test a regular expression on the response buffer.
8382                         A health check response will be considered valid if the
8383                         response's buffer matches this expression. If the
8384                         "rstring" keyword is prefixed with "!", then the response
8385                         will be considered invalid if the body matches the
```



```
8386                         expression.
8387
8388       binary <hexstring> : test the exact string in its hexadecimal form matches
8389                            in the response buffer. A health check response will
8390                            be considered valid if the response's buffer contains
8391                            this exact hexadecimal string.
8392                            Purpose is to match data on binary protocols.
8393
8394     It is important to note that the responses will be limited to a certain size
8395     defined by the global "tune.chksize" option, which defaults to 16384 bytes.
8396     Thus, too large responses may not contain the mandatory pattern when using
8397     "string", "rstring" or binary. If a large response is absolutely required, it
8398     is possible to change the default max size by setting the global variable.
8399     However, it is worth keeping in mind that parsing very large responses can
8400     waste some CPU cycles, especially when regular expressions are used, and that
8401     it is always better to focus the checks on smaller resources. Also, in its
8402     current state, the check will not find any string nor regex past a null
8403     character in the response. Similarly it is not possible to request matching
8404     the null character.
8405
8406     Examples :
8407           # perform a POP check
8408           option tcp-check
8409           tcp-check expect string +OK\ POP3\ ready
8410
8411           # perform an IMAP check
8412           option tcp-check
8413           tcp-check expect string *\ OK\ IMAP4\ ready
8414
8415           # look for the redis master server
8416           option tcp-check
8417           tcp-check send PING\r\n
8418           tcp-check expect string +PONG
8419           tcp-check send info\ replication\r\n
8420           tcp-check expect string role:master
8421           tcp-check send QUIT\r\n
8422           tcp-check expect string +OK
8423
8424
8425     See also : "option tcp-check", "tcp-check connect", "tcp-check send",
8426                "tcp-check send-binary", "http-check expect", tune.chksize
8427
8428
8429   tcp-check send <data>
8430     Specify a string to be sent as a question during a generic health check
8431     May be used in sections:   defaults | frontend | listen | backend
8432                                   no     |    no    |   yes  |   yes
8433
8434       <data> : the data to be sent as a question during a generic health check
8435                session. For now, <data> must be a string.
8436
8437     Examples :
8438           # look for the redis master server
8439           option tcp-check
8440           tcp-check send info\ replication\r\n
8441           tcp-check expect string role:master
8442
8443     See also : "option tcp-check", "tcp-check connect", "tcp-check expect",
8444                "tcp-check send-binary", tune.chksize
8445
8446
8447   tcp-check send-binary <hexastring>
8448     Specify an hexa digits string to be sent as a binary question during a raw
8449     tcp health check
8450     May be used in sections:   defaults | frontend | listen | backend
```

```
                                 no     |    no    |   yes  |   yes

    <data> : the data to be sent as a question during a generic health check
             session. For now, <data> must be a string.
    <hexastring> : test the exact string in its hexadecimal form matches in the
                   response buffer. A health check response will be considered
                   valid if the response's buffer contains this exact
                   hexadecimal string.
                   Purpose is to send binary data to ask on binary protocols.

  Examples :
        # redis check in binary
        option tcp-check
        tcp-check send-binary 50494e470d0a # PING\r\n
        tcp-check expect binary 2b504F4e47 # +PONG


  See also : "option tcp-check", "tcp-check connect", "tcp-check expect",
             "tcp-check send", tune.chksize


tcp-request connection <action> [{if | unless} <condition>]
  Perform an action on an incoming connection depending on a layer 4 condition
  May be used in sections :   defaults | frontend | listen | backend
                                 no    |    yes   |   yes  |   no
  Arguments :
    <action>    defines the action to perform if the condition applies. See
                below.

    <condition> is a standard layer4-only ACL-based condition (see section 7).

  Immediately after acceptance of a new incoming connection, it is possible to
  evaluate some conditions to decide whether this connection must be accepted
  or dropped or have its counters tracked. Those conditions cannot make use of
  any data contents because the connection has not been read from yet, and the
  buffers are not yet allocated. This is used to selectively and very quickly
  accept or drop connections from various sources with a very low overhead. If
  some contents need to be inspected in order to take the decision, the
  "tcp-request content" statements must be used instead.

  The "tcp-request connection" rules are evaluated in their exact declaration
  order. If no rule matches or if there is no rule, the default action is to
  accept the incoming connection. There is no specific limit to the number of
  rules which may be inserted.

  Four types of actions are supported :
    - accept :
        accepts the connection if the condition is true (when used with "if")
        or false (when used with "unless"). The first such rule executed ends
        the rules evaluation.

    - reject :
        rejects the connection if the condition is true (when used with "if")
        or false (when used with "unless"). The first such rule executed ends
        the rules evaluation. Rejected connections do not even become a
        session, which is why they are accounted separately for in the stats,
        as "denied connections". They are not considered for the session
        rate-limit and are not logged either. The reason is that these rules
        should only be used to filter extremely high connection rates such as
        the ones encountered during a massive DDoS attack. Under these extreme
        conditions, the simple action of logging each event would make the
        system collapse and would considerably lower the filtering capacity. If
        logging is absolutely desired, then "tcp-request content" rules should
        be used instead.

```



```
    - expect-proxy layer4 :
        configures the client-facing connection to receive a PROXY protocol
        header before any byte is read from the socket. This is equivalent to
        having the "accept-proxy" keyword on the "bind" line, except that using
        the TCP rule allows the PROXY protocol to be accepted only for certain
        IP address ranges using an ACL. This is convenient when multiple layers
        of load balancers are passed through by traffic coming from public
        hosts.

    - capture <sample> len <length> :
        This only applies to "tcp-request content" rules. It captures sample
        expression <sample> from the request buffer, and converts it to a
        string of at most <len> characters. The resulting string is stored into
        the next request "capture" slot, so it will possibly appear next to
        some captured HTTP headers. It will then automatically appear in the
        logs, and it will be possible to extract it using sample fetch rules to
        feed it into headers or anything. The length should be limited given
        that this size will be allocated for each capture during the whole
        session life. Please check section 7.3 (Fetching samples) and "capture
        request header" for more information.

    - { track-sc0 | track-sc1 | track-sc2 } <key> [table <table>] :
        enables tracking of sticky counters from current connection. These
        rules do not stop evaluation and do not change default action. 3 sets
        of counters may be simultaneously tracked by the same connection. The
        first "track-sc0" rule executed enables tracking of the counters of the
        specified table as the first set. The first "track-sc1" rule executed
        enables tracking of the counters of the specified table as the second
        set. The first "track-sc2" rule executed enables tracking of the
        counters of the specified table as the third set. It is a recommended
        practice to use the first set of counters for the per-frontend counters
        and the second set for the per-backend ones. But this is just a
        guideline, all may be used everywhere.

        These actions take one or two arguments :
          <key>   is mandatory, and is a sample expression rule as described
                  in section 7.3. It describes what elements of the incoming
                  request or connection will be analysed, extracted, combined,
                  and used to select which table entry to update the counters.
                  Note that "tcp-request connection" cannot use content-based
                  fetches.

         <table>  is an optional table to be used instead of the default one,
                  which is the stick-table declared in the current proxy. All
                  the counters for the matches and updates for the key will
                  then be performed in that table until the session ends.

        Once a "track-sc*" rule is executed, the key is looked up in the table
        and if it is not found, an entry is allocated for it. Then a pointer to
        that entry is kept during all the session's life, and this entry's
        counters are updated as often as possible, every time the session's
        counters are updated, and also systematically when the session ends.
        Counters are only updated for events that happen after the tracking has
        been started. For example, connection counters will not be updated when
        tracking layer 7 information, since the connection event happens before
        layer7 information is extracted.

        If the entry tracks concurrent connection counters, one connection is
        counted for as long as the entry is tracked, and the entry will not
        expire during that time. Tracking counters also provides a performance
        advantage over just checking the keys, because only one table lookup is
        performed for all ACL checks that make use of it.

    - sc-inc-gpc0(<sc-id>):
        The "sc-inc-gpc0" increments the GPC0 counter according to the sticky
```

```
8581          counter designated by <sc-id>. If an error occurs, this action silently
8582          fails and the actions evaluation continues.
8583
8584      - sc-set-gpt0(<sc-id>) <int>:
8585          This action sets the GPT0 tag according to the sticky counter designated
8586          by <sc-id> and the value of <int>. The expected result is a boolean. If
8587          an error occurs, this action silently fails and the actions evaluation
8588          continues.
8589
8590      - "silent-drop" :
8591          This stops the evaluation of the rules and makes the client-facing
8592          connection suddenly disappear using a system-dependant way that tries
8593          to prevent the client from being notified. The effect it then that the
8594          client still sees an established connection while there's none on
8595          HAProxy. The purpose is to achieve a comparable effect to "tarpit"
8596          except that it doesn't use any local resource at all on the machine
8597          running HAProxy. It can resist much higher loads than "tarpit", and
8598          slow down stronger attackers. It is important to undestand the impact
8599          of using this mechanism. All stateful equipments placed between the
8600          client and HAProxy (firewalls, proxies, load balancers) will also keep
8601          the established connection for a long time and may suffer from this
8602          action.  On modern Linux systems running with enough privileges, the
8603          TCP_REPAIR socket option is used to block the emission of a TCP
8604          reset. On other systems, the socket's TTL is reduced to 1 so that the
8605          TCP reset doesn't pass the first router, though it's still delivered to
8606          local networks. Do not use it unless you fully understand how it works.
8607
8608    Note that the "if/unless" condition is optional. If no condition is set on
8609    the action, it is simply performed unconditionally. That can be useful for
8610    "track-sc*" actions as well as for changing the default action to a reject.
8611
8612    Example: accept all connections from white-listed hosts, reject too fast
8613             connection without counting them, and track accepted connections.
8614             This results in connection rate being capped from abusive sources.
8615
8616          tcp-request connection accept if { src -f /etc/haproxy/whitelist.lst }
8617          tcp-request connection reject if { src_conn_rate gt 10 }
8618          tcp-request connection track-sc0 src
8619
8620    Example: accept all connections from white-listed hosts, count all other
8621             connections and reject too fast ones. This results in abusive ones
8622             being blocked as long as they don't slow down.
8623
8624          tcp-request connection accept if { src -f /etc/haproxy/whitelist.lst }
8625          tcp-request connection track-sc0 src
8626          tcp-request connection reject if { sc0_conn_rate gt 10 }
8627
8628    Example: enable the PROXY protocol for traffic coming from all known proxies.
8629
8630          tcp-request connection expect-proxy layer4 if { src -f proxies.lst }
8631
8632    See section 7 about ACL usage.
8633
8634    See also : "tcp-request content", "stick-table"
8635
8636
8637  tcp-request content <action> [{if | unless} <condition>]
8638    Perform an action on a new session depending on a layer 4-7 condition
8639    May be used in sections :   defaults | frontend | listen | backend
8640                                   no    |    yes   |   yes  |   yes
8641    Arguments :
8642      <action>    defines the action to perform if the condition applies. See
8643                  below.
8644
8645      <condition> is a standard layer 4-7 ACL-based condition (see section 7).
```



```
8646
8647    A request's contents can be analysed at an early stage of request processing
8648    called "TCP content inspection". During this stage, ACL-based rules are
8649    evaluated every time the request contents are updated, until either an
8650    "accept" or a "reject" rule matches, or the TCP request inspection delay
8651    expires with no matching rule.
8652
8653    The first difference between these rules and "tcp-request connection" rules
8654    is that "tcp-request content" rules can make use of contents to take a
8655    decision. Most often, these decisions will consider a protocol recognition or
8656    validity. The second difference is that content-based rules can be used in
8657    both frontends and backends. In case of HTTP keep-alive with the client, all
8658    tcp-request content rules are evaluated again, so haproxy keeps a record of
8659    what sticky counters were assigned by a "tcp-request connection" versus a
8660    "tcp-request content" rule, and flushes all the content-related ones after
8661    processing an HTTP request, so that they may be evaluated again by the rules
8662    being evaluated again for the next request. This is of particular importance
8663    when the rule tracks some L7 information or when it is conditioned by an
8664    L7-based ACL, since tracking may change between requests.
8665
8666    Content-based rules are evaluated in their exact declaration order. If no
8667    rule matches or if there is no rule, the default action is to accept the
8668    contents. There is no specific limit to the number of rules which may be
8669    inserted.
8670
8671    Several types of actions are supported :
8672      - accept : the request is accepted
8673      - reject : the request is rejected and the connection is closed
8674      - capture : the specified sample expression is captured
8675      - { track-sc0 | track-sc1 | track-sc2 } <key> [table <table>]
8676      - sc-inc-gpc0(<sc-id>)
8677      - set-gpt0(<sc-id>) <int>
8678      - set-var(<var-name>) <expr>
8679      - silent-drop
8680
8681    They have the same meaning as their counter-parts in "tcp-request connection"
8682    so please refer to that section for a complete description.
8683
8684    While there is nothing mandatory about it, it is recommended to use the
8685    track-sc0 in "tcp-request connection" rules, track-sc1 for "tcp-request
8686    content" rules in the frontend, and track-sc2 for "tcp-request content"
8687    rules in the backend, because that makes the configuration more readable
8688    and easier to troubleshoot, but this is just a guideline and all counters
8689    may be used everywhere.
8690
8691    Note that the "if/unless" condition is optional. If no condition is set on
8692    the action, it is simply performed unconditionally. That can be useful for
8693    "track-sc*" actions as well as for changing the default action to a reject.
8694
8695    It is perfectly possible to match layer 7 contents with "tcp-request content"
8696    rules, since HTTP-specific ACL matches are able to preliminarily parse the
8697    contents of a buffer before extracting the required data. If the buffered
8698    contents do not parse as a valid HTTP message, then the ACL does not match.
8699    The parser which is involved there is exactly the same as for all other HTTP
8700    processing, so there is no risk of parsing something differently. In an HTTP
8701    backend connected to from an HTTP frontend, it is guaranteed that HTTP
8702    contents will always be immediately present when the rule is evaluated first.
8703
8704    Tracking layer7 information is also possible provided that the information
8705    are present when the rule is processed. The rule processing engine is able to
8706    wait until the inspect delay expires when the data to be tracked is not yet
8707    available.
8708
8709    The "set-var" is used to set the content of a variable. The variable is
8710    declared inline.
```

```
8711
8712      <var-name> The name of the variable starts by an indication about its scope.
8713                 The allowed scopes are:
8714                   "sess" : the variable is shared with all the session,
8715                   "txn"  : the variable is shared with all the transaction
8716                            (request and response)
8717                   "req"  : the variable is shared only during the request
8718                            processing
8719                   "res"  : the variable is shared only during the response
8720                            processing.
8721                 This prefix is followed by a name. The separator is a '.'.
8722                 The name may only contain characters 'a-z', 'A-Z', '0-9' and '_'.
8723
8724      <expr>     Is a standard HAProxy expression formed by a sample-fetch
8725                 followed by some converters.
8726
8727    Example:
8728
8729         tcp-request content set-var(sess.my_var) src
8730
8731    Example:
8732          # Accept HTTP requests containing a Host header saying "example.com"
8733          # and reject everything else.
8734          acl is_host_com hdr(Host) -i example.com
8735          tcp-request inspect-delay 30s
8736          tcp-request content accept if is_host_com
8737          tcp-request content reject
8738
8739    Example:
8740          # reject SMTP connection if client speaks first
8741          tcp-request inspect-delay 30s
8742          acl content_present req_len gt 0
8743          tcp-request content reject if content_present
8744
8745          # Forward HTTPS connection only if client speaks
8746          tcp-request inspect-delay 30s
8747          acl content_present req_len gt 0
8748          tcp-request content accept if content_present
8749          tcp-request content reject
8750
8751    Example:
8752          # Track the last IP from X-Forwarded-For
8753          tcp-request inspect-delay 10s
8754          tcp-request content track-sc0 hdr(x-forwarded-for,-1)
8755
8756    Example:
8757          # track request counts per "base" (concatenation of Host+URL)
8758          tcp-request inspect-delay 10s
8759          tcp-request content track-sc0 base table req-rate
8760
8761    Example: track per-frontend and per-backend counters, block abusers at the
8762             frontend when the backend detects abuse.
8763
8764          frontend http
8765              # Use General Purpose Couter 0 in SC0 as a global abuse counter
8766              # protecting all our sites
8767              stick-table type ip size 1m expire 5m store gpc0
8768              tcp-request connection track-sc0 src
8769              tcp-request connection reject if { sc0_get_gpc0 gt 0 }
8770              ...
8771              use_backend http_dynamic if { path_end .php }
8772
8773          backend http_dynamic
8774              # if a source makes too fast requests to this dynamic site (tracked
8775              # by SC1), block it globally in the frontend.
```



```
8776              stick-table type ip size 1m expire 5m store http_req_rate(10s)
8777              acl click_too_fast sc1_http_req_rate gt 10
8778              acl mark_as_abuser sc0_inc_gpc0 gt 0
8779              tcp-request content track-sc1 src
8780              tcp-request content reject if click_too_fast mark_as_abuser
8781
8782    See section 7 about ACL usage.
8783
8784    See also : "tcp-request connection", "tcp-request inspect-delay"
8785
8786
8787  tcp-request inspect-delay <timeout>
8788    Set the maximum allowed time to wait for data during content inspection
8789    May be used in sections :   defaults | frontend | listen | backend
8790                                   no    |    yes   |   yes  |   yes
8791    Arguments :
8792      <timeout> is the timeout value specified in milliseconds by default, but
8793                can be in any other unit if the number is suffixed by the unit,
8794                as explained at the top of this document.
8795
8796    People using haproxy primarily as a TCP relay are often worried about the
8797    risk of passing any type of protocol to a server without any analysis. In
8798    order to be able to analyze the request contents, we must first withhold
8799    the data then analyze them. This statement simply enables withholding of
8800    data for at most the specified amount of time.
8801
8802    TCP content inspection applies very early when a connection reaches a
8803    frontend, then very early when the connection is forwarded to a backend. This
8804    means that a connection may experience a first delay in the frontend and a
8805    second delay in the backend if both have tcp-request rules.
8806
8807    Note that when performing content inspection, haproxy will evaluate the whole
8808    rules for every new chunk which gets in, taking into account the fact that
8809    those data are partial. If no rule matches before the aforementioned delay,
8810    a last check is performed upon expiration, this time considering that the
8811    contents are definitive. If no delay is set, haproxy will not wait at all
8812    and will immediately apply a verdict based on the available information.
8813    Obviously this is unlikely to be very useful and might even be racy, so such
8814    setups are not recommended.
8815
8816    As soon as a rule matches, the request is released and continues as usual. If
8817    the timeout is reached and no rule matches, the default policy will be to let
8818    it pass through unaffected.
8819
8820    For most protocols, it is enough to set it to a few seconds, as most clients
8821    send the full request immediately upon connection. Add 3 or more seconds to
8822    cover TCP retransmits but that's all. For some protocols, it may make sense
8823    to use large values, for instance to ensure that the client never talks
8824    before the server (eg: SMTP), or to wait for a client to talk before passing
8825    data to the server (eg: SSL). Note that the client timeout must cover at
8826    least the inspection delay, otherwise it will expire first. If the client
8827    closes the connection or if the buffer is full, the delay immediately expires
8828    since the contents will not be able to change anymore.
8829
8830    See also : "tcp-request content accept", "tcp-request content reject",
8831               "timeout client".
8832
8833
8834  tcp-response content <action> [{if | unless} <condition>]
8835    Perform an action on a session response depending on a layer 4-7 condition
8836    May be used in sections :   defaults | frontend | listen | backend
8837                                   no    |    no    |   yes  |   yes
8838    Arguments :
8839      <action>    defines the action to perform if the condition applies. See
8840                  below.
```

```
8841
8842      <condition> is a standard layer 4-7 ACL-based condition (see section 7).
8843
8844    Response contents can be analysed at an early stage of response processing
8845    called "TCP content inspection". During this stage, ACL-based rules are
8846    evaluated every time the response contents are updated, until either an
8847    "accept", "close" or a "reject" rule matches, or a TCP response inspection
8848    delay is set and expires with no matching rule.
8849
8850    Most often, these decisions will consider a protocol recognition or validity.
8851
8852    Content-based rules are evaluated in their exact declaration order. If no
8853    rule matches or if there is no rule, the default action is to accept the
8854    contents. There is no specific limit to the number of rules which may be
8855    inserted.
8856
8857    Several types of actions are supported :
8858      - accept :
8859          accepts the response if the condition is true (when used with "if")
8860          or false (when used with "unless"). The first such rule executed ends
8861          the rules evaluation.
8862
8863      - close :
8864          immediately closes the connection with the server if the condition is
8865          true (when used with "if"), or false (when used with "unless"). The
8866          first such rule executed ends the rules evaluation. The main purpose of
8867          this action is to force a connection to be finished between a client
8868          and a server after an exchange when the application protocol expects
8869          some long time outs to elapse first. The goal is to eliminate idle
8870          connections which take significant resources on servers with certain
8871          protocols.
8872
8873      - reject :
8874          rejects the response if the condition is true (when used with "if")
8875          or false (when used with "unless"). The first such rule executed ends
8876          the rules evaluation. Rejected session are immediately closed.
8877
8878      - set-var(<var-name>) <expr>
8879          Sets a variable.
8880
8881      - sc-inc-gpc0(<sc-id>):
8882          This action increments the GPC0 counter according to the sticky
8883          counter designated by <sc-id>. If an error occurs, this action fails
8884          silently and the actions evaluation continues.
8885
8886      - sc-set-gpt0(<sc-id>) <int> :
8887          This action sets the GPT0 tag according to the sticky counter designated
8888          by <sc-id> and the value of <int>. The expected result is a boolean. If
8889          an error occurs, this action silently fails and the actions evaluation
8890          continues.
8891
8892      - "silent-drop" :
8893          This stops the evaluation of the rules and makes the client-facing
8894          connection suddenly disappear using a system-dependant way that tries
8895          to prevent the client from being notified. The effect it then that the
8896          client still sees an established connection while there's none on
8897          HAProxy. The purpose is to achieve a comparable effect to "tarpit"
8898          except that it doesn't use any local resource at all on the machine
8899          running HAProxy. It can resist much higher loads than "tarpit", and
8900          slow down stronger attackers. It is important to undestand the impact
8901          of using this mechanism. All stateful equipments placed between the
8902          client and HAProxy (firewalls, proxies, load balancers) will also keep
8903          the established connection for a long time and may suffer from this
8904          action.  On modern Linux systems running with enough privileges, the
8905          TCP_REPAIR socket option is used to block the emission of a TCP
```



```
8906          reset. On other systems, the socket's TTL is reduced to 1 so that the
8907          TCP reset doesn't pass the first router, though it's still delivered to
8908          local networks. Do not use it unless you fully understand how it works.
8909
8910    Note that the "if/unless" condition is optional. If no condition is set on
8911    the action, it is simply performed unconditionally. That can be useful for
8912    for changing the default action to a reject.
8913
8914    It is perfectly possible to match layer 7 contents with "tcp-response
8915    content" rules, but then it is important to ensure that a full response has
8916    been buffered, otherwise no contents will match. In order to achieve this,
8917    the best solution involves detecting the HTTP protocol during the inspection
8918    period.
8919
8920    The "set-var" is used to set the content of a variable. The variable is
8921    declared inline.
8922
8923      <var-name> The name of the variable starts by an indication about its scope.
8924                 The allowed scopes are:
8925                   "sess" : the variable is shared with all the session,
8926                   "txn"  : the variable is shared with all the transaction
8927                            (request and response)
8928                   "req"  : the variable is shared only during the request
8929                            processing
8930                   "res"  : the variable is shared only during the response
8931                            processing.
8932                 This prefix is followed by a name. The separator is a '.'.
8933                 The name may only contain characters 'a-z', 'A-Z', '0-9' and '_'.
8934
8935      <expr>     Is a standard HAProxy expression formed by a sample-fetch
8936                 followed by some converters.
8937
8938    Example:
8939
8940         tcp-request content set-var(sess.my_var) src
8941
8942    See section 7 about ACL usage.
8943
8944    See also : "tcp-request content", "tcp-response inspect-delay"
8945
8946
8947  tcp-response inspect-delay <timeout>
8948    Set the maximum allowed time to wait for a response during content inspection
8949    May be used in sections :   defaults | frontend | listen | backend
8950                                   no    |    no    |   yes  |   yes
8951    Arguments :
8952      <timeout> is the timeout value specified in milliseconds by default, but
8953                can be in any other unit if the number is suffixed by the unit,
8954                as explained at the top of this document.
8955
8956    See also : "tcp-response content", "tcp-request inspect-delay".
8957
8958
8959  timeout check <timeout>
8960    Set additional check timeout, but only after a connection has been already
8961    established.
8962
8963    May be used in sections:    defaults | frontend | listen | backend
8964                                   yes   |    no    |   yes  |   yes
8965    Arguments:
8966      <timeout> is the timeout value specified in milliseconds by default, but
8967                can be in any other unit if the number is suffixed by the unit,
8968                as explained at the top of this document.
8969
8970    If set, haproxy uses min("timeout connect", "inter") as a connect timeout
```

```
   for check and "timeout check" as an additional read timeout. The "min" is
   used so that people running with *very* long "timeout connect" (eg. those
   who needed this due to the queue or tarpit) do not slow down their checks.
   (Please also note that there is no valid reason to have such long connect
   timeouts, because "timeout queue" and "timeout tarpit" can always be used to
   avoid that).

   If "timeout check" is not set haproxy uses "inter" for complete check
   timeout (connect + read) exactly like all <1.3.15 version.

   In most cases check request is much simpler and faster to handle than normal
   requests and people may want to kick out laggy servers so this timeout should
   be smaller than "timeout server".

   This parameter is specific to backends, but can be specified once for all in
   "defaults" sections. This is in fact one of the easiest solutions not to
   forget about it.

   See also: "timeout connect", "timeout queue", "timeout server",
             "timeout tarpit".


timeout client <timeout>
timeout clitimeout <timeout> (deprecated)
  Set the maximum inactivity time on the client side.
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
  Arguments :
    <timeout> is the timeout value specified in milliseconds by default, but
              can be in any other unit if the number is suffixed by the unit,
              as explained at the top of this document.

  The inactivity timeout applies when the client is expected to acknowledge or
  send data. In HTTP mode, this timeout is particularly important to consider
  during the first phase, when the client sends the request, and during the
  response while it is reading data sent by the server. The value is specified
  in milliseconds by default, but can be in any other unit if the number is
  suffixed by the unit, as specified at the top of this document. In TCP mode
  (and to a lesser extent, in HTTP mode), it is highly recommended that the
  client timeout remains equal to the server timeout in order to avoid complex
  situations to debug. It is a good practice to cover one or several TCP packet
  losses by specifying timeouts that are slightly above multiples of 3 seconds
  (eg: 4 or 5 seconds). If some long-lived sessions are mixed with short-lived
  sessions (eg: WebSocket and HTTP), it's worth considering "timeout tunnel",
  which overrides "timeout client" and "timeout server" for tunnels, as well as
  "timeout client-fin" for half-closed connections.

  This parameter is specific to frontends, but can be specified once for all in
  "defaults" sections. This is in fact one of the easiest solutions not to
  forget about it. An unspecified timeout results in an infinite timeout, which
  is not recommended. Such a usage is accepted and works but reports a warning
  during startup because it may results in accumulation of expired sessions in
  the system if the system's timeouts are not configured either.

  This parameter replaces the old, deprecated "clitimeout". It is recommended
  to use it to write new configurations. The form "timeout clitimeout" is
  provided only by backwards compatibility but its use is strongly discouraged.

  See also : "clitimeout", "timeout server", "timeout tunnel".


timeout client-fin <timeout>
  Set the inactivity timeout on the client side for half-closed connections.
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   no
```



```
  Arguments :
    <timeout> is the timeout value specified in milliseconds by default, but
              can be in any other unit if the number is suffixed by the unit,
              as explained at the top of this document.

  The inactivity timeout applies when the client is expected to acknowledge or
  send data while one direction is already shut down. This timeout is different
  from "timeout client" in that it only applies to connections which are closed
  in one direction. This is particularly useful to avoid keeping connections in
  FIN_WAIT state for too long when clients do not disconnect cleanly. This
  problem is particularly common long connections such as RDP or WebSocket.
  Note that this timeout can override "timeout tunnel" when a connection shuts
  down in one direction.

  This parameter is specific to frontends, but can be specified once for all in
  "defaults" sections. By default it is not set, so half-closed connections
  will use the other timeouts (timeout.client or timeout.tunnel).

  See also : "timeout client", "timeout server-fin", and "timeout tunnel".


timeout connect <timeout>
timeout contimeout <timeout> (deprecated)
  Set the maximum time to wait for a connection attempt to a server to succeed.
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    no    |   yes  |   yes
  Arguments :
    <timeout> is the timeout value specified in milliseconds by default, but
              can be in any other unit if the number is suffixed by the unit,
              as explained at the top of this document.

  If the server is located on the same LAN as haproxy, the connection should be
  immediate (less than a few milliseconds). Anyway, it is a good practice to
  cover one or several TCP packet losses by specifying timeouts that are
  slightly above multiples of 3 seconds (eg: 4 or 5 seconds). By default, the
  connect timeout also presets both queue and tarpit timeouts to the same value
  if these have not been specified.

  This parameter is specific to backends, but can be specified once for all in
  "defaults" sections. This is in fact one of the easiest solutions not to
  forget about it. An unspecified timeout results in an infinite timeout, which
  is not recommended. Such a usage is accepted and works but reports a warning
  during startup because it may results in accumulation of failed sessions in
  the system if the system's timeouts are not configured either.

  This parameter replaces the old, deprecated "contimeout". It is recommended
  to use it to write new configurations. The form "timeout contimeout" is
  provided only by backwards compatibility but its use is strongly discouraged.

  See also: "timeout check", "timeout queue", "timeout server", "contimeout",
            "timeout tarpit".


timeout http-keep-alive <timeout>
  Set the maximum allowed time to wait for a new HTTP request to appear
  May be used in sections :   defaults | frontend | listen | backend
                                 yes   |    yes   |   yes  |   yes
  Arguments :
    <timeout> is the timeout value specified in milliseconds by default, but
              can be in any other unit if the number is suffixed by the unit,
              as explained at the top of this document.

  By default, the time to wait for a new request in case of keep-alive is set
  by "timeout http-request". However this is not always convenient because some
  people want very short keep-alive timeouts in order to release connections
```

faster, and others prefer to have larger ones but still have short timeouts
once the request has started to present itself.

The "http-keep-alive" timeout covers these needs. It will define how long to
wait for a new HTTP request to start coming after a response was sent. Once
the first byte of request has been seen, the "http-request" timeout is used
to wait for the complete request to come. Note that empty lines prior to a
new request do not refresh the timeout and are not counted as a new request.

There is also another difference between the two timeouts : when a connection
expires during timeout http-keep-alive, no error is returned, the connection
just closes. If the connection expires in "http-request" while waiting for a
connection to complete, a HTTP 408 error is returned.

In general it is optimal to set this value to a few tens to hundreds of
milliseconds, to allow users to fetch all objects of a page at once but
without waiting for further clicks. Also, if set to a very small value (eg:
1 millisecond) it will probably only accept pipelined requests but not the
non-pipelined ones. It may be a nice trade-off for very large sites running
with tens to hundreds of thousands of clients.

If this parameter is not set, the "http-request" timeout applies, and if both
are not set, "timeout client" still applies at the lower level. It should be
set in the frontend to take effect, unless the frontend is in TCP mode, in
which case the HTTP backend's timeout will be used.

See also : "timeout http-request", "timeout client".

timeout http-request <timeout>
  Set the maximum allowed time to wait for a complete HTTP request
  May be used in sections :   defaults | frontend | listen | backend
                                 yes | yes | yes | yes
  Arguments :
    <timeout> is the timeout value specified in milliseconds by default, but
              can be in any other unit if the number is suffixed by the unit,
              as explained at the top of this document.

In order to offer DoS protection, it may be required to lower the maximum
accepted time to receive a complete HTTP request without affecting the client
timeout. This helps protecting against established connections on which
nothing is sent. The client timeout cannot offer a good protection against
this abuse because it is an inactivity timeout, which means that if the
attacker sends one character every now and then, the timeout will not
trigger. With the HTTP request timeout, no matter what speed the client
types, the request will be aborted if it does not complete in time. When the
timeout expires, an HTTP 408 response is sent to the client to inform it
about the problem, and the connection is closed. The logs will report
termination codes "cR". Some recent browsers are having problems with this
standard, well-documented behaviour, so it might be needed to hide the 408
code using "option http-ignore-probes" or "errorfile 408 /dev/null". See
more details in the explanations of the "cR" termination code in section 8.5.

By default, this timeout only applies to the header part of the request,
and not to any data. As soon as the empty line is received, this timeout is
not used anymore. When combined with "option http-buffer-request", this
timeout also applies to the body of the request..
It is used again on keep-alive connections to wait for a second
request if "timeout http-keep-alive" is not set.

Generally it is enough to set it to a few seconds, as most clients send the
full request immediately upon connection. Add 3 or more seconds to cover TCP
retransmits but that's all. Setting it to very low values (eg: 50 ms) will
generally work on local networks as long as there are no packet losses. This
will prevent people from sending bare HTTP requests using telnet.

If this parameter is not set, the client timeout still applies between each
chunk of the incoming request. It should be set in the frontend to take
effect, unless the frontend is in TCP mode, in which case the HTTP backend's
timeout will be used.

See also : "errorfile", "http-ignore-probes", "timeout http-keep-alive", and
           "timeout client", "option http-buffer-request".

timeout queue <timeout>
  Set the maximum time to wait in the queue for a connection slot to be free
  May be used in sections :   defaults | frontend | listen | backend
                                 yes | no | yes | yes
  Arguments :
    <timeout> is the timeout value specified in milliseconds by default, but
              can be in any other unit if the number is suffixed by the unit,
              as explained at the top of this document.

When a server's maxconn is reached, connections are left pending in a queue
which may be server-specific or global to the backend. In order not to wait
indefinitely, a timeout is applied to requests pending in the queue. If the
timeout is reached, it is considered that the request will almost never be
served, so it is dropped and a 503 error is returned to the client.

The "timeout queue" statement allows to fix the maximum time for a request to
be left pending in a queue. If unspecified, the same value as the backend's
connection timeout ("timeout connect") is used, for backwards compatibility
with older versions with no "timeout queue" parameter.

See also : "timeout connect", "contimeout".

timeout server <timeout>
timeout srvtimeout <timeout> (deprecated)
  Set the maximum inactivity time on the server side.
  May be used in sections :   defaults | frontend | listen | backend
                                 yes | no | yes | yes
  Arguments :
    <timeout> is the timeout value specified in milliseconds by default, but
              can be in any other unit if the number is suffixed by the unit,
              as explained at the top of this document.

The inactivity timeout applies when the server is expected to acknowledge or
send data. In HTTP mode, this timeout is particularly important to consider
during the first phase of the server's response, when it has to send the
headers, as it directly represents the server's processing time for the
request. To find out what value to put there, it's often good to start with
what would be considered as unacceptable response times, then check the logs
to observe the response time distribution, and adjust the value accordingly.

The value is specified in milliseconds by default, but can be in any other
unit if the number is suffixed by the unit, as specified at the top of this
document. In TCP mode (and to a lesser extent, in HTTP mode), it is highly
recommended that the client timeout remains equal to the server timeout in
order to avoid complex situations to debug. Whatever the expected server
response times, it is a good practice to cover at least one or several TCP
packet losses by specifying timeouts that are slightly above multiples of 3
seconds (eg: 4 or 5 seconds minimum). If some long-lived sessions are mixed
with short-lived sessions (eg: WebSocket and HTTP), it's worth considering
"timeout tunnel", which overrides "timeout client" and "timeout server" for
tunnels.

This parameter is specific to backends, but can be specified once for all in
"defaults" sections. This is in fact one of the easiest solutions not to

```
   forget about it. An unspecified timeout results in an infinite timeout, which
   is not recommended. Such a usage is accepted and works but reports a warning
   during startup because it may results in accumulation of expired sessions in
   the system if the system's timeouts are not configured either.

   This parameter replaces the old, deprecated "srvtimeout". It is recommended
   to use it to write new configurations. The form "timeout srvtimeout" is
   provided only by backwards compatibility but its use is strongly discouraged.

   See also : "srvtimeout", "timeout client" and "timeout tunnel".


timeout server-fin <timeout>
   Set the inactivity timeout on the server side for half-closed connections.
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    no    |   yes  |   yes
   Arguments :
     <timeout> is the timeout value specified in milliseconds by default, but
               can be in any other unit if the number is suffixed by the unit,
               as explained at the top of this document.

   The inactivity timeout applies when the server is expected to acknowledge or
   send data while one direction is already shut down. This timeout is different
   from "timeout server" in that it only applies to connections which are closed
   in one direction. This is particularly useful to avoid keeping connections in
   FIN_WAIT state for too long when a remote server does not disconnect cleanly.
   This problem is particularly common long connections such as RDP or WebSocket.
   Note that this timeout can override "timeout tunnel" when a connection shuts
   down in one direction. This setting was provided for completeness, but in most
   situations, it should not be needed.

   This parameter is specific to backends, but can be specified once for all in
   "defaults" sections. By default it is not set, so half-closed connections
   will use the other timeouts (timeout.server or timeout.tunnel).

   See also : "timeout client-fin", "timeout server", and "timeout tunnel".


timeout tarpit <timeout>
   Set the duration for which tarpitted connections will be maintained
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    yes   |   yes  |   yes
   Arguments :
     <timeout> is the tarpit duration specified in milliseconds by default, but
               can be in any other unit if the number is suffixed by the unit,
               as explained at the top of this document.

   When a connection is tarpitted using "reqtarpit", it is maintained open with
   no activity for a certain amount of time, then closed. "timeout tarpit"
   defines how long it will be maintained open.

   The value is specified in milliseconds by default, but can be in any other
   unit if the number is suffixed by the unit, as specified at the top of this
   document. If unspecified, the same value as the backend's connection timeout
   ("timeout connect") is used, for backwards compatibility with older versions
   with no "timeout tarpit" parameter.

   See also : "timeout connect", "contimeout".


timeout tunnel <timeout>
   Set the maximum inactivity time on the client and server side for tunnels.
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    no    |   yes  |   yes
   Arguments :
```



```
     <timeout> is the timeout value specified in milliseconds by default, but
               can be in any other unit if the number is suffixed by the unit,
               as explained at the top of this document.

   The tunnel timeout applies when a bidirectional connection is established
   between a client and a server, and the connection remains inactive in both
   directions. This timeout supersedes both the client and server timeouts once
   the connection becomes a tunnel. In TCP, this timeout is used as soon as no
   analyser remains attached to either connection (eg: tcp content rules are
   accepted). In HTTP, this timeout is used when a connection is upgraded (eg:
   when switching to the WebSocket protocol, or forwarding a CONNECT request
   to a proxy), or after the first response when no keepalive/close option is
   specified.

   Since this timeout is usually used in conjunction with long-lived connections,
   it usually is a good idea to also set "timeout client-fin" to handle the
   situation where a client suddenly disappears from the net and does not
   acknowledge a close, or sends a shutdown and does not acknowledge pending
   data anymore. This can happen in lossy networks where firewalls are present,
   and is detected by the presence of large amounts of sessions in a FIN_WAIT
   state.

   The value is specified in milliseconds by default, but can be in any other
   unit if the number is suffixed by the unit, as specified at the top of this
   document. Whatever the expected normal idle time, it is a good practice to
   cover at least one or several TCP packet losses by specifying timeouts that
   are slightly above multiples of 3 seconds (eg: 4 or 5 seconds minimum).

   This parameter is specific to backends, but can be specified once for all in
   "defaults" sections. This is in fact one of the easiest solutions not to
   forget about it.

   Example :
         defaults http
             option http-server-close
             timeout connect 5s
             timeout client 30s
             timeout client-fin 30s
             timeout server 30s
             timeout tunnel  1h    # timeout to use with WebSocket and CONNECT

   See also : "timeout client", "timeout client-fin", "timeout server".


transparent (deprecated)
   Enable client-side transparent proxying
   May be used in sections :   defaults | frontend | listen | backend
                                  yes   |    no    |   yes  |   yes
   Arguments : none

   This keyword was introduced in order to provide layer 7 persistence to layer
   3 load balancers. The idea is to use the OS's ability to redirect an incoming
   connection for a remote address to a local process (here HAProxy), and let
   this process know what address was initially requested. When this option is
   used, sessions without cookies will be forwarded to the original destination
   IP address of the incoming request (which should match that of another
   equipment), while requests with cookies will still be forwarded to the
   appropriate server.

   The "transparent" keyword is deprecated, use "option transparent" instead.

   Note that contrary to a common belief, this option does NOT make HAProxy
   present the client's IP to the server when establishing the connection.

   See also: "option transparent"
```

```
9361
9362  unique-id-format <string>
9363    Generate a unique ID for each request.
9364    May be used in sections :   defaults | frontend | listen | backend
9365                                   yes   |    yes   |   yes  |   no
9366    Arguments :
9367      <string>   is a log-format string.
9368
9369    This keyword creates a ID for each request using the custom log format. A
9370    unique ID is useful to trace a request passing through many components of
9371    a complex infrastructure. The newly created ID may also be logged using the
9372    %ID tag the log-format string.
9373
9374    The format should be composed from elements that are guaranteed to be
9375    unique when combined together. For instance, if multiple haproxy instances
9376    are involved, it might be important to include the node name. It is often
9377    needed to log the incoming connection's source and destination addresses
9378    and ports. Note that since multiple requests may be performed over the same
9379    connection, including a request counter may help differentiate them.
9380    Similarly, a timestamp may protect against a rollover of the counter.
9381    Logging the process ID will avoid collisions after a service restart.
9382
9383    It is recommended to use hexadecimal notation for many fields since it
9384    makes them more compact and saves space in logs.
9385
9386    Example:
9387
9388          unique-id-format %{+X}o\ %ci:%cp_%fi:%fp_%Ts_%rt:%pid
9389
9390          will generate:
9391
9392                7F000001:8296_7F00001E:1F90_4F7B0A69_0003:790A
9393
9394    See also: "unique-id-header"
9395
9396  unique-id-header <name>
9397    Add a unique ID header in the HTTP request.
9398    May be used in sections :   defaults | frontend | listen | backend
9399                                   yes   |    yes   |   yes  |   no
9400    Arguments :
9401      <name>   is the name of the header.
9402
9403    Add a unique-id header in the HTTP request sent to the server, using the
9404    unique-id-format. It can't work if the unique-id-format doesn't exist.
9405
9406    Example:
9407
9408          unique-id-format %{+X}o\ %ci:%cp_%fi:%fp_%Ts_%rt:%pid
9409          unique-id-header X-Unique-ID
9410
9411          will generate:
9412
9413             X-Unique-ID: 7F000001:8296_7F00001E:1F90_4F7B0A69_0003:790A
9414
9415      See also: "unique-id-format"
9416
9417  use_backend <backend> [{if | unless} <condition>]
9418    Switch to a specific backend if/unless an ACL-based condition is matched.
9419    May be used in sections :   defaults | frontend | listen | backend
9420                                   no   |    yes   |   yes  |   no
9421    Arguments :
9422      <backend>   is the name of a valid backend or "listen" section, or a
9423                  "log-format" string resolving to a backend name.
9424
9425      <condition> is a condition composed of ACLs, as described in section 7. If
```



```
9426                  it is omitted, the rule is unconditionally applied.
9427
9428    When doing content-switching, connections arrive on a frontend and are then
9429    dispatched to various backends depending on a number of conditions. The
9430    relation between the conditions and the backends is described with the
9431    "use_backend" keyword. While it is normally used with HTTP processing, it can
9432    also be used in pure TCP, either without content using stateless ACLs (eg:
9433    source address validation) or combined with a "tcp-request" rule to wait for
9434    some payload.
9435
9436    There may be as many "use_backend" rules as desired. All of these rules are
9437    evaluated in their declaration order, and the first one which matches will
9438    assign the backend.
9439
9440    In the first form, the backend will be used if the condition is met. In the
9441    second form, the backend will be used if the condition is not met. If no
9442    condition is valid, the backend defined with "default_backend" will be used.
9443    If no default backend is defined, either the servers in the same section are
9444    used (in case of a "listen" section) or, in case of a frontend, no server is
9445    used and a 503 service unavailable response is returned.
9446
9447    Note that it is possible to switch from a TCP frontend to an HTTP backend. In
9448    this case, either the frontend has already checked that the protocol is HTTP,
9449    and backend processing will immediately follow, or the backend will wait for
9450    a complete HTTP request to get in. This feature is useful when a frontend
9451    must decode several protocols on a unique port, one of them being HTTP.
9452
9453    When <backend> is a simple name, it is resolved at configuration time, and an
9454    error is reported if the specified backend does not exist. If <backend> is
9455    a log-format string instead, no check may be done at configuration time, so
9456    the backend name is resolved dynamically at run time. If the resulting
9457    backend name does not correspond to any valid backend, no other rule is
9458    evaluated, and the default_backend directive is applied instead. Note that
9459    when using dynamic backend names, it is highly recommended to use a prefix
9460    that no other backend uses in order to ensure that an unauthorized backend
9461    cannot be forced from the request.
9462
9463    It is worth mentioning that "use_backend" rules with an explicit name are
9464    used to detect the association between frontends and backends to compute the
9465    backend's "fullconn" setting. This cannot be done for dynamic names.
9466
9467    See also: "default_backend", "tcp-request", "fullconn", "log-format", and
9468              section 7 about ACLs.
9469
9470
9471  use-server <server> if <condition>
9472  use-server <server> unless <condition>
9473    Only use a specific server if/unless an ACL-based condition is matched.
9474    May be used in sections :   defaults | frontend | listen | backend
9475                                   no   |    no    |   yes  |   yes
9476    Arguments :
9477      <server>    is the name of a valid server in the same backend section.
9478
9479      <condition> is a condition composed of ACLs, as described in section 7.
9480
9481    By default, connections which arrive to a backend are load-balanced across
9482    the available servers according to the configured algorithm, unless a
9483    persistence mechanism such as a cookie is used and found in the request.
9484
9485    Sometimes it is desirable to forward a particular request to a specific
9486    server without having to declare a dedicated backend for this server. This
9487    can be achieved using the "use-server" rules. These rules are evaluated after
9488    the "redirect" rules and before evaluating cookies, and they have precedence
9489    on them. There may be as many "use-server" rules as desired. All of these
9490    rules are evaluated in their declaration order, and the first one which
```

```
   matches will assign the server.

   If a rule designates a server which is down, and "option persist" is not used
   and no force-persist rule was validated, it is ignored and evaluation goes on
   with the next rules until one matches.

   In the first form, the server will be used if the condition is met. In the
   second form, the server will be used if the condition is not met. If no
   condition is valid, the processing continues and the server will be assigned
   according to other persistence mechanisms.

   Note that even if a rule is matched, cookie processing is still performed but
   does not assign the server. This allows prefixed cookies to have their prefix
   stripped.

   The "use-server" statement works both in HTTP and TCP mode. This makes it
   suitable for use with content-based inspection. For instance, a server could
   be selected in a farm according to the TLS SNI field. And if these servers
   have their weight set to zero, they will not be used for other traffic.

   Example :
      # intercept incoming TLS requests based on the SNI field
      use-server www if { req_ssl_sni -i www.example.com }
      server     www 192.168.0.1:443 weight 0
      use-server mail if { req_ssl_sni -i mail.example.com }
      server     mail 192.168.0.1:587 weight 0
      use-server imap if { req_ssl_sni -i imap.example.com }
      server     mail 192.168.0.1:993 weight 0
      # all the rest is forwarded to this server
      server  default 192.168.0.2:443 check

   See also: "use_backend", section 5 about server and section 7 about ACLs.


5. Bind and Server options
--------------------------

The "bind", "server" and "default-server" keywords support a number of settings
depending on some build options and on the system HAProxy was built on. These
settings generally each consist in one word sometimes followed by a value,
written on the same line as the "bind" or "server" line. All these options are
described in this section.


5.1. Bind options
-----------------

The "bind" keyword supports a certain number of settings which are all passed
as arguments on the same line. The order in which those arguments appear makes
no importance, provided that they appear after the bind address. All of these
parameters are optional. Some of them consist in a single words (booleans),
while other ones expect a value after them. In this case, the value must be
provided immediately after the setting name.

The currently supported settings are the following ones.

accept-proxy
  Enforces the use of the PROXY protocol over any connection accepted by any of
  the sockets declared on the same line. Versions 1 and 2 of the PROXY protocol
  are supported and correctly detected. The PROXY protocol dictates the layer
  3/4 addresses of the incoming connection to be used everywhere an address is
  used, with the only exception of "tcp-request connection" rules which will
  only see the real connection address. Logs will reflect the addresses
  indicated in the protocol, unless it is violated, in which case the real
  address will still be used.  This keyword combined with support from external
```



```
  components can be used as an efficient and reliable alternative to the
  X-Forwarded-For mechanism which is not always reliable and not even always
  usable. See also "tcp-request connection expect-proxy" for a finer-grained
  setting of which client is allowed to use the protocol.

alpn <protocols>
  This enables the TLS ALPN extension and advertises the specified protocol
  list as supported on top of ALPN. The protocol list consists in a comma-
  delimited list of protocol names, for instance: "http/1.1,http/1.0" (without
  quotes). This requires that the SSL library is build with support for TLS
  extensions enabled (check with haproxy -vv). The ALPN extension replaces the
  initial NPN extension.

backlog <backlog>
  Sets the socket's backlog to this value. If unspecified, the frontend's
  backlog is used instead, which generally defaults to the maxconn value.

ecdhe <named curve>
  This setting is only available when support for OpenSSL was built in. It sets
  the named curve (RFC 4492) used to generate ECDH ephemeral keys. By default,
  used named curve is prime256v1.

ca-file <cafile>
  This setting is only available when support for OpenSSL was built in. It
  designates a PEM file from which to load CA certificates used to verify
  client's certificate.

ca-ignore-err [all|<errorID>,...]
  This setting is only available when support for OpenSSL was built in.
  Sets a comma separated list of errorIDs to ignore during verify at depth > 0.
  If set to 'all', all errors are ignored. SSL handshake is not aborted if an
  error is ignored.

ca-sign-file <cafile>
  This setting is only available when support for OpenSSL was built in. It
  designates a PEM file containing both the CA certificate and the CA private
  key used to create and sign server's certificates. This is a mandatory
  setting when the dynamic generation of certificates is enabled. See
  'generate-certificates' for details.

ca-sign-passphrase <passphrase>
  This setting is only available when support for OpenSSL was built in. It is
  the CA private key passphrase. This setting is optional and used only when
  the dynamic generation of certificates is enabled. See
  'generate-certificates' for details.

ciphers <ciphers>
  This setting is only available when support for OpenSSL was built in. It sets
  the string describing the list of cipher algorithms ("cipher suite") that are
  negotiated during the SSL/TLS handshake. The format of the string is defined
  in "man 1 ciphers" from OpenSSL man pages, and can be for instance a string
  such as "AES:ALL:!aNULL:!eNULL:+RC4:@STRENGTH" (without quotes).

crl-file <crlfile>
  This setting is only available when support for OpenSSL was built in. It
  designates a PEM file from which to load certificate revocation list used
  to verify client's certificate.

crt <cert>
  This setting is only available when support for OpenSSL was built in. It
  designates a PEM file containing both the required certificates and any
  associated private keys. This file can be built by concatenating multiple
  PEM files into one (e.g. cat cert.pem key.pem > combined.pem). If your CA
  requires an intermediate certificate, this can also be concatenated into this
  file.
```

If the OpenSSL used supports Diffie-Hellman, parameters present in this file are loaded.

If a directory name is used instead of a PEM file, then all files found in that directory will be loaded in alphabetic order unless their name ends with '.issuer', '.ocsp' or '.sctl' (reserved extensions). This directive may be specified multiple times in order to load certificates from multiple files or directories. The certificates will be presented to clients who provide a valid TLS Server Name Indication field matching one of their CN or alt subjects. Wildcards are supported, where a wildcard character '*' is used instead of the first hostname component (eg: *.example.org matches www.example.org but not www.sub.example.org).

If no SNI is provided by the client or if the SSL library does not support TLS extensions, or if the client provides an SNI hostname which does not match any certificate, then the first loaded certificate will be presented. This means that when loading certificates from a directory, it is highly recommended to load the default one first as a file or to ensure that it will always be the first one in the directory.

Note that the same cert may be loaded multiple times without side effects.

Some CAs (such as Godaddy) offer a drop down list of server types that do not include HAProxy when obtaining a certificate. If this happens be sure to choose a webserver that the CA believes requires an intermediate CA (for Godaddy, selection Apache Tomcat will get the correct bundle, but many others, e.g. nginx, result in a wrong bundle that will not work for some clients).

For each PEM file, haproxy checks for the presence of file at the same path suffixed by ".ocsp". If such file is found, support for the TLS Certificate Status Request extension (also known as "OCSP stapling") is automatically enabled. The content of this file is optional. If not empty, it must contain a valid OCSP Response in DER format. In order to be valid an OCSP Response must comply with the following rules: it has to indicate a good status, it has to be a single response for the certificate of the PEM file, and it has to be valid at the moment of addition. If these rules are not respected the OCSP Response is ignored and a warning is emitted. In order to identify which certificate an OCSP Response applies to, the issuer's certificate is necessary. If the issuer's certificate is not found in the PEM file, it will be loaded from a file at the same path as the PEM file suffixed by ".issuer" if it exists otherwise it will fail with an error.

For each PEM file, haproxy also checks for the presence of file at the same path suffixed by ".sctl". If such file is found, support for Certificate Transparency (RFC6962) TLS extension is enabled. The file must contain a valid Signed Certificate Timestamp List, as described in RFC. File is parsed to check basic syntax, but no signatures are verified.

There are cases where it is desirable support multiple key types (RSA/ECDSA) in the cipher suites offered to the clients. This allows clients that support EC certificates to be able to use EC ciphers, while simultaneously supporting older, RSA only clients.

In order to provide this functionality, multiple PEM files, each with a different key type, are required. To associate these PEM files into a "cert bundle" that is recognized by haproxy, they must be named in the following way: All PEM files that are to be bundled must have the same base name, with a suffix indicating the key type. Currently, three suffixes are supported: rsa, dsa and ecdsa. For example, if www.example.com has two PEM files, an RSA file and an ECDSA file, they must be named: "example.pem.rsa" and "example.pem.ecdsa". The first part of the filename is arbitrary; only the suffix matters. To load this bundle into haproxy, specify the base name only:

Example : bind :8443 ssl crt example.pem

Note that the suffix is not given to haproxy, this tells haproxy to look for a cert bundle.

Haproxy will load all PEM files in the bundle at the same time to try to support multiple key types. PEM files are combined based on Common Name (CN) and Subject Alternative Name (SAN) to support SNI lookups. This means that even if you give haproxy a cert bundle, if there are no shared CN/SAN entries in the certificates in that bundle, haproxy will not be able to provide multi-cert support.

Assuming bundle in the example above contained the following:

Filename	CN	SAN
example.pem.rsa	www.example.com	rsa.example.com
example.pem.ecdsa	www.example.com	ecdsa.example.com

Users connecting with an SNI of "www.example.com" will be able to use both RSA and ECDSA cipher suites. Users connecting with an SNI of "rsa.example.com" will only be able to use RSA cipher suites, and users connecting with "ecdsa.example.com" will only be able to use ECDSA cipher suites.

If a directory name is given as the <cert> argument, haproxy will automatically search and load bundled files in that directory.

OSCP files (.ocsp) and issuer files (.issuer) are supported with multi-cert bundling. Each certificate can have its own .ocsp and .issuer file. At this time, sctl is not supported in multi-certificate bundling.

crt-ignore-err <errors>
This setting is only available when support for OpenSSL was built in. Sets a comma separated list of errorIDs to ignore during verify at depth == 0. If set to 'all', all errors are ignored. SSL handshake is not aborted if an error is ignored.

crt-list <file>
This setting is only available when support for OpenSSL was built in. It designates a list of PEM file with an optional list of SNI filter per certificate, with the following format for each line :

```
<crtfile> [[!]<snifilter> ...]
```

Wildcards are supported in the SNI filter. Negative filter are also supported, only useful in combination with a wildcard filter to exclude a particular SNI. The certificates will be presented to clients who provide a valid TLS Server Name Indication field matching one of the SNI filters. If no SNI filter is specified, the CN and alt subjects are used. This directive may be specified multiple times. See the "crt" option for more information. The default certificate is still needed to meet OpenSSL expectations. If it is not used, the 'strict-sni' option may be used.

Multi-cert bundling (see "crt") is support with crt-list, as long as only the base name is given in the crt-list. Due to the nature of bundling, all SNI filters given to a multi-cert bundle entry are ignored.

defer-accept
Is an optional keyword which is supported only on certain Linux kernels. It states that a connection will only be accepted once some data arrive on it, or at worst after the first retransmit. This should be used only on protocols for which the client talks first (eg: HTTP). It can slightly improve

```
9751    performance by ensuring that most of the request is already available when
9752    the connection is accepted. On the other hand, it will not be able to detect
9753    connections which don't talk. It is important to note that this option is
9754    broken in all kernels up to 2.6.31, as the connection is never accepted until
9755    the client talks. This can cause issues with front firewalls which would see
9756    an established connection while the proxy will only see it in SYN_RECV. This
9757    option is only supported on TCPv4/TCPv6 sockets and ignored by other ones.
9758
9759  force-sslv3
9760    This option enforces use of SSLv3 only on SSL connections instantiated from
9761    this listener. SSLv3 is generally less expensive than the TLS counterparts
9762    for high connection rates. This option is also available on global statement
9763    "ssl-default-bind-options". See also "no-tlsv*" and "no-sslv3".
9764
9765  force-tlsv10
9766    This option enforces use of TLSv1.0 only on SSL connections instantiated from
9767    this listener. This option is also available on global statement
9768    "ssl-default-bind-options". See also "no-tlsv*" and "no-sslv3".
9769
9770  force-tlsv11
9771    This option enforces use of TLSv1.1 only on SSL connections instantiated from
9772    this listener. This option is also available on global statement
9773    "ssl-default-bind-options". See also "no-tlsv*", and "no-sslv3".
9774
9775  force-tlsv12
9776    This option enforces use of TLSv1.2 only on SSL connections instantiated from
9777    this listener. This option is also available on global statement
9778    "ssl-default-bind-options". See also "no-tlsv*", and "no-sslv3".
9779
9780  generate-certificates
9781    This setting is only available when support for OpenSSL was built in. It
9782    enables the dynamic SSL certificates generation. A CA certificate and its
9783    private key are necessary (see 'ca-sign-file'). When HAProxy is configured as
9784    a transparent forward proxy, SSL requests generate errors because of a common
9785    name mismatch on the certificate presented to the client. With this option
9786    enabled, HAProxy will try to forge a certificate using the SNI hostname
9787    indicated by the client. This is done only if no certificate matches the SNI
9788    hostname (see 'crt-list'). If an error occurs, the default certificate is
9789    used, else the 'strict-sni' option is set.
9790    It can also be used when HAProxy is configured as a reverse proxy to ease the
9791    deployment of an architecture with many backends.
9792
9793    Creating a SSL certificate is an expensive operation, so a LRU cache is used
9794    to store forged certificates (see 'tune.ssl.ssl-ctx-cache-size'). It
9795    increases the HAProxy's memroy footprint to reduce latency when the same
9796    certificate is used many times.
9797
9798  gid <gid>
9799    Sets the group of the UNIX sockets to the designated system gid. It can also
9800    be set by default in the global section's "unix-bind" statement. Note that
9801    some platforms simply ignore this. This setting is equivalent to the "group"
9802    setting except that the group ID is used instead of its name. This setting is
9803    ignored by non UNIX sockets.
9804
9805  group <group>
9806    Sets the group of the UNIX sockets to the designated system group. It can
9807    also be set by default in the global section's "unix-bind" statement. Note
9808    that some platforms simply ignore this. This setting is equivalent to the
9809    "gid" setting except that the group name is used instead of its gid. This
9810    setting is ignored by non UNIX sockets.
9811
9812  id <id>
9813    Fixes the socket ID. By default, socket IDs are automatically assigned, but
9814    sometimes it is more convenient to fix them to ease monitoring. This value
9815    must be strictly positive and unique within the listener/frontend. This
```



```
9816    option can only be used when defining only a single socket.
9817
9818  interface <interface>
9819    Restricts the socket to a specific interface. When specified, only packets
9820    received from that particular interface are processed by the socket. This is
9821    currently only supported on Linux. The interface must be a primary system
9822    interface, not an aliased interface. It is also possible to bind multiple
9823    frontends to the same address if they are bound to different interfaces. Note
9824    that binding to a network interface requires root privileges. This parameter
9825    is only compatible with TCPv4/TCPv6 sockets.
9826
9827  level <level>
9828    This setting is used with the stats sockets only to restrict the nature of
9829    the commands that can be issued on the socket. It is ignored by other
9830    sockets. <level> can be one of :
9831    - "user" is the least privileged level ; only non-sensitive stats can be
9832      read, and no change is allowed. It would make sense on systems where it
9833      is not easy to restrict access to the socket.
9834    - "operator" is the default level and fits most common uses. All data can
9835      be read, and only non-sensitive changes are permitted (eg: clear max
9836      counters).
9837    - "admin" should be used with care, as everything is permitted (eg: clear
9838      all counters).
9839
9840  maxconn <maxconn>
9841    Limits the sockets to this number of concurrent connections. Extraneous
9842    connections will remain in the system's backlog until a connection is
9843    released. If unspecified, the limit will be the same as the frontend's
9844    maxconn. Note that in case of port ranges or multiple addresses, the same
9845    value will be applied to each socket. This setting enables different
9846    limitations on expensive sockets, for instance SSL entries which may easily
9847    eat all memory.
9848
9849  mode <mode>
9850    Sets the octal mode used to define access permissions on the UNIX socket. It
9851    can also be set by default in the global section's "unix-bind" statement.
9852    Note that some platforms simply ignore this. This setting is ignored by non
9853    UNIX sockets.
9854
9855  mss <maxseg>
9856    Sets the TCP Maximum Segment Size (MSS) value to be advertised on incoming
9857    connections. This can be used to force a lower MSS for certain specific
9858    ports, for instance for connections passing through a VPN. Note that this
9859    relies on a kernel feature which is theoretically supported under Linux but
9860    was buggy in all versions prior to 2.6.28. It may or may not work on other
9861    operating systems. It may also not change the advertised value but change the
9862    effective size of outgoing segments. The commonly advertised value for TCPv4
9863    over Ethernet networks is 1460 = 1500(MTU) - 40(IP+TCP). If this value is
9864    positive, it will be used as the advertised MSS. If it is negative, it will
9865    indicate by how much to reduce the incoming connection's advertised MSS for
9866    outgoing segments. This parameter is only compatible with TCP v4/v6 sockets.
9867
9868  name <name>
9869    Sets an optional name for these sockets, which will be reported on the stats
9870    page.
9871
9872  namespace <name>
9873    On Linux, it is possible to specify which network namespace a socket will
9874    belong to. This directive makes it possible to explicitly bind a listener to
9875    a namespace different from the default one. Please refer to your operating
9876    system's documentation to find more details about network namespaces.
9877
9878  nice <nice>
9879    Sets the 'niceness' of connections initiated from the socket. Value must be
9880    in the range -1024..1024 inclusive, and defaults to zero. Positive values
```

```
   means that such connections are more friendly to others and easily offer
   their place in the scheduler. On the opposite, negative values mean that
   connections want to run with a higher priority than others. The difference
   only happens under high loads when the system is close to saturation.
   Negative values are appropriate for low-latency or administration services,
   and high values are generally recommended for CPU intensive tasks such as SSL
   processing or bulk transfers which are less sensible to latency. For example,
   it may make sense to use a positive value for an SMTP socket and a negative
   one for an RDP socket.

no-sslv3
   This setting is only available when support for OpenSSL was built in. It
   disables support for SSLv3 on any sockets instantiated from the listener when
   SSL is supported. Note that SSLv2 is forced disabled in the code and cannot
   be enabled using any configuration option. This option is also available on
   global statement "ssl-default-bind-options". See also "force-tls*",
   and "force-sslv3".

no-tls-tickets
   This setting is only available when support for OpenSSL was built in. It
   disables the stateless session resumption (RFC 5077 TLS Ticket
   extension) and force to use stateful session resumption. Stateless
   session resumption is more expensive in CPU usage. This option is also
   available on global statement "ssl-default-bind-options".

no-tlsv10
   This setting is only available when support for OpenSSL was built in. It
   disables support for TLSv1.0 on any sockets instantiated from the listener
   when SSL is supported. Note that SSLv2 is forced disabled in the code and
   cannot be enabled using any configuration option. This option is also
   available on global statement "ssl-default-bind-options". See also
   "force-tlsv*", and "force-sslv3".

no-tlsv11
   This setting is only available when support for OpenSSL was built in. It
   disables support for TLSv1.1 on any sockets instantiated from the listener
   when SSL is supported. Note that SSLv2 is forced disabled in the code and
   cannot be enabled using any configuration option. This option is also
   available on global statement "ssl-default-bind-options". See also
   "force-tlsv*", and "force-sslv3".

no-tlsv12
   This setting is only available when support for OpenSSL was built in. It
   disables support for TLSv1.2 on any sockets instantiated from the listener
   when SSL is supported. Note that SSLv2 is forced disabled in the code and
   cannot be enabled using any configuration option. This option is also
   available on global statement "ssl-default-bind-options". See also
   "force-tlsv*", and "force-sslv3".

npn <protocols>
   This enables the NPN TLS extension and advertises the specified protocol list
   as supported on top of NPN. The protocol list consists in a comma-delimited
   list of protocol names, for instance: "http/1.1,http/1.0" (without quotes).
   This requires that the SSL library is build with support for TLS extensions
   enabled (check with haproxy -vv). Note that the NPN extension has been
   replaced with the ALPN extension (see the "alpn" keyword).

process [ all | odd | even | <number 1-64>[-<number 1-64>] ]
   This restricts the list of processes on which this listener is allowed to
   run. It does not enforce any process but eliminates those which do not match.
   If the frontend uses a "bind-process" setting, the intersection between the
   two is applied. If in the end the listener is not allowed to run on any
   remaining process, a warning is emitted, and the listener will either run on
   the first process of the listener if a single process was specified, or on
   all of its processes if multiple processes were specified. For the unlikely
```



```
   case where several ranges are needed, this directive may be repeated. The
   main purpose of this directive is to be used with the stats sockets and have
   one different socket per process. The second purpose is to have multiple bind
   lines sharing the same IP:port but not the same process in a listener, so
   that the system can distribute the incoming connections into multiple queues
   and allow a smoother inter-process load balancing. Currently Linux 3.9 and
   above is known for supporting this. See also "bind-process" and "nbproc".

ssl
   This setting is only available when support for OpenSSL was built in. It
   enables SSL deciphering on connections instantiated from this listener. A
   certificate is necessary (see "crt" above). All contents in the buffers will
   appear in clear text, so that ACLs and HTTP processing will only have access
   to deciphered contents.

strict-sni
   This setting is only available when support for OpenSSL was built in. The
   SSL/TLS negotiation is allow only if the client provided an SNI which match
   a certificate. The default certificate is not used.
   See the "crt" option for more information.

tcp-ut <delay>
   Sets the TCP User Timeout for all incoming connections instanciated from this
   listening socket. This option is available on Linux since version 2.6.37. It
   allows haproxy to configure a timeout for sockets which contain data not
   receiving an acknoledgement for the configured delay. This is especially
   useful on long-lived connections experiencing long idle periods such as
   remote terminals or database connection pools, where the client and server
   timeouts must remain high to allow a long period of idle, but where it is
   important to detect that the client has disappeared in order to release all
   resources associated with its connection (and the server's session). The
   argument is a delay expressed in milliseconds by default. This only works
   for regular TCP connections, and is ignored for other protocols.

tfo
   Is an optional keyword which is supported only on Linux kernels >= 3.7. It
   enables TCP Fast Open on the listening socket, which means that clients which
   support this feature will be able to send a request and receive a response
   during the 3-way handshake starting from second connection, thus saving one
   round-trip after the first connection. This only makes sense with protocols
   that use high connection rates and where each round trip matters. This can
   possibly cause issues with many firewalls which do not accept data on SYN
   packets, so this option should only be enabled once well tested. This option
   is only supported on TCPv4/TCPv6 sockets and ignored by other ones. You may
   need to build HAProxy with USE_TFO=1 if your libc doesn't define
   TCP_FASTOPEN.

tls-ticket-keys <keyfile>
   Sets the TLS ticket keys file to load the keys from. The keys need to be 48
   bytes long, encoded with base64 (ex. openssl rand -base64 48). Number of keys
   is specified by the TLS_TICKETS_NO build option (default 3) and at least as
   many keys need to be present in the file. Last TLS_TICKETS_NO keys will be
   used for decryption and the penultimate one for encryption. This enables easy
   key rotation by just appending new key to the file and reloading the process.
   Keys must be periodically rotated (ex. every 12h) or Perfect Forward Secrecy
   is compromised. It is also a good idea to keep the keys off any permanent
   storage such as hard drives (hint: use tmpfs and don't swap those files).
   Lifetime hint can be changed using tune.ssl.timeout.

transparent
   Is an optional keyword which is supported only on certain Linux kernels. It
   indicates that the addresses will be bound even if they do not belong to the
   local machine, and that packets targeting any of these addresses will be
   intercepted just as if the addresses were locally configured. This normally
   requires that IP forwarding is enabled. Caution! do not use this with the
```

```
10011     default address '*', as it would redirect any traffic for the specified port.
10012     This keyword is available only when HAProxy is built with USE_LINUX_TPROXY=1.
10013     This parameter is only compatible with TCPv4 and TCPv6 sockets, depending on
10014     kernel version. Some distribution kernels include backports of the feature,
10015     so check for support with your vendor.
10016
10017   v4v6
10018     Is an optional keyword which is supported only on most recent systems
10019     including Linux kernels >= 2.4.21. It is used to bind a socket to both IPv4
10020     and IPv6 when it uses the default address. Doing so is sometimes necessary
10021     on systems which bind to IPv6 only by default. It has no effect on non-IPv6
10022     sockets, and is overridden by the "v6only" option.
10023
10024   v6only
10025     Is an optional keyword which is supported only on most recent systems
10026     including Linux kernels >= 2.4.21. It is used to bind a socket to IPv6 only
10027     when it uses the default address. Doing so is sometimes preferred to doing it
10028     system-wide as it is per-listener. It has no effect on non-IPv6 sockets and
10029     has precedence over the "v4v6" option.
10030
10031   uid <uid>
10032     Sets the owner of the UNIX sockets to the designated system uid. It can also
10033     be set by default in the global section's "unix-bind" statement. Note that
10034     some platforms simply ignore this. This setting is equivalent to the "user"
10035     setting except that the user numeric ID is used instead of its name. This
10036     setting is ignored by non UNIX sockets.
10037
10038   user <user>
10039     Sets the owner of the UNIX sockets to the designated system user. It can also
10040     be set by default in the global section's "unix-bind" statement. Note that
10041     some platforms simply ignore this. This setting is equivalent to the "uid"
10042     setting except that the user name is used instead of its uid. This setting is
10043     ignored by non UNIX sockets.
10044
10045   verify [none|optional|required]
10046     This setting is only available when support for OpenSSL was built in. If set
10047     to 'none', client certificate is not requested. This is the default. In other
10048     cases, a client certificate is requested. If the client does not provide a
10049     certificate after the request and if 'verify' is set to 'required', then the
10050     handshake is aborted, while it would have succeeded if set to 'optional'. The
10051     certificate provided by the client is always verified using CAs from
10052     'ca-file' and optional CRLs from 'crl-file'. On verify failure the handshake
10053     is aborted, regardless of the 'verify' option, unless the error code exactly
10054     matches one of those listed with 'ca-ignore-err' or 'crt-ignore-err'.
10055
10056   5.2. Server and default-server options
10057   ------------------------------------
10058
10059   The "server" and "default-server" keywords support a certain number of settings
10060   which are all passed as arguments on the server line. The order in which those
10061   arguments appear does not count, and they are all optional. Some of those
10062   settings are single words (booleans) while others expect one or several values
10063   after them. In this case, the values must immediately follow the setting name.
10064   Except default-server, all those settings must be specified after the server's
10065   address if they are used:
10066
10067     server <name> <address>[:port] [settings ...]
10068     default-server [settings ...]
10069
10070   The currently supported settings are the following ones.
10071
10072   addr <ipv4|ipv6>
10073     Using the "addr" parameter, it becomes possible to use a different IP address
10074     to send health-checks. On some servers, it may be desirable to dedicate an IP
10075     address to specific component able to perform complex tests which are more
```



```
10076     suitable to health-checks than the application. This parameter is ignored if
10077     the "check" parameter is not set. See also the "port" parameter.
10078
10079     Supported in default-server: No
10080
10081   agent-check
10082     Enable an auxiliary agent check which is run independently of a regular
10083     health check. An agent health check is performed by making a TCP connection
10084     to the port set by the "agent-port" parameter and reading an ASCII string.
10085     The string is made of a series of words delimited by spaces, tabs or commas
10086     in any order, optionally terminated by '\r' and/or '\n', each consisting of :
10087
10088     - An ASCII representation of a positive integer percentage, e.g. "75%".
10089       Values in this format will set the weight proportional to the initial
10090       weight of a server as configured when haproxy starts. Note that a zero
10091       weight is reported on the stats page as "DRAIN" since it has the same
10092       effect on the server (it's removed from the LB farm).
10093
10094     - The word "ready". This will turn the server's administrative state to the
10095       READY mode, thus cancelling any DRAIN or MAINT state
10096
10097     - The word "drain". This will turn the server's administrative state to the
10098       DRAIN mode, thus it will not accept any new connections other than those
10099       that are accepted via persistence.
10100
10101     - The word "maint". This will turn the server's administrative state to the
10102       MAINT mode, thus it will not accept any new connections at all, and health
10103       checks will be stopped.
10104
10105     - The words "down", "failed", or "stopped", optionally followed by a
10106       description string after a sharp ('#'). All of these mark the server's
10107       operating state as DOWN, but since the word itself is reported on the stats
10108       page, the difference allows an administrator to know if the situation was
10109       expected or not : the service may intentionally be stopped, may appear up
10110       but fail some validity tests, or may be seen as down (eg: missing process,
10111       or port not responding).
10112
10113     - The word "up" sets back the server's operating state as UP if health checks
10114       also report that the service is accessible.
10115
10116     Parameters which are not advertised by the agent are not changed. For
10117     example, an agent might be designed to monitor CPU usage and only report a
10118     relative weight and never interact with the operating status. Similarly, an
10119     agent could be designed as an end-user interface with 3 radio buttons
10120     allowing an administrator to change only the administrative state. However,
10121     it is important to consider that only the agent may revert its own actions,
10122     so if a server is set to DRAIN mode or to DOWN state using the agent, the
10123     agent must implement the other equivalent actions to bring the service into
10124     operations again.
10125
10126     Failure to connect to the agent is not considered an error as connectivity
10127     is tested by the regular health check which is enabled by the "check"
10128     parameter. Warning though, it is not a good idea to stop an agent after it
10129     reports "down", since only an agent reporting "up" will be able to turn the
10130     server up again. Note that the CLI on the Unix stats socket is also able to
10131     force an agent's result in order to workaround a bogus agent if needed.
10132
10133     Requires the "agent-port" parameter to be set. See also the "agent-inter"
10134     parameter.
10135
10136     Supported in default-server: No
10137
10138   agent-send <string>
10139     If this option is specified, haproxy will send the given string (verbatim)
10140     to the agent server upon connection. You could, for example, encode
```

```
10141     the backend name into this string, which would enable your agent to send
10142     different responses based on the backend. Make sure to include a '\n' if
10143     you want to terminate your request with a newline.
10144
10145   agent-inter <delay>
10146     The "agent-inter" parameter sets the interval between two agent checks
10147     to <delay> milliseconds. If left unspecified, the delay defaults to 2000 ms.
10148
10149     Just as with every other time-based parameter, it may be entered in any
10150     other explicit unit among { us, ms, s, m, h, d }. The "agent-inter"
10151     parameter also serves as a timeout for agent checks "timeout check" is
10152     not set. In order to reduce "resonance" effects when multiple servers are
10153     hosted on the same hardware, the agent and health checks of all servers
10154     are started with a small time offset between them. It is also possible to
10155     add some random noise in the agent and health checks interval using the
10156     global "spread-checks" keyword. This makes sense for instance when a lot
10157     of backends use the same servers.
10158
10159     See also the "agent-check" and "agent-port" parameters.
10160
10161     Supported in default-server: Yes
10162
10163   agent-port <port>
10164     The "agent-port" parameter sets the TCP port used for agent checks.
10165
10166     See also the "agent-check" and "agent-inter" parameters.
10167
10168     Supported in default-server: Yes
10169
10170   backup
10171     When "backup" is present on a server line, the server is only used in load
10172     balancing when all other non-backup servers are unavailable. Requests coming
10173     with a persistence cookie referencing the server will always be served
10174     though. By default, only the first operational backup server is used, unless
10175     the "allbackups" option is set in the backend. See also the "allbackups"
10176     option.
10177
10178     Supported in default-server: No
10179
10180   ca-file <cafile>
10181     This setting is only available when support for OpenSSL was built in. It
10182     designates a PEM file from which to load CA certificates used to verify
10183     server's certificate.
10184
10185     Supported in default-server: No
10186
10187   check
10188     This option enables health checks on the server. By default, a server is
10189     always considered available. If "check" is set, the server is available when
10190     accepting periodic TCP connections, to ensure that it is really able to serve
10191     requests. The default address and port to send the tests to are those of the
10192     server, and the default source is the same as the one defined in the
10193     backend. It is possible to change the address using the "addr" parameter, the
10194     port using the "port" parameter, the source address using the "source"
10195     address, and the interval and timers using the "inter", "rise" and "fall"
10196     parameters. The request method is define in the backend using the "httpchk",
10197     "smtpchk", "mysql-check", "pgsql-check" and "ssl-hello-chk" options. Please
10198     refer to those options and parameters for more information.
10199
10200     Supported in default-server: No
10201
10202   check-send-proxy
10203     This option forces emission of a PROXY protocol line with outgoing health
10204     checks, regardless of whether the server uses send-proxy or not for the
10205     normal traffic. By default, the PROXY protocol is enabled for health checks
```



```
10206     if it is already enabled for normal traffic and if no "port" nor "addr"
10207     directive is present. However, if such a directive is present, the
10208     "check-send-proxy" option needs to be used to force the use of the
10209     protocol. See also the "send-proxy" option for more information.
10210
10211     Supported in default-server: No
10212
10213   check-ssl
10214     This option forces encryption of all health checks over SSL, regardless of
10215     whether the server uses SSL or not for the normal traffic. This is generally
10216     used when an explicit "port" or "addr" directive is specified and SSL health
10217     checks are not inherited. It is important to understand that this option
10218     inserts an SSL transport layer below the checks, so that a simple TCP connect
10219     check becomes an SSL connect, which replaces the old ssl-hello-chk. The most
10220     common use is to send HTTPS checks by combining "httpchk" with SSL checks.
10221     All SSL settings are common to health checks and traffic (eg: ciphers).
10222     See the "ssl" option for more information.
10223
10224     Supported in default-server: No
10225
10226   ciphers <ciphers>
10227     This option sets the string describing the list of cipher algorithms that is
10228     is negotiated during the SSL/TLS handshake with the server. The format of the
10229     string is defined in "man 1 ciphers". When SSL is used to communicate with
10230     servers on the local network, it is common to see a weaker set of algorithms
10231     than what is used over the internet. Doing so reduces CPU usage on both the
10232     server and haproxy while still keeping it compatible with deployed software.
10233     Some algorithms such as RC4-SHA1 are reasonably cheap. If no security at all
10234     is needed and just connectivity, using DES can be appropriate.
10235
10236     Supported in default-server: No
10237
10238   cookie <value>
10239     The "cookie" parameter sets the cookie value assigned to the server to
10240     <value>. This value will be checked in incoming requests, and the first
10241     operational server possessing the same value will be selected. In return, in
10242     cookie insertion or rewrite modes, this value will be assigned to the cookie
10243     sent to the client. There is nothing wrong in having several servers sharing
10244     the same cookie value, and it is in fact somewhat common between normal and
10245     backup servers. See also the "cookie" keyword in backend section.
10246
10247     Supported in default-server: No
10248
10249   crl-file <crlfile>
10250     This setting is only available when support for OpenSSL was built in. It
10251     designates a PEM file from which to load certificate revocation list used
10252     to verify server's certificate.
10253
10254     Supported in default-server: No
10255
10256   crt <cert>
10257     This setting is only available when support for OpenSSL was built in.
10258     It designates a PEM file from which to load both a certificate and the
10259     associated private key. This file can be built by concatenating both PEM
10260     files into one. This certificate will be sent if the server send a client
10261     certificate request.
10262
10263     Supported in default-server: No
10264
10265   disabled
10266     The "disabled" keyword starts the server in the "disabled" state. That means
10267     that it is marked down in maintenance mode, and no connection other than the
10268     ones allowed by persist mode will reach it. It is very well suited to setup
10269     new servers, because normal traffic will never reach them, while it is still
10270     possible to test the service by making use of the force-persist mechanism.
```

```
10271
10272     Supported in default-server: No
10273
10274   error-limit <count>
10275     If health observing is enabled, the "error-limit" parameter specifies the
10276     number of consecutive errors that triggers event selected by the "on-error"
10277     option. By default it is set to 10 consecutive errors.
10278
10279     Supported in default-server: Yes
10280
10281     See also the "check", "error-limit" and "on-error".
10282
10283   fall <count>
10284     The "fall" parameter states that a server will be considered as dead after
10285     <count> consecutive unsuccessful health checks. This value defaults to 3 if
10286     unspecified. See also the "check", "inter" and "rise" parameters.
10287
10288     Supported in default-server: Yes
10289
10290   force-sslv3
10291     This option enforces use of SSLv3 only when SSL is used to communicate with
10292     the server. SSLv3 is generally less expensive than the TLS counterparts for
10293     high connection rates. This option is also available on global statement
10294     "ssl-default-server-options". See also "no-tlsv*", "no-sslv3".
10295
10296     Supported in default-server: No
10297
10298   force-tlsv10
10299     This option enforces use of TLSv1.0 only when SSL is used to communicate with
10300     the server. This option is also available on global statement
10301     "ssl-default-server-options". See also "no-tlsv*", "no-sslv3".
10302
10303     Supported in default-server: No
10304
10305   force-tlsv11
10306     This option enforces use of TLSv1.1 only when SSL is used to communicate with
10307     the server. This option is also available on global statement
10308     "ssl-default-server-options". See also "no-tlsv*", "no-sslv3".
10309
10310     Supported in default-server: No
10311
10312   force-tlsv12
10313     This option enforces use of TLSv1.2 only when SSL is used to communicate with
10314     the server. This option is also available on global statement
10315     "ssl-default-server-options". See also "no-tlsv*", "no-sslv3".
10316
10317     Supported in default-server: No
10318
10319   id <value>
10320     Set a persistent ID for the server. This ID must be positive and unique for
10321     the proxy. An unused ID will automatically be assigned if unset. The first
10322     assigned value will be 1. This ID is currently only returned in statistics.
10323
10324     Supported in default-server: No
10325
10326   inter <delay>
10327   fastinter <delay>
10328   downinter <delay>
10329     The "inter" parameter sets the interval between two consecutive health checks
10330     to <delay> milliseconds. If left unspecified, the delay defaults to 2000 ms.
10331     It is also possible to use "fastinter" and "downinter" to optimize delays
10332     between checks depending on the server state :
10333
10334                 Server state                   |         Interval used
10335       ---------------------------------------+----------------------------------
```



```
10336        UP 100% (non-transitional)             | "inter"
10337       ---------------------------------------+----------------------------------
10338        Transitionally UP (going down "fall"), | "fastinter" if set,
10339        Transitionally DOWN (going up "rise"), | "inter" otherwise.
10340        or yet unchecked.                      |
10341       ---------------------------------------+----------------------------------
10342        DOWN 100% (non-transitional)           | "downinter" if set,
10343                                               | "inter" otherwise.
10344       ---------------------------------------+----------------------------------
10345
10346     Just as with every other time-based parameter, they can be entered in any
10347     other explicit unit among { us, ms, s, m, h, d }. The "inter" parameter also
10348     serves as a timeout for health checks sent to servers if "timeout check" is
10349     not set. In order to reduce "resonance" effects when multiple servers are
10350     hosted on the same hardware, the agent and health checks of all servers
10351     are started with a small time offset between them. It is also possible to
10352     add some random noise in the agent and health checks interval using the
10353     global "spread-checks" keyword. This makes sense for instance when a lot
10354     of backends use the same servers.
10355
10356     Supported in default-server: Yes
10357
10358   maxconn <maxconn>
10359     The "maxconn" parameter specifies the maximal number of concurrent
10360     connections that will be sent to this server. If the number of incoming
10361     concurrent requests goes higher than this value, they will be queued, waiting
10362     for a connection to be released. This parameter is very important as it can
10363     save fragile servers from going down under extreme loads. If a "minconn"
10364     parameter is specified, the limit becomes dynamic. The default value is "0"
10365     which means unlimited. See also the "minconn" and "maxqueue" parameters, and
10366     the backend's "fullconn" keyword.
10367
10368     Supported in default-server: Yes
10369
10370   maxqueue <maxqueue>
10371     The "maxqueue" parameter specifies the maximal number of connections which
10372     will wait in the queue for this server. If this limit is reached, next
10373     requests will be redispatched to other servers instead of indefinitely
10374     waiting to be served. This will break persistence but may allow people to
10375     quickly re-log in when the server they try to connect to is dying. The
10376     default value is "0" which means the queue is unlimited. See also the
10377     "maxconn" and "minconn" parameters.
10378
10379     Supported in default-server: Yes
10380
10381   minconn <minconn>
10382     When the "minconn" parameter is set, the maxconn limit becomes a dynamic
10383     limit following the backend's load. The server will always accept at least
10384     <minconn> connections, never more than <maxconn>, and the limit will be on
10385     the ramp between both values when the backend has less than <fullconn>
10386     concurrent connections. This makes it possible to limit the load on the
10387     server during normal loads, but push it further for important loads without
10388     overloading the server during exceptional loads. See also the "maxconn"
10389     and "maxqueue" parameters, as well as the "fullconn" backend keyword.
10390
10391     Supported in default-server: Yes
10392
10393   namespace <name>
10394     On Linux, it is possible to specify which network namespace a socket will
10395     belong to. This directive makes it possible to explicitly bind a server to
10396     a namespace different from the default one. Please refer to your operating
10397     system's documentation to find more details about network namespaces.
10398
10399   no-ssl-reuse
10400     This option disables SSL session reuse when SSL is used to communicate with
```

```
10401     the server. It will force the server to perform a full handshake for every
10402     new connection. It's probably only useful for benchmarking, troubleshooting,
10403     and for paranoid users.
10404
10405     Supported in default-server: No
10406
10407   no-sslv3
10408     This option disables support for SSLv3 when SSL is used to communicate with
10409     the server. Note that SSLv2 is disabled in the code and cannot be enabled
10410     using any configuration option. See also "force-sslv3", "force-tlsv*".
10411
10412     Supported in default-server: No
10413
10414   no-tls-tickets
10415     This setting is only available when support for OpenSSL was built in. It
10416     disables the stateless session resumption (RFC 5077 TLS Ticket
10417     extension) and force to use stateful session resumption. Stateless
10418     session resumption is more expensive in CPU usage for servers. This option
10419     is also available on global statement "ssl-default-server-options".
10420
10421     Supported in default-server: No
10422
10423   no-tlsv10
10424     This option disables support for TLSv1.0 when SSL is used to communicate with
10425     the server. Note that SSLv2 is disabled in the code and cannot be enabled
10426     using any configuration option. TLSv1 is more expensive than SSLv3 so it
10427     often makes sense to disable it when communicating with local servers. This
10428     option is also available on global statement "ssl-default-server-options".
10429     See also "force-sslv3", "force-tlsv*".
10430
10431     Supported in default-server: No
10432
10433   no-tlsv11
10434     This option disables support for TLSv1.1 when SSL is used to communicate with
10435     the server. Note that SSLv2 is disabled in the code and cannot be enabled
10436     using any configuration option. TLSv1 is more expensive than SSLv3 so it
10437     often makes sense to disable it when communicating with local servers. This
10438     option is also available on global statement "ssl-default-server-options".
10439     See also "force-sslv3", "force-tlsv*".
10440
10441     Supported in default-server: No
10442
10443   no-tlsv12
10444     This option disables support for TLSv1.2 when SSL is used to communicate with
10445     the server. Note that SSLv2 is disabled in the code and cannot be enabled
10446     using any configuration option. TLSv1 is more expensive than SSLv3 so it
10447     often makes sense to disable it when communicating with local servers. This
10448     option is also available on global statement "ssl-default-server-options".
10449     See also "force-sslv3", "force-tlsv*".
10450
10451     Supported in default-server: No
10452
10453   non-stick
10454     Never add connections allocated to this sever to a stick-table.
10455     This may be used in conjunction with backup to ensure that
10456     stick-table persistence is disabled for backup servers.
10457
10458     Supported in default-server: No
10459
10460   observe <mode>
10461     This option enables health adjusting based on observing communication with
10462     the server. By default this functionality is disabled and enabling it also
10463     requires to enable health checks. There are two supported modes: "layer4" and
10464     "layer7". In layer4 mode, only successful/unsuccessful tcp connections are
10465     significant. In layer7, which is only allowed for http proxies, responses
```



```
10466     received from server are verified, like valid/wrong http code, unparsable
10467     headers, a timeout, etc. Valid status codes include 100 to 499, 501 and 505.
10468
10469     Supported in default-server: No
10470
10471     See also the "check", "on-error" and "error-limit".
10472
10473   on-error <mode>
10474     Select what should happen when enough consecutive errors are detected.
10475     Currently, four modes are available:
10476     - fastinter: force fastinter
10477     - fail-check: simulate a failed check, also forces fastinter (default)
10478     - sudden-death: simulate a pre-fatal failed health check, one more failed
10479       check will mark a server down, forces fastinter
10480     - mark-down: mark the server immediately down and force fastinter
10481
10482     Supported in default-server: Yes
10483
10484     See also the "check", "observe" and "error-limit".
10485
10486   on-marked-down <action>
10487     Modify what occurs when a server is marked down.
10488     Currently one action is available:
10489     - shutdown-sessions: Shutdown peer sessions. When this setting is enabled,
10490       all connections to the server are immediately terminated when the server
10491       goes down. It might be used if the health check detects more complex cases
10492       than a simple connection status, and long timeouts would cause the service
10493       to remain unresponsive for too long a time. For instance, a health check
10494       might detect that a database is stuck and that there's no chance to reuse
10495       existing connections anymore. Connections killed this way are logged with
10496       a 'D' termination code (for "Down").
10497
10498     Actions are disabled by default
10499
10500     Supported in default-server: Yes
10501
10502   on-marked-up <action>
10503     Modify what occurs when a server is marked up.
10504     Currently one action is available:
10505     - shutdown-backup-sessions: Shutdown sessions on all backup servers. This is
10506       done only if the server is not in backup state and if it is not disabled
10507       (it must have an effective weight > 0). This can be used sometimes to force
10508       an active server to take all the traffic back after recovery when dealing
10509       with long sessions (eg: LDAP, SQL, ...). Doing this can cause more trouble
10510       than it tries to solve (eg: incomplete transactions), so use this feature
10511       with extreme care. Sessions killed because a server comes up are logged
10512       with an 'U' termination code (for "Up").
10513
10514     Actions are disabled by default
10515
10516     Supported in default-server: Yes
10517
10518   port <port>
10519     Using the "port" parameter, it becomes possible to use a different port to
10520     send health-checks. On some servers, it may be desirable to dedicate a port
10521     to a specific component able to perform complex tests which are more suitable
10522     to health-checks than the application. It is common to run a simple script in
10523     inetd for instance. This parameter is ignored if the "check" parameter is not
10524     set. See also the "addr" parameter.
10525
10526     Supported in default-server: Yes
10527
10528   redir <prefix>
10529     The "redir" parameter enables the redirection mode for all GET and HEAD
10530     requests addressing this server. This means that instead of having HAProxy
```

```
10531     forward the request to the server, it will send an "HTTP 302" response with
10532     the "Location" header composed of this prefix immediately followed by the
10533     requested URI beginning at the leading '/' of the path component. That means
10534     that no trailing slash should be used after <prefix>. All invalid requests
10535     will be rejected, and all non-GET or HEAD requests will be normally served by
10536     the server. Note that since the response is completely forged, no header
10537     mangling nor cookie insertion is possible in the response. However, cookies in
10538     requests are still analysed, making this solution completely usable to direct
10539     users to a remote location in case of local disaster. Main use consists in
10540     increasing bandwidth for static servers by having the clients directly
10541     connect to them. Note: never use a relative location here, it would cause a
10542     loop between the client and HAProxy!
10543
10544     Example :  server srv1 192.168.1.1:80 redir http://image1.mydomain.com check
10545
10546     Supported in default-server: No
10547
10548   rise <count>
10549     The "rise" parameter states that a server will be considered as operational
10550     after <count> consecutive successful health checks. This value defaults to 2
10551     if unspecified. See also the "check", "inter" and "fall" parameters.
10552
10553     Supported in default-server: Yes
10554
10555   resolve-prefer <family>
10556     When DNS resolution is enabled for a server and multiple IP addresses from
10557     different families are returned, HAProxy will prefer using an IP address
10558     from the family mentioned in the "resolve-prefer" parameter.
10559     Available families: "ipv4" and "ipv6"
10560
10561     Default value: ipv6
10562
10563     Supported in default-server: Yes
10564
10565     Example: server s1 app1.domain.com:80 resolvers mydns resolve-prefer ipv6
10566
10567   resolvers <id>
10568     Points to an existing "resolvers" section to resolve current server's
10569     hostname.
10570     In order to be operational, DNS resolution requires that health check is
10571     enabled on the server. Actually, health checks triggers the DNS resolution.
10572     You must precise one 'resolvers' parameter on each server line where DNS
10573     resolution is required.
10574
10575     Supported in default-server: No
10576
10577     Example: server s1 app1.domain.com:80 check resolvers mydns
10578
10579     See also chapter 5.3
10580
10581   send-proxy
10582     The "send-proxy" parameter enforces use of the PROXY protocol over any
10583     connection established to this server. The PROXY protocol informs the other
10584     end about the layer 3/4 addresses of the incoming connection, so that it can
10585     know the client's address or the public address it accessed to, whatever the
10586     upper layer protocol. For connections accepted by an "accept-proxy" listener,
10587     the advertised address will be used. Only TCPv4 and TCPv6 address families
10588     are supported. Other families such as Unix sockets, will report an UNKNOWN
10589     family. Servers using this option can fully be chained to another instance of
10590     haproxy listening with an "accept-proxy" setting. This setting must not be
10591     used if the server isn't aware of the protocol. When health checks are sent
10592     to the server, the PROXY protocol is automatically used when this option is
10593     set, unless there is an explicit "port" or "addr" directive, in which case an
10594     explicit "check-send-proxy" directive would also be needed to use the PROXY
10595     protocol. See also the "accept-proxy" option of the "bind" keyword.
```



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10596
10597     Supported in default-server: No
10598
10599   send-proxy-v2
10600     The "send-proxy-v2" parameter enforces use of the PROXY protocol version 2
10601     over any connection established to this server. The PROXY protocol informs
10602     the other end about the layer 3/4 addresses of the incoming connection, so
10603     that it can know the client's address or the public address it accessed to,
10604     whatever the upper layer protocol. This setting must not be used if the
10605     server isn't aware of this version of the protocol. See also the "send-proxy"
10606     option of the "bind" keyword.
10607
10608     Supported in default-server: No
10609
10610   send-proxy-v2-ssl
10611     The "send-proxy-v2-ssl" parameter enforces use of the PROXY protocol version
10612     2 over any connection established to this server. The PROXY protocol informs
10613     the other end about the layer 3/4 addresses of the incoming connection, so
10614     that it can know the client's address or the public address it accessed to,
10615     whatever the upper layer protocol. In addition, the SSL information extension
10616     of the PROXY protocol is added to the PROXY protocol header. This setting
10617     must not be used if the server isn't aware of this version of the protocol.
10618     See also the "send-proxy-v2" option of the "bind" keyword.
10619
10620     Supported in default-server: No
10621
10622   send-proxy-v2-ssl-cn
10623     The "send-proxy-v2-ssl" parameter enforces use of the PROXY protocol version
10624     2 over any connection established to this server. The PROXY protocol informs
10625     the other end about the layer 3/4 addresses of the incoming connection, so
10626     that it can know the client's address or the public address it accessed to,
10627     whatever the upper layer protocol. In addition, the SSL information extension
10628     of the PROXY protocol, along along with the Common Name from the subject of
10629     the client certificate (if any), is added to the PROXY protocol header. This
10630     setting must not be used if the server isn't aware of this version of the
10631     protocol. See also the "send-proxy-v2" option of the "bind" keyword.
10632
10633     Supported in default-server: No
10634
10635   slowstart <start_time_in_ms>
10636     The "slowstart" parameter for a server accepts a value in milliseconds which
10637     indicates after how long a server which has just come back up will run at
10638     full speed. Just as with every other time-based parameter, it can be entered
10639     in any other explicit unit among { us, ms, s, m, h, d }. The speed grows
10640     linearly from 0 to 100% during this time. The limitation applies to two
10641     parameters :
10642
10643     - maxconn: the number of connections accepted by the server will grow from 1
10644       to 100% of the usual dynamic limit defined by (minconn,maxconn,fullconn).
10645
10646     - weight: when the backend uses a dynamic weighted algorithm, the weight
10647       grows linearly from 1 to 100%. In this case, the weight is updated at every
10648       health-check. For this reason, it is important that the "inter" parameter
10649       is smaller than the "slowstart", in order to maximize the number of steps.
10650
10651     The slowstart never applies when haproxy starts, otherwise it would cause
10652     trouble to running servers. It only applies when a server has been previously
10653     seen as failed.
10654
10655     Supported in default-server: Yes
10656
10657   sni <expression>
10658     The "sni" parameter evaluates the sample fetch expression, converts it to a
10659     string and uses the result as the host name sent in the SNI TLS extension to
10660     the server. A typical use case is to send the SNI received from the client in
```

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10661     a bridged HTTPS scenario, using the "ssl_fc_sni" sample fetch for the
10662     expression, though alternatives such as req.hdr(host) can also make sense.
10663
10664     Supported in default-server: no
10665
10666   source <addr>[:<pl>[-<ph>]] [usesrc { <addr2>[:<port2>] | client | clientip } ]
10667   source <addr>[:<port>] [usesrc { <addr2>[:<port2>] | hdr_ip(<hdr>[,<occ>]) } ]
10668   source <addr>[:<pl>[-<ph>]] [interface <name>] ...
10669     The "source" parameter sets the source address which will be used when
10670     connecting to the server. It follows the exact same parameters and principle
10671     as the backend "source" keyword, except that it only applies to the server
10672     referencing it. Please consult the "source" keyword for details.
10673
10674     Additionally, the "source" statement on a server line allows one to specify a
10675     source port range by indicating the lower and higher bounds delimited by a
10676     dash ('-'). Some operating systems might require a valid IP address when a
10677     source port range is specified. It is permitted to have the same IP/range for
10678     several servers. Doing so makes it possible to bypass the maximum of 64k
10679     total concurrent connections. The limit will then reach 64k connections per
10680     server.
10681
10682     Supported in default-server: No
10683
10684   ssl
10685     This option enables SSL ciphering on outgoing connections to the server. It
10686     is critical to verify server certificates using "verify" when using SSL to
10687     connect to servers, otherwise the communication is prone to trivial man in
10688     the-middle attacks rendering SSL useless. When this option is used, health
10689     checks are automatically sent in SSL too unless there is a "port" or an
10690     "addr" directive indicating the check should be sent to a different location.
10691     See the "check-ssl" option to force SSL health checks.
10692
10693     Supported in default-server: No
10694
10695   tcp-ut <delay>
10696     Sets the TCP User Timeout for all outgoing connections to this server. This
10697     option is available on Linux since version 2.6.37. It allows haproxy to
10698     configure a timeout for sockets which contain data not receiving an
10699     acknoledgement for the configured delay. This is especially useful on
10700     long-lived connections experiencing long idle periods such as remote
10701     terminals or database connection pools, where the client and server timeouts
10702     must remain high to allow a long period of idle, but where it is important to
10703     detect that the server has disappeared in order to release all resources
10704     associated with its connection (and the client's session). One typical use
10705     case is also to force dead server connections to die when health checks are
10706     too slow or during a soft reload since health checks are then disabled. The
10707     argument is a delay expressed in milliseconds by default. This only works for
10708     regular TCP connections, and is ignored for other protocols.
10709
10710   track [<proxy>/]<server>
10711     This option enables ability to set the current state of the server by tracking
10712     another one. It is possible to track a server which itself tracks another
10713     server, provided that at the end of the chain, a server has health checks
10714     enabled. If <proxy> is omitted the current one is used. If disable-on-404 is
10715     used, it has to be enabled on both proxies.
10716
10717     Supported in default-server: No
10718
10719   verify [none|required]
10720     This setting is only available when support for OpenSSL was built in. If set
10721     to 'none', server certificate is not verified. In the other case, The
10722     certificate provided by the server is verified using CAs from 'ca-file'
10723     and optional CRLs from 'crl-file'. If 'ssl_server_verify' is not specified
10724     in global  section, this is the default. On verify failure the handshake
10725     is aborted. It is critically important to verify server certificates when
```



```
10726     using SSL to connect to servers, otherwise the communication is prone to
10727     trivial man-in-the-middle attacks rendering SSL totally useless.
10728
10729     Supported in default-server: No
10730
10731   verifyhost <hostname>
10732     This setting is only available when support for OpenSSL was built in, and
10733     only takes effect if 'verify required' is also specified. When set, the
10734     hostnames in the subject and subjectAlternateNames of the certificate
10735     provided by the server are checked. If none of the hostnames in the
10736     certificate match the specified hostname, the handshake is aborted. The
10737     hostnames in the server-provided certificate may include wildcards.
10738
10739     Supported in default-server: No
10740
10741   weight <weight>
10742     The "weight" parameter is used to adjust the server's weight relative to
10743     other servers. All servers will receive a load proportional to their weight
10744     relative to the sum of all weights, so the higher the weight, the higher the
10745     load. The default weight is 1, and the maximal value is 256. A value of 0
10746     means the server will not participate in load-balancing but will still accept
10747     persistent connections. If this parameter is used to distribute the load
10748     according to server's capacity, it is recommended to start with values which
10749     can both grow and shrink, for instance between 10 and 100 to leave enough
10750     room above and below for later adjustments.
10751
10752     Supported in default-server: Yes
10753
10754
10755   5.3. Server IP address resolution using DNS
10756   -------------------------------------------
10757
10758   HAProxy allows using a host name on the server line to retrieve its IP address
10759   using name servers. By default, HAProxy resolves the name when parsing the
10760   configuration file, at startup and cache the result for the process' life.
10761   This is not sufficient in some cases, such as in Amazon where a server's IP
10762   can change after a reboot or an ELB Virtual IP can change based on current
10763   workload.
10764   This chapter describes how HAProxy can be configured to process server's name
10765   resolution at run time.
10766   Whether run time server name resolution has been enable or not, HAProxy will
10767   carry on doing the first resolution when parsing the configuration.
10768
10769   Bear in mind that DNS resolution is triggered by health checks. This makes
10770   health checks mandatory to allow DNS resolution.
10771
10772
10773   5.3.1. Global overview
10774   ----------------------
10775
10776   As we've seen in introduction, name resolution in HAProxy occurs at two
10777   different steps of the process life:
10778
10779     1. when starting up, HAProxy parses the server line definition and matches a
10780        host name. It uses libc functions to get the host name resolved. This
10781        resolution relies on /etc/resolv.conf file.
10782
10783     2. at run time, when HAProxy gets prepared to run a health check on a server,
10784        it verifies if the current name resolution is still considered as valid.
10785        If not, it processes a new resolution, in parallel of the health check.
10786
10787   A few other events can trigger a name resolution at run time:
10788     - when a server's health check ends up in a connection timeout: this may be
10789       because the server has a new IP address. So we need to trigger a name
10790       resolution to know this new IP.
```

A few things important to notice:
  - all the name servers are queried in the mean time. HAProxy will process the
    first valid response.

  - a resolution is considered as invalid (NX, timeout, refused), when all the
    servers return an error.

5.3.2. The resolvers section

This section is dedicated to host information related to name resolution in
HAProxy.
There can be as many as resolvers section as needed. Each section can contain
many name servers.

When multiple name servers are configured in a resolvers section, then HAProxy
uses the first valid response. In case of invalid responses, only the last one
is treated. Purpose is to give the chance to a slow server to deliver a valid
answer after a fast faulty or outdated server.

When each server returns a different error type, then only the last error is
used by HAProxy to decide what type of behavior to apply.

Two types of behavior can be applied:
 1. stop DNS resolution
 2. replay the DNS query with a new query type
      In such case, the following types are applied in this exact order:
        1. ANY query type
        2. query type corresponding to family pointed by resolve-prefer
           server's parameter
        3. remaining family type

HAProxy stops DNS resolution when the following errors occur:
 - invalid DNS response packet
 - wrong name in the query section of the response
 - NX domain
 - Query refused by server
 - CNAME not pointing to an IP address

HAProxy tries a new query type when the following errors occur:
 - no Answer records in the response
 - DNS response truncated
 - Error in DNS response
 - No expected DNS records found in the response
 - name server timeout

For example, with 2 name servers configured in a resolvers section:
 - first response is valid and is applied directly, second response is ignored
 - first response is invalid and second one is valid, then second response is
   applied;
 - first response is a NX domain and second one a truncated response, then
   HAProxy replays the query with a new type;
 - first response is truncated and second one is a NX Domain, then HAProxy
   stops resolution.

resolvers <resolvers id>
  Creates a new name server list labelled <resolvers id>

A resolvers section accept the following parameters:

nameserver <id> <ip>:<port>
  DNS server description:

    <id>   : label of the server, should be unique
    <ip>   : IP address of the server
    <port> : port where the DNS service actually runs

hold <status> <period>
  Defines <period> during which the last name resolution should be kept based
  on last resolution <status>
    <status> : last name resolution status. Only "valid" is accepted for now.
    <period> : interval between two successive name resolution when the last
               answer was in <status>. It follows the HAProxy time format.
               <period> is in milliseconds by default.

  Default value is 10s for "valid".

  Note: since the name resolution is triggered by the health checks, a new
        resolution is triggered after <period> modulo the <inter> parameter of
        the healch check.

resolve_retries <nb>
  Defines the number <nb> of queries to send to resolve a server name before
  giving up.
  Default value: 3

  A retry occurs on name server timeout or when the full sequence of DNS query
  type failover is over and we need to start up from the default ANY query
  type.

timeout <event> <time>
  Defines timeouts related to name resolution
    <event> : the event on which the <time> timeout period applies to.
              events available are:
              - retry: time between two DNS queries, when no response have
                       been received.
                       Default value: 1s
    <time> : time related to the event. It follows the HAProxy time format.
              <time> is expressed in milliseconds.

Example of a resolvers section (with default values):

   resolvers mydns
     nameserver dns1 10.0.0.1:53
     nameserver dns2 10.0.0.2:53
     resolve_retries   3
     timeout retry   1s
     hold valid   10s

6. HTTP header manipulation

In HTTP mode, it is possible to rewrite, add or delete some of the request and
response headers based on regular expressions. It is also possible to block a
request or a response if a particular header matches a regular expression,
which is enough to stop most elementary protocol attacks, and to protect
against information leak from the internal network.

If HAProxy encounters an "Informational Response" (status code 1xx), it is able
to process all rsp* rules which can allow, deny, rewrite or delete a header,
but it will refuse to add a header to any such messages as this is not
HTTP-compliant. The reason for still processing headers in such responses is to
stop and/or fix any possible information leak which may happen, for instance
because another downstream equipment would unconditionally add a header, or if
a server name appears there. When such messages are seen, normal processing
still occurs on the next non-informational messages.

This section covers common usage of the following keywords, described in detail
in section 4.2 :

  - reqadd   <string>
  - reqallow   <search>
  - reqiallow <search>
  - reqdel   <search>
  - reqidel   <search>
  - reqdeny   <search>
  - reqideny   <search>
  - reqpass   <search>
  - reqipass   <search>
  - reqrep   <search> <replace>
  - reqirep   <search> <replace>
  - reqtarpit <search>
  - reqitarpit <search>
  - rspadd   <string>
  - rspdel   <search>
  - rspidel   <search>
  - rspdeny   <search>
  - rspideny   <search>
  - rsprep   <search> <replace>
  - rspirep   <search> <replace>

With all these keywords, the same conventions are used. The <search> parameter
is a POSIX extended regular expression (regex) which supports grouping through
parenthesis (without the backslash). Spaces and other delimiters must be
prefixed with a backslash ('\') to avoid confusion with a field delimiter.
Other characters may be prefixed with a backslash to change their meaning :

  \t   for a tab
  \r   for a carriage return (CR)
  \n   for a new line (LF)
  \   to mark a space and differentiate it from a delimiter
  \#   to mark a sharp and differentiate it from a comment
  \\   to use a backslash in a regex
  \\\\ to use a backslash in the text (*2 for regex, *2 for haproxy)
  \xXX to write the ASCII hex code XX as in the C language

The <replace> parameter contains the string to be used to replace the largest
portion of text matching the regex. It can make use of the special characters
above, and can reference a substring which is delimited by parenthesis in the
regex, by writing a backslash ('\') immediately followed by one digit from 0 to
9 indicating the group position (0 designating the entire line). This practice
is very common to users of the "sed" program.

The <string> parameter represents the string which will systematically be added
after the last header line. It can also use special character sequences above.

Notes related to these keywords :

  - these keywords are not always convenient to allow/deny based on header
    contents. It is strongly recommended to use ACLs with the "block" keyword
    instead, resulting in far more flexible and manageable rules.

  - lines are always considered as a whole. It is not possible to reference
    a header name only or a value only. This is important because of the way
    headers are written (notably the number of spaces after the colon).

  - the first line is always considered as a header, which makes it possible to
    rewrite or filter HTTP requests URIs or response codes, but in turn makes
    it harder to distinguish between headers and request line. The regex prefix
    ^[^\ \t]*[\ \t] matches any HTTP method followed by a space, and the prefix
    ^[^ \t:]*: matches any header name followed by a colon.

  - for performances reasons, the number of characters added to a request or to
    a response is limited at build time to values between 1 and 4 kB. This
    should normally be far more than enough for most usages. If it is too short
    on occasional usages, it is possible to gain some space by removing some
    useless headers before adding new ones.

  - keywords beginning with "reqi" and "rspi" are the same as their counterpart
    without the 'i' letter except that they ignore case when matching patterns.

  - when a request passes through a frontend then a backend, all req* rules
    from the frontend will be evaluated, then all req* rules from the backend
    will be evaluated. The reverse path is applied to responses.

  - req* statements are applied after "block" statements, so that "block" is
    always the first one, but before "use_backend" in order to permit rewriting
    before switching.

7. Using ACLs and fetching samples

Haproxy is capable of extracting data from request or response streams, from
client or server information, from tables, environmental information etc...
The action of extracting such data is called fetching a sample. Once retrieved,
these samples may be used for various purposes such as a key to a stick-table,
but most common usages consist in matching them against predefined constant
data called patterns.

7.1. ACL basics

The use of Access Control Lists (ACL) provides a flexible solution to perform
content switching and generally to take decisions based on content extracted
from the request, the response or any environmental status. The principle is
simple :

  - extract a data sample from a stream, table or the environment
  - optionally apply some format conversion to the extracted sample
  - apply one or multiple pattern matching methods on this sample
  - perform actions only when a pattern matches the sample

The actions generally consist in blocking a request, selecting a backend, or
adding a header.

In order to define a test, the "acl" keyword is used. The syntax is :

   acl <aclname> <criterion> [flags] [operator] [<value>] ...

This creates a new ACL <aclname> or completes an existing one with new tests.
Those tests apply to the portion of request/response specified in <criterion>
and may be adjusted with optional flags [flags]. Some criteria also support
an operator which may be specified before the set of values. Optionally some
conversion operators may be applied to the sample, and they will be specified
as a comma-delimited list of keywords just after the first keyword. The values
are of the type supported by the criterion, and are separated by spaces.

ACL names must be formed from upper and lower case letters, digits, '-' (dash),
'_' (underscore) , '.' (dot) and ':' (colon). ACL names are case-sensitive,
which means that "my_acl" and "My_Acl" are two different ACLs.

There is no enforced limit to the number of ACLs. The unused ones do not affect
performance, they just consume a small amount of memory.

The criterion generally is the name of a sample fetch method, or one of its ACL

specific declinations. The default test method is implied by the output type of this sample fetch method. The ACL declinations can describe alternate matching methods of a same sample fetch method. The sample fetch methods are the only ones supporting a conversion.

Sample fetch methods return data which can be of the following types :
  - boolean
  - integer (signed or unsigned)
  - IPv4 or IPv6 address
  - string
  - data block

Converters transform any of these data into any of these. For example, some converters might convert a string to a lower-case string while other ones would turn a string to an IPv4 address, or apply a netmask to an IP address. The resulting sample is of the type of the last converter applied to the list, which defaults to the type of the sample fetch method.

Each sample or converter returns data of a specific type, specified with its keyword in this documentation. When an ACL is declared using a standard sample fetch method, certain types automatically involved a default matching method which are summarized in the table below :

```
   +---------------------+-----------------+
   | Sample or converter | Default         |
   |    output type      | matching method |
   +---------------------+-----------------+
   | boolean             | bool            |
   +---------------------+-----------------+
   | integer             | int             |
   +---------------------+-----------------+
   | ip                  | ip              |
   +---------------------+-----------------+
   | string              | str             |
   +---------------------+-----------------+
   | binary              | none, use "-m"  |
   +---------------------+-----------------+
```

Note that in order to match a binary samples, it is mandatory to specify a matching method, see below.

The ACL engine can match these types against patterns of the following types :
  - boolean
  - integer or integer range
  - IP address / network
  - string (exact, substring, suffix, prefix, subdir, domain)
  - regular expression
  - hex block

The following ACL flags are currently supported :

   -i : ignore case during matching of all subsequent patterns.
   -f : load patterns from a file.
   -m : use a specific pattern matching method
   -n : forbid the DNS resolutions
   -M : load the file pointed by -f like a map file.
   -u : force the unique id of the ACL
   -- : force end of flags. Useful when a string looks like one of the flags.

The "-f" flag is followed by the name of a file from which all lines will be read as individual values. It is even possible to pass multiple "-f" arguments if the patterns are to be loaded from multiple files. Empty lines as well as lines beginning with a sharp ('#') will be ignored. All leading spaces and tabs will be stripped. If it is absolutely necessary to insert a valid pattern beginning with a sharp, just prefix it with a space so that it is not taken for

a comment. Depending on the data type and match method, haproxy may load the lines into a binary tree, allowing very fast lookups. This is true for IPv4 and exact string matching. In this case, duplicates will automatically be removed.

The "-M" flag allows an ACL to use a map file. If this flag is set, the file is parsed as two column file. The first column contains the patterns used by the ACL, and the second column contain the samples. The sample can be used later by a map. This can be useful in some rare cases where an ACL would just be used to check for the existence of a pattern in a map before a mapping is applied.

The "-u" flag forces the unique id of the ACL. This unique id is used with the socket interface to identify ACL and dynamically change its values. Note that a file is always identified by its name even if an id is set.

Also, note that the "-i" flag applies to subsequent entries and not to entries loaded from files preceding it. For instance :

```
    acl valid-ua hdr(user-agent) -f exact-ua.lst -i -f generic-ua.lst test
```

In this example, each line of "exact-ua.lst" will be exactly matched against the "user-agent" header of the request. Then each line of "generic-ua" will be case-insensitively matched. Then the word "test" will be insensitively matched as well.

The "-m" flag is used to select a specific pattern matching method on the input sample. All ACL-specific criteria imply a pattern matching method and generally do not need this flag. However, this flag is useful with generic sample fetch methods to describe how they're going to be matched against the patterns. This is required for sample fetches which return data type for which there is no obvious matching method (eg: string or binary). When "-m" is specified and followed by a pattern matching method name, this method is used instead of the default one for the criterion. This makes it possible to match contents in ways that were not initially planned, or with sample fetch methods which return a string. The matching method also affects the way the patterns are parsed.

The "-n" flag forbids the dns resolutions. It is used with the load of ip files. By default, if the parser cannot parse ip address it considers that the parsed string is maybe a domain name and try dns resolution. The flag "-n" disable this resolution. It is useful for detecting malformed ip lists. Note that if the DNS server is not reachable, the haproxy configuration parsing may last many minutes waiting fir the timeout. During this time no error messages are displayed. The flag "-n" disable this behavior. Note also that during the runtime, this function is disabled for the dynamic acl modifications.

There are some restrictions however. Not all methods can be used with all sample fetch methods. Also, if "-m" is used in conjunction with "-f", it must be placed first. The pattern matching method must be one of the following :

  - "found" : only check if the requested sample could be found in the stream,
              but do not compare it against any pattern. It is recommended not
              to pass any pattern to avoid confusion. This matching method is
              particularly useful to detect presence of certain contents such
              as headers, cookies, etc... even if they are empty and without
              comparing them to anything nor counting them.

  - "bool" : check the value as a boolean. It can only be applied to fetches
              which return a boolean or integer value, and takes no pattern.
              Value zero or false does not match, all other values do match.

  - "int"   : match the value as an integer. It can be used with integer and
              boolean samples. Boolean false is integer 0, true is integer 1.

  - "ip"   : match the value as an IPv4 or IPv6 address. It is compatible
              with IP address samples only, so it is implied and never needed.

```
   - "bin"   : match the contents against an hexadecimal string representing a
               binary sequence. This may be used with binary or string samples.

   - "len"   : match the sample's length as an integer. This may be used with
               binary or string samples.

   - "str"   : exact match : match the contents against a string. This may be
               used with binary or string samples.

   - "sub"   : substring match : check that the contents contain at least one of
               the provided string patterns. This may be used with binary or
               string samples.

   - "reg"   : regex match : match the contents against a list of regular
               expressions. This may be used with binary or string samples.

   - "beg"   : prefix match : check that the contents begin like the provided
               string patterns. This may be used with binary or string samples.

   - "end"   : suffix match : check that the contents end like the provided
               string patterns. This may be used with binary or string samples.

   - "dir"   : subdir match : check that a slash-delimited portion of the
               contents exactly matches one of the provided string patterns.
               This may be used with binary or string samples.

   - "dom"   : domain match : check that a dot-delimited portion of the contents
               exactly match one of the provided string patterns. This may be
               used with binary or string samples.

For example, to quickly detect the presence of cookie "JSESSIONID" in an HTTP
request, it is possible to do :

    acl jsess_present cook(JSESSIONID) -m found

In order to apply a regular expression on the 500 first bytes of data in the
buffer, one would use the following acl :

    acl script_tag payload(0,500) -m reg -i <script>

On systems where the regex library is much slower when using "-i", it is
possible to convert the sample to lowercase before matching, like this :

    acl script_tag payload(0,500),lower -m reg <script>

All ACL-specific criteria imply a default matching method. Most often, these
criteria are composed by concatenating the name of the original sample fetch
method and the matching method. For example, "hdr_beg" applies the "beg" match
to samples retrieved using the "hdr" fetch method. Since all ACL-specific
criteria rely on a sample fetch method, it is always possible instead to use
the original sample fetch method and the explicit matching method using "-m".

If an alternate match is specified using "-m" on an ACL-specific criterion,
the matching method is simply applied to the underlying sample fetch method.
For example, all ACLs below are exact equivalent :

    acl short_form  hdr_beg(host)       www.
    acl alternate1  hdr_beg(host) -m beg www.
    acl alternate2  hdr_dom(host) -m beg www.
    acl alternate3  hdr(host)     -m beg www.


The table below summarizes the compatibility matrix between sample or converter
types and the pattern types to fetch against. It indicates for each compatible
combination the name of the matching method to be used, surrounded with angle
```



```
brackets ">" and "<" when the method is the default one and will work by
default without "-m".

                          +-----------------------------------------------+
                          |                Input sample type              |
    +---------------------+---------+---------+---------+---------+---------+
    |     pattern type    | boolean | integer |   ip    | string  | binary  |
    +---------------------+---------+---------+---------+---------+---------+
    | none (presence only) |  found  |  found  |  found  |  found  |  found  |
    +---------------------+---------+---------+---------+---------+---------+
    | none (boolean value) |>  bool <|   bool  |         |   bool  |         |
    +---------------------+---------+---------+---------+---------+---------+
    | integer (value)     |   int   |>  int  <|   int   |   int   |         |
    +---------------------+---------+---------+---------+---------+---------+
    | integer (length)    |   len   |   len   |   len   |   len   |   len   |
    +---------------------+---------+---------+---------+---------+---------+
    | IP address          |         |         |>   ip  <|    ip   |    ip   |
    +---------------------+---------+---------+---------+---------+---------+
    | exact string        |   str   |   str   |   str   |>  str  <|   str   |
    +---------------------+---------+---------+---------+---------+---------+
    | prefix              |   beg   |   beg   |   beg   |   beg   |   beg   |
    +---------------------+---------+---------+---------+---------+---------+
    | suffix              |   end   |   end   |   end   |   end   |   end   |
    +---------------------+---------+---------+---------+---------+---------+
    | substring           |   sub   |   sub   |   sub   |   sub   |   sub   |
    +---------------------+---------+---------+---------+---------+---------+
    | subdir              |   dir   |   dir   |   dir   |   dir   |   dir   |
    +---------------------+---------+---------+---------+---------+---------+
    | domain              |   dom   |   dom   |   dom   |   dom   |   dom   |
    +---------------------+---------+---------+---------+---------+---------+
    | regex               |   reg   |   reg   |   reg   |   reg   |   reg   |
    +---------------------+---------+---------+---------+---------+---------+
    | hex block           |         |         |         |   bin   |   bin   |
    +---------------------+---------+---------+---------+---------+---------+


7.1.1. Matching booleans
------------------------

In order to match a boolean, no value is needed and all values are ignored.
Boolean matching is used by default for all fetch methods of type "boolean".
When boolean matching is used, the fetched value is returned as-is, which means
that a boolean "true" will always match and a boolean "false" will never match.

Boolean matching may also be enforced using "-m bool" on fetch methods which
return an integer value. Then, integer value 0 is converted to the boolean
"false" and all other values are converted to "true".


7.1.2. Matching integers
------------------------

Integer matching applies by default to integer fetch methods. It can also be
enforced on boolean fetches using "-m int". In this case, "false" is converted
to the integer 0, and "true" is converted to the integer 1.

Integer matching also supports integer ranges and operators. Note that integer
matching only applies to positive values. A range is a value expressed with a
lower and an upper bound separated with a colon, both of which may be omitted.

For instance, "1024:65535" is a valid range to represent a range of
unprivileged ports, and "1024:" would also work. "0:1023" is a valid
representation of privileged ports, and ":1023" would also work.

As a special case, some ACL functions support decimal numbers which are in fact
```

two integers separated by a dot. This is used with some version checks for instance. All integer properties apply to those decimal numbers, including ranges and operators.

For an easier usage, comparison operators are also supported. Note that using operators with ranges does not make much sense and is strongly discouraged. Similarly, it does not make much sense to perform order comparisons with a set of values.

Available operators for integer matching are :

  eq : true if the tested value equals at least one value
  ge : true if the tested value is greater than or equal to at least one value
  gt : true if the tested value is greater than at least one value
  le : true if the tested value is less than or equal to at least one value
  lt : true if the tested value is less than at least one value

For instance, the following ACL matches any negative Content-Length header :

  acl negative-length hdr_val(content-length) lt 0

This one matches SSL versions between 3.0 and 3.1 (inclusive) :

  acl sslv3 req_ssl_ver 3:3.1

7.1.3. Matching strings

String matching applies to string or binary fetch methods, and exists in 6 different forms :

  - exact match   (-m str) : the extracted string must exactly match the
    patterns ;

  - substring match (-m sub) : the patterns are looked up inside the
    extracted string, and the ACL matches if any of them is found inside ;

  - prefix match   (-m beg) : the patterns are compared with the beginning of
    the extracted string, and the ACL matches if any of them matches.

  - suffix match   (-m end) : the patterns are compared with the end of the
    extracted string, and the ACL matches if any of them matches.

  - subdir match   (-m sub) : the patterns are looked up inside the extracted
    string, delimited with slashes ("/"), and the ACL matches if any of them
    matches.

  - domain match   (-m dom) : the patterns are looked up inside the extracted
    string, delimited with dots ("."), and the ACL matches if any of them
    matches.

String matching applies to verbatim strings as they are passed, with the exception of the backslash ("\") which makes it possible to escape some characters such as the space. If the "-i" flag is passed before the first string, then the matching will be performed ignoring the case. In order to match the string "-i", either set it second, or pass the "--" flag before the first string. Same applies of course to match the string "--".

7.1.4. Matching regular expressions (regexes)

Just like with string matching, regex matching applies to verbatim strings as they are passed, with the exception of the backslash ("\") which makes it

possible to escape some characters such as the space. If the "-i" flag is passed before the first regex, then the matching will be performed ignoring the case. In order to match the string "-i", either set it second, or pass the "--" flag before the first string. Same principle applies of course to match the string "--".

7.1.5. Matching arbitrary data blocks

It is possible to match some extracted samples against a binary block which may not safely be represented as a string. For this, the patterns must be passed as a series of hexadecimal digits in an even number, when the match method is set to binary. Each sequence of two digits will represent a byte. The hexadecimal digits may be used upper or lower case.

Example :
    # match "Hello\n" in the input stream (\x48 \x65 \x6c \x6c \x6f \x0a)
    acl hello payload(0,6) -m bin 48656c6c6f0a

7.1.6. Matching IPv4 and IPv6 addresses

IPv4 addresses values can be specified either as plain addresses or with a netmask appended, in which case the IPv4 address matches whenever it is within the network. Plain addresses may also be replaced with a resolvable host name, but this practice is generally discouraged as it makes it more difficult to read and debug configurations. If hostnames are used, you should at least ensure that they are present in /etc/hosts so that the configuration does not depend on any random DNS match at the moment the configuration is parsed.

IPv6 may be entered in their usual form, with or without a netmask appended. Only bit counts are accepted for IPv6 netmasks. In order to avoid any risk of trouble with randomly resolved IP addresses, host names are never allowed in IPv6 patterns.

HAProxy is also able to match IPv4 addresses with IPv6 addresses in the following situations :
  - tested address is IPv4, pattern address is IPv4, the match applies
    in IPv4 using the supplied mask if any.
  - tested address is IPv6, pattern address is IPv6, the match applies
    in IPv6 using the supplied mask if any.
  - tested address is IPv6, pattern address is IPv4, the match applies in IPv4
    using the pattern's mask if the IPv6 address matches with 2002:IPV4::,
    ::IPV4 or ::ffff:IPV4, otherwise it fails.
  - tested address is IPv4, pattern address is IPv6, the IPv4 address is first
    converted to IPv6 by prefixing ::ffff: in front of it, then the match is
    applied in IPv6 using the supplied IPv6 mask.

7.2. Using ACLs to form conditions

Some actions are only performed upon a valid condition. A condition is a combination of ACLs with operators. 3 operators are supported :

  - AND (implicit)
  - OR (explicit with the "or" keyword or the "||" operator)
  - Negation with the exclamation mark ("!")

A condition is formed as a disjunctive form:

   [!]acl1 [!]acl2 ... [!]acln { or [!]acl1 [!]acl2 ... [!]acln } ...

Such conditions are generally used after an "if" or "unless" statement,
indicating when the condition will trigger the action.

For instance, to block HTTP requests to the "*" URL with methods other than
"OPTIONS", as well as POST requests without content-length, and GET or HEAD
requests with a content-length greater than 0, and finally every request which
is not either GET/HEAD/POST/OPTIONS !

```
   acl missing_cl hdr_cnt(Content-length) eq 0
   block if HTTP_URL_STAR !METH_OPTIONS || METH_POST missing_cl
   block if METH_GET HTTP_CONTENT
   block unless METH_GET or METH_POST or METH_OPTIONS
```

To select a different backend for requests to static contents on the "www" site
and to every request on the "img", "video", "download" and "ftp" hosts :

```
   acl url_static  path_beg         /static /images /img /css
   acl url_static  path_end         .gif .png .jpg .css .js
   acl host_www    hdr_beg(host) -i www
   acl host_static hdr_beg(host) -i img. video. download. ftp.

   # now use backend "static" for all static-only hosts, and for static urls
   # of host "www". Use backend "www" for the rest.
   use_backend static if host_static or host_www url_static
   use_backend www    if host_www
```

It is also possible to form rules using "anonymous ACLs". Those are unnamed ACL
expressions that are built on the fly without needing to be declared. They must
be enclosed between braces, with a space before and after each brace (because
the braces must be seen as independent words). Example :

   The following rule :

```
       acl missing_cl hdr_cnt(Content-length) eq 0
       block if METH_POST missing_cl
```

   Can also be written that way :

```
       block if METH_POST { hdr_cnt(Content-length) eq 0 }
```

It is generally not recommended to use this construct because it's a lot easier
to leave errors in the configuration when written that way. However, for very
simple rules matching only one source IP address for instance, it can make more
sense to use them than to declare ACLs with random names. Another example of
good use is the following :

   With named ACLs :

```
        acl site_dead nbsrv(dynamic) lt 2
        acl site_dead nbsrv(static)  lt 2
        monitor fail  if site_dead
```

   With anonymous ACLs :

```
        monitor fail if { nbsrv(dynamic) lt 2 } || { nbsrv(static) lt 2 }
```

See section 4.2 for detailed help on the "block" and "use_backend" keywords.

7.3. Fetching samples

Historically, sample fetch methods were only used to retrieve data to match
against patterns using ACLs. With the arrival of stick-tables, a new class of

sample fetch methods was created, most often sharing the same syntax as their
ACL counterpart. These sample fetch methods are also known as "fetches". As
of now, ACLs and fetches have converged. All ACL fetch methods have been made
available as fetch methods, and ACLs may use any sample fetch method as well.

This section details all available sample fetch methods and their output type.
Some sample fetch methods have deprecated aliases that are used to maintain
compatibility with existing configurations. They are then explicitly marked as
deprecated and should not be used in new setups.

The ACL derivatives are also indicated when available, with their respective
matching methods. These ones all have a well defined default pattern matching
method, so it is never necessary (though allowed) to pass the "-m" option to
indicate how the sample will be matched using ACLs.

As indicated in the sample type versus matching compatibility matrix above,
when using a generic sample fetch method in an ACL, the "-m" option is
mandatory unless the sample type is one of boolean, integer, IPv4 or IPv6. When
the same keyword exists as an ACL keyword and as a standard fetch method, the
ACL engine will automatically pick the ACL-only one by default.

Some of these keywords support one or multiple mandatory arguments, and one or
multiple optional arguments. These arguments are strongly typed and are checked
when the configuration is parsed so that there is no risk of running with an
incorrect argument (eg: an unresolved backend name). Fetch function arguments
are passed between parenthesis and are delimited by commas. When an argument
is optional, it will be indicated below between square brackets ('[ ]'). When
all arguments are optional, the parenthesis may be omitted.

Thus, the syntax of a standard sample fetch method is one of the following :

```
   - name
   - name(arg1)
   - name(arg1,arg2)
```

7.3.1. Converters

Sample fetch methods may be combined with transformations to be applied on top
of the fetched sample (also called "converters"). These combinations form what
is called "sample expressions" and the result is a "sample". Initially this
was only supported by "stick on" and "stick store-request" directives but this
has now be extended to all places where samples may be used (acls, log-format,
unique-id-format, add-header, ...).

These transformations are enumerated as a series of specific keywords after the
sample fetch method. These keywords may equally be appended immediately after
the fetch keyword's argument, delimited by a comma. These keywords can also
support some arguments (eg: a netmask) which must be passed in parenthesis.

A certain category of converters are bitwise and arithmetic operators which
support performing basic operations on integers. Some bitwise operations are
supported (and, or, xor, cpl) and some arithmetic operations are supported
(add, sub, mul, div, mod, neg). Some comparators are provided (odd, even, not,
bool) which make it possible to report a match without having to write an ACL.

The currently available list of transformation keywords include :

add(<value>)
  Adds <value> to the input value of type signed integer, and returns the
  result as a signed integer. <value> can be a numeric value or a variable
  name. The name of the variable starts by an indication about its scope. The
  allowed scopes are:
    "sess" : the variable is shared with all the session,
    "txn" : the variable is shared with all the transaction (request and

```
11571               response),
11572     "req"  : the variable is shared only during the request processing,
11573     "res"  : the variable is shared only during the response processing.
11574   This prefix is followed by a name. The separator is a '.'. The name may only
11575   contain characters 'a-z', 'A-Z', '0-9' and '_'.
11576
11577 and(<value>)
11578   Performs a bitwise "AND" between <value> and the input value of type signed
11579   integer, and returns the result as an signed integer. <value> can be a
11580   numeric value or a variable name. The name of the variable starts by an
11581   indication about its scope. The allowed scopes are:
11582     "sess" : the variable is shared with all the session,
11583     "txn"  : the variable is shared with all the transaction (request and
11584              response),
11585     "req"  : the variable is shared only during the request processing,
11586     "res"  : the variable is shared only during the response processing.
11587   This prefix is followed by a name. The separator is a '.'. The name may only
11588   contain characters 'a-z', 'A-Z', '0-9' and '_'.
11589
11590 base64
11591   Converts a binary input sample to a base64 string. It is used to log or
11592   transfer binary content in a way that can be reliably transferred (eg:
11593   an SSL ID can be copied in a header).
11594
11595 bool
11596   Returns a boolean TRUE if the input value of type signed integer is
11597   non-null, otherwise returns FALSE. Used in conjunction with and(), it can be
11598   used to report true/false for bit testing on input values (eg: verify the
11599   presence of a flag).
11600
11601 bytes(<offset>[,<length>])
11602   Extracts some bytes from an input binary sample. The result is a binary
11603   sample starting at an offset (in bytes) of the original sample and
11604   optionnaly truncated at the given length.
11605
11606 cpl
11607   Takes the input value of type signed integer, applies a ones-complement
11608   (flips all bits) and returns the result as an signed integer.
11609
11610 crc32([<avalanche>])
11611   Hashes a binary input sample into an unsigned 32-bit quantity using the CRC32
11612   hash function. Optionally, it is possible to apply a full avalanche hash
11613   function to the output if the optional <avalanche> argument equals 1. This
11614   converter uses the same functions as used by the various hash-based load
11615   balancing algorithms, so it will provide exactly the same results. It is
11616   provided for compatibility with other software which want a CRC32 to be
11617   computed on some input keys, so it follows the most common implementation as
11618   found in Ethernet, Gzip, PNG, etc... It is slower than the other algorithms
11619   but may provide a better or at least less predictable distribution. It must
11620   not be used for security purposes as a 32-bit hash is trivial to break. See
11621   also "djb2", "sdbm", "wt6" and the "hash-type" directive.
11622
11623 da-csv-conv(<prop>[,<prop>*])
11624   Asks the DeviceAtlas converter to identify the User Agent string passed on
11625   input, and to emit a string made of the concatenation of the properties
11626   enumerated in argument, delimited by the separator defined by the global
11627   keyword "deviceatlas-property-separator", or by default the pipe character
11628   ('|'). There's a limit of 5 different properties imposed by the haproxy
11629   configuration language.
11630
11631   Example:
11632     frontend www
11633       bind *:8881
11634       default_backend servers
11635       http-request set-header X-DeviceAtlas-Data %[req.fhdr(User-Agent),da-csv(prima…
```



```
11636
11637 debug
11638   This converter is used as debug tool. It dumps on screen the content and the
11639   type of the input sample. The sample is returned as is on its output. This
11640   converter only exists when haproxy was built with debugging enabled.
11641
11642 div(<value>)
11643   Divides the input value of type signed integer by <value>, and returns the
11644   result as an signed integer. If <value> is null, the largest unsigned
11645   integer is returned (typically 2^63-1). <value> can be a numeric value or a
11646   variable name. The name of the variable starts by an indication about it
11647   scope. The scope allowed are:
11648     "sess" : the variable is shared with all the session,
11649     "txn"  : the variable is shared with all the transaction (request and
11650              response),
11651     "req"  : the variable is shared only during the request processing,
11652     "res"  : the variable is shared only during the response processing.
11653   This prefix is followed by a name. The separator is a '.'. The name may only
11654   contain characters 'a-z', 'A-Z', '0-9' and '_'.
11655
11656 djb2([<avalanche>])
11657   Hashes a binary input sample into an unsigned 32-bit quantity using the DJB2
11658   hash function. Optionally, it is possible to apply a full avalanche hash
11659   function to the output if the optional <avalanche> argument equals 1. This
11660   converter uses the same functions as used by the various hash-based load
11661   balancing algorithms, so it will provide exactly the same results. It is
11662   mostly intended for debugging, but can be used as a stick-table entry to
11663   collect rough statistics. It must not be used for security purposes as a
11664   32-bit hash is trivial to break. See also "crc32", "sdbm", "wt6" and the
11665   "hash-type" directive.
11666
11667 even
11668   Returns a boolean TRUE if the input value of type signed integer is even
11669   otherwise returns FALSE. It is functionally equivalent to "not,and(1),bool".
11670
11671 field(<index>,<delimiters>)
11672   Extracts the substring at the given index considering given delimiters from
11673   an input string. Indexes start at 1 and delimiters are a string formatted
11674   list of chars.
11675
11676 hex
11677   Converts a binary input sample to an hex string containing two hex digits per
11678   input byte. It is used to log or transfer hex dumps of some binary input data
11679   in a way that can be reliably transferred (eg: an SSL ID can be copied in a
11680   header).
11681
11682 http_date([<offset>])
11683   Converts an integer supposed to contain a date since epoch to a string
11684   representing this date in a format suitable for use in HTTP header fields. If
11685   an offset value is specified, then it is a number of seconds that is added to
11686   the date before the conversion is operated. This is particularly useful to
11687   emit Date header fields, Expires values in responses when combined with a
11688   positive offset, or Last-Modified values when the offset is negative.
11689
11690 in_table(<table>)
11691   Uses the string representation of the input sample to perform a look up in
11692   the specified table. If the key is not found in the table, a boolean false
11693   is returned. Otherwise a boolean true is returned. This can be used to verify
11694   the presence of a certain key in a table tracking some elements (eg: whether
11695   or not a source IP address or an Authorization header was already seen).
11696
11697 ipmask(<mask>)
11698   Apply a mask to an IPv4 address, and use the result for lookups and storage.
11699   This can be used to make all hosts within a certain mask to share the same
11700   table entries and as such use the same server. The mask can be passed in
```

```
   dotted form (eg: 255.255.255.0) or in CIDR form (eg: 24).

json([<input-code>])
  Escapes the input string and produces an ASCII ouput string ready to use as a
  JSON string. The converter tries to decode the input string according to the
  <input-code> parameter. It can be "ascii", "utf8", "utf8s", "utf8"" or
  "utf8ps". The "ascii" decoder never fails. The "utf8" decoder detects 3 types
  of errors:
   - bad UTF-8 sequence (lone continuation byte, bad number of continuation
     bytes, ...)
   - invalid range (the decoded value is within a UTF-8 prohibited range),
   - code overlong (the value is encoded with more bytes than necessary).

  The UTF-8 JSON encoding can produce a "too long value" error when the UTF-8
  character is greater than 0xffff because the JSON string escape specification
  only authorizes 4 hex digits for the value encoding. The UTF-8 decoder exists
  in 4 variants designated by a combination of two suffix letters : "p" for
  "permissive" and "s" for "silently ignore". The behaviors of the decoders
  are :
   - "ascii"  : never fails ;
   - "utf8"   : fails on any detected errors ;
   - "utf8s"  : never fails, but removes characters corresponding to errors ;
   - "utf8p"  : accepts and fixes the overlong errors, but fails on any other
                error ;
   - "utf8ps" : never fails, accepts and fixes the overlong errors, but removes
                characters corresponding to the other errors.

  This converter is particularly useful for building properly escaped JSON for
  logging to servers which consume JSON-formated traffic logs.

  Example:
     capture request header user-agent len 150
     capture request header Host len 15
     log-format {"ip":"%[src]","user-agent":"%[capture.req.hdr(1),json]"}

  Input request from client 127.0.0.1:
     GET / HTTP/1.0
     User-Agent: Very "Ugly" UA 1/2

  Output log:
     {"ip":"127.0.0.1","user-agent":"Very \"Ugly\" UA 1\/2"}

language(<value>[,<default>])
  Returns the value with the highest q-factor from a list as extracted from the
  "accept-language" header using "req.fhdr". Values with no q-factor have a
  q-factor of 1. Values with a q-factor of 0 are dropped. Only values which
  belong to the list of semi-colon delimited <values> will be considered. The
  argument <value> syntax is "lang[;lang[;lang[;...]]]". If no value matches the
  given list and a default value is provided, it is returned. Note that language
  names may have a variant after a dash ('-'). If this variant is present in the
  list, it will be matched, but if it is not, only the base language is checked.
  The match is case-sensitive, and the output string is always one of those
  provided in arguments.  The ordering of arguments is meaningless, only the
  ordering of the values in the request counts, as the first value among
  multiple sharing the same q-factor is used.

  Example :

    # this configuration switches to the backend matching a
    # given language based on the request :

    acl es req.fhdr(accept-language),language(es;fr;en) -m str es
    acl fr req.fhdr(accept-language),language(es;fr;en) -m str fr
    acl en req.fhdr(accept-language),language(es;fr;en) -m str en
    use_backend spanish if es
```



```
    use_backend french  if fr
    use_backend english if en
    default_backend choose_your_language

lower
  Convert a string sample to lower case. This can only be placed after a string
  sample fetch function or after a transformation keyword returning a string
  type. The result is of type string.

ltime(<format>[,<offset>])
  Converts an integer supposed to contain a date since epoch to a string
  representing this date in local time using a format defined by the <format>
  string using strftime(3). The purpose is to allow any date format to be used
  in logs. An optional <offset> in seconds may be applied to the input date
  (positive or negative). See the strftime() man page for the format supported
  by your operating system. See also the utime converter.

  Example :

      # Emit two colons, one with the local time and another with ip:port
      # Eg:  20140710162350 127.0.0.1:57325
      log-format %[date,ltime(%Y%m%d%H%M%S)]\ %ci:%cp

map(<map_file>[,<default_value>])
map_<match_type>(<map_file>[,<default_value>])
map_<match_type>_<output_type>(<map_file>[,<default_value>])
  Search the input value from <map_file> using the <match_type> matching method,
  and return the associated value converted to the type <output_type>. If the
  input value cannot be found in the <map_file>, the converter returns the
  <default_value>. If the <default_value> is not set, the converter fails and
  acts as if no input value could be fetched. If the <match_type> is not set, it
  defaults to "str". Likewise, if the <output_type> is not set, it defaults to
  "str". For convenience, the "map" keyword is an alias for "map_str" and maps a
  string to another string.

  It is important to avoid overlapping between the keys : IP addresses and
  strings are stored in trees, so the first of the finest match will be used.
  Other keys are stored in lists, so the first matching occurrence will be used.

  The following array contains the list of all map functions avalaible sorted by
  input type, match type and output type.

  input type | match method | output type str | output type int | output type ip
  -----------+--------------+-----------------+-----------------+--------------
    str      | str          | map_str         | map_str_int     | map_str_ip
  -----------+--------------+-----------------+-----------------+--------------
    str      | beg          | map_beg         | map_beg_int     | map_end_ip
  -----------+--------------+-----------------+-----------------+--------------
    str      | sub          | map_sub         | map_sub_int     | map_sub_ip
  -----------+--------------+-----------------+-----------------+--------------
    str      | dir          | map_dir         | map_dir_int     | map_dir_ip
  -----------+--------------+-----------------+-----------------+--------------
    str      | dom          | map_dom         | map_dom_int     | map_dom_ip
  -----------+--------------+-----------------+-----------------+--------------
    str      | end          | map_end         | map_end_int     | map_end_ip
  -----------+--------------+-----------------+-----------------+--------------
    str      | reg          | map_reg         | map_reg_int     | map_reg_ip
  -----------+--------------+-----------------+-----------------+--------------
    int      | int          | map_int         | map_int_int     | map_int_ip
  -----------+--------------+-----------------+-----------------+--------------
    ip       | ip           | map_ip          | map_ip_int      | map_ip_ip
  -----------+--------------+-----------------+-----------------+--------------

  The file contains one key + value per line. Lines which start with '#' are
  ignored, just like empty lines. Leading tabs and spaces are stripped. The key
```

```
   is then the first "word" (series of non-space/tabs characters), and the value
   is what follows this series of space/tab till the end of the line excluding
   trailing spaces/tabs.

   Example :

      # this is a comment and is ignored
         2.22.246.0/23    United Kingdom      \n
      <-><-----------><--><------------><---->
       |       |       |         |        `- trailing spaces ignored
       |       |       |         `---------- value
       |       |       `-------------------- middle spaces ignored
       |       `---------------------------- key
       `------------------------------------ leading spaces ignored

mod(<value>)
  Divides the input value of type signed integer by <value>, and returns the
  remainder as an signed integer. If <value> is null, then zero is returned.
  <value> can be a numeric value or a variable name. The name of the variable
  starts by an indication about its scope. The allowed scopes are:
    "sess" : the variable is shared with all the session,
    "txn"  : the variable is shared with all the transaction (request and
             response),
    "req"  : the variable is shared only during the request processing,
    "res"  : the variable is shared only during the response processing.
  This prefix is followed by a name. The separator is a '.'. The name may only
  contain characters 'a-z', 'A-Z', '0-9' and '_'.

mul(<value>)
  Multiplies the input value of type signed integer by <value>, and returns
  the product as an signed integer. In case of overflow, the largest possible
  value for the sign is returned so that the operation doesn't wrap around.
  <value> can be a numeric value or a variable name. The name of the variable
  starts by an indication about its scope. The allowed scopes are:
    "sess" : the variable is shared with all the session,
    "txn"  : the variable is shared with all the transaction (request and
             response),
    "req"  : the variable is shared only during the request processing,
    "res"  : the variable is shared only during the response processing.
  This prefix is followed by a name. The separator is a '.'. The name may only
  contain characters 'a-z', 'A-Z', '0-9' and '_'.

neg
  Takes the input value of type signed integer, computes the opposite value,
  and returns the remainder as an signed integer. 0 is identity. This operator
  is provided for reversed subtracts : in order to subtract the input from a
  constant, simply perform a "neg,add(value)".

not
  Returns a boolean FALSE if the input value of type signed integer is
  non-null, otherwise returns TRUE. Used in conjunction with and(), it can be
  used to report true/false for bit testing on input values (eg: verify the
  absence of a flag).

odd
  Returns a boolean TRUE if the input value of type signed integer is odd
  otherwise returns FALSE. It is functionally equivalent to "and(1),bool".

or(<value>)
  Performs a bitwise "OR" between <value> and the input value of type signed
  integer, and returns the result as an signed integer. <value> can be a
  numeric value or a variable name. The name of the variable starts by an
  indication about its scope. The allowed scopes are:
    "sess" : the variable is shared with all the session,
    "txn"  : the variable is shared with all the transaction (request and
```



```
             response),
    "req"  : the variable is shared only during the request processing,
    "res"  : the variable is shared only during the response processing.
  This prefix is followed by a name. The separator is a '.'. The name may only
  contain characters 'a-z', 'A-Z', '0-9' and '_'.

regsub(<regex>,<subst>[,<flags>])
  Applies a regex-based substitution to the input string. It does the same
  operation as the well-known "sed" utility with "s/<regex>/<subst>/". By
  default it will replace in the input string the first occurrence of the
  largest part matching the regular expression <regex> with the substitution
  string <subst>. It is possible to replace all occurrences instead by adding
  the flag "g" in the third argument <flags>. It is also possible to make the
  regex case insensitive by adding the flag "i" in <flags>. Since <flags> is a
  string, it is made up from the concatenation of all desired flags. Thus if
  both "i" and "g" are desired, using "gi" or "ig" will have the same effect.
  It is important to note that due to the current limitations of the
  configuration parser, some characters such as closing parenthesis or comma
  are not possible to use in the arguments. The first use of this converter is
  to replace certain characters or sequence of characters with other ones.

  Example :

     # de-duplicate "/" in header "x-path".
     # input:  x-path: /////a///b/c/xzxyz/
     # output: x-path: /a/b/c/xzxyz/
     http-request set-header x-path %[hdr(x-path),regsub(/+,/,g)]

capture-req(<id>)
  Capture the string entry in the request slot <id> and returns the entry as
  is. If the slot doesn't exist, the capture fails silently.

  See also: "declare capture", "http-request capture",
            "http-response capture", "capture.req.hdr" and
            "capture.res.hdr" (sample fetches).

capture-res(<id>)
  Capture the string entry in the response slot <id> and returns the entry as
  is. If the slot doesn't exist, the capture fails silently.

  See also: "declare capture", "http-request capture",
            "http-response capture", "capture.req.hdr" and
            "capture.res.hdr" (sample fetches).

sdbm([<avalanche>])
  Hashes a binary input sample into an unsigned 32-bit quantity using the SDBM
  hash function. Optionally, it is possible to apply a full avalanche hash
  function to the output if the optional <avalanche> argument equals 1. This
  converter uses the same functions as used by the various hash-based load
  balancing algorithms, so it will provide exactly the same results. It is
  mostly intended for debugging, but can be used as a stick-table entry to
  collect rough statistics. It must not be used for security purposes as a
  32-bit hash is trivial to break. See also "crc32", "djb2", "wt6" and the
  "hash-type" directive.

set-var(<var name>)
  Sets a variable with the input content and return the content on the output as
  is. The variable keep the value and the associated input type. The name of the
  variable starts by an indication about it scope. The scope allowed are:
    "sess" : the variable is shared with all the session,
    "txn"  : the variable is shared with all the transaction (request and
             response),
    "req"  : the variable is shared only during the request processing,
    "res"  : the variable is shared only during the response processing.
  This prefix is followed by a name. The separator is a '.'. The name may only
```

```
11961     contain characters 'a-z', 'A-Z', '0-9' and '_'.
11962
11963   sub(<value>)
11964     Subtracts <value> from the input value of type signed integer, and returns
11965     the result as an signed integer. Note: in order to subtract the input from
11966     a constant, simply perform a "neg,add(value)". <value> can be a numeric value
11967     or a variable name. The name of the variable starts by an indication about its
11968     scope. The allowed scopes are:
11969       "sess" : the variable is shared with all the session,
11970       "txn"  : the variable is shared with all the transaction (request and
11971                response),
11972       "req"  : the variable is shared only during the request processing,
11973       "res"  : the variable is shared only during the response processing.
11974     This prefix is followed by a name. The separator is a '.'. The name may only
11975     contain characters 'a-z', 'A-Z', '0-9' and '_'.
11976
11977   table_bytes_in_rate(<table>)
11978     Uses the string representation of the input sample to perform a look up in
11979     the specified table. If the key is not found in the table, integer value zero
11980     is returned. Otherwise the converter returns the average client-to-server
11981     bytes rate associated with the input sample in the designated table, measured
11982     in amount of bytes over the period configured in the table. See also the
11983     sc_bytes_in_rate sample fetch keyword.
11984
11985
11986   table_bytes_out_rate(<table>)
11987     Uses the string representation of the input sample to perform a look up in
11988     the specified table. If the key is not found in the table, integer value zero
11989     is returned. Otherwise the converter returns the average server-to-client
11990     bytes rate associated with the input sample in the designated table, measured
11991     in amount of bytes over the period configured in the table. See also the
11992     sc_bytes_out_rate sample fetch keyword.
11993
11994   table_conn_cnt(<table>)
11995     Uses the string representation of the input sample to perform a look up in
11996     the specified table. If the key is not found in the table, integer value zero
11997     is returned. Otherwise the converter returns the cumulated amount of incoming
11998     connections associated with the input sample in the designated table. See
11999     also the sc_conn_cnt sample fetch keyword.
12000
12001   table_conn_cur(<table>)
12002     Uses the string representation of the input sample to perform a look up in
12003     the specified table. If the key is not found in the table, integer value zero
12004     is returned. Otherwise the converter returns the current amount of concurrent
12005     tracked connections associated with the input sample in the designated table.
12006     See also the sc_conn_cur sample fetch keyword.
12007
12008   table_conn_rate(<table>)
12009     Uses the string representation of the input sample to perform a look up in
12010     the specified table. If the key is not found in the table, integer value zero
12011     is returned. Otherwise the converter returns the average incoming connection
12012     rate associated with the input sample in the designated table. See also the
12013     sc_conn_rate sample fetch keyword.
12014
12015   table_gpt0(<table>)
12016     Uses the string representation of the input sample to perform a look up in
12017     the specified table. If the key is not found in the table, boolean value zero
12018     is returned. Otherwise the converter returns the current value of the first
12019     general purpose tag associated with the input sample in the designated table.
12020     See also the sc_get_gpt0 sample fetch keyword.
12021
12022   table_gpc0(<table>)
12023     Uses the string representation of the input sample to perform a look up in
12024     the specified table. If the key is not found in the table, integer value zero
12025     is returned. Otherwise the converter returns the current value of the first
```



```
12026     general purpose counter associated with the input sample in the designated
12027     table. See also the sc_get_gpc0 sample fetch keyword.
12028
12029   table_gpc0_rate(<table>)
12030     Uses the string representation of the input sample to perform a look up in
12031     the specified table. If the key is not found in the table, integer value zero
12032     is returned. Otherwise the converter returns the frequency which the gpc0
12033     counter was incremented over the configured period in the table, associated
12034     with the input sample in the designated table. See also the sc_get_gpc0_rate
12035     sample fetch keyword.
12036
12037   table_http_err_cnt(<table>)
12038     Uses the string representation of the input sample to perform a look up in
12039     the specified table. If the key is not found in the table, integer value zero
12040     is returned. Otherwise the converter returns the cumulated amount of HTTP
12041     errors associated with the input sample in the designated table. See also the
12042     sc_http_err_cnt sample fetch keyword.
12043
12044   table_http_err_rate(<table>)
12045     Uses the string representation of the input sample to perform a look up in
12046     the specified table. If the key is not found in the table, integer value zero
12047     is returned. Otherwise the average rate of HTTP errors associated with the
12048     input sample in the designated table, measured in amount of errors over the
12049     period configured in the table. See also the sc_http_err_rate sample fetch
12050     keyword.
12051
12052   table_http_req_cnt(<table>)
12053     Uses the string representation of the input sample to perform a look up in
12054     the specified table. If the key is not found in the table, integer value zero
12055     is returned. Otherwise the converter returns the cumulated amount of HTTP
12056     requests associated with the input sample in the designated table. See also
12057     the sc_http_req_cnt sample fetch keyword.
12058
12059   table_http_req_rate(<table>)
12060     Uses the string representation of the input sample to perform a look up in
12061     the specified table. If the key is not found in the table, integer value zero
12062     is returned. Otherwise the average rate of HTTP requests associated with the
12063     input sample in the designated table, measured in amount of requests over the
12064     period configured in the table. See also the sc_http_req_rate sample fetch
12065     keyword.
12066
12067   table_kbytes_in(<table>)
12068     Uses the string representation of the input sample to perform a look up in
12069     the specified table. If the key is not found in the table, integer value zero
12070     is returned. Otherwise the converter returns the cumulated amount of client-
12071     to-server data associated with the input sample in the designated table,
12072     measured in kilobytes. The test is currently performed on 32-bit integers,
12073     which limits values to 4 terabytes. See also the sc_kbytes_in sample fetch
12074     keyword.
12075
12076   table_kbytes_out(<table>)
12077     Uses the string representation of the input sample to perform a look up in
12078     the specified table. If the key is not found in the table, integer value zero
12079     is returned. Otherwise the converter returns the cumulated amount of server-
12080     to-client data associated with the input sample in the designated table,
12081     measured in kilobytes. The test is currently performed on 32-bit integers,
12082     which limits values to 4 terabytes. See also the sc_kbytes_out sample fetch
12083     keyword.
12084
12085   table_server_id(<table>)
12086     Uses the string representation of the input sample to perform a look up in
12087     the specified table. If the key is not found in the table, integer value zero
12088     is returned. Otherwise the converter returns the server ID associated with
12089     the input sample in the designated table. A server ID is associated to a
12090     sample by a "stick" rule when a connection to a server succeeds. A server ID
```

```
12091     zero means that no server is associated with this key.
12092
12093   table_sess_cnt(<table>)
12094     Uses the string representation of the input sample to perform a look up in
12095     the specified table. If the key is not found in the table, integer value zero
12096     is returned. Otherwise the converter returns the cumulated amount of incoming
12097     sessions associated with the input sample in the designated table. Note that
12098     a session here refers to an incoming connection being accepted by the
12099     "tcp-request connection" rulesets. See also the sc_sess_cnt sample fetch
12100     keyword.
12101
12102   table_sess_rate(<table>)
12103     Uses the string representation of the input sample to perform a look up in
12104     the specified table. If the key is not found in the table, integer value zero
12105     is returned. Otherwise the converter returns the average incoming session
12106     rate associated with the input sample in the designated table. Note that a
12107     session here refers to an incoming connection being accepted by the
12108     "tcp-request connection" rulesets. See also the sc_sess_rate sample fetch
12109     keyword.
12110
12111   table_trackers(<table>)
12112     Uses the string representation of the input sample to perform a look up in
12113     the specified table. If the key is not found in the table, integer value zero
12114     is returned. Otherwise the converter returns the current amount of concurrent
12115     connections tracking the same key as the input sample in the designated
12116     table. It differs from table_conn_cur in that it does not rely on any stored
12117     information but on the table's reference count (the "use" value which is
12118     returned by "show table" on the CLI). This may sometimes be more suited for
12119     layer7 tracking. It can be used to tell a server how many concurrent
12120     connections there are from a given address for example. See also the
12121     sc_trackers sample fetch keyword.
12122
12123   upper
12124     Convert a string sample to upper case. This can only be placed after a string
12125     sample fetch function or after a transformation keyword returning a string
12126     type. The result is of type string.
12127
12128   url_dec
12129     Takes an url-encoded string provided as input and returns the decoded
12130     version as output. The input and the output are of type string.
12131
12132   utime(<format>[,<offset>])
12133     Converts an integer supposed to contain a date since epoch to a string
12134     representing this date in UTC time using a format defined by the <format>
12135     string using strftime(3). The purpose is to allow any date format to be used
12136     in logs. An optional <offset> in seconds may be applied to the input date
12137     (positive or negative). See the strftime() man page for the format supported
12138     by your operating system. See also the ltime converter.
12139
12140     Example :
12141
12142         # Emit two colons, one with the UTC time and another with ip:port
12143         # Eg:  20140710162350 127.0.0.1:57325
12144         log-format %[date,utime(%Y%m%d%H%M%S)]\ %ci:%cp
12145
12146   word(<index>,<delimiters>)
12147     Extracts the nth word considering given delimiters from an input string.
12148     Indexes start at 1 and delimiters are a string formatted list of chars.
12149
12150   wt6([<avalanche>])
12151     Hashes a binary input sample into an unsigned 32-bit quantity using the WT6
12152     hash function. Optionally, it is possible to apply a full avalanche hash
12153     function to the output if the optional <avalanche> argument equals 1. This
12154     converter uses the same functions as used by the various hash-based load
12155     balancing algorithms, so it will provide exactly the same results. It is
```



```
12156     mostly intended for debugging, but can be used as a stick-table entry to
12157     collect rough statistics. It must not be used for security purposes as a
12158     32-bit hash is trivial to break. See also "crc32", "djb2", "sdbm", and the
12159     "hash-type" directive.
12160
12161   xor(<value>)
12162     Performs a bitwise "XOR" (exclusive OR) between <value> and the input value
12163     of type signed integer, and returns the result as an signed integer.
12164     <value> can be a numeric value or a variable name. The name of the variable
12165     starts by an indication about its scope. The allowed scopes are:
12166       "sess" : the variable is shared with all the session,
12167       "txn"  : the variable is shared with all the transaction (request and
12168                response),
12169       "req"  : the variable is shared only during the request processing,
12170       "res"  : the variable is shared only during the response processing.
12171     This prefix is followed by a name. The separator is a '.'. The name may only
12172     contain characters 'a-z', 'A-Z', '0-9' and '_'.
12173
12174
12175   7.3.2. Fetching samples from internal states
12176   --------------------------------------------
12177
12178   A first set of sample fetch methods applies to internal information which does
12179   not even relate to any client information. These ones are sometimes used with
12180   "monitor-fail" directives to report an internal status to external watchers.
12181   The sample fetch methods described in this section are usable anywhere.
12182
12183   always_false : boolean
12184     Always returns the boolean "false" value. It may be used with ACLs as a
12185     temporary replacement for another one when adjusting configurations.
12186
12187   always_true : boolean
12188     Always returns the boolean "true" value. It may be used with ACLs as a
12189     temporary replacement for another one when adjusting configurations.
12190
12191   avg_queue([<backend>]) : integer
12192     Returns the total number of queued connections of the designated backend
12193     divided by the number of active servers. The current backend is used if no
12194     backend is specified. This is very similar to "queue" except that the size of
12195     the farm is considered, in order to give a more accurate measurement of the
12196     time it may take for a new connection to be processed. The main usage is with
12197     ACL to return a sorry page to new users when it becomes certain they will get
12198     a degraded service, or to pass to the backend servers in a header so that
12199     they decide to work in degraded mode or to disable some functions to speed up
12200     the processing a bit. Note that in the event there would not be any active
12201     server anymore, twice the number of queued connections would be considered as
12202     the measured value. This is a fair estimate, as we expect one server to get
12203     back soon anyway, but we still prefer to send new traffic to another backend
12204     if in better shape. See also the "queue", "be_conn", and "be_sess_rate"
12205     sample fetches.
12206
12207   be_conn([<backend>]) : integer
12208     Applies to the number of currently established connections on the backend,
12209     possibly including the connection being evaluated. If no backend name is
12210     specified, the current one is used. But it is also possible to check another
12211     backend. It can be used to use a specific farm when the nominal one is full.
12212     See also the "fe_conn", "queue" and "be_sess_rate" criteria.
12213
12214   be_sess_rate([<backend>]) : integer
12215     Returns an integer value corresponding to the sessions creation rate on the
12216     backend, in number of new sessions per second. This is used with ACLs to
12217     switch to an alternate backend when an expensive or fragile one reaches too
12218     high a session rate, or to limit abuse of service (eg. prevent sucking of an
12219     online dictionary). It can also be useful to add this element to logs using a
12220     log-format directive.
```

```
12221
12222     Example :
12223           # Redirect to an error page if the dictionary is requested too often
12224           backend dynamic
12225               mode http
12226               acl being_scanned be_sess_rate gt 100
12227               redirect location /denied.html if being_scanned
12228
12229   bin(<hexa>) : bin
12230     Returns a binary chain. The input is the hexadecimal representation
12231     of the string.
12232
12233   bool(<bool>) : bool
12234     Returns a boolean value. <bool> can be 'true', 'false', '1' or '0'.
12235     'false' and '0' are the same. 'true' and '1' are the same.
12236
12237   connslots([<backend>]) : integer
12238     Returns an integer value corresponding to the number of connection slots
12239     still available in the backend, by totaling the maximum amount of
12240     connections on all servers and the maximum queue size. This is probably only
12241     used with ACLs.
12242
12243     The basic idea here is to be able to measure the number of connection "slots"
12244     still available (connection + queue), so that anything beyond that (intended
12245     usage; see "use_backend" keyword) can be redirected to a different backend.
12246
12247     'connslots' = number of available server connection slots, + number of
12248     available server queue slots.
12249
12250     Note that while "fe_conn" may be used, "connslots" comes in especially
12251     useful when you have a case of traffic going to one single ip, splitting into
12252     multiple backends (perhaps using ACLs to do name-based load balancing) and
12253     you want to be able to differentiate between different backends, and their
12254     available "connslots".  Also, whereas "nbsrv" only measures servers that are
12255     actually *down*, this fetch is more fine-grained and looks into the number of
12256     available connection slots as well. See also "queue" and "avg_queue".
12257
12258     OTHER CAVEATS AND NOTES: at this point in time, the code does not take care
12259     of dynamic connections. Also, if any of the server maxconn, or maxqueue is 0,
12260     then this fetch clearly does not make sense, in which case the value returned
12261     will be -1.
12262
12263   date([<offset>]) : integer
12264     Returns the current date as the epoch (number of seconds since 01/01/1970).
12265     If an offset value is specified, then it is a number of seconds that is added
12266     to the current date before returning the value. This is particularly useful
12267     to compute relative dates, as both positive and negative offsets are allowed.
12268     It is useful combined with the http_date converter.
12269
12270     Example :
12271
12272        # set an expires header to now+1 hour in every response
12273        http-response set-header Expires %[date(3600),http_date]
12274
12275   env(<name>) : string
12276     Returns a string containing the value of environment variable <name>. As a
12277     reminder, environment variables are per-process and are sampled when the
12278     process starts. This can be useful to pass some information to a next hop
12279     server, or with ACLs to take specific action when the process is started a
12280     certain way.
12281
12282     Examples :
12283         # Pass the Via header to next hop with the local hostname in it
12284         http-request add-header Via 1.1\ %[env(HOSTNAME)]
12285
```



```
12286         # reject cookie-less requests when the STOP environment variable is set
12287         http-request deny if !{ cook(SESSIONID) -m found } { env(STOP) -m found }
12288
12289   fe_conn([<frontend>]) : integer
12290     Returns the number of currently established connections on the frontend,
12291     possibly including the connection being evaluated. If no frontend name is
12292     specified, the current one is used. But it is also possible to check another
12293     frontend. It can be used to return a sorry page before hard-blocking, or to
12294     use a specific backend to drain new requests when the farm is considered
12295     full.  This is mostly used with ACLs but can also be used to pass some
12296     statistics to servers in HTTP headers. See also the "dst_conn", "be_conn",
12297     "fe_sess_rate" fetches.
12298
12299   fe_sess_rate([<frontend>]) : integer
12300     Returns an integer value corresponding to the sessions creation rate on the
12301     frontend, in number of new sessions per second. This is used with ACLs to
12302     limit the incoming session rate to an acceptable range in order to prevent
12303     abuse of service at the earliest moment, for example when combined with other
12304     layer 4 ACLs in order to force the clients to wait a bit for the rate to go
12305     down below the limit. It can also be useful to add this element to logs using
12306     a log-format directive. See also the "rate-limit sessions" directive for use
12307     in frontends.
12308
12309     Example :
12310           # This frontend limits incoming mails to 10/s with a max of 100
12311           # concurrent connections. We accept any connection below 10/s, and
12312           # force excess clients to wait for 100 ms. Since clients are limited to
12313           # 100 max, there cannot be more than 10 incoming mails per second.
12314           frontend mail
12315               bind :25
12316               mode tcp
12317               maxconn 100
12318               acl too_fast fe_sess_rate ge 10
12319               tcp-request inspect-delay 100ms
12320               tcp-request content accept if ! too_fast
12321               tcp-request content accept if WAIT_END
12322
12323   int(<integer>) : signed integer
12324     Returns a signed integer.
12325
12326   ipv4(<ipv4>) : ipv4
12327     Returns an ipv4.
12328
12329   ipv6(<ipv6>) : ipv6
12330     Returns an ipv6.
12331
12332   meth(<method>) : method
12333     Returns a method.
12334
12335   nbproc : integer
12336     Returns an integer value corresponding to the number of processes that were
12337     started (it equals the global "nbproc" setting). This is useful for logging
12338     and debugging purposes.
12339
12340   nbsrv([<backend>]) : integer
12341     Returns an integer value corresponding to the number of usable servers of
12342     either the current backend or the named backend. This is mostly used with
12343     ACLs but can also be useful when added to logs. This is normally used to
12344     switch to an alternate backend when the number of servers is too low to
12345     to handle some load. It is useful to report a failure when combined with
12346     "monitor fail".
12347
12348   proc : integer
12349     Returns an integer value corresponding to the position of the process calling
12350     the function, between 1 and global.nbproc. This is useful for logging and
```

```
   debugging purposes.

queue([<backend>]) : integer
  Returns the total number of queued connections of the designated backend,
  including all the connections in server queues. If no backend name is
  specified, the current one is used, but it is also possible to check another
  one. This is useful with ACLs or to pass statistics to backend servers. This
  can be used to take actions when queuing goes above a known level, generally
  indicating a surge of traffic or a massive slowdown on the servers. One
  possible action could be to reject new users but still accept old ones. See
  also the "avg_queue", "be_conn", and "be_sess_rate" fetches.

rand([<range>]) : integer
  Returns a random integer value within a range of <range> possible values,
  starting at zero. If the range is not specified, it defaults to 2^32, which
  gives numbers between 0 and 4294967295. It can be useful to pass some values
  needed to take some routing decisions for example, or just for debugging
  purposes. This random must not be used for security purposes.

srv_conn([<backend>/]<server>) : integer
  Returns an integer value corresponding to the number of currently established
  connections on the designated server, possibly including the connection being
  evaluated. If <backend> is omitted, then the server is looked up in the
  current backend. It can be used to use a specific farm when one server is
  full, or to inform the server about our view of the number of active
  connections with it. See also the "fe_conn", "be_conn" and "queue" fetch
  methods.

srv_is_up([<backend>/]<server>) : boolean
  Returns true when the designated server is UP, and false when it is either
  DOWN or in maintenance mode. If <backend> is omitted, then the server is
  looked up in the current backend. It is mainly used to take action based on
  an external status reported via a health check (eg: a geographical site's
  availability). Another possible use which is more of a hack consists in
  using dummy servers as boolean variables that can be enabled or disabled from
  the CLI, so that rules depending on those ACLs can be tweaked in realtime.

srv_sess_rate([<backend>/]<server>) : integer
  Returns an integer corresponding to the sessions creation rate on the
  designated server, in number of new sessions per second. If <backend> is
  omitted, then the server is looked up in the current backend. This is mostly
  used with ACLs but can make sense with logs too. This is used to switch to an
  alternate backend when an expensive or fragile one reaches too high a session
  rate, or to limit abuse of service (eg. prevent latent requests from
  overloading servers).

  Example :
        # Redirect to a separate back
        acl srv1_full srv_sess_rate(be1/srv1) gt 50
        acl srv2_full srv_sess_rate(be1/srv2) gt 50
        use_backend be2 if srv1_full or srv2_full

stopping : boolean
  Returns TRUE if the process calling the function is currently stopping. This
  can be useful for logging, or for relaxing certain checks or helping close
  certain connections upon graceful shutdown.

str(<string>) : string
  Returns a string.

table_avl([<table>]) : integer
  Returns the total number of available entries in the current proxy's
  stick-table or in the designated stick-table. See also table_cnt.

table_cnt([<table>]) : integer
```



```
  Returns the total number of entries currently in use in the current proxy's
  stick-table or in the designated stick-table. See also src_conn_cnt and
  table_avl for other entry counting methods.

var(<var-name>) : undefined
  Returns a variable with the stored type. If the variable is not set, the
  sample fetch fails. The name of the variable starts by an indication about its
  scope. The scope allowed are:
    "sess" : the variable is shared with all the session,
    "txn"  : the variable is shared with all the transaction (request and
             response),
    "req"  : the variable is shared only during the request processing,
    "res"  : the variable is shared only during the response processing.
  This prefix is followed by a name. The separator is a '.'. The name may only
  contain characters 'a-z', 'A-Z', '0-9' and '_'.


7.3.3. Fetching samples at Layer 4
----------------------------------

The layer 4 usually describes just the transport layer which in haproxy is
closest to the connection, where no content is yet made available. The fetch
methods described here are usable as low as the "tcp-request connection" rule
sets unless they require some future information. Those generally include
TCP/IP addresses and ports, as well as elements from stick-tables related to
the incoming connection. For retrieving a value from a sticky counters, the
counter number can be explicitly set as 0, 1, or 2 using the pre-defined
"sc0_", "sc1_", or "sc2_" prefix, or it can be specified as the first integer
argument when using the "sc_" prefix. An optional table may be specified with
the "sc*" form, in which case the currently tracked key will be looked up into
this alternate table instead of the table currently being tracked.

be_id : integer
  Returns an integer containing the current backend's id. It can be used in
  frontends with responses to check which backend processed the request.

dst : ip
  This is the destination IPv4 address of the connection on the client side,
  which is the address the client connected to. It can be useful when running
  in transparent mode. It is of type IP and works on both IPv4 and IPv6 tables.
  On IPv6 tables, IPv4 address is mapped to its IPv6 equivalent, according to
  RFC 4291.

dst_conn : integer
  Returns an integer value corresponding to the number of currently established
  connections on the same socket including the one being evaluated. It is
  normally used with ACLs but can as well be used to pass the information to
  servers in an HTTP header or in logs. It can be used to either return a sorry
  page before hard-blocking, or to use a specific backend to drain new requests
  when the socket is considered saturated. This offers the ability to assign
  different limits to different listening ports or addresses. See also the
  "fe_conn" and "be_conn" fetches.

dst_port : integer
  Returns an integer value corresponding to the destination TCP port of the
  connection on the client side, which is the port the client connected to.
  This might be used when running in transparent mode, when assigning dynamic
  ports to some clients for a whole application session, to stick all users to
  a same server, or to pass the destination port information to a server using
  an HTTP header.

fe_id : integer
  Returns an integer containing the current frontend's id. It can be used in
  backends to check from which backend it was called, or to stick all users
  coming via a same frontend to the same server.
```

```
12481
12482  sc_bytes_in_rate(<ctr>[,<table>]) : integer
12483  sc0_bytes_in_rate([<table>]) : integer
12484  sc1_bytes_in_rate([<table>]) : integer
12485  sc2_bytes_in_rate([<table>]) : integer
12486    Returns the average client-to-server bytes rate from the currently tracked
12487    counters, measured in amount of bytes over the period configured in the
12488    table. See also src_bytes_in_rate.
12489
12490  sc_bytes_out_rate(<ctr>[,<table>]) : integer
12491  sc0_bytes_out_rate([<table>]) : integer
12492  sc1_bytes_out_rate([<table>]) : integer
12493  sc2_bytes_out_rate([<table>]) : integer
12494    Returns the average server-to-client bytes rate from the currently tracked
12495    counters, measured in amount of bytes over the period configured in the
12496    table. See also src_bytes_out_rate.
12497
12498  sc_clr_gpc0(<ctr>[,<table>]) : integer
12499  sc0_clr_gpc0([<table>]) : integer
12500  sc1_clr_gpc0([<table>]) : integer
12501  sc2_clr_gpc0([<table>]) : integer
12502    Clears the first General Purpose Counter associated to the currently tracked
12503    counters, and returns its previous value. Before the first invocation, the
12504    stored value is zero, so first invocation will always return zero. This is
12505    typically used as a second ACL in an expression in order to mark a connection
12506    when a first ACL was verified :
12507
12508          # block if 5 consecutive requests continue to come faster than 10 sess
12509          # per second, and reset the counter as soon as the traffic slows down.
12510          acl abuse sc0_http_req_rate gt 10
12511          acl kill  sc0_inc_gpc0 gt 5
12512          acl save  sc0_clr_gpc0 ge 0
12513          tcp-request connection accept if !abuse save
12514          tcp-request connection reject if abuse kill
12515
12516  sc_conn_cnt(<ctr>[,<table>]) : integer
12517  sc0_conn_cnt([<table>]) : integer
12518  sc1_conn_cnt([<table>]) : integer
12519  sc2_conn_cnt([<table>]) : integer
12520    Returns the cumulated number of incoming connections from currently tracked
12521    counters. See also src_conn_cnt.
12522
12523  sc_conn_cur(<ctr>[,<table>]) : integer
12524  sc0_conn_cur([<table>]) : integer
12525  sc1_conn_cur([<table>]) : integer
12526  sc2_conn_cur([<table>]) : integer
12527    Returns the current amount of concurrent connections tracking the same
12528    tracked counters. This number is automatically incremented when tracking
12529    begins and decremented when tracking stops. See also src_conn_cur.
12530
12531  sc_conn_rate(<ctr>[,<table>]) : integer
12532  sc0_conn_rate([<table>]) : integer
12533  sc1_conn_rate([<table>]) : integer
12534  sc2_conn_rate([<table>]) : integer
12535    Returns the average connection rate from the currently tracked counters,
12536    measured in amount of connections over the period configured in the table.
12537    See also src_conn_rate.
12538
12539  sc_get_gpc0(<ctr>[,<table>]) : integer
12540  sc0_get_gpc0([<table>]) : integer
12541  sc1_get_gpc0([<table>]) : integer
12542  sc2_get_gpc0([<table>]) : integer
12543    Returns the value of the first General Purpose Counter associated to the
12544    currently tracked counters. See also src_get_gpc0 and sc/sc0/sc1/sc2_inc_gpc0.
12545
```



```
12546  sc_get_gpt0(<ctr>[,<table>]) : integer
12547  sc0_get_gpt0([<table>]) : integer
12548  sc1_get_gpt0([<table>]) : integer
12549  sc2_get_gpt0([<table>]) : integer
12550    Returns the value of the first General Purpose Tag associated to the
12551    currently tracked counters. See also src_get_gpt0.
12552
12553  sc_gpc0_rate(<ctr>[,<table>]) : integer
12554  sc0_gpc0_rate([<table>]) : integer
12555  sc1_gpc0_rate([<table>]) : integer
12556  sc2_gpc0_rate([<table>]) : integer
12557    Returns the average increment rate of the first General Purpose Counter
12558    associated to the currently tracked counters. It reports the frequency
12559    which the gpc0 counter was incremented over the configured period. See also
12560    src_gpc0_rate, sc/sc0/sc1/sc2_get_gpc0, and sc/sc0/sc1/sc2_inc_gpc0. Note
12561    that the "gpc0_rate" counter must be stored in the stick-table for a value to
12562    be returned, as "gpc0" only holds the event count.
12563
12564  sc_http_err_cnt(<ctr>[,<table>]) : integer
12565  sc0_http_err_cnt([<table>]) : integer
12566  sc1_http_err_cnt([<table>]) : integer
12567  sc2_http_err_cnt([<table>]) : integer
12568    Returns the cumulated number of HTTP errors from the currently tracked
12569    counters. This includes the both request errors and 4xx error responses.
12570    See also src_http_err_cnt.
12571
12572  sc_http_err_rate(<ctr>[,<table>]) : integer
12573  sc0_http_err_rate([<table>]) : integer
12574  sc1_http_err_rate([<table>]) : integer
12575  sc2_http_err_rate([<table>]) : integer
12576    Returns the average rate of HTTP errors from the currently tracked counters,
12577    measured in amount of errors over the period configured in the table. This
12578    includes the both request errors and 4xx error responses. See also
12579    src_http_err_rate.
12580
12581  sc_http_req_cnt(<ctr>[,<table>]) : integer
12582  sc0_http_req_cnt([<table>]) : integer
12583  sc1_http_req_cnt([<table>]) : integer
12584  sc2_http_req_cnt([<table>]) : integer
12585    Returns the cumulated number of HTTP requests from the currently tracked
12586    counters. This includes every started request, valid or not. See also
12587    src_http_req_cnt.
12588
12589  sc_http_req_rate(<ctr>[,<table>]) : integer
12590  sc0_http_req_rate([<table>]) : integer
12591  sc1_http_req_rate([<table>]) : integer
12592  sc2_http_req_rate([<table>]) : integer
12593    Returns the average rate of HTTP requests from the currently tracked
12594    counters, measured in amount of requests over the period configured in
12595    the table. This includes every started request, valid or not. See also
12596    src_http_req_rate.
12597
12598  sc_inc_gpc0(<ctr>[,<table>]) : integer
12599  sc0_inc_gpc0([<table>]) : integer
12600  sc1_inc_gpc0([<table>]) : integer
12601  sc2_inc_gpc0([<table>]) : integer
12602    Increments the first General Purpose Counter associated to the currently
12603    tracked counters, and returns its new value. Before the first invocation,
12604    the stored value is zero, so first invocation will increase it to 1 and will
12605    return 1. This is typically used as a second ACL in an expression in order
12606    to mark a connection when a first ACL was verified :
12607
12608          acl abuse sc0_http_req_rate gt 10
12609          acl kill  sc0_inc_gpc0 gt 0
12610          tcp-request connection reject if abuse kill
```

```
12611
12612  sc_kbytes_in(<ctr>[,<table>]) : integer
12613  sc0_kbytes_in([<table>]) : integer
12614  sc1_kbytes_in([<table>]) : integer
12615  sc2_kbytes_in([<table>]) : integer
12616    Returns the total amount of client-to-server data from the currently tracked
12617    counters, measured in kilobytes. The test is currently performed on 32-bit
12618    integers, which limits values to 4 terabytes. See also src_kbytes_in.
12619
12620  sc_kbytes_out(<ctr>[,<table>]) : integer
12621  sc0_kbytes_out([<table>]) : integer
12622  sc1_kbytes_out([<table>]) : integer
12623  sc2_kbytes_out([<table>]) : integer
12624    Returns the total amount of server-to-client data from the currently tracked
12625    counters, measured in kilobytes. The test is currently performed on 32-bit
12626    integers, which limits values to 4 terabytes. See also src_kbytes_out.
12627
12628  sc_sess_cnt(<ctr>[,<table>]) : integer
12629  sc0_sess_cnt([<table>]) : integer
12630  sc1_sess_cnt([<table>]) : integer
12631  sc2_sess_cnt([<table>]) : integer
12632    Returns the cumulated number of incoming connections that were transformed
12633    into sessions, which means that they were accepted by a "tcp-request
12634    connection" rule, from the currently tracked counters. A backend may count
12635    more sessions than connections because each connection could result in many
12636    backend sessions if some HTTP keep-alive is performed over the connection
12637    with the client. See also src_sess_cnt.
12638
12639  sc_sess_rate(<ctr>[,<table>]) : integer
12640  sc0_sess_rate([<table>]) : integer
12641  sc1_sess_rate([<table>]) : integer
12642  sc2_sess_rate([<table>]) : integer
12643    Returns the average session rate from the currently tracked counters,
12644    measured in amount of sessions over the period configured in the table. A
12645    session is a connection that got past the early "tcp-request connection"
12646    rules. A backend may count more sessions than connections because each
12647    connection could result in many backend sessions if some HTTP keep-alive is
12648    performed over the connection with the client. See also src_sess_rate.
12649
12650  sc_tracked(<ctr>[,<table>]) : boolean
12651  sc0_tracked([<table>]) : boolean
12652  sc1_tracked([<table>]) : boolean
12653  sc2_tracked([<table>]) : boolean
12654    Returns true if the designated session counter is currently being tracked by
12655    the current session. This can be useful when deciding whether or not we want
12656    to set some values in a header passed to the server.
12657
12658  sc_trackers(<ctr>[,<table>]) : integer
12659  sc0_trackers([<table>]) : integer
12660  sc1_trackers([<table>]) : integer
12661  sc2_trackers([<table>]) : integer
12662    Returns the current amount of concurrent connections tracking the same
12663    tracked counters. This number is automatically incremented when tracking
12664    begins and decremented when tracking stops. It differs from sc0_conn_cur in
12665    that it does not rely on any stored information but on the table's reference
12666    count (the "use" value which is returned by "show table" on the CLI). This
12667    may sometimes be more suited for layer7 tracking. It can be used to tell a
12668    server how many concurrent connections there are from a given address for
12669    example.
12670
12671  so_id : integer
12672    Returns an integer containing the current listening socket's id. It is useful
12673    in frontends involving many "bind" lines, or to stick all users coming via a
12674    same socket to the same server.
12675
```



```
12676  src : ip
12677    This is the source IPv4 address of the client of the session.  It is of type
12678    IP and works on both IPv4 and IPv6 tables. On IPv6 tables, IPv4 addresses are
12679    mapped to their IPv6 equivalent, according to RFC 4291. Note that it is the
12680    TCP-level source address which is used, and not the address of a client
12681    behind a proxy. However if the "accept-proxy" bind directive is used, it can
12682    be the address of a client behind another PROXY-protocol compatible component
12683    for all rule sets except "tcp-request connection" which sees the real address.
12684
12685    Example:
12686         # add an HTTP header in requests with the originating address' country
12687         http-request set-header X-Country %[src,map_ip(geoip.lst)]
12688
12689  src_bytes_in_rate([<table>]) : integer
12690    Returns the average bytes rate from the incoming connection's source address
12691    in the current proxy's stick-table or in the designated stick-table, measured
12692    in amount of bytes over the period configured in the table. If the address is
12693    not found, zero is returned. See also sc/sc0/sc1/sc2_bytes_in_rate.
12694
12695  src_bytes_out_rate([<table>]) : integer
12696    Returns the average bytes rate to the incoming connection's source address in
12697    the current proxy's stick-table or in the designated stick-table, measured in
12698    amount of bytes over the period configured in the table. If the address is
12699    not found, zero is returned. See also sc/sc0/sc1/sc2_bytes_out_rate.
12700
12701  src_clr_gpc0([<table>]) : integer
12702    Clears the first General Purpose Counter associated to the incoming
12703    connection's source address in the current proxy's stick-table or in the
12704    designated stick-table, and returns its previous value. If the address is not
12705    found, an entry is created and 0 is returned. This is typically used as a
12706    second ACL in an expression in order to mark a connection when a first ACL
12707    was verified :
12708
12709         # block if 5 consecutive requests continue to come faster than 10 sess
12710         # per second, and reset the counter as soon as the traffic slows down.
12711         acl abuse src_http_req_rate gt 10
12712         acl kill  src_inc_gpc0 gt 5
12713         acl save  src_clr_gpc0 ge 0
12714         tcp-request connection accept if !abuse save
12715         tcp-request connection reject if abuse kill
12716
12717  src_conn_cnt([<table>]) : integer
12718    Returns the cumulated number of connections initiated from the current
12719    incoming connection's source address in the current proxy's stick-table or in
12720    the designated stick-table. If the address is not found, zero is returned.
12721    See also sc/sc0/sc1/sc2_conn_cnt.
12722
12723  src_conn_cur([<table>]) : integer
12724    Returns the current amount of concurrent connections initiated from the
12725    current incoming connection's source address in the current proxy's
12726    stick-table or in the designated stick-table. If the address is not found,
12727    zero is returned. See also sc/sc0/sc1/sc2_conn_cur.
12728
12729  src_conn_rate([<table>]) : integer
12730    Returns the average connection rate from the incoming connection's source
12731    address in the current proxy's stick-table or in the designated stick-table,
12732    measured in amount of connections over the period configured in the table. If
12733    the address is not found, zero is returned. See also sc/sc0/sc1/sc2_conn_rate.
12734
12735  src_get_gpc0([<table>]) : integer
12736    Returns the value of the first General Purpose Counter associated to the
12737    incoming connection's source address in the current proxy's stick-table or in
12738    the designated stick-table. If the address is not found, zero is returned.
12739    See also sc/sc0/sc1/sc2_get_gpc0 and src_inc_gpc0.
12740
```

```
12741  src_get_gpt0([<table>]) : integer
12742    Returns the value of the first General Purpose Tag associated to the
12743    incoming connection's source address in the current proxy's stick-table or in
12744    the designated stick-table. If the address is not found, zero is returned.
12745    See also sc/sc0/sc1/sc2_get_gpt0.
12746
12747  src_gpc0_rate([<table>]) : integer
12748    Returns the average increment rate of the first General Purpose Counter
12749    associated to the incoming connection's source address in the current proxy's
12750    stick-table or in the designated stick-table. It reports the frequency
12751    which the gpc0 counter was incremented over the configured period. See also
12752    sc/sc0/sc1/sc2_gpc0_rate, src_get_gpc0, and sc/sc0/sc1/sc2_inc_gpc0. Note
12753    that the "gpc0_rate" counter must be stored in the stick-table for a value to
12754    be returned, as "gpc0" only holds the event count.
12755
12756  src_http_err_cnt([<table>]) : integer
12757    Returns the cumulated number of HTTP errors from the incoming connection's
12758    source address in the current proxy's stick-table or in the designated
12759    stick-table. This includes the both request errors and 4xx error responses.
12760    See also sc/sc0/sc1/sc2_http_err_cnt. If the address is not found, zero is
12761    returned.
12762
12763  src_http_err_rate([<table>]) : integer
12764    Returns the average rate of HTTP errors from the incoming connection's source
12765    address in the current proxy's stick-table or in the designated stick-table,
12766    measured in amount of errors over the period configured in the table. This
12767    includes the both request errors and 4xx error responses. If the address is
12768    not found, zero is returned. See also sc/sc0/sc1/sc2_http_err_rate.
12769
12770  src_http_req_cnt([<table>]) : integer
12771    Returns the cumulated number of HTTP requests from the incoming connection's
12772    source address in the current proxy's stick-table or in the designated stick-
12773    table. This includes every started request, valid or not. If the address is
12774    not found, zero is returned. See also sc/sc0/sc1/sc2_http_req_cnt.
12775
12776  src_http_req_rate([<table>]) : integer
12777    Returns the average rate of HTTP requests from the incoming connection's
12778    source address in the current proxy's stick-table or in the designated stick-
12779    table, measured in amount of requests over the period configured in the
12780    table. This includes every started request, valid or not. If the address is
12781    not found, zero is returned. See also sc/sc0/sc1/sc2_http_req_rate.
12782
12783  src_inc_gpc0([<table>]) : integer
12784    Increments the first General Purpose Counter associated to the incoming
12785    connection's source address in the current proxy's stick-table or in the
12786    designated stick-table, and returns its new value. If the address is not
12787    found, an entry is created and 1 is returned. See also sc0/sc2/sc2_inc_gpc0.
12788    This is typically used as a second ACL in an expression in order to mark a
12789    connection when a first ACL was verified :
12790
12791          acl abuse src_http_req_rate gt 10
12792          acl kill  src_inc_gpc0 gt 0
12793          tcp-request connection reject if abuse kill
12794
12795  src_kbytes_in([<table>]) : integer
12796    Returns the total amount of data received from the incoming connection's
12797    source address in the current proxy's stick-table or in the designated
12798    stick-table, measured in kilobytes. If the address is not found, zero is
12799    returned. The test is currently performed on 32-bit integers, which limits
12800    values to 4 terabytes. See also sc/sc0/sc1/sc2_kbytes_in.
12801
12802  src_kbytes_out([<table>]) : integer
12803    Returns the total amount of data sent to the incoming connection's source
12804    address in the current proxy's stick-table or in the designated stick-table,
12805    measured in kilobytes. If the address is not found, zero is returned. The
```



```
12806    test is currently performed on 32-bit integers, which limits values to 4
12807    terabytes. See also sc/sc0/sc1/sc2_kbytes_out.
12808
12809  src_port : integer
12810    Returns an integer value corresponding to the TCP source port of the
12811    connection on the client side, which is the port the client connected from.
12812    Usage of this function is very limited as modern protocols do not care much
12813    about source ports nowadays.
12814
12815  src_sess_cnt([<table>]) : integer
12816    Returns the cumulated number of connections initiated from the incoming
12817    connection's source IPv4 address in the current proxy's stick-table or in the
12818    designated stick-table, that were transformed into sessions, which means that
12819    they were accepted by "tcp-request" rules. If the address is not found, zero
12820    is returned. See also sc/sc0/sc1/sc2_sess_cnt.
12821
12822  src_sess_rate([<table>]) : integer
12823    Returns the average session rate from the incoming connection's source
12824    address in the current proxy's stick-table or in the designated stick-table,
12825    measured in amount of sessions over the period configured in the table. A
12826    session is a connection that went past the early "tcp-request" rules. If the
12827    address is not found, zero is returned. See also sc/sc0/sc1/sc2_sess_rate.
12828
12829  src_updt_conn_cnt([<table>]) : integer
12830    Creates or updates the entry associated to the incoming connection's source
12831    address in the current proxy's stick-table or in the designated stick-table.
12832    This table must be configured to store the "conn_cnt" data type, otherwise
12833    the match will be ignored. The current count is incremented by one, and the
12834    expiration timer refreshed. The updated count is returned, so this match
12835    can't return zero. This was used to reject service abusers based on their
12836    source address. Note: it is recommended to use the more complete "track-sc*"
12837    actions in "tcp-request" rules instead.
12838
12839    Example :
12840          # This frontend limits incoming SSH connections to 3 per 10 second for
12841          # each source address, and rejects excess connections until a 10 second
12842          # silence is observed. At most 20 addresses are tracked.
12843          listen ssh
12844              bind :22
12845              mode tcp
12846              maxconn 100
12847              stick-table type ip size 20 expire 10s store conn_cnt
12848              tcp-request content reject if { src_updt_conn_cnt gt 3 }
12849              server local 127.0.0.1:22
12850
12851  srv_id : integer
12852    Returns an integer containing the server's id when processing the response.
12853    While it's almost only used with ACLs, it may be used for logging or
12854    debugging.
12855
12856
12857  7.3.4. Fetching samples at Layer 5
12858  ----------------------------------
12859
12860  The layer 5 usually describes just the session layer which in haproxy is
12861  closest to the session once all the connection handshakes are finished, but
12862  when no content is yet made available. The fetch methods described here are
12863  usable as low as the "tcp-request content" rule sets unless they require some
12864  future information. Those generally include the results of SSL negotiations.
12865
12866  ssl_bc : boolean
12867    Returns true when the back connection was made via an SSL/TLS transport
12868    layer and is locally deciphered. This means the outgoing connection was made
12869    other a server with the "ssl" option.
12870
```

```
ssl_bc_alg_keysize : integer
  Returns the symmetric cipher key size supported in bits when the outgoing
  connection was made over an SSL/TLS transport layer.

ssl_bc_cipher : string
  Returns the name of the used cipher when the outgoing connection was made
  over an SSL/TLS transport layer.

ssl_bc_protocol : string
  Returns the name of the used protocol when the outgoing connection was made
  over an SSL/TLS transport layer.

ssl_bc_unique_id : binary
  When the outgoing connection was made over an SSL/TLS transport layer,
  returns the TLS unique ID as defined in RFC5929 section 3. The unique id
  can be encoded to base64 using the converter: "ssl_bc_unique_id,base64".

ssl_bc_session_id : binary
  Returns the SSL ID of the back connection when the outgoing connection was
  made over an SSL/TLS transport layer. It is useful to log if we want to know
  if session was reused or not.

ssl_bc_use_keysize : integer
  Returns the symmetric cipher key size used in bits when the outgoing
  connection was made over an SSL/TLS transport layer.

ssl_c_ca_err : integer
  When the incoming connection was made over an SSL/TLS transport layer,
  returns the ID of the first error detected during verification of the client
  certificate at depth > 0, or 0 if no error was encountered during this
  verification process. Please refer to your SSL library's documentation to
  find the exhaustive list of error codes.

ssl_c_ca_err_depth : integer
  When the incoming connection was made over an SSL/TLS transport layer,
  returns the depth in the CA chain of the first error detected during the
  verification of the client certificate. If no error is encountered, 0 is
  returned.

ssl_c_der : binary
  Returns the DER formatted certificate presented by the client when the
  incoming connection was made over an SSL/TLS transport layer. When used for
  an ACL, the value(s) to match against can be passed in hexadecimal form.

ssl_c_err : integer
  When the incoming connection was made over an SSL/TLS transport layer,
  returns the ID of the first error detected during verification at depth 0, or
  0 if no error was encountered during this verification process. Please refer
  to your SSL library's documentation to find the exhaustive list of error
  codes.

ssl_c_i_dn([<entry>[,<occ>]]) : string
  When the incoming connection was made over an SSL/TLS transport layer,
  returns the full distinguished name of the issuer of the certificate
  presented by the client when no <entry> is specified, or the value of the
  first given entry found from the beginning of the DN. If a positive/negative
  occurrence number is specified as the optional second argument, it returns
  the value of the nth given entry value from the beginning/end of the DN.
  For instance, "ssl_c_i_dn(OU,2)" the second organization unit, and
  "ssl_c_i_dn(CN)" retrieves the common name.

ssl_c_key_alg : string
  Returns the name of the algorithm used to generate the key of the certificate
  presented by the client when the incoming connection was made over an SSL/TLS
  transport layer.
```



```

ssl_c_notafter : string
  Returns the end date presented by the client as a formatted string
  YYMMDDhhmmss[Z] when the incoming connection was made over an SSL/TLS
  transport layer.

ssl_c_notbefore : string
  Returns the start date presented by the client as a formatted string
  YYMMDDhhmmss[Z] when the incoming connection was made over an SSL/TLS
  transport layer.

ssl_c_s_dn([<entry>[,<occ>]]) : string
  When the incoming connection was made over an SSL/TLS transport layer,
  returns the full distinguished name of the subject of the certificate
  presented by the client when no <entry> is specified, or the value of the
  first given entry found from the beginning of the DN. If a positive/negative
  occurrence number is specified as the optional second argument, it returns
  the value of the nth given entry value from the beginning/end of the DN.
  For instance, "ssl_c_s_dn(OU,2)" the second organization unit, and
  "ssl_c_s_dn(CN)" retrieves the common name.

ssl_c_serial : binary
  Returns the serial of the certificate presented by the client when the
  incoming connection was made over an SSL/TLS transport layer. When used for
  an ACL, the value(s) to match against can be passed in hexadecimal form.

ssl_c_sha1 : binary
  Returns the SHA-1 fingerprint of the certificate presented by the client when
  the incoming connection was made over an SSL/TLS transport layer. This can be
  used to stick a client to a server, or to pass this information to a server.
  Note that the output is binary, so if you want to pass that signature to the
  server, you need to encode it in hex or base64, such as in the example below:

     http-request set-header X-SSL-Client-SHA1 %[ssl_c_sha1,hex]

ssl_c_sig_alg : string
  Returns the name of the algorithm used to sign the certificate presented by
  the client when the incoming connection was made over an SSL/TLS transport
  layer.

ssl_c_used : boolean
  Returns true if current SSL session uses a client certificate even if current
  connection uses SSL session resumption. See also "ssl_fc_has_crt".

ssl_c_verify : integer
  Returns the verify result error ID when the incoming connection was made over
  an SSL/TLS transport layer, otherwise zero if no error is encountered. Please
  refer to your SSL library's documentation for an exhaustive list of error
  codes.

ssl_c_version : integer
  Returns the version of the certificate presented by the client when the
  incoming connection was made over an SSL/TLS transport layer.

ssl_f_der : binary
  Returns the DER formatted certificate presented by the frontend when the
  incoming connection was made over an SSL/TLS transport layer. When used for
  an ACL, the value(s) to match against can be passed in hexadecimal form.

ssl_f_i_dn([<entry>[,<occ>]]) : string
  When the incoming connection was made over an SSL/TLS transport layer,
  returns the full distinguished name of the issuer of the certificate
  presented by the frontend when no <entry> is specified, or the value of the
  first given entry found from the beginning of the DN. If a positive/negative
  occurrence number is specified as the optional second argument, it returns
```

```
13001     the value of the nth given entry value from the beginning/end of the DN.
13002     For instance, "ssl_f_i_dn(OU,2)" the second organization unit, and
13003     "ssl_f_i_dn(CN)" retrieves the common name.
13004
13005   ssl_f_key_alg : string
13006     Returns the name of the algorithm used to generate the key of the certificate
13007     presented by the frontend when the incoming connection was made over an
13008     SSL/TLS transport layer.
13009
13010   ssl_f_notafter : string
13011     Returns the end date presented by the frontend as a formatted string
13012     YYMMDDhhmmss[Z] when the incoming connection was made over an SSL/TLS
13013     transport layer.
13014
13015   ssl_f_notbefore : string
13016     Returns the start date presented by the frontend as a formatted string
13017     YYMMDDhhmmss[Z] when the incoming connection was made over an SSL/TLS
13018     transport layer.
13019
13020   ssl_f_s_dn([<entry>[,<occ>]]) : string
13021     When the incoming connection was made over an SSL/TLS transport layer,
13022     returns the full distinguished name of the subject of the certificate
13023     presented by the frontend when no <entry> is specified, or the value of the
13024     first given entry found from the beginning of the DN. If a positive/negative
13025     occurrence number is specified as the optional second argument, it returns
13026     the value of the nth given entry value from the beginning/end of the DN.
13027     For instance, "ssl_f_s_dn(OU,2)" the second organization unit, and
13028     "ssl_f_s_dn(CN)" retrieves the common name.
13029
13030   ssl_f_serial : binary
13031     Returns the serial of the certificate presented by the frontend when the
13032     incoming connection was made over an SSL/TLS transport layer. When used for
13033     an ACL, the value(s) to match against can be passed in hexadecimal form.
13034
13035   ssl_f_sha1 : binary
13036     Returns the SHA-1 fingerprint of the certificate presented by the frontend
13037     when the incoming connection was made over an SSL/TLS transport layer. This
13038     can be used to know which certificate was chosen using SNI.
13039
13040   ssl_f_sig_alg : string
13041     Returns the name of the algorithm used to sign the certificate presented by
13042     the frontend when the incoming connection was made over an SSL/TLS transport
13043     layer.
13044
13045   ssl_f_version : integer
13046     Returns the version of the certificate presented by the frontend when the
13047     incoming connection was made over an SSL/TLS transport layer.
13048
13049   ssl_fc : boolean
13050     Returns true when the front connection was made via an SSL/TLS transport
13051     layer and is locally deciphered. This means it has matched a socket declared
13052     with a "bind" line having the "ssl" option.
13053
13054     Example :
13055           # This passes "X-Proto: https" to servers when client connects over SSL
13056           listen http-https
13057               bind :80
13058               bind :443 ssl crt /etc/haproxy.pem
13059               http-request add-header X-Proto https if { ssl_fc }
13060
13061   ssl_fc_alg_keysize : integer
13062     Returns the symmetric cipher key size supported in bits when the incoming
13063     connection was made over an SSL/TLS transport layer.
13064
13065   ssl_fc_alpn : string
```



```
13066     This extracts the Application Layer Protocol Negotiation field from an
13067     incoming connection made via a TLS transport layer and locally deciphered by
13068     haproxy. The result is a string containing the protocol name advertised by
13069     the client. The SSL library must have been built with support for TLS
13070     extensions enabled (check haproxy -vv). Note that the TLS ALPN extension is
13071     not advertised unless the "alpn" keyword on the "bind" line specifies a
13072     protocol list. Also, nothing forces the client to pick a protocol from this
13073     list, any other one may be requested. The TLS ALPN extension is meant to
13074     replace the TLS NPN extension. See also "ssl_fc_npn".
13075
13076   ssl_fc_cipher : string
13077     Returns the name of the used cipher when the incoming connection was made
13078     over an SSL/TLS transport layer.
13079
13080   ssl_fc_has_crt : boolean
13081     Returns true if a client certificate is present in an incoming connection over
13082     SSL/TLS transport layer. Useful if 'verify' statement is set to 'optional'.
13083     Note: on SSL session resumption with Session ID or TLS ticket, client
13084     certificate is not present in the current connection but may be retrieved
13085     from the cache or the ticket. So prefer "ssl_c_used" if you want to check if
13086     current SSL session uses a client certificate.
13087
13088   ssl_fc_has_sni : boolean
13089     This checks for the presence of a Server Name Indication TLS extension (SNI)
13090     in an incoming connection was made over an SSL/TLS transport layer. Returns
13091     true when the incoming connection presents a TLS SNI field. This requires
13092     that the SSL library is build with support for TLS extensions enabled (check
13093     haproxy -vv).
13094
13095   ssl_fc_is_resumed: boolean
13096     Returns true if the SSL/TLS session has been resumed through the use of
13097     SSL session cache or TLS tickets.
13098
13099   ssl_fc_npn : string
13100     This extracts the Next Protocol Negotiation field from an incoming connection
13101     made via a TLS transport layer and locally deciphered by haproxy. The result
13102     is a string containing the protocol name advertised by the client. The SSL
13103     library must have been built with support for TLS extensions enabled (check
13104     haproxy -vv). Note that the TLS NPN extension is not advertised unless the
13105     "npn" keyword on the "bind" line specifies a protocol list. Also, nothing
13106     forces the client to pick a protocol from this list, any other one may be
13107     requested. Please note that the TLS NPN extension was replaced with ALPN.
13108
13109   ssl_fc_protocol : string
13110     Returns the name of the used protocol when the incoming connection was made
13111     over an SSL/TLS transport layer.
13112
13113   ssl_fc_unique_id : binary
13114     When the incoming connection was made over an SSL/TLS transport layer,
13115     returns the TLS unique ID as defined in RFC5929 section 3. The unique id
13116     can be encoded to base64 using the converter: "ssl_bc_unique_id,base64".
13117
13118   ssl_fc_session_id : binary
13119     Returns the SSL ID of the front connection when the incoming connection was
13120     made over an SSL/TLS transport layer. It is useful to stick a given client to
13121     a server. It is important to note that some browsers refresh their session ID
13122     every few minutes.
13123
13124   ssl_fc_sni : string
13125     This extracts the Server Name Indication TLS extension (SNI) field from an
13126     incoming connection made via an SSL/TLS transport layer and locally
13127     deciphered by haproxy. The result (when present) typically is a string
13128     matching the HTTPS host name (253 chars or less). The SSL library must have
13129     been built with support for TLS extensions enabled (check haproxy -vv).
13130
```

```
13131    This fetch is different from "req_ssl_sni" above in that it applies to the
13132    connection being deciphered by haproxy and not to SSL contents being blindly
13133    forwarded. See also "ssl_fc_sni_end" and "ssl_fc_sni_reg" below. This
13134    requires that the SSL library is build with support for TLS extensions
13135    enabled (check haproxy -vv).
13136
13137    ACL derivatives :
13138      ssl_fc_sni_end : suffix match
13139      ssl_fc_sni_reg : regex match
13140
13141  ssl_fc_use_keysize : integer
13142    Returns the symmetric cipher key size used in bits when the incoming
13143    connection was made over an SSL/TLS transport layer.
13144
13145
13146  7.3.5. Fetching samples from buffer contents (Layer 6)
13147  ------------------------------------------------------
13148
13149  Fetching samples from buffer contents is a bit different from the previous
13150  sample fetches above because the sampled data are ephemeral. These data can
13151  only be used when they're available and will be lost when they're forwarded.
13152  For this reason, samples fetched from buffer contents during a request cannot
13153  be used in a response for example. Even while the data are being fetched, they
13154  can change. Sometimes it is necessary to set some delays or combine multiple
13155  sample fetch methods to ensure that the expected data are complete and usable,
13156  for example through TCP request content inspection. Please see the "tcp-request
13157  content" keyword for more detailed information on the subject.
13158
13159  payload(<offset>,<length>) : binary (deprecated)
13160    This is an alias for "req.payload" when used in the context of a request (eg:
13161    "stick on", "stick match"), and for "res.payload" when used in the context of
13162    a response such as in "stick store response".
13163
13164  payload_lv(<offset1>,<length>[,<offset2>]) : binary (deprecated)
13165    This is an alias for "req.payload_lv" when used in the context of a request
13166    (eg: "stick on", "stick match"), and for "res.payload_lv" when used in the
13167    context of a response such as in "stick store response".
13168
13169  req.len : integer
13170  req_len : integer (deprecated)
13171    Returns an integer value corresponding to the number of bytes present in the
13172    request buffer. This is mostly used in ACL. It is important to understand
13173    that this test does not return false as long as the buffer is changing. This
13174    means that a check with equality to zero will almost always immediately match
13175    at the beginning of the session, while a test for more data will wait for
13176    that data to come in and return false only when haproxy is certain that no
13177    more data will come in. This test was designed to be used with TCP request
13178    content inspection.
13179
13180  req.payload(<offset>,<length>) : binary
13181    This extracts a binary block of <length> bytes and starting at byte <offset>
13182    in the request buffer. As a special case, if the <length> argument is zero,
13183    the the whole buffer from <offset> to the end is extracted. This can be used
13184    with ACLs in order to check for the presence of some content in a buffer at
13185    any location.
13186
13187    ACL alternatives :
13188      payload(<offset>,<length>) : hex binary match
13189
13190  req.payload_lv(<offset1>,<length>[,<offset2>]) : binary
13191    This extracts a binary block whose size is specified at <offset1> for <length>
13192    bytes, and which starts at <offset2> if specified or just after the length in
13193    the request buffer. The <offset2> parameter also supports relative offsets if
13194    prepended with a '+' or '-' sign.
13195
```



```
13196    ACL alternatives :
13197      payload_lv(<offset1>,<length>[,<offset2>]) : hex binary match
13198
13199    Example : please consult the example from the "stick store-response" keyword.
13200
13201  req.proto_http : boolean
13202  req_proto_http : boolean (deprecated)
13203    Returns true when data in the request buffer look like HTTP and correctly
13204    parses as such. It is the same parser as the common HTTP request parser which
13205    is used so there should be no surprises. The test does not match until the
13206    request is complete, failed or timed out. This test may be used to report the
13207    protocol in TCP logs, but the biggest use is to block TCP request analysis
13208    until a complete HTTP request is present in the buffer, for example to track
13209    a header.
13210
13211    Example:
13212          # track request counts per "base" (concatenation of Host+URL)
13213          tcp-request inspect-delay 10s
13214          tcp-request content reject if !HTTP
13215          tcp-request content track-sc0 base table req-rate
13216
13217  req.rdp_cookie([<name>]) : string
13218  rdp_cookie([<name>]) : string (deprecated)
13219    When the request buffer looks like the RDP protocol, extracts the RDP cookie
13220    <name>, or any cookie if unspecified. The parser only checks for the first
13221    cookie, as illustrated in the RDP protocol specification. The cookie name is
13222    case insensitive. Generally the "MSTS" cookie name will be used, as it can
13223    contain the user name of the client connecting to the server if properly
13224    configured on the client. The "MSTSHASH" cookie is often used as well for
13225    session stickiness to servers.
13226
13227    This differs from "balance rdp-cookie" in that any balancing algorithm may be
13228    used and thus the distribution of clients to backend servers is not linked to
13229    a hash of the RDP cookie. It is envisaged that using a balancing algorithm
13230    such as "balance roundrobin" or "balance leastconn" will lead to a more even
13231    distribution of clients to backend servers than the hash used by "balance
13232    rdp-cookie".
13233
13234    ACL derivatives :
13235      req_rdp_cookie([<name>]) : exact string match
13236
13237    Example :
13238     listen tse-farm
13239         bind 0.0.0.0:3389
13240         # wait up to 5s for an RDP cookie in the request
13241         tcp-request inspect-delay 5s
13242         tcp-request content accept if RDP_COOKIE
13243         # apply RDP cookie persistence
13244         persist rdp-cookie
13245         # Persist based on the mstshash cookie
13246         # This is only useful makes sense if
13247         # balance rdp-cookie is not used
13248         stick-table type string size 204800
13249         stick on req.rdp_cookie(mstshash)
13250         server srv1 1.1.1.1:3389
13251         server srv1 1.1.1.2:3389
13252
13253    See also : "balance rdp-cookie", "persist rdp-cookie", "tcp-request" and the
13254    "req_rdp_cookie" ACL.
13255
13256  req.rdp_cookie_cnt([name]) : integer
13257  rdp_cookie_cnt([name]) : integer (deprecated)
13258    Tries to parse the request buffer as RDP protocol, then returns an integer
13259    corresponding to the number of RDP cookies found. If an optional cookie name
13260    is passed, only cookies matching this name are considered. This is mostly
```

```
13261    used in ACL.
13262
13263    ACL derivatives :
13264      req_rdp_cookie_cnt([<name>]) : integer match
13265
13266  req.ssl_ec_ext : boolean
13267    Returns a boolean identifying if client sent the Supported Elliptic Curves
13268    Extension as defined in RFC4492, section 5.1. within the SSL ClientHello
13269    message. This can be used to present ECC compatible clients with EC
13270    certificate and to use RSA for all others, on the same IP address. Note that
13271    this only applies to raw contents found in the request buffer and not to
13272    contents deciphered via an SSL data layer, so this will not work with "bind"
13273    lines having the "ssl" option.
13274
13275  req.ssl_hello_type : integer
13276  req_ssl_hello_type : integer (deprecated)
13277    Returns an integer value containing the type of the SSL hello message found
13278    in the request buffer if the buffer contains data that parse as a complete
13279    SSL (v3 or superior) client hello message. Note that this only applies to raw
13280    contents found in the request buffer and not to contents deciphered via an
13281    SSL data layer, so this will not work with "bind" lines having the "ssl"
13282    option. This is mostly used in ACL to detect presence of an SSL hello message
13283    that is supposed to contain an SSL session ID usable for stickiness.
13284
13285  req.ssl_sni : string
13286  req_ssl_sni : string (deprecated)
13287    Returns a string containing the value of the Server Name TLS extension sent
13288    by a client in a TLS stream passing through the request buffer if the buffer
13289    contains data that parse as a complete SSL (v3 or superior) client hello
13290    message. Note that this only applies to raw contents found in the request
13291    buffer and not to contents deciphered via an SSL data layer, so this will not
13292    work with "bind" lines having the "ssl" option. SNI normally contains the
13293    name of the host the client tries to connect to (for recent browsers). SNI is
13294    useful for allowing or denying access to certain hosts when SSL/TLS is used
13295    by the client. This test was designed to be used with TCP request content
13296    inspection. If content switching is needed, it is recommended to first wait
13297    for a complete client hello (type 1), like in the example below. See also
13298    "ssl_fc_sni".
13299
13300    ACL derivatives :
13301      req_ssl_sni : exact string match
13302
13303    Examples :
13304       # Wait for a client hello for at most 5 seconds
13305       tcp-request inspect-delay 5s
13306       tcp-request content accept if { req_ssl_hello_type 1 }
13307       use_backend bk_allow if { req_ssl_sni -f allowed_sites }
13308       default_backend bk_sorry_page
13309
13310  req.ssl_st_ext : integer
13311    Returns 0 if the client didn't send a SessionTicket TLS Extension (RFC5077)
13312    Returns 1 if the client sent SessionTicket TLS Extension
13313    Returns 2 if the client also sent non-zero length TLS SessionTicket
13314    Note that this only applies to raw contents found in the request buffer and
13315    not to contents deciphered via an SSL data layer, so this will not work with
13316    "bind" lines having the "ssl" option. This can for example be used to detect
13317    whether the client sent a SessionTicket or not and stick it accordingly, if
13318    no SessionTicket then stick on SessionID or don't stick as there's no server
13319    side state is there when SessionTickets are in use.
13320
13321  req.ssl_ver : integer
13322  req_ssl_ver : integer (deprecated)
13323    Returns an integer value containing the version of the SSL/TLS protocol of a
13324    stream present in the request buffer. Both SSLv2 hello messages and SSLv3
13325    messages are supported. TLSv1 is announced as SSL version 3.1. The value is
```



```
13326    composed of the major version multiplied by 65536, added to the minor
13327    version. Note that this only applies to raw contents found in the request
13328    buffer and not to contents deciphered via an SSL data layer, so this will not
13329    work with "bind" lines having the "ssl" option. The ACL version of the test
13330    matches against a decimal notation in the form MAJOR.MINOR (eg: 3.1). This
13331    fetch is mostly used in ACL.
13332
13333    ACL derivatives :
13334      req_ssl_ver : decimal match
13335
13336  res.len : integer
13337    Returns an integer value corresponding to the number of bytes present in the
13338    response buffer. This is mostly used in ACL. It is important to understand
13339    that this test does not return false as long as the buffer is changing. This
13340    means that a check with equality to zero will almost always immediately match
13341    at the beginning of the session, while a test for more data will wait for
13342    that data to come in and return false only when haproxy is certain that no
13343    more data will come in. This test was designed to be used with TCP response
13344    content inspection.
13345
13346  res.payload(<offset>,<length>) : binary
13347    This extracts a binary block of <length> bytes and starting at byte <offset>
13348    in the response buffer. As a special case, if the <length> argument is zero,
13349    the the whole buffer from <offset> to the end is extracted. This can be used
13350    with ACLs in order to check for the presence of some content in a buffer at
13351    any location.
13352
13353  res.payload_lv(<offset1>,<length>[,<offset2>]) : binary
13354    This extracts a binary block whose size is specified at <offset1> for <length>
13355    bytes, and which starts at <offset2> if specified or just after the length in
13356    the response buffer. The <offset2> parameter also supports relative offsets
13357    if prepended with a '+' or '-' sign.
13358
13359    Example : please consult the example from the "stick store-response" keyword.
13360
13361  res.ssl_hello_type : integer
13362  rep_ssl_hello_type : integer (deprecated)
13363    Returns an integer value containing the type of the SSL hello message found
13364    in the response buffer if the buffer contains data that parses as a complete
13365    SSL (v3 or superior) hello message. Note that this only applies to raw
13366    contents found in the response buffer and not to contents deciphered via an
13367    SSL data layer, so this will not work with "server" lines having the "ssl"
13368    option. This is mostly used in ACL to detect presence of an SSL hello message
13369    that is supposed to contain an SSL session ID usable for stickiness.
13370
13371  wait_end : boolean
13372    This fetch either returns true when the inspection period is over, or does
13373    not fetch. It is only used in ACLs, in conjunction with content analysis to
13374    avoid returning a wrong verdict early.  It may also be used to delay some
13375    actions, such as a delayed reject for some special addresses. Since it either
13376    stops the rules evaluation or immediately returns true, it is recommended to
13377    use this acl as the last one in a rule.  Please note that the default ACL
13378    "WAIT_END" is always usable without prior declaration. This test was designed
13379    to be used with TCP request content inspection.
13380
13381    Examples :
13382       # delay every incoming request by 2 seconds
13383       tcp-request inspect-delay 2s
13384       tcp-request content accept if WAIT_END
13385
13386       # don't immediately tell bad guys they are rejected
13387       tcp-request inspect-delay 10s
13388       acl goodguys src 10.0.0.0/24
13389       acl badguys  src 10.0.1.0/24
13390       tcp-request content accept if goodguys
```

```
      tcp-request content reject if badguys WAIT_END
      tcp-request content reject


7.3.6. Fetching HTTP samples (Layer 7)
--------------------------------------

It is possible to fetch samples from HTTP contents, requests and responses.
This application layer is also called layer 7. It is only possible to fetch the
data in this section when a full HTTP request or response has been parsed from
its respective request or response buffer. This is always the case with all
HTTP specific rules and for sections running with "mode http". When using TCP
content inspection, it may be necessary to support an inspection delay in order
to let the request or response come in first. These fetches may require a bit
more CPU resources than the layer 4 ones, but not much since the request and
response are indexed.

base : string
  This returns the concatenation of the first Host header and the path part of
  the request, which starts at the first slash and ends before the question
  mark. It can be useful in virtual hosted environments to detect URL abuses as
  well as to improve shared caches efficiency. Using this with a limited size
  stick table also allows one to collect statistics about most commonly
  requested objects by host/path. With ACLs it can allow simple content
  switching rules involving the host and the path at the same time, such as
  "www.example.com/favicon.ico". See also "path" and "uri".

  ACL derivatives :
    base     : exact string match
    base_beg : prefix match
    base_dir : subdir match
    base_dom : domain match
    base_end : suffix match
    base_len : length match
    base_reg : regex match
    base_sub : substring match

base32 : integer
  This returns a 32-bit hash of the value returned by the "base" fetch method
  above. This is useful to track per-URL activity on high traffic sites without
  having to store all URLs. Instead a shorter hash is stored, saving a lot of
  memory. The output type is an unsigned integer. The hash function used is
  SDBM with full avalanche on the output. Technically, base32 is exactly equal
  to "base,sdbm(1)".

base32+src : binary
  This returns the concatenation of the base32 fetch above and the src fetch
  below. The resulting type is of type binary, with a size of 8 or 20 bytes
  depending on the source address family. This can be used to track per-IP,
  per-URL counters.

capture.req.hdr(<idx>) : string
  This extracts the content of the header captured by the "capture request
  header", idx is the position of the capture keyword in the configuration.
  The first entry is an index of 0. See also: "capture request header".

capture.req.method : string
  This extracts the METHOD of an HTTP request. It can be used in both request
  and response. Unlike "method", it can be used in both request and response
  because it's allocated.

capture.req.uri : string
  This extracts the request's URI, which starts at the first slash and ends
  before the first space in the request (without the host part). Unlike "path"
  and "url", it can be used in both request and response because it's
```



```
  allocated.

capture.req.ver : string
  This extracts the request's HTTP version and returns either "HTTP/1.0" or
  "HTTP/1.1". Unlike "req.ver", it can be used in both request, response, and
  logs because it relies on a persistent flag.

capture.res.hdr(<idx>) : string
  This extracts the content of the header captured by the "capture response
  header", idx is the position of the capture keyword in the configuration.
  The first entry is an index of 0.
  See also: "capture response header"

capture.res.ver : string
  This extracts the response's HTTP version and returns either "HTTP/1.0" or
  "HTTP/1.1". Unlike "res.ver", it can be used in logs because it relies on a
  persistent flag.

req.body : binary
  This returns the HTTP request's available body as a block of data. It
  requires that the request body has been buffered made available using
  "option http-buffer-request". In case of chunked-encoded body, currently only
  the first chunk is analyzed.

req.body_param([<name>) : string
  This fetch assumes that the body of the POST request is url-encoded. The user
  can check if the "content-type" contains the value
  "application/x-www-form-urlencoded". This extracts the first occurrence of the
  parameter <name> in the body, which ends before '&'. The parameter name is
  case-sensitive. If no name is given, any parameter will match, and the first
  one will be returned. The result is a string corresponding to the value of the
  parameter <name> as presented in the request body (no URL decoding is
  performed). Note that the ACL version of this fetch iterates over multiple
  parameters and will iteratively report all parameters values if no name is
  given.

req.body_len : integer
  This returns the length of the HTTP request's available body in bytes. It may
  be lower than the advertised length if the body is larger than the buffer. It
  requires that the request body has been buffered made available using
  "option http-buffer-request".

req.body_size : integer
  This returns the advertised length of the HTTP request's body in bytes. It
  will represent the advertised Content-Length header, or the size of the first
  chunk in case of chunked encoding. In order to parse the chunks, it requires
  that the request body has been buffered made available using
  "option http-buffer-request".

req.cook([<name>]) : string
cook([<name>]) : string (deprecated)
  This extracts the last occurrence of the cookie name <name> on a "Cookie"
  header line from the request, and returns its value as string. If no name is
  specified, the first cookie value is returned. When used with ACLs, all
  matching cookies are evaluated. Spaces around the name and the value are
  ignored as requested by the Cookie header specification (RFC6265). The cookie
  name is case-sensitive. Empty cookies are valid, so an empty cookie may very
  well return an empty value if it is present. Use the "found" match to detect
  presence. Use the res.cook() variant for response cookies sent by the server.

  ACL derivatives :
    cook([<name>])     : exact string match
    cook_beg([<name>]) : prefix match
    cook_dir([<name>]) : subdir match
    cook_dom([<name>]) : domain match
```

```
13521      cook_end([<name>]) : suffix match
13522      cook_len([<name>]) : length match
13523      cook_reg([<name>]) : regex match
13524      cook_sub([<name>]) : substring match
13525
13526  req.cook_cnt([<name>]) : integer
13527  cook_cnt([<name>]) : integer (deprecated)
13528    Returns an integer value representing the number of occurrences of the cookie
13529    <name> in the request, or all cookies if <name> is not specified.
13530
13531  req.cook_val([<name>]) : integer
13532  cook_val([<name>]) : integer (deprecated)
13533    This extracts the last occurrence of the cookie name <name> on a "Cookie"
13534    header line from the request, and converts its value to an integer which is
13535    returned. If no name is specified, the first cookie value is returned. When
13536    used in ACLs, all matching names are iterated over until a value matches.
13537
13538  cookie([<name>]) : string (deprecated)
13539    This extracts the last occurrence of the cookie name <name> on a "Cookie"
13540    header line from the request, or a "Set-Cookie" header from the response, and
13541    returns its value as a string. A typical use is to get multiple clients
13542    sharing a same profile use the same server. This can be similar to what
13543    "appsession" did with the "request-learn" statement, but with support for
13544    multi-peer synchronization and state keeping across restarts. If no name is
13545    specified, the first cookie value is returned. This fetch should not be used
13546    anymore and should be replaced by req.cook() or res.cook() instead as it
13547    ambiguously uses the direction based on the context where it is used.
13548
13549  hdr([<name>[,<occ>]]) : string
13550    This is equivalent to req.hdr() when used on requests, and to res.hdr() when
13551    used on responses. Please refer to these respective fetches for more details.
13552    In case of doubt about the fetch direction, please use the explicit ones.
13553    Note that contrary to the hdr() sample fetch method, the hdr_* ACL keywords
13554    unambiguously apply to the request headers.
13555
13556  req.fhdr(<name>[,<occ>]) : string
13557    This extracts the last occurrence of header <name> in an HTTP request. When
13558    used from an ACL, all occurrences are iterated over until a match is found.
13559    Optionally, a specific occurrence might be specified as a position number.
13560    Positive values indicate a position from the first occurrence, with 1 being
13561    the first one. Negative values indicate positions relative to the last one,
13562    with -1 being the last one. It differs from req.hdr() in that any commas
13563    present in the value are returned and are not used as delimiters. This is
13564    sometimes useful with headers such as User-Agent.
13565
13566  req.fhdr_cnt([<name>]) : integer
13567    Returns an integer value representing the number of occurrences of request
13568    header field name <name>, or the total number of header fields if <name> is
13569    not specified. Contrary to its req.hdr_cnt() cousin, this function returns
13570    the number of full line headers and does not stop on commas.
13571
13572  req.hdr([<name>[,<occ>]]) : string
13573    This extracts the last occurrence of header <name> in an HTTP request. When
13574    used from an ACL, all occurrences are iterated over until a match is found.
13575    Optionally, a specific occurrence might be specified as a position number.
13576    Positive values indicate a position from the first occurrence, with 1 being
13577    the first one. Negative values indicate positions relative to the last one,
13578    with -1 being the last one. A typical use is with the X-Forwarded-For header
13579    once converted to IP, associated with an IP stick-table. The function
13580    considers any comma as a delimiter for distinct values. If full-line headers
13581    are desired instead, use req.fhdr(). Please carefully check RFC2616 to know
13582    how certain headers are supposed to be parsed. Also, some of them are case
13583    insensitive (eg: Connection).
13584
13585    ACL derivatives :
```



```
13586      hdr([<name>[,<occ>]])     : exact string match
13587      hdr_beg([<name>[,<occ>]]) : prefix match
13588      hdr_dir([<name>[,<occ>]]) : subdir match
13589      hdr_dom([<name>[,<occ>]]) : domain match
13590      hdr_end([<name>[,<occ>]]) : suffix match
13591      hdr_len([<name>[,<occ>]]) : length match
13592      hdr_reg([<name>[,<occ>]]) : regex match
13593      hdr_sub([<name>[,<occ>]]) : substring match
13594
13595  req.hdr_cnt([<name>]) : integer
13596  hdr_cnt([<header>]) : integer (deprecated)
13597    Returns an integer value representing the number of occurrences of request
13598    header field name <name>, or the total number of header field values if
13599    <name> is not specified. It is important to remember that one header line may
13600    count as several headers if it has several values. The function considers any
13601    comma as a delimiter for distinct values. If full-line headers are desired
13602    instead, req.fhdr_cnt() should be used instead. With ACLs, it can be used to
13603    detect presence, absence or abuse of a specific header, as well as to block
13604    request smuggling attacks by rejecting requests which contain more than one
13605    of certain headers. See "req.hdr" for more information on header matching.
13606
13607  req.hdr_ip([<name>[,<occ>]]) : ip
13608  hdr_ip([<name>[,<occ>]]) : ip (deprecated)
13609    This extracts the last occurrence of header <name> in an HTTP request,
13610    converts it to an IPv4 or IPv6 address and returns this address. When used
13611    with ACLs, all occurrences are checked, and if <name> is omitted, every value
13612    of every header is checked. Optionally, a specific occurrence might be
13613    specified as a position number. Positive values indicate a position from the
13614    first occurrence, with 1 being the first one.  Negative values indicate
13615    positions relative to the last one, with -1 being the last one. A typical use
13616    is with the X-Forwarded-For and X-Client-IP headers.
13617
13618  req.hdr_val([<name>[,<occ>]]) : integer
13619  hdr_val([<name>[,<occ>]]) : integer (deprecated)
13620    This extracts the last occurrence of header <name> in an HTTP request, and
13621    converts it to an integer value. When used with ACLs, all occurrences are
13622    checked, and if <name> is omitted, every value of every header is checked.
13623    Optionally, a specific occurrence might be specified as a position number.
13624    Positive values indicate a position from the first occurrence, with 1 being
13625    the first one. Negative values indicate positions relative to the last one,
13626    with -1 being the last one. A typical use is with the X-Forwarded-For header.
13627
13628  http_auth(<userlist>) : boolean
13629    Returns a boolean indicating whether the authentication data received from
13630    the client match a username & password stored in the specified userlist. This
13631    fetch function is not really useful outside of ACLs. Currently only http
13632    basic auth is supported.
13633
13634  http_auth_group(<userlist>) : string
13635    Returns a string corresponding to the user name found in the authentication
13636    data received from the client if both the user name and password are valid
13637    according to the specified userlist. The main purpose is to use it in ACLs
13638    where it is then checked whether the user belongs to any group within a list.
13639    This fetch function is not really useful outside of ACLs. Currently only http
13640    basic auth is supported.
13641
13642    ACL derivatives :
13643      http_auth_group(<userlist>) : group ...
13644      Returns true when the user extracted from the request and whose password is
13645      valid according to the specified userlist belongs to at least one of the
13646      groups.
13647
13648  http_first_req : boolean
13649    Returns true when the request being processed is the first one of the
13650    connection. This can be used to add or remove headers that may be missing
```

```
   from some requests when a request is not the first one, or to help grouping
   requests in the logs.

method : integer + string
   Returns an integer value corresponding to the method in the HTTP request. For
   example, "GET" equals 1 (check sources to establish the matching). Value 9
   means "other method" and may be converted to a string extracted from the
   stream. This should not be used directly as a sample, this is only meant to
   be used from ACLs, which transparently convert methods from patterns to these
   integer + string values. Some predefined ACL already check for most common
   methods.

   ACL derivatives :
     method : case insensitive method match

   Example :
       # only accept GET and HEAD requests
       acl valid_method method GET HEAD
       http-request deny if ! valid_method

path : string
   This extracts the request's URL path, which starts at the first slash and
   ends before the question mark (without the host part). A typical use is with
   prefetch-capable caches, and with portals which need to aggregate multiple
   information from databases and keep them in caches. Note that with outgoing
   caches, it would be wiser to use "url" instead. With ACLs, it's typically
   used to match exact file names (eg: "/login.php"), or directory parts using
   the derivative forms. See also the "url" and "base" fetch methods.

   ACL derivatives :
     path     : exact string match
     path_beg : prefix match
     path_dir : subdir match
     path_dom : domain match
     path_end : suffix match
     path_len : length match
     path_reg : regex match
     path_sub : substring match

query : string
   This extracts the request's query string, which starts after the first
   question mark. If no question mark is present, this fetch returns nothing. If
   a question mark is present but nothing follows, it returns an empty string.
   This means it's possible to easily know whether a query string is present
   using the "found" matching method. This fetch is the completemnt of "path"
   which stops before the question mark.

req.hdr_names([<delim>]) : string
   This builds a string made from the concatenation of all header names as they
   appear in the request when the rule is evaluated. The default delimiter is
   the comma (',') but it may be overridden as an optional argument <delim>. In
   this case, only the first character of <delim> is considered.

req.ver : string
req_ver : string (deprecated)
   Returns the version string from the HTTP request, for example "1.1". This can
   be useful for logs, but is mostly there for ACL. Some predefined ACL already
   check for versions 1.0 and 1.1.

   ACL derivatives :
     req_ver : exact string match

res.comp : boolean
   Returns the boolean "true" value if the response has been compressed by
   HAProxy, otherwise returns boolean "false". This may be used to add
```



```
   information in the logs.

res.comp_algo : string
   Returns a string containing the name of the algorithm used if the response
   was compressed by HAProxy, for example : "deflate". This may be used to add
   some information in the logs.

res.cook([<name>]) : string
scook([<name>]) : string (deprecated)
   This extracts the last occurrence of the cookie name <name> on a "Set-Cookie"
   header line from the response, and returns its value as string. If no name is
   specified, the first cookie value is returned.

   ACL derivatives :
     scook([<name>] : exact string match

res.cook_cnt([<name>]) : integer
scook_cnt([<name>]) : integer (deprecated)
   Returns an integer value representing the number of occurrences of the cookie
   <name> in the response, or all cookies if <name> is not specified. This is
   mostly useful when combined with ACLs to detect suspicious responses.

res.cook_val([<name>]) : integer
scook_val([<name>]) : integer (deprecated)
   This extracts the last occurrence of the cookie name <name> on a "Set-Cookie"
   header line from the response, and converts its value to an integer which is
   returned. If no name is specified, the first cookie value is returned.

res.fhdr([<name>[,<occ>]]) : string
   This extracts the last occurrence of header <name> in an HTTP response, or of
   the last header if no <name> is specified. Optionally, a specific occurrence
   might be specified as a position number. Positive values indicate a position
   from the first occurrence, with 1 being the first one. Negative values
   indicate positions relative to the last one, with -1 being the last one. It
   differs from res.hdr() in that any commas present in the value are returned
   and are not used as delimiters. If this is not desired, the res.hdr() fetch
   should be used instead. This is sometimes useful with headers such as Date or
   Expires.

res.fhdr_cnt([<name>]) : integer
   Returns an integer value representing the number of occurrences of response
   header field name <name>, or the total number of header fields if <name> is
   not specified. Contrary to its res.hdr_cnt() cousin, this function returns
   the number of full line headers and does not stop on commas. If this is not
   desired, the res.hdr_cnt() fetch should be used instead.

res.hdr([<name>[,<occ>]]) : string
shdr([<name>[,<occ>]]) : string (deprecated)
   This extracts the last occurrence of header <name> in an HTTP response, or of
   the last header if no <name> is specified. Optionally, a specific occurrence
   might be specified as a position number. Positive values indicate a position
   from the first occurrence, with 1 being the first one. Negative values
   indicate positions relative to the last one, with -1 being the last one. This
   can be useful to learn some data into a stick-table. The function considers
   any comma as a delimiter for distinct values. If this is not desired, the
   res.fhdr() fetch should be used instead.

   ACL derivatives :
     shdr([<name>[,<occ>]])     : exact string match
     shdr_beg([<name>[,<occ>]]) : prefix match
     shdr_dir([<name>[,<occ>]]) : subdir match
     shdr_dom([<name>[,<occ>]]) : domain match
     shdr_end([<name>[,<occ>]]) : suffix match
     shdr_len([<name>[,<occ>]]) : length match
     shdr_reg([<name>[,<occ>]]) : regex match
```

```
13781      shdr_sub([<name>[,<occ>]]) : substring match
13782
13783   res.hdr_cnt([<name>]) : integer
13784   shdr_cnt([<name>]) : integer (deprecated)
13785     Returns an integer value representing the number of occurrences of response
13786     header field name <name>, or the total number of header fields if <name> is
13787     not specified. The function considers any comma as a delimiter for distinct
13788     values. If this is not desired, the res.fhdr_cnt() fetch should be used
13789     instead.
13790
13791   res.hdr_ip([<name>[,<occ>]]) : ip
13792   shdr_ip([<name>[,<occ>]]) : ip (deprecated)
13793     This extracts the last occurrence of header <name> in an HTTP response,
13794     convert it to an IPv4 or IPv6 address and returns this address. Optionally, a
13795     specific occurrence might be specified as a position number. Positive values
13796     indicate a position from the first occurrence, with 1 being the first one.
13797     Negative values indicate positions relative to the last one, with -1 being
13798     the last one. This can be useful to learn some data into a stick table.
13799
13800   res.hdr_names([<delim>]) : string
13801     This builds a string made from the concatenation of all header names as they
13802     appear in the response when the rule is evaluated. The default delimiter is
13803     the comma (',') but it may be overridden as an optional argument <delim>. In
13804     this case, only the first character of <delim> is considered.
13805
13806   res.hdr_val([<name>[,<occ>]]) : integer
13807   shdr_val([<name>[,<occ>]]) : integer (deprecated)
13808     This extracts the last occurrence of header <name> in an HTTP response, and
13809     converts it to an integer value. Optionally, a specific occurrence might be
13810     specified as a position number. Positive values indicate a position from the
13811     first occurrence, with 1 being the first one. Negative values indicate
13812     positions relative to the last one, with -1 being the last one. This can be
13813     useful to learn some data into a stick table.
13814
13815   res.ver : string
13816   resp_ver : string (deprecated)
13817     Returns the version string from the HTTP response, for example "1.1". This
13818     can be useful for logs, but is mostly there for ACL.
13819
13820     ACL derivatives :
13821       resp_ver : exact string match
13822
13823   set-cookie([<name>]) : string (deprecated)
13824     This extracts the last occurrence of the cookie name <name> on a "Set-Cookie"
13825     header line from the response and uses the corresponding value to match. This
13826     can be comparable to what "appsession" did with default options, but with
13827     support for multi-peer synchronization and state keeping across restarts.
13828
13829     This fetch function is deprecated and has been superseded by the "res.cook"
13830     fetch. This keyword will disappear soon.
13831
13832   status : integer
13833     Returns an integer containing the HTTP status code in the HTTP response, for
13834     example, 302. It is mostly used within ACLs and integer ranges, for example,
13835     to remove any Location header if the response is not a 3xx.
13836
13837   url : string
13838     This extracts the request's URL as presented in the request. A typical use is
13839     with prefetch-capable caches, and with portals which need to aggregate
13840     multiple information from databases and keep them in caches. With ACLs, using
13841     "path" is preferred over using "url", because clients may send a full URL as
13842     is normally done with proxies. The only real use is to match "*" which does
13843     not match in "path", and for which there is already a predefined ACL. See
13844     also "path" and "base".
13845
```



```
13846     ACL derivatives :
13847       url     : exact string match
13848       url_beg : prefix match
13849       url_dir : subdir match
13850       url_dom : domain match
13851       url_end : suffix match
13852       url_len : length match
13853       url_reg : regex match
13854       url_sub : substring match
13855
13856   url_ip : ip
13857     This extracts the IP address from the request's URL when the host part is
13858     presented as an IP address. Its use is very limited. For instance, a
13859     monitoring system might use this field as an alternative for the source IP in
13860     order to test what path a given source address would follow, or to force an
13861     entry in a table for a given source address. With ACLs it can be used to
13862     restrict access to certain systems through a proxy, for example when combined
13863     with option "http_proxy".
13864
13865   url_port : integer
13866     This extracts the port part from the request's URL. Note that if the port is
13867     not specified in the request, port 80 is assumed. With ACLs it can be used to
13868     restrict access to certain systems through a proxy, for example when combined
13869     with option "http_proxy".
13870
13871   urlp([<name>[,<delim>]]) : string
13872   url_param([<name>[,<delim>]]) : string
13873     This extracts the first occurrence of the parameter <name> in the query
13874     string, which begins after either '?' or <delim>, and which ends before '&',
13875     ';' or <delim>. The parameter name is case-sensitive. If no name is given,
13876     any parameter will match, and the first one will be returned. The result is
13877     a string corresponding to the value of the parameter <name> as presented in
13878     the request (no URL decoding is performed). This can be used for session
13879     stickiness based on a client ID, to extract an application cookie passed as a
13880     URL parameter, or in ACLs to apply some checks. Note that the ACL version of
13881     this fetch iterates over multiple parameters and will iteratively report all
13882     parameters values if no name is given
13883
13884     ACL derivatives :
13885       urlp(<name>[,<delim>])     : exact string match
13886       urlp_beg(<name>[,<delim>]) : prefix match
13887       urlp_dir(<name>[,<delim>]) : subdir match
13888       urlp_dom(<name>[,<delim>]) : domain match
13889       urlp_end(<name>[,<delim>]) : suffix match
13890       urlp_len(<name>[,<delim>]) : length match
13891       urlp_reg(<name>[,<delim>]) : regex match
13892       urlp_sub(<name>[,<delim>]) : substring match
13893
13894
13895     Example :
13896         # match http://example.com/foo?PHPSESSIONID=some_id
13897         stick on urlp(PHPSESSIONID)
13898         # match http://example.com/foo;JSESSIONID=some_id
13899         stick on urlp(JSESSIONID,;)
13900
13901   urlp_val([<name>[,<delim>])] : integer
13902     See "urlp" above. This one extracts the URL parameter <name> in the request
13903     and converts it to an integer value. This can be used for session stickiness
13904     based on a user ID for example, or with ACLs to match a page number or price.
13905
13906
13907   7.4. Pre-defined ACLs
13908   ---------------------
13909
13910   Some predefined ACLs are hard-coded so that they do not have to be declared in
```

every frontend which needs them. They all have their names in upper case in
order to avoid confusion. Their equivalence is provided below.

ACL name	Equivalent to	Usage
FALSE	always_false	never match
HTTP	req_proto_http	match if protocol is valid HTTP
HTTP_1.0	req_ver 1.0	match HTTP version 1.0
HTTP_1.1	req_ver 1.1	match HTTP version 1.1
HTTP_CONTENT	hdr_val(content-length) gt 0	match an existing content-length
HTTP_URL_ABS	url_reg ^[^/:]*://	match absolute URL with scheme
HTTP_URL_SLASH	url_beg /	match URL beginning with "/"
HTTP_URL_STAR	url *	match URL equal to "*"
LOCALHOST	src 127.0.0.1/8	match connection from local host
METH_CONNECT	method CONNECT	match HTTP CONNECT method
METH_GET	method GET HEAD	match HTTP GET or HEAD method
METH_HEAD	method HEAD	match HTTP HEAD method
METH_OPTIONS	method OPTIONS	match HTTP OPTIONS method
METH_POST	method POST	match HTTP POST method
METH_TRACE	method TRACE	match HTTP TRACE method
RDP_COOKIE	req_rdp_cookie_cnt gt 0	match presence of an RDP cookie
REQ_CONTENT	req_len gt 0	match data in the request buffer
TRUE	always_true	always match
WAIT_END	wait_end	wait for end of content analysis

8. Logging

One of HAProxy's strong points certainly lies is its precise logs. It probably
provides the finest level of information available for such a product, which is
very important for troubleshooting complex environments. Standard information
provided in logs include client ports, TCP/HTTP state timers, precise session
state at termination and precise termination cause, information about decisions
to direct traffic to a server, and of course the ability to capture arbitrary
headers.

In order to improve administrators reactivity, it offers a great transparency
about encountered problems, both internal and external, and it is possible to
send logs to different sources at the same time with different level filters :

  - global process-level logs (system errors, start/stop, etc..)
  - per-instance system and internal errors (lack of resource, bugs, ...)
  - per-instance external troubles (servers up/down, max connections)
  - per-instance activity (client connections), either at the establishment or
    at the termination.
  - per-request control of log-level, eg:
        http-request set-log-level silent if sensitive_request

The ability to distribute different levels of logs to different log servers
allow several production teams to interact and to fix their problems as soon
as possible. For example, the system team might monitor system-wide errors,
while the application team might be monitoring the up/down for their servers in
real time, and the security team might analyze the activity logs with one hour
delay.

8.1. Log levels

TCP and HTTP connections can be logged with information such as the date, time,
source IP address, destination address, connection duration, response times,
HTTP request, HTTP return code, number of bytes transmitted, conditions
in which the session ended, and even exchanged cookies values. For example

track a particular user's problems. All messages may be sent to up to two
syslog servers. Check the "log" keyword in section 4.2 for more information
about log facilities.

8.2. Log formats

HAProxy supports 5 log formats. Several fields are common between these formats
and will be detailed in the following sections. A few of them may vary
slightly with the configuration, due to indicators specific to certain
options. The supported formats are as follows :

  - the default format, which is very basic and very rarely used. It only
    provides very basic information about the incoming connection at the moment
    it is accepted : source IP:port, destination IP:port, and frontend-name.
    This mode will eventually disappear so it will not be described to great
    extents.

  - the TCP format, which is more advanced. This format is enabled when "option
    tcplog" is set on the frontend. HAProxy will then usually wait for the
    connection to terminate before logging. This format provides much richer
    information, such as timers, connection counts, queue size, etc... This
    format is recommended for pure TCP proxies.

  - the HTTP format, which is the most advanced for HTTP proxying. This format
    is enabled when "option httplog" is set on the frontend. It provides the
    same information as the TCP format with some HTTP-specific fields such as
    the request, the status code, and captures of headers and cookies. This
    format is recommended for HTTP proxies.

  - the CLF HTTP format, which is equivalent to the HTTP format, but with the
    fields arranged in the same order as the CLF format. In this mode, all
    timers, captures, flags, etc... appear one per field after the end of the
    common fields, in the same order they appear in the standard HTTP format.

  - the custom log format, allows you to make your own log line.

Next sections will go deeper into details for each of these formats. Format
specification will be performed on a "field" basis. Unless stated otherwise, a
field is a portion of text delimited by any number of spaces. Since syslog
servers are susceptible of inserting fields at the beginning of a line, it is
always assumed that the first field is the one containing the process name and
identifier.

Note : Since log lines may be quite long, the log examples in sections below
       might be broken into multiple lines. The example log lines will be
       prefixed with 3 closing angle brackets ('>>>') and each time a log is
       broken into multiple lines, each non-final line will end with a
       backslash ('\') and the next line will start indented by two characters.

8.2.1. Default log format

This format is used when no specific option is set. The log is emitted as soon
as the connection is accepted. One should note that this currently is the only
format which logs the request's destination IP and ports.

  Example :
        listen www
            mode http
            log global
            server srv1 127.0.0.1:8000

```
     >>> Feb  6 12:12:09 localhost \
           haproxy[14385]: Connect from 10.0.1.2:33312 to 10.0.3.31:8012 \
           (www/HTTP)

  Field   Format                                Extract from the example above
      1   process_name '[' pid ']:'                            haproxy[14385]:
      2   'Connect from'                                         Connect from
      3   source_ip ':' source_port                           10.0.1.2:33312
      4   'to'                                                           to
      5   destination_ip ':' destination_port                 10.0.3.31:8012
      6   '(' frontend_name '/' mode ')'                          (www/HTTP)

Detailed fields description :
  - "source_ip" is the IP address of the client which initiated the connection.
  - "source_port" is the TCP port of the client which initiated the connection.
  - "destination_ip" is the IP address the client connected to.
  - "destination_port" is the TCP port the client connected to.
  - "frontend_name" is the name of the frontend (or listener) which received
    and processed the connection.
  - "mode is the mode the frontend is operating (TCP or HTTP).

In case of a UNIX socket, the source and destination addresses are marked as
"unix:" and the ports reflect the internal ID of the socket which accepted the
connection (the same ID as reported in the stats).

It is advised not to use this deprecated format for newer installations as it
will eventually disappear.


8.2.2. TCP log format
---------------------

The TCP format is used when "option tcplog" is specified in the frontend, and
is the recommended format for pure TCP proxies. It provides a lot of precious
information for troubleshooting. Since this format includes timers and byte
counts, the log is normally emitted at the end of the session. It can be
emitted earlier if "option logasap" is specified, which makes sense in most
environments with long sessions such as remote terminals. Sessions which match
the "monitor" rules are never logged. It is also possible not to emit logs for
sessions for which no data were exchanged between the client and the server, by
specifying "option dontlognull" in the frontend. Successful connections will
not be logged if "option dontlog-normal" is specified in the frontend. A few
fields may slightly vary depending on some configuration options, those are
marked with a star ('*') after the field name below.

  Example :
        frontend fnt
            mode tcp
            option tcplog
            log global
            default_backend bck

        backend bck
            server srv1 127.0.0.1:8000

    >>> Feb  6 12:12:56 localhost \
          haproxy[14387]: 10.0.1.2:33313 [06/Feb/2009:12:12:51.443] fnt \
          bck/srv1 0/0/5007 212 -- 0/0/0/0/3 0/0

  Field   Format                                Extract from the example above
      1   process_name '[' pid ']:'                            haproxy[14387]:
      2   client_ip ':' client_port                             10.0.1.2:33313
      3   '[' accept_date ']'                      [06/Feb/2009:12:12:51.443]
      4   frontend_name                                                  fnt
      5   backend_name '/' server_name                               bck/srv1
```



```
      6   Tw '/' Tc '/' Tt*                                       0/0/5007
      7   bytes_read*                                                  212
      8   termination_state                                             --
      9   actconn '/' feconn '/' beconn '/' srv_conn '/' retries*  0/0/0/0/3
     10   srv_queue '/' backend_queue                                 0/0

Detailed fields description :
  - "client_ip" is the IP address of the client which initiated the TCP
    connection to haproxy. If the connection was accepted on a UNIX socket
    instead, the IP address would be replaced with the word "unix". Note that
    when the connection is accepted on a socket configured with "accept-proxy"
    and the PROXY protocol is correctly used, then the logs will reflect the
    forwarded connection's information.

  - "client_port" is the TCP port of the client which initiated the connection.
    If the connection was accepted on a UNIX socket instead, the port would be
    replaced with the ID of the accepting socket, which is also reported in the
    stats interface.

  - "accept_date" is the exact date when the connection was received by haproxy
    (which might be very slightly different from the date observed on the
    network if there was some queuing in the system's backlog). This is usually
    the same date which may appear in any upstream firewall's log.

  - "frontend_name" is the name of the frontend (or listener) which received
    and processed the connection.

  - "backend_name" is the name of the backend (or listener) which was selected
    to manage the connection to the server. This will be the same as the
    frontend if no switching rule has been applied, which is common for TCP
    applications.

  - "server_name" is the name of the last server to which the connection was
    sent, which might differ from the first one if there were connection errors
    and a redispatch occurred. Note that this server belongs to the backend
    which processed the request. If the connection was aborted before reaching
    a server, "<NOSRV>" is indicated instead of a server name.

  - "Tw" is the total time in milliseconds spent waiting in the various queues.
    It can be "-1" if the connection was aborted before reaching the queue.
    See "Timers" below for more details.

  - "Tc" is the total time in milliseconds spent waiting for the connection to
    establish to the final server, including retries. It can be "-1" if the
    connection was aborted before a connection could be established. See
    "Timers" below for more details.

  - "Tt" is the total time in milliseconds elapsed between the accept and the
    last close. It covers all possible processing. There is one exception, if
    "option logasap" was specified, then the time counting stops at the moment
    the log is emitted. In this case, a '+' sign is prepended before the value,
    indicating that the final one will be larger. See "Timers" below for more
    details.

  - "bytes_read" is the total number of bytes transmitted from the server to
    the client when the log is emitted. If "option logasap" is specified, the
    this value will be prefixed with a '+' sign indicating that the final one
    may be larger. Please note that this value is a 64-bit counter, so log
    analysis tools must be able to handle it without overflowing.

  - "termination_state" is the condition the session was in when the session
    ended. This indicates the session state, which side caused the end of
    session to happen, and for what reason (timeout, error, ...). The normal
    flags should be "--", indicating the session was closed by either end with
    no data remaining in buffers. See below "Session state at disconnection"
```

```
14171       for more details.
14172
14173     - "actconn" is the total number of concurrent connections on the process when
14174       the session was logged. It is useful to detect when some per-process system
14175       limits have been reached. For instance, if actconn is close to 512 when
14176       multiple connection errors occur, chances are high that the system limits
14177       the process to use a maximum of 1024 file descriptors and that all of them
14178       are used. See section 3 "Global parameters" to find how to tune the system.
14179
14180     - "feconn" is the total number of concurrent connections on the frontend when
14181       the session was logged. It is useful to estimate the amount of resource
14182       required to sustain high loads, and to detect when the frontend's "maxconn"
14183       has been reached. Most often when this value increases by huge jumps, it is
14184       because there is congestion on the backend servers, but sometimes it can be
14185       caused by a denial of service attack.
14186
14187     - "beconn" is the total number of concurrent connections handled by the
14188       backend when the session was logged. It includes the total number of
14189       concurrent connections active on servers as well as the number of
14190       connections pending in queues. It is useful to estimate the amount of
14191       additional servers needed to support high loads for a given application.
14192       Most often when this value increases by huge jumps, it is because there is
14193       congestion on the backend servers, but sometimes it can be caused by a
14194       denial of service attack.
14195
14196     - "srv_conn" is the total number of concurrent connections still active on
14197       the server when the session was logged. It can never exceed the server's
14198       configured "maxconn" parameter. If this value is very often close or equal
14199       to the server's "maxconn", it means that traffic regulation is involved a
14200       lot, meaning that either the server's maxconn value is too low, or that
14201       there aren't enough servers to process the load with an optimal response
14202       time. When only one of the server's "srv_conn" is high, it usually means
14203       that this server has some trouble causing the connections to take longer to
14204       be processed than on other servers.
14205
14206     - "retries" is the number of connection retries experienced by this session
14207       when trying to connect to the server. It must normally be zero, unless a
14208       server is being stopped at the same moment the connection was attempted.
14209       Frequent retries generally indicate either a network problem between
14210       haproxy and the server, or a misconfigured system backlog on the server
14211       preventing new connections from being queued. This field may optionally be
14212       prefixed with a '+' sign, indicating that the session has experienced a
14213       redispatch after the maximal retry count has been reached on the initial
14214       server. In this case, the server name appearing in the log is the one the
14215       connection was redispatched to, and not the first one, though both may
14216       sometimes be the same in case of hashing for instance. So as a general rule
14217       of thumb, when a '+' is present in front of the retry count, this count
14218       should not be attributed to the logged server.
14219
14220     - "srv_queue" is the total number of requests which were processed before
14221       this one in the server queue. It is zero when the request has not gone
14222       through the server queue. It makes it possible to estimate the approximate
14223       server's response time by dividing the time spent in queue by the number of
14224       requests in the queue. It is worth noting that if a session experiences a
14225       redispatch and passes through two server queues, their positions will be
14226       cumulated. A request should not pass through both the server queue and the
14227       backend queue unless a redispatch occurs.
14228
14229     - "backend_queue" is the total number of requests which were processed before
14230       this one in the backend's global queue. It is zero when the request has not
14231       gone through the global queue. It makes it possible to estimate the average
14232       queue length, which easily translates into a number of missing servers when
14233       divided by a server's "maxconn" parameter. It is worth noting that if a
14234       session experiences a redispatch, it may pass twice in the backend's queue,
14235       and then both positions will be cumulated. A request should not pass
```



```
14236       through both the server queue and the backend queue unless a redispatch
14237       occurs.
14238
14239
14240   8.2.3. HTTP log format
14241   ----------------------
14242
14243   The HTTP format is the most complete and the best suited for HTTP proxies. It
14244   is enabled by when "option httplog" is specified in the frontend. It provides
14245   the same level of information as the TCP format with additional features which
14246   are specific to the HTTP protocol. Just like the TCP format, the log is usually
14247   emitted at the end of the session, unless "option logasap" is specified, which
14248   generally only makes sense for download sites. A session which matches the
14249   "monitor" rules will never logged. It is also possible not to log sessions for
14250   which no data were sent by the client by specifying "option dontlognull" in the
14251   frontend. Successful connections will not be logged if "option dontlog-normal"
14252   is specified in the frontend.
14253
14254   Most fields are shared with the TCP log, some being different. A few fields may
14255   slightly vary depending on some configuration options. Those ones are marked
14256   with a star ('*') after the field name below.
14257
14258     Example :
14259           frontend http-in
14260               mode http
14261               option httplog
14262               log global
14263               default_backend bck
14264
14265           backend static
14266               server srv1 127.0.0.1:8000
14267
14268       >>> Feb  6 12:14:14 localhost \
14269             haproxy[14389]: 10.0.1.2:33317 [06/Feb/2009:12:14:14.655] http-in \
14270             static/srv1 10/0/30/69/109 200 2750 - - ---- 1/1/1/1/0 0/0 {1wt.eu} \
14271             {} "GET /index.html HTTP/1.1"
14272
14273     Field   Format                                Extract from the example above
14274         1   process_name '[' pid ']:'                            haproxy[14389]:
14275         2   client_ip ':' client_port                             10.0.1.2:33317
14276         3   '[' accept_date ']'                [06/Feb/2009:12:14:14.655]
14277         4   frontend_name                                            http-in
14278         5   backend_name '/' server_name                          static/srv1
14279         6   Tq '/' Tw '/' Tc '/' Tr '/' Tt*                    10/0/30/69/109
14280         7   status_code                                                 200
14281         8   bytes_read*                                                2750
14282         9   captured_request_cookie                                       -
14283        10   captured_response_cookie                                      -
14284        11   termination_state                                          ----
14285        12   actconn '/' feconn '/' beconn '/' srv_conn '/' retries*    1/1/1/1/0
14286        13   srv_queue '/' backend_queue                                 0/0
14287        14   '{' captured_request_headers* '}'                  {haproxy.1wt.eu}
14288        15   '{' captured_response_headers* '}'                            {}
14289        16   '"' http_request '"'                    "GET /index.html HTTP/1.1"
14290
14291
14292   Detailed fields description :
14293     - "client_ip" is the IP address of the client which initiated the TCP
14294       connection to haproxy. If the connection was accepted on a UNIX socket
14295       instead, the IP address would be replaced with the word "unix". Note that
14296       when the connection is accepted on a socket configured with "accept-proxy"
14297       and the PROXY protocol is correctly used, then the logs will reflect the
14298       forwarded connection's information.
14299
14300     - "client_port" is the TCP port of the client which initiated the connection.
```

If the connection was accepted on a UNIX socket instead, the port would be replaced with the ID of the accepting socket, which is also reported in the stats interface.

- "accept_date" is the exact date when the TCP connection was received by haproxy (which might be very slightly different from the date observed on the network if there was some queuing in the system's backlog). This is usually the same date which may appear in any upstream firewall's log. This does not depend on the fact that the client has sent the request or not.

- "frontend_name" is the name of the frontend (or listener) which received and processed the connection.

- "backend_name" is the name of the backend (or listener) which was selected to manage the connection to the server. This will be the same as the frontend if no switching rule has been applied.

- "server_name" is the name of the last server to which the connection was sent, which might differ from the first one if there were connection errors and a redispatch occurred. Note that this server belongs to the backend which processed the request. If the request was aborted before reaching a server, "<NOSRV>" is indicated instead of a server name. If the request was intercepted by the stats subsystem, "<STATS>" is indicated instead.

- "Tq" is the total time in milliseconds spent waiting for the client to send a full HTTP request, not counting data. It can be "-1" if the connection was aborted before a complete request could be received. It should always be very small because a request generally fits in one single packet. Large times here generally indicate network trouble between the client and haproxy. See "Timers" below for more details.

- "Tw" is the total time in milliseconds spent waiting in the various queues. It can be "-1" if the connection was aborted before reaching the queue. See "Timers" below for more details.

- "Tc" is the total time in milliseconds spent waiting for the connection to establish to the final server, including retries. It can be "-1" if the request was aborted before a connection could be established. See "Timers" below for more details.

- "Tr" is the total time in milliseconds spent waiting for the server to send a full HTTP response, not counting data. It can be "-1" if the request was aborted before a complete response could be received. It generally matches the server's processing time for the request, though it may be altered by the amount of data sent by the client to the server. Large times here on "GET" requests generally indicate an overloaded server. See "Timers" below for more details.

- "Tt" is the total time in milliseconds elapsed between the accept and the last close. It covers all possible processing. There is one exception, if "option logasap" was specified, then the time counting stops at the moment the log is emitted. In this case, a '+' sign is prepended before the value, indicating that the final one will be larger. See "Timers" below for more details.

- "status_code" is the HTTP status code returned to the client. This status is generally set by the server, but it might also be set by haproxy when the server cannot be reached or when its response is blocked by haproxy.

- "bytes_read" is the total number of bytes transmitted to the client when the log is emitted. This does include HTTP headers. If "option logasap" is specified, the this value will be prefixed with a '+' sign indicating that the final one may be larger. Please note that this value is a 64-bit counter, so log analysis tools must be able to handle it without overflowing.

- "captured_request_cookie" is an optional "name=value" entry indicating that the client had this cookie in the request. The cookie name and its maximum length are defined by the "capture cookie" statement in the frontend configuration. The field is a single dash ('-') when the option is not set. Only one cookie may be captured, it is generally used to track session ID exchanges between a client and a server to detect session crossing between clients due to application bugs. For more details, please consult the section "Capturing HTTP headers and cookies" below.

- "captured_response_cookie" is an optional "name=value" entry indicating that the server has returned a cookie with its response. The cookie name and its maximum length are defined by the "capture cookie" statement in the frontend configuration. The field is a single dash ('-') when the option is not set. Only one cookie may be captured, it is generally used to track session ID exchanges between a client and a server to detect session crossing between clients due to application bugs. For more details, please consult the section "Capturing HTTP headers and cookies" below.

- "termination_state" is the condition the session was in when the session ended. This indicates the session state, which side caused the end of session to happen, for what reason (timeout, error, ...), just like in TCP logs, and information about persistence operations on cookies in the last two characters. The normal flags should begin with "--", indicating the session was closed by either end with no data remaining in buffers. See below "Session state at disconnection" for more details.

- "actconn" is the total number of concurrent connections on the process when the session was logged. It is useful to detect when some per-process system limits have been reached. For instance, if actconn is close to 512 or 1024 when multiple connection errors occur, chances are high that the system limits the process to use a maximum of 1024 file descriptors and that all of them are used. See section 3 "Global parameters" to find how to tune the system.

- "feconn" is the total number of concurrent connections on the frontend when the session was logged. It is useful to estimate the amount of resource required to sustain high loads, and to detect when the frontend's "maxconn" has been reached. Most often when this value increases by huge jumps, it is because there is congestion on the backend servers, but sometimes it can be caused by a denial of service attack.

- "beconn" is the total number of concurrent connections handled by the backend when the session was logged. It includes the total number of concurrent connections active on servers as well as the number of connections pending in queues. It is useful to estimate the amount of additional servers needed to support high loads for a given application. Most often when this value increases by huge jumps, it is because there is congestion on the backend servers, but sometimes it can be caused by a denial of service attack.

- "srv_conn" is the total number of concurrent connections still active on the server when the session was logged. It can never exceed the server's configured "maxconn" parameter. If this value is very often close or equal to the server's "maxconn", it means that traffic regulation is involved a lot, meaning that either the server's maxconn value is too low, or that there aren't enough servers to process the load with an optimal response time. When only one of the server's "srv_conn" is high, it usually means that this server has some trouble causing the requests to take longer to be processed than on other servers.

- "retries" is the number of connection retries experienced by this session when trying to connect to the server. It must normally be zero, unless a server is being stopped at the same moment the connection was attempted. Frequent retries generally indicate either a network problem between

haproxy and the server, or a misconfigured system backlog on the server preventing new connections from being queued. This field may optionally be prefixed with a '+' sign, indicating that the session has experienced a redispatch after the maximal retry count has been reached on the initial server. In this case, the server name appearing in the log is the one the connection was redispatched to, and not the first one, though both may sometimes be the same in case of hashing for instance. So as a general rule of thumb, when a '+' is present in front of the retry count, this count should not be attributed to the logged server.

  - "srv_queue" is the total number of requests which were processed before this one in the server queue. It is zero when the request has not gone through the server queue. It makes it possible to estimate the approximate server's response time by dividing the time spent in queue by the number of requests in the queue. It is worth noting that if a session experiences a redispatch and passes through two server queues, their positions will be cumulated. A request should not pass through both the server queue and the backend queue unless a redispatch occurs.

  - "backend_queue" is the total number of requests which were processed before this one in the backend's global queue. It is zero when the request has not gone through the global queue. It makes it possible to estimate the average queue length, which easily translates into a number of missing servers when divided by a server's "maxconn" parameter. It is worth noting that if a session experiences a redispatch, it may pass twice in the backend's queue, and then both positions will be cumulated. A request should not pass through both the server queue and the backend queue unless a redispatch occurs.

  - "captured_request_headers" is a list of headers captured in the request due to the presence of the "capture request header" statement in the frontend. Multiple headers can be captured, they will be delimited by a vertical bar ('|'). When no capture is enabled, the braces do not appear, causing a shift of remaining fields. It is important to note that this field may contain spaces, and that using it requires a smarter log parser than when it's not used. Please consult the section "Capturing HTTP headers and cookies" below for more details.

  - "captured_response_headers" is a list of headers captured in the response due to the presence of the "capture response header" statement in the frontend. Multiple headers can be captured, they will be delimited by a vertical bar ('|'). When no capture is enabled, the braces do not appear, causing a shift of remaining fields. It is important to note that this field may contain spaces, and that using it requires a smarter log parser than when it's not used. Please consult the section "Capturing HTTP headers and cookies" below for more details.

  - "http_request" is the complete HTTP request line, including the method, request and HTTP version string. Non-printable characters are encoded (see below the section "Non-printable characters"). This is always the last field, and it is always delimited by quotes and is the only one which can contain quotes. If new fields are added to the log format, they will be added before this field. This field might be truncated if the request is huge and does not fit in the standard syslog buffer (1024 characters). This is the reason why this field must always remain the last one.

8.2.4. Custom log format

The directive log-format allows you to customize the logs in http mode and tcp mode. It takes a string as argument.

HAproxy understands some log format variables. % precedes log format variables. Variables can take arguments using braces ('{}'), and multiple arguments are

separated by commas within the braces. Flags may be added or removed by prefixing them with a '+' or '-' sign.

Special variable "%o" may be used to propagate its flags to all other variables on the same format string. This is particularly handy with quoted string formats ("Q").

If a variable is named between square brackets ('[' .. ']') then it is used as a sample expression rule (see section 7.3). This it useful to add some less common information such as the client's SSL certificate's DN, or to log the key that would be used to store an entry into a stick table.

Note: spaces must be escaped. A space character is considered as a separator. In order to emit a verbatim '%', it must be preceded by another '%' resulting in '%%'. HAProxy will automatically merge consecutive separators.

Flags are :
  * Q: quote a string
  * X: hexadecimal representation (IPs, Ports, %Ts, %rt, %pid)

  Example:

```
    log-format %T\ %t\ Some\ Text
    log-format %{+Q}o\ %t\ %s\ %{-Q}r
```

At the moment, the default HTTP format is defined this way :

```
    log-format %ci:%cp\ [%t]\ %ft\ %b/%s\ %Tq/%Tw/%Tc/%Tr/%Tt\ %ST\ %B\ %CC\ \
                %CS\ %tsc\ %ac/%fc/%bc/%sc/%rc\ %sq/%bq\ %hr\ %hs\ %{+Q}r
```

the default CLF format is defined this way :

```
    log-format %{+Q}o\ %{-Q}ci\ -\ -\ [%T]\ %r\ %ST\ %B\ \"\"\ \"\"\ %cp\ \
                %ms\ %ft\ %b\ %s\ \%Tq\ %Tw\ %Tc\ %Tr\ %Tt\ %tsc\ %ac\ %fc\ \
                %bc\ %sc\ %rc\ %sq\ %bq\ %CC\ %CS\ \%hrl\ %hsl
```

and the default TCP format is defined this way :

```
    log-format %ci:%cp\ [%t]\ %ft\ %b/%s\ %Tw/%Tc/%Tt\ %B\ %ts\ \
                %ac/%fc/%bc/%sc/%rc\ %sq/%bq
```

Please refer to the table below for currently defined variables :

R	var	field name (8.2.2 and 8.2.3 for description)	type
	%o	special variable, apply flags on all next var	
	%B	bytes_read (from server to client)	numeric
H	%CC	captured_request_cookie	string
H	%CS	captured_response_cookie	string
	%H	hostname	string
H	%HM	HTTP method (ex: POST)	string
H	%HP	HTTP request URI without query string (path)	string
H	%HQ	HTTP request URI query string (ex: ?bar=baz)	string
H	%HU	HTTP request URI (ex: /foo?bar=baz)	string
H	%HV	HTTP version (ex: HTTP/1.0)	string
	%ID	unique-id	string
	%ST	status_code	numeric
	%T	gmt_date_time	date
	%Tc	Tc	numeric
	%Tl	local_date_time	date
H	%Tq	Tq	numeric
H	%Tr	Tr	numeric
	%Ts	timestamp	numeric

```
    |   | %Tt  | Tt                                              | numeric     |
    |   | %Tw  | Tw                                              | numeric     |
    |   | %U   | bytes_uploaded       (from client to server)    | numeric     |
    |   | %ac  | actconn                                         | numeric     |
    |   | %b   | backend_name                                    | string      |
    |   | %bc  | beconn      (backend concurrent connections)    | numeric     |
    |   | %bi  | backend_source_ip       (connecting address)    | IP          |
    |   | %bp  | backend_source_port     (connecting address)    | numeric     |
    |   | %bq  | backend_queue                                   | numeric     |
    |   | %ci  | client_ip                 (accepted address)    | IP          |
    |   | %cp  | client_port               (accepted address)    | numeric     |
    |   | %f   | frontend_name                                   | string      |
    |   | %fc  | feconn     (frontend concurrent connections)    | numeric     |
    |   | %fi  | frontend_ip              (accepting address)    | IP          |
    |   | %fp  | frontend_port            (accepting address)    | numeric     |
    |   | %ft  | frontend_name_transport ('~' suffix for SSL)    | string      |
    |   | %lc  | frontend_log_counter                            | numeric     |
    |   | %hr  | captured_request_headers default style          | string      |
    |   | %hrl | captured_request_headers CLF style              | string list |
    |   | %hs  | captured_response_headers default style         | string      |
    |   | %hsl | captured_response_headers CLF style             | string list |
    |   | %ms  | accept date milliseconds (left-padded with 0)   | numeric     |
    |   | %pid | PID                                             | numeric     |
    | H | %r   | http_request                                    | string      |
    |   | %rc  | retries                                         | numeric     |
    |   | %rt  | request_counter (HTTP req or TCP session)       | numeric     |
    |   | %s   | server_name                                     | string      |
    |   | %sc  | srv_conn     (server concurrent connections)    | numeric     |
    |   | %si  | server_IP                 (target address)      | IP          |
    |   | %sp  | server_port               (target address)      | numeric     |
    |   | %sq  | srv_queue                                       | numeric     |
    | S | %sslc| ssl_ciphers (ex: AES-SHA)                       | string      |
    | S | %sslv| ssl_version (ex: TLSv1)                         | string      |
    |   | %t   | date_time      (with millisecond resolution)    | date        |
    |   | %ts  | termination_state                               | string      |
    | H | %tsc | termination_state with cookie status            | string      |
    +---+------+-------------------------------------------------+-------------+

      R = Restrictions : H = mode http only ; S = SSL only
```

8.2.5. Error log format

When an incoming connection fails due to an SSL handshake or an invalid PROXY protocol header, haproxy will log the event using a shorter, fixed line format. By default, logs are emitted at the LOG_INFO level, unless the option "log-separate-errors" is set in the backend, in which case the LOG_ERR level will be used. Connections on which no data are exchanged (eg: probes) are not logged if the "dontlognull" option is set.

The format looks like this :

```
    >>> Dec  3 18:27:14 localhost \
          haproxy[6103]: 127.0.0.1:56059 [03/Dec/2012:17:35:10.380] frt/f1: \
          Connection error during SSL handshake

  Field   Format                                Extract from the example above
      1   process_name '[' pid ']:'                            haproxy[6103]:
      2   client_ip ':' client_port                           127.0.0.1:56059
      3   '[' accept_date ']'                    [03/Dec/2012:17:35:10.380]
      4   frontend_name "/" bind_name ":"                              frt/f1:
      5   message                      Connection error during SSL handshake
```

These fields just provide minimal information to help debugging connection

failures.

8.3. Advanced logging options

Some advanced logging options are often looked for but are not easy to find out just by looking at the various options. Here is an entry point for the few options which can enable better logging. Please refer to the keywords reference for more information about their usage.

8.3.1. Disabling logging of external tests

It is quite common to have some monitoring tools perform health checks on haproxy. Sometimes it will be a layer 3 load-balancer such as LVS or any commercial load-balancer, and sometimes it will simply be a more complete monitoring system such as Nagios. When the tests are very frequent, users often ask how to disable logging for those checks. There are three possibilities :

  - if connections come from everywhere and are just TCP probes, it is often
    desired to simply disable logging of connections without data exchange, by
    setting "option dontlognull" in the frontend. It also disables logging of
    port scans, which may or may not be desired.

  - if the connection come from a known source network, use "monitor-net" to
    declare this network as monitoring only. Any host in this network will then
    only be able to perform health checks, and their requests will not be
    logged. This is generally appropriate to designate a list of equipment
    such as other load-balancers.

  - if the tests are performed on a known URI, use "monitor-uri" to declare
    this URI as dedicated to monitoring. Any host sending this request will
    only get the result of a health-check, and the request will not be logged.

8.3.2. Logging before waiting for the session to terminate

The problem with logging at end of connection is that you have no clue about what is happening during very long sessions, such as remote terminal sessions or large file downloads. This problem can be worked around by specifying "option logasap" in the frontend. Haproxy will then log as soon as possible, just before data transfer begins. This means that in case of TCP, it will still log the connection status to the server, and in case of HTTP, it will log just after processing the server headers. In this case, the number of bytes reported is the number of header bytes sent to the client. In order to avoid confusion with normal logs, the total time field and the number of bytes are prefixed with a '+' sign which means that real numbers are certainly larger.

8.3.3. Raising log level upon errors

Sometimes it is more convenient to separate normal traffic from errors logs, for instance in order to ease error monitoring from log files. When the option "log-separate-errors" is used, connections which experience errors, timeouts, retries, redispatches or HTTP status codes 5xx will see their syslog level raised from "info" to "err". This will help a syslog daemon store the log in a separate file. It is very important to keep the errors in the normal traffic file too, so that log ordering is not altered. You should also be careful if you already have configured your syslog daemon to store all logs higher than "notice" in an "admin" file, because the "err" level is higher than "notice".

8.3.4. Disabling logging of successful connections

Although this may sound strange at first, some large sites have to deal with multiple thousands of logs per second and are experiencing difficulties keeping them intact for a long time or detecting errors within them. If the option "dontlog-normal" is set on the frontend, all normal connections will not be logged. In this regard, a normal connection is defined as one without any error, timeout, retry nor redispatch. In HTTP, the status code is checked too, and a response with a status 5xx is not considered normal and will be logged too. Of course, doing is is really discouraged as it will remove most of the useful information from the logs. Do this only if you have no other alternative.

8.4. Timing events

Timers provide a great help in troubleshooting network problems. All values are reported in milliseconds (ms). These timers should be used in conjunction with the session termination flags. In TCP mode with "option tcplog" set on the frontend, 3 control points are reported under the form "Tw/Tc/Tt", and in HTTP mode, 5 control points are reported under the form "Tq/Tw/Tc/Tr/Tt" :

  - Tq: total time to get the client request (HTTP mode only). It's the time elapsed between the moment the client connection was accepted and the moment the proxy received the last HTTP header. The value "-1" indicates that the end of headers (empty line) has never been seen. This happens when the client closes prematurely or times out.

  - Tw: total time spent in the queues waiting for a connection slot. It accounts for backend queue as well as the server queues, and depends on the queue size, and the time needed for the server to complete previous requests. The value "-1" means that the request was killed before reaching the queue, which is generally what happens with invalid or denied requests.

  - Tc: total time to establish the TCP connection to the server. It's the time elapsed between the moment the proxy sent the connection request, and the moment it was acknowledged by the server, or between the TCP SYN packet and the matching SYN/ACK packet in return. The value "-1" means that the connection never established.

  - Tr: server response time (HTTP mode only). It's the time elapsed between the moment the TCP connection was established to the server and the moment the server sent its complete response headers. It purely shows its request processing time, without the network overhead due to the data transmission. It is worth noting that when the client has data to send to the server, for instance during a POST request, the time already runs, and this can distort apparent response time. For this reason, it's generally wise not to trust too much this field for POST requests initiated from clients behind an untrusted network. A value of "-1" here means that the last the response header (empty line) was never seen, most likely because the server timeout stroke before the server managed to process the request.

  - Tt: total session duration time, between the moment the proxy accepted it and the moment both ends were closed. The exception is when the "logasap" option is specified. In this case, it only equals (Tq+Tw+Tc+Tr), and is prefixed with a '+' sign. From this field, we can deduce "Td", the data transmission time, by subtracting other timers when valid :

        Td = Tt - (Tq + Tw + Tc + Tr)

    Timers with "-1" values have to be excluded from this equation. In TCP mode, "Tq" and "Tr" have to be excluded too. Note that "Tt" can never be

    negative.

These timers provide precious indications on trouble causes. Since the TCP protocol defines retransmit delays of 3, 6, 12... seconds, we know for sure that timers close to multiples of 3s are nearly always related to lost packets due to network problems (wires, negotiation, congestion). Moreover, if "Tt" is close to a timeout value specified in the configuration, it often means that a session has been aborted on timeout.

Most common cases :

  - If "Tq" is close to 3000, a packet has probably been lost between the client and the proxy. This is very rare on local networks but might happen when clients are on far remote networks and send large requests. It may happen that values larger than usual appear here without any network cause. Sometimes, during an attack or just after a resource starvation has ended, haproxy may accept thousands of connections in a few milliseconds. The time spent accepting these connections will inevitably slightly delay processing of other connections, and it can happen that request times in the order of a few tens of milliseconds are measured after a few thousands of new connections have been accepted at once. Setting "option http-server-close" may display larger request times since "Tq" also measures the time spent waiting for additional requests.

  - If "Tc" is close to 3000, a packet has probably been lost between the server and the proxy during the server connection phase. This value should always be very low, such as 1 ms on local networks and less than a few tens of ms on remote networks.

  - If "Tr" is nearly always lower than 3000 except some rare values which seem to be the average majored by 3000, there are probably some packets lost between the proxy and the server.

  - If "Tt" is large even for small byte counts, it generally is because neither the client nor the server decides to close the connection, for instance because both have agreed on a keep-alive connection mode. In order to solve this issue, it will be needed to specify "option httpclose" on either the frontend or the backend. If the problem persists, it means that the server ignores the "close" connection mode and expects the client to close. Then it will be required to use "option forceclose". Having the smallest possible 'Tt' is important when connection regulation is used with the "maxconn" option on the servers, since no new connection will be sent to the server until another one is released.

Other noticeable HTTP log cases ('xx' means any value to be ignored) :

Tq/Tw/Tc/Tr/+Tt	The "option logasap" is present on the frontend and the log was emitted before the data phase. All the timers are valid except "Tt" which is shorter than reality.
-1/xx/xx/xx/Tt	The client was not able to send a complete request in time or it aborted too early. Check the session termination flags then "timeout http-request" and "timeout client" settings.
Tq/-1/xx/xx/Tt	It was not possible to process the request, maybe because servers were out of order, because the request was invalid or forbidden by ACL rules. Check the session termination flags.
Tq/Tw/-1/xx/Tt	The connection could not establish on the server. Either it actively refused it or it timed out after Tt-(Tq+Tw) ms. Check the session termination flags, then check the "timeout connect" setting. Note that the tarpit action might return similar-looking patterns, with "Tw" equal to the time the client connection was maintained open.

```
14821
14822     Tq/Tw/Tc/-1/Tt   The server has accepted the connection but did not return
14823                      a complete response in time, or it closed its connection
14824                      unexpectedly after Tt-(Tq+Tw+Tc) ms. Check the session
14825                      termination flags, then check the "timeout server" setting.
14826
14827
14828   8.5. Session state at disconnection
14829   -----------------------------------
14830
14831   TCP and HTTP logs provide a session termination indicator in the
14832   "termination_state" field, just before the number of active connections. It is
14833   2-characters long in TCP mode, and is extended to 4 characters in HTTP mode,
14834   each of which has a special meaning :
14835
14836     - On the first character, a code reporting the first event which caused the
14837       session to terminate :
14838
14839           C : the TCP session was unexpectedly aborted by the client.
14840
14841           S : the TCP session was unexpectedly aborted by the server, or the
14842               server explicitly refused it.
14843
14844           P : the session was prematurely aborted by the proxy, because of a
14845               connection limit enforcement, because a DENY filter was matched,
14846               because of a security check which detected and blocked a dangerous
14847               error in server response which might have caused information leak
14848               (eg: cacheable cookie).
14849
14850           L : the session was locally processed by haproxy and was not passed to
14851               a server. This is what happens for stats and redirects.
14852
14853           R : a resource on the proxy has been exhausted (memory, sockets, source
14854               ports, ...). Usually, this appears during the connection phase, and
14855               system logs should contain a copy of the precise error. If this
14856               happens, it must be considered as a very serious anomaly which
14857               should be fixed as soon as possible by any means.
14858
14859           I : an internal error was identified by the proxy during a self-check.
14860               This should NEVER happen, and you are encouraged to report any log
14861               containing this, because this would almost certainly be a bug. It
14862               would be wise to preventively restart the process after such an
14863               event too, in case it would be caused by memory corruption.
14864
14865           D : the session was killed by haproxy because the server was detected
14866               as down and was configured to kill all connections when going down.
14867
14868           U : the session was killed by haproxy on this backup server because an
14869               active server was detected as up and was configured to kill all
14870               backup connections when going up.
14871
14872           K : the session was actively killed by an admin operating on haproxy.
14873
14874           c : the client-side timeout expired while waiting for the client to
14875               send or receive data.
14876
14877           s : the server-side timeout expired while waiting for the server to
14878               send or receive data.
14879
14880           - : normal session completion, both the client and the server closed
14881               with nothing left in the buffers.
14882
14883     - on the second character, the TCP or HTTP session state when it was closed :
14884
14885           R : the proxy was waiting for a complete, valid REQUEST from the client
```



```
14886               (HTTP mode only). Nothing was sent to any server.
14887
14888           Q : the proxy was waiting in the QUEUE for a connection slot. This can
14889               only happen when servers have a 'maxconn' parameter set. It can
14890               also happen in the global queue after a redispatch consecutive to
14891               a failed attempt to connect to a dying server. If no redispatch is
14892               reported, then no connection attempt was made to any server.
14893
14894           C : the proxy was waiting for the CONNECTION to establish on the
14895               server. The server might at most have noticed a connection attempt.
14896
14897           H : the proxy was waiting for complete, valid response HEADERS from the
14898               server (HTTP only).
14899
14900           D : the session was in the DATA phase.
14901
14902           L : the proxy was still transmitting LAST data to the client while the
14903               server had already finished. This one is very rare as it can only
14904               happen when the client dies while receiving the last packets.
14905
14906           T : the request was tarpitted. It has been held open with the client
14907               during the whole "timeout tarpit" duration or until the client
14908               closed, both of which will be reported in the "Tw" timer.
14909
14910           - : normal session completion after end of data transfer.
14911
14912     - the third character tells whether the persistence cookie was provided by
14913       the client (only in HTTP mode) :
14914
14915           N : the client provided NO cookie. This is usually the case for new
14916               visitors, so counting the number of occurrences of this flag in the
14917               logs generally indicate a valid trend for the site frequentation.
14918
14919           I : the client provided an INVALID cookie matching no known server.
14920               This might be caused by a recent configuration change, mixed
14921               cookies between HTTP/HTTPS sites, persistence conditionally
14922               ignored, or an attack.
14923
14924           D : the client provided a cookie designating a server which was DOWN,
14925               so either "option persist" was used and the client was sent to
14926               this server, or it was not set and the client was redispatched to
14927               another server.
14928
14929           V : the client provided a VALID cookie, and was sent to the associated
14930               server.
14931
14932           E : the client provided a valid cookie, but with a last date which was
14933               older than what is allowed by the "maxidle" cookie parameter, so
14934               the cookie is consider EXPIRED and is ignored. The request will be
14935               redispatched just as if there was no cookie.
14936
14937           O : the client provided a valid cookie, but with a first date which was
14938               older than what is allowed by the "maxlife" cookie parameter, so
14939               the cookie is consider too OLD and is ignored. The request will be
14940               redispatched just as if there was no cookie.
14941
14942           U : a cookie was present but was not used to select the server because
14943               some other server selection mechanism was used instead (typically a
14944               "use-server" rule).
14945
14946           - : does not apply (no cookie set in configuration).
14947
14948     - the last character reports what operations were performed on the persistence
14949       cookie returned by the server (only in HTTP mode) :
14950
```

N : NO cookie was provided by the server, and none was inserted either.

I : no cookie was provided by the server, and the proxy INSERTED one.
Note that in "cookie insert" mode, if the server provides a cookie,
it will still be overwritten and reported as "I" here.

U : the proxy UPDATED the last date in the cookie that was presented by
the client. This can only happen in insert mode with "maxidle". It
happens every time there is activity at a different date than the
date indicated in the cookie. If any other change happens, such as
a redispatch, then the cookie will be marked as inserted instead.

P : a cookie was PROVIDED by the server and transmitted as-is.

R : the cookie provided by the server was REWRITTEN by the proxy, which
happens in "cookie rewrite" or "cookie prefix" modes.

D : the cookie provided by the server was DELETED by the proxy.

- : does not apply (no cookie set in configuration).

The combination of the two first flags gives a lot of information about what
was happening when the session terminated, and why it did terminate. It can be
helpful to detect server saturation, network troubles, local system resource
starvation, attacks, etc...

The most common termination flags combinations are indicated below. They are
alphabetically sorted, with the lowercase set just after the upper case for
easier finding and understanding.

Flags	Reason
--	Normal termination.
CC	The client aborted before the connection could be established to the server. This can happen when haproxy tries to connect to a recently dead (or unchecked) server, and the client aborts while haproxy is waiting for the server to respond or for "timeout connect" to expire.
CD	The client unexpectedly aborted during data transfer. This can be caused by a browser crash, by an intermediate equipment between the client and haproxy which decided to actively break the connection, by network routing issues between the client and haproxy, or by a keep-alive session between the server and the client terminated first by the client.
cD	The client did not send nor acknowledge any data for as long as the "timeout client" delay. This is often caused by network failures on the client side, or the client simply leaving the net uncleanly.
CH	The client aborted while waiting for the server to start responding. It might be the server taking too long to respond or the client clicking the 'Stop' button too fast.
cH	The "timeout client" stroke while waiting for client data during a POST request. This is sometimes caused by too large TCP MSS values for PPPoE networks which cannot transport full-sized packets. It can also happen when client timeout is smaller than server timeout and the server takes too long to respond.
CQ	The client aborted while its session was queued, waiting for a server with enough empty slots to accept it. It might be that either all the servers were saturated or that the assigned server was taking too long a time to respond.

CR	The client aborted before sending a full HTTP request. Most likely the request was typed by hand using a telnet client, and aborted too early. The HTTP status code is likely a 400 here. Sometimes this might also be caused by an IDS killing the connection between haproxy and the client. "option http-ignore-probes" can be used to ignore connections without any data transfer.
cR	The "timeout http-request" stroke before the client sent a full HTTP request. This is sometimes caused by too large TCP MSS values on the client side for PPPoE networks which cannot transport full-sized packets, or by clients sending requests by hand and not typing fast enough, or forgetting to enter the empty line at the end of the request. The HTTP status code is likely a 408 here. Note: recently, some browsers started to implement a "pre-connect" feature consisting in speculatively connecting to some recently visited web sites just in case the user would like to visit them. This results in many connections being established to web sites, which end up in 408 Request Timeout if the timeout strikes first, or 400 Bad Request when the browser decides to close them first. These ones pollute the log and feed the error counters. Some versions of some browsers have even been reported to display the error code. It is possible to work around the undesirable effects of this behaviour by adding "option http-ignore-probes" in the frontend, resulting in connections with zero data transfer to be totally ignored. This will definitely hide the errors of people experiencing connectivity issues though.
CT	The client aborted while its session was tarpitted. It is important to check if this happens on valid requests, in order to be sure that no wrong tarpit rules have been written. If a lot of them happen, it might make sense to lower the "timeout tarpit" value to something closer to the average reported "Tw" timer, in order not to consume resources for just a few attackers.
LR	The request was intercepted and locally handled by haproxy. Generally it means that this was a redirect or a stats request.
SC	The server or an equipment between it and haproxy explicitly refused the TCP connection (the proxy received a TCP RST or an ICMP message in return). Under some circumstances, it can also be the network stack telling the proxy that the server is unreachable (eg: no route, or no ARP response on local network). When this happens in HTTP mode, the status code is likely a 502 or 503 here.
sC	The "timeout connect" stroke before a connection to the server could complete. When this happens in HTTP mode, the status code is likely a 503 or 504 here.
SD	The connection to the server died with an error during the data transfer. This usually means that haproxy has received an RST from the server or an ICMP message from an intermediate equipment while exchanging data with the server. This can be caused by a server crash or by a network issue on an intermediate equipment.
sD	The server did not send nor acknowledge any data for as long as the "timeout server" setting during the data phase. This is often caused by too short timeouts on L4 equipments before the server (firewalls, load-balancers, ...), as well as keep-alive sessions maintained between the client and the server expiring first on haproxy.
SH	The server aborted before sending its full HTTP response headers, or it crashed while processing the request. Since a server aborting at this moment is very rare, it would be wise to inspect its logs to control whether it crashed and why. The logged request may indicate a small set of faulty requests, demonstrating bugs in the application. Sometimes this might also be caused by an IDS killing the connection

between haproxy and the server.

sH The "timeout server" stroke before the server could return its response headers. This is the most common anomaly, indicating too long transactions, probably caused by server or database saturation. The immediate workaround consists in increasing the "timeout server" setting, but it is important to keep in mind that the user experience will suffer from these long response times. The only long term solution is to fix the application.

sQ The session spent too much time in queue and has been expired. See the "timeout queue" and "timeout connect" settings to find out how to fix this if it happens too often. If it often happens massively in short periods, it may indicate general problems on the affected servers due to I/O or database congestion, or saturation caused by external attacks.

PC The proxy refused to establish a connection to the server because the process' socket limit has been reached while attempting to connect. The global "maxconn" parameter may be increased in the configuration so that it does not happen anymore. This status is very rare and might happen when the global "ulimit-n" parameter is forced by hand.

PD The proxy blocked an incorrectly formatted chunked encoded message in a request or a response, after the server has emitted its headers. In most cases, this will indicate an invalid message from the server to the client. Haproxy supports chunk sizes of up to 2GB - 1 (2147483647 bytes). Any larger size will be considered as an error.

PH The proxy blocked the server's response, because it was invalid, incomplete, dangerous (cache control), or matched a security filter. In any case, an HTTP 502 error is sent to the client. One possible cause for this error is an invalid syntax in an HTTP header name containing unauthorized characters. It is also possible but quite rare, that the proxy blocked a chunked-encoding request from the client due to an invalid syntax, before the server responded. In this case, an HTTP 400 error is sent to the client and reported in the logs.

PR The proxy blocked the client's HTTP request, either because of an invalid HTTP syntax, in which case it returned an HTTP 400 error to the client, or because a deny filter matched, in which case it returned an HTTP 403 error.

PT The proxy blocked the client's request and has tarpitted its connection before returning it a 500 server error. Nothing was sent to the server. The connection was maintained open for as long as reported by the "Tw" timer field.

RC A local resource has been exhausted (memory, sockets, source ports) preventing the connection to the server from establishing. The error logs will tell precisely what was missing. This is very rare and can only be solved by proper system tuning.

The combination of the two last flags gives a lot of information about how persistence was handled by the client, the server and by haproxy. This is very important to troubleshoot disconnections, when users complain they have to re-authenticate. The commonly encountered flags are :

-- Persistence cookie is not enabled.

NN No cookie was provided by the client, none was inserted in the response. For instance, this can be in insert mode with "postonly" set on a GET request.

II A cookie designating an invalid server was provided by the client, a valid one was inserted in the response. This typically happens when a "server" entry is removed from the configuration, since its cookie value can be presented by a client when no other server knows it.

NI No cookie was provided by the client, one was inserted in the response. This typically happens for first requests from every user in "insert" mode, which makes it an easy way to count real users.

VN A cookie was provided by the client, none was inserted in the response. This happens for most responses for which the client has already got a cookie.

VU A cookie was provided by the client, with a last visit date which is not completely up-to-date, so an updated cookie was provided in response. This can also happen if there was no date at all, or if there was a date but the "maxidle" parameter was not set, so that the cookie can be switched to unlimited time.

EI A cookie was provided by the client, with a last visit date which is too old for the "maxidle" parameter, so the cookie was ignored and a new cookie was inserted in the response.

OI A cookie was provided by the client, with a first visit date which is too old for the "maxlife" parameter, so the cookie was ignored and a new cookie was inserted in the response.

DI The server designated by the cookie was down, a new server was selected and a new cookie was emitted in the response.

VI The server designated by the cookie was not marked dead but could not be reached. A redispatch happened and selected another one, which was then advertised in the response.

8.6. Non-printable characters

In order not to cause trouble to log analysis tools or terminals during log consulting, non-printable characters are not sent as-is into log files, but are converted to the two-digits hexadecimal representation of their ASCII code, prefixed by the character '#'. The only characters that can be logged without being escaped are comprised between 32 and 126 (inclusive). Obviously, the escape character '#' itself is also encoded to avoid any ambiguity ("#23"). It is the same for the character '"' which becomes "#22", as well as '{', '|' and '}' when logging headers.

Note that the space character (' ') is not encoded in headers, which can cause issues for tools relying on space count to locate fields. A typical header containing spaces is "User-Agent".

Last, it has been observed that some syslog daemons such as syslog-ng escape the quote ('"') with a backslash ('\'). The reverse operation can safely be performed since no quote may appear anywhere else in the logs.

8.7. Capturing HTTP cookies

Cookie capture simplifies the tracking a complete user session. This can be achieved using the "capture cookie" statement in the frontend. Please refer to section 4.2 for more details. Only one cookie can be captured, and the same cookie will simultaneously be checked in the request ("Cookie:" header) and in the response ("Set-Cookie:" header). The respective values will be reported in the HTTP logs at the "captured_request_cookie" and "captured_response_cookie"

locations (see section 8.2.3 about HTTP log format). When either cookie is
not seen, a dash ('-') replaces the value. This way, it's easy to detect when a
user switches to a new session for example, because the server will reassign it
a new cookie. It is also possible to detect if a server unexpectedly sets a
wrong cookie to a client, leading to session crossing.

  Examples :
        # capture the first cookie whose name starts with "ASPSESSION"
        capture cookie ASPSESSION len 32

        # capture the first cookie whose name is exactly "vgnvisitor"
        capture cookie vgnvisitor= len 32

8.8. Capturing HTTP headers

Header captures are useful to track unique request identifiers set by an upper
proxy, virtual host names, user-agents, POST content-length, referrers, etc. In
the response, one can search for information about the response length, how the
server asked the cache to behave, or an object location during a redirection.

Header captures are performed using the "capture request header" and "capture
response header" statements in the frontend. Please consult their definition in
section 4.2 for more details.

It is possible to include both request headers and response headers at the same
time. Non-existent headers are logged as empty strings, and if one header
appears more than once, only its last occurrence will be logged. Request headers
are grouped within braces '{' and '}' in the same order as they were declared,
and delimited with a vertical bar '|' without any space. Response headers
follow the same representation, but are displayed after a space following the
request headers block. These blocks are displayed just before the HTTP request
in the logs.

As a special case, it is possible to specify an HTTP header capture in a TCP
frontend. The purpose is to enable logging of headers which will be parsed in
an HTTP backend if the request is then switched to this HTTP backend.

  Example :
        # This instance chains to the outgoing proxy
        listen proxy-out
            mode http
            option httplog
            option logasap
            log global
            server cache1 192.168.1.1:3128

            # log the name of the virtual server
            capture request header Host len 20

            # log the amount of data uploaded during a POST
            capture request header Content-Length len 10

            # log the beginning of the referrer
            capture request header Referer len 20

            # server name (useful for outgoing proxies only)
            capture response header Server len 20

            # logging the content-length is useful with "option logasap"
            capture response header Content-Length len 10

            # log the expected cache behaviour on the response
            capture response header Cache-Control len 8

            # the Via header will report the next proxy's name
            capture response header Via len 20

            # log the URL location during a redirection
            capture response header Location len 20

    >>> Aug 9 20:26:09 localhost \
          haproxy[2022]: 127.0.0.1:34014 [09/Aug/2004:20:26:09] proxy-out \
          proxy-out/cache1 0/0/0/162/+162 200 +350 - - ---- 0/0/0/0/0 0/0 \
          {fr.adserver.yahoo.co||http://fr.f416.mail.} {|864|private||} \
          "GET http://fr.adserver.yahoo.com/"

    >>> Aug 9 20:30:46 localhost \
          haproxy[2022]: 127.0.0.1:34020 [09/Aug/2004:20:30:46] proxy-out \
          proxy-out/cache1 0/0/0/182/+182 200 +279 - - ---- 0/0/0/0/0 0/0 \
          {w.ods.org||} {Formilux/0.1.8|3495|||} \
          "GET http://trafic.1wt.eu/ HTTP/1.1"

    >>> Aug 9 20:30:46 localhost \
          haproxy[2022]: 127.0.0.1:34028 [09/Aug/2004:20:30:46] proxy-out \
          proxy-out/cache1 0/0/2/126/+128 301 +223 - - ---- 0/0/0/0/0 0/0 \
          {www.sytadin.equipement.gouv.fr||http://trafic.1wt.eu/} \
          {Apache|230|||http://www.sytadin.} \
          "GET http://www.sytadin.equipement.gouv.fr/ HTTP/1.1"

8.9. Examples of logs

These are real-world examples of logs accompanied with an explanation. Some of
them have been made up by hand. The syslog part has been removed for better
reading. Their sole purpose is to explain how to decipher them.

    >>> haproxy[674]: 127.0.0.1:33318 [15/Oct/2003:08:31:57.130] px-http \
          px-http/srv1 6559/0/7/147/6723 200 243 - - ---- 5/3/3/1/0 0/0 \
          "HEAD / HTTP/1.0"

    => long request (6.5s) entered by hand through 'telnet'. The server replied
       in 147 ms, and the session ended normally ('----')

    >>> haproxy[674]: 127.0.0.1:33319 [15/Oct/2003:08:31:57.149] px-http \
          px-http/srv1 6559/1230/7/147/6870 200 243 - - ---- 324/239/239/99/0 \
          0/9 "HEAD / HTTP/1.0"

    => Idem, but the request was queued in the global queue behind 9 other
       requests, and waited there for 1230 ms.

    >>> haproxy[674]: 127.0.0.1:33320 [15/Oct/2003:08:32:17.654] px-http \
          px-http/srv1 9/0/7/14/+30 200 +243 - - ---- 3/3/3/1/0 0/0 \
          "GET /image.iso HTTP/1.0"

    => request for a long data transfer. The "logasap" option was specified, so
       the log was produced just before transferring data. The server replied in
       14 ms, 243 bytes of headers were sent to the client, and total time from
       accept to first data byte is 30 ms.

    >>> haproxy[674]: 127.0.0.1:33320 [15/Oct/2003:08:32:17.925] px-http \
          px-http/srv1 9/0/7/14/30 502 243 - - PH-- 3/2/2/0/0 0/0 \
          "GET /cgi-bin/bug.cgi? HTTP/1.0"

    => the proxy blocked a server response either because of an "rspdeny" or
       "rspideny" filter, or because the response was improperly formatted and
       not HTTP-compliant, or because it blocked sensitive information which
       risked being cached. In this case, the response is replaced with a "502

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15341         bad gateway". The flags ("PH--") tell us that it was haproxy who decided
15342         to return the 502 and not the server.
15343
15344      >>> haproxy[18113]: 127.0.0.1:34548 [15/Oct/2003:15:18:55.798] px-http \
15345            px-http/<NOSRV> -1/-1/-1/-1/8490 -1 0 - - CR-- 2/2/2/0/0 0/0 ""
15346
15347      => the client never completed its request and aborted itself ("C---") after
15348         8.5s, while the proxy was waiting for the request headers ("-R--").
15349         Nothing was sent to any server.
15350
15351      >>> haproxy[18113]: 127.0.0.1:34549 [15/Oct/2003:15:19:06.103] px-http \
15352           px-http/<NOSRV> -1/-1/-1/-1/50001 408 0 - - cR-- 2/2/2/0/0 0/0 ""
15353
15354      => The client never completed its request, which was aborted by the
15355         time-out ("c---") after 50s, while the proxy was waiting for the request
15356         headers ("-R--").  Nothing was sent to any server, but the proxy could
15357         send a 408 return code to the client.
15358
15359      >>> haproxy[18989]: 127.0.0.1:34550 [15/Oct/2003:15:24:28.312] px-tcp \
15360            px-tcp/srv1 0/0/5007 0 cD 0/0/0/0/0 0/0
15361
15362      => This log was produced with "option tcplog". The client timed out after
15363         5 seconds ("c----").
15364
15365      >>> haproxy[18989]: 10.0.0.1:34552 [15/Oct/2003:15:26:31.462] px-http \
15366            px-http/srv1 3183/-1/-1/-1/11215 503 0 - - SC-- 205/202/202/115/3 \
15367            0/0 "HEAD / HTTP/1.0"
15368
15369      => The request took 3s to complete (probably a network problem), and the
15370         connection to the server failed ('SC--') after 4 attempts of 2 seconds
15371         (config says 'retries 3'), and no redispatch (otherwise we would have
15372         seen "/+3"). Status code 503 was returned to the client. There were 115
15373         connections on this server, 202 connections on this proxy, and 205 on
15374         the global process. It is possible that the server refused the
15375         connection because of too many already established.
15376
15377
15378   /*
15379    * Local variables:
15380    *  fill-column: 79
15381    * End:
15382    */
```