

## E2Guardian V5 – Storyboarding

*NB - This document and the development of v5 is work in progress and so not all the functionally described in this document may be fully implemented at this time.*

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## E2Guardian V5 – Storyboarding

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Version 5 has a revised model for logic flow and using lists.

Storyboarding is a simple scripting language which defines functions that control list checking, map actions to list matches and defines logic flow. Each filter group can use a different storyboard and so can have different logic if required. The lists used and logic can now also be changed without stopping and re-starting e2guardian.

### The Storyboard File

A storyboard file defines functions. Certain 'entry point' functions must be defined as e2guardian will use these as entry points into the function engine. These functions are 'checkrequest' and 'checkresponse' for storyboards included in e2guardianf1.conf and 'pre-authcheck' for storyboard included in e2guardian.conf. Further entry point functions are required when transparent https (thttps-checkrequest, thttps-checkresponse & thttps-pre-authcheck) or ICAP (icap-checkrequest, icap-checkresponse & icap-pre-authcheck) are enabled.

A storyboard file can include other storyboard files, to allow a structured approach to function definitions with common functions being defined in a common included file. Functions can be redefined with the last read version overwriting the previous one.

Blank lines and lines starting with '#' are ignored.

## Function Definition

The start of a function is defined with:-

```
function(function_name)
```

*function\_name* is a label made up of alphanumeric, '\_' and '-' (no spaces). Do not use labels starting with 'true', 'false', 'set' or 'return' as these may conflict with built-in actions.

The end of a function is defined with:-

```
end()
```

or by the start of a new function

or by an include

or by the end of the file.

A function must be completely defined in a single file and consists of one or more command lines which are executed in order.

## Command Line Format

The format of a command line is:-

```
Command(Condition) [return || returnif ]Action
```

where:-

*Command* is **if** - if *Condition* is true do *Action*

or is **ifnot** - if *Condition* is false do *Action*

*Condition* format is:-

```
state [, [list] [, message_no [, logmessage_no ] ] ]
```

where:-

*state* is as listed in Table 2.

*list* is list name (mandatory if *state* ends in 'in')

*message\_no* is a message number (overrides *messageno* in list definition or used when no list) default 0

*logmessage\_no* - (overrides *logmessageno* in list definition or used when no list) default *message\_no*

*Action* is a built-in action (see Table 3) or a function name

if *Action* is prefixed with **return** then return from the current function with the return value of *Action*

if *Action* is prefixed with **returnif** then return true from the current function if *Action* returns **true**

**Table 1a – Flags which can be set**

<b>Flag name</b>	<b>Action when set</b>
addheader	Result from regexpreplacelist is added to the request headers
block	Request will be blocked
done	Process no more
exception	Request will be allowed without any content checking
godirect	Connect directly i.e. do not use proxy – this flag is set by default if no proxyip is defined
gomitm	Do MITM interception on a CONNECT request or TLS connection
grey	Content-checking inforced
issearch	Request is a search request which has had search terms extracted
logcategory	Log category but do not block
modurl	Result from a regexpreplacelist replaces the original requested url
nolog	Do not log this request
nocheckcert	Allow access to SSL site without checking certificate
redirect	Redirect browser to result from a regexpreplacelist

**Table 1b – Flags – Read-only**

<b>Flag name</b>	<b>Description</b>
hassni	Server Name Indication is present in TLS clienthello request
mitm	Am in MITM session
modheader	Header(s) have been modified by regular expression list
return	The return status of last executed function or built-in action.

**Table 2a – States which require lists**

<b>State</b>	<b>Description</b>	<b>List types checked in this order</b>
urlin	Is url in named list(s)?	siteiplist, sitelist, urllist, regexpboollist
sitein	Is site in named list(s)?	siteiplist, sitelist, regexpboollist
searchin	Is search term in named list? Note: action setsearchterm must have already been called for searchin to be effective.	searchlist
embeddedin	Are any embedded URL in named list(s)?	siteiplist, sitelist, urllist, regexpboollist
refererin	Is referer in named list(s)?	siteiplist, sitelist, urllist, regexpboollist
headerin	Is a header in the named list?	regexpboollist or regexpreplacelist (not both)
fullurlin	Is full url in named list?	regexpreplacelist
clientin	Is client host in named list?	iplist, sitelist
extensionin	Is file extension in named list?	fileextlist
mimein	Is mime type in named list?	mimelist
Note: lists are only checked if present and when required:- i.e. siteiplist is only checked if site is an IP & urllist is not checked if URL is site-only.		

**Table 2b – States without lists**

<b>State</b>	<b>Description</b>
connect	Is it a CONNECT request?
blockset	Is block flag set?
done	Is done flag set?
exceptionset	Is exception flag set?
get	Is it a GET request?
greyset	Is grey flag set?
hassnisset	Is hassni flag set?
mitmset	Are we in a MITM session?
post	Is it a POST request?
redirectset	Is redirect flag set?
returnset	Was return from last action true?
siteisip	Is site an IP?
tls	Is it a TLS connection request?
true	Always true

**Table 3 – Built-in Actions**

<b>Name</b>	<b>Action</b>
false	Return false
setaddheader	Set addheader flag to true and add header – return true if successful
setblock	Set block flag to true – return true
setdone	Set done flag to true – return true
setexception	Set exception flag to true – return true
setgodirect	Set godirect flag to true – return true
setgomitm	Set gomitm flag to true – return true
setgrey	Set grey flag to true – return true
setlogcategory	Log category without blocking – return true
setmodheader	Set modheader flag to true – return true
setmodurl	Set modurl flag to true and modify URL – return true
setnolog	Set nolog flag to true – return true
setnocheckcert	Set nocheckcert flag – return true
setredirect	Set redirect flag to true – return true if successful
setsearchterm	Set issearch flag and store search terms for list/content checking – use with state fullurlin and listtype regexpreplacelist which outputs searchterms from url. This action must be performed prior to any searchin state conditions.
true	Return true