USER'S GUIDE
iAdmin URL Filter
version 1.5

SECTION 1 – INTRODUCTION

Section 1.1 – Brief Description

iAdmin URL Filter is software that allows you to block internet access by website categories based on the iAdmin URL database.
iAdmin URL Filter operates as an ICAP server for a third-party HTTP proxy server or hardware device that provides internet access to other users.
iAdmin URL Filter consists of three components:
- c-icap (https://c-icap.sourceforge.net/) directly implements the ICAP protocol and is open source software under the GPL license.
- iadmin_filter, implemented as a library for c-icap, performs filtering based on access rules.
- iAdmin URL SDK implements the website category detection mechanism, contains a proprietary website database, and a mechanism for updating it.

Section 1.2 – Version Changes

1. Version 1.5
- Expanded diagnostics for file socket communication between iadmin_filter and iadmin-service.
- Increased the maximum number of licenses in license keys.
- Added the optional ability to determine the category by the ORIGIN header, if present in the HTTP request. For a description of the UseOriginHeader parameter, see the iadmin_filter.conf file.
- Added the ability to force safe search in search engines (Google, Bing, Yandex). For a description of the EnableSafeSearch parameter, see the iadmin_filter.conf file.

2. Version 1.4
- The new match rule type adds a header with the category number to the HTTP request for analysis by Squid. Squid must be compiled with the "./configure --enable-http-violations" parameter to remove the header before sending it to the site.

3. Version 1.3
- Added the ability to filter by user groups in Squid or any other ACL.

4. Version 1.2
- Added the ability to filter rules by IP, UserName, and domain names.
- The blocking page displays the site categories, the blocked rule, and the reason for the block, but only for the HTTP protocol. To determine the reason for the block over HTTPS, you can remove the "S" from the address and make a new request (if there is no redirect on the site). Alternatively, you can use the icap client; see Section 2.2, point 6.
- The iAdmin Filter version can be obtained by calling c-icap-client -s "iadmin_filter." The currently running version will be indicated in the Service header.

5. Version 1.1
- Added a separate iadmin_service daemon, which maintains the iAdmin URL database in memory and provides an interface for determining categories via the internal AF_UNIX socket mechanism.

- The c-icap server no longer loads the database itself, but instead queries the iadmin_service daemon for categories. Therefore, the restriction on creating separate c-icap processes has been removed.
- The licensing mechanism controls a maximum of 1,000 requests per host or username per minute. If this limit is exceeded, categories will not be determined. To achieve this, be sure to enable Client IP \ Client Username forwarding on your proxy server.

6. Version 1.0 has been released.

SECTION 2 – INSTALLATION AND SETUP

Section 2.1 – System Requirements

Operating systems:
- Linux (Ubuntu 22.04), compilations for any other Linux systems or FreeBSD are possible.

Dependencies:
- Openssl (libssl)
- libidn
- libcurl

Server RAM: a fast SSD for disk caching mode (default), or 13 GB of free space for loading the entire database into RAM for maximum performance.

Hard drive: 20 GB of free space.

Other: Internet connection required for updating the category database directly or through a proxy server.

Section 2.2 – Installation

1. Installing the iAdmin URL SDK (See its separate documentation for installation and configuration).
Unzip the iAdmin URL SDK archive; the paths in the archive are relative to the root of the file system. The files will be located in the /opt/iadmin directory.
You need to specify the path to the library in /opt/iadmin/lib in /etc/ld.so.conf. To do this, run, for example:
```
echo "/opt/iadmin/lib" > /etc/ld.so.conf.d/iadmin.conf
ldconfig
```

Write the received license key to /opt/iadmin/etc/key and try updating the category database at /opt/iadmin/bin/iadminupdate. To receive periodic updates, schedule this utility to run in Cron, for example, once a day. This utility requires write access to /opt/iadmin.
Test the SDK by running /opt/iadmin/bin/iadmintest. This is a test utility where you can enter a website name and check its category.

2. Installing c-icap (https://c-icap.sourceforge.net/)
Install c-icap and configure it as a service. If installation is available from your Linux repository, use it.

If not, use our archive with files and unzip it relative to the root of the file system. Then register c-icap as a service, copy the file from our c-icap archive to /lib/systemd/system/c-icap.service, and run
```
systemctl daemon-reload
```

3. Install iAdmin URL filter by unzipping the files from its archive.

The file /usr/local/share/c_icap/templates/iadminurl/EN/DENY should be in your c-icap installation path. Check the TemplateDir parameter in c-icap.conf.

Register our service: the /lib/systemd/system/iadmin-service.service file
from the archive should be located in its path. Add a user there if necessary and run
systemctl daemon-reload

The user under which iadmin-service will run (root by default), if changed, needs write access to /opt/iadmin.
The service maintains its log file at /opt/iadmin/etc/iadmin-service.log and also writes basic information to syslog (start, stop, and failure to create its log).
1. Start our service
systemctl start iadmin-service
and test it using
/opt/iadmin/bin/iadmin-client
This is a console utility where you can enter website names, and it will connect to iadmin-service and return the categories.
Connect iAdmin filter to c-icap: in the c-icap configuration file (/usr/local/etc/c-icap.conf or /etc/c-icap.conf), add
Include /opt/iadmin/etc/iadmin_filter.conf
2. Now you can start c-icap. You can run it either as a service via systemctl or as a regular process. For debugging output, use the following parameters:
./c-icap -N -D -d 1
The last digit indicates the debug output level. iadmin_filter outputs its messages at level 1 and writes them to the c-icap log, for example, when the database starts or when a rule fails to load. For maximum output from all c-icap processes, use 10.
To stop, use Ctrl-C. If you started the process without parameters, you can stop it by running echo -n "stop" > /var/run/c-icap/c-icap.ctl (**the -n parameter is required**).
3. Testing the c-icap protocol.
To test the connection and rules, use c-icap-client -s "iadmin_filter" -req "https://www.google.com/" with different site values.

Section 2.3. – Configuring the external c-icap client

To connect external proxy servers or devices that support ICAP, please refer to their documentation. iAdmin URL filter only works in reqmod mode, meaning it only analyzes outgoing HTTP requests for URL filtering; filtering for respmod does not require configuration. It is essential to configure the client to transmit IP addresses or usernames. This is necessary for the licensing mechanism, which controls the total number of users (by IP or Username) and a maximum of 10000 requests per minute from a single host or username.

Configuring the client using Squid proxy as an example:

In the Squid configuration file (/etc/squid/squid.conf), enter:

```
icap_enable        on
icap_service  iadmin_filter reqmod_precache 0 icap://localhost:1344/iadmin_filter
adaptation_access iadmin_filter allow all
adaptation_send_client_ip on
adaptation_send_username on
icap_client_username_header X-Client-Username
#The X-Authenticated-User header is also supported

#For rules with groups (groups are created and configured in advance)
```

```
# mark transactions from users in the "G 1" group
adaptation_meta X-Authenticated-Groups "G 1" authed_as_G1
#More details https://www.squid-cache.org/Doc/config/adaptation_meta/
```

Squid can be configured to retrieve the request category in the added X-Iadmin-Cat header. This can then be parsed directly by Squid rules.

Requirements:
- Squid must be compiled with the "./configure --enable-http-violations" parameter to remove the header before sending it to the site.
- Ssl_bump must be configured to detect HTTPS traffic.

To do this, configure the following:
In squid.conf
acl bad_cat req_header X-Iadmin-Cat ^(19|21|8)$ #Determines categories by header. The last parameter is any regular expression
adapted_http_access deny bad_cat #Rule that works after ICAP; here you can mix acl with categories and users/groups
request_header_access X-Iadmin-Cat deny all #Removes our header; it can't be shared externally. Some sites doesn't work with it.
In iadmin_filter.conf
iadmin_filter.AddRule match #Adds the header to all requests. Parameters can be used to specify conditions for both pass and block rules for exceptions, for example, for those whose HTTPS traffic is not exposed.

Note: The proxy server may cache requests to the ICAP server and/or website. If the site was previously accessed with permission, the proxy may allow access for a short time, even if it was subsequently blocked. This includes if the site was recently assigned a restricted category through an iAdmin URL database update.
The same can happen if the c-icap service was restarted – the proxy server will not immediately attempt to reconnect to it to identify restricted sites that was accessed early.

Section 2.4 – Internet access rules

To control access, use rules in the /opt/iadmin/etc/iadmin_filter.conf configuration file. See the comments in the rules section for how to create them.
To reload rules after changes without restarting c-icap, run
echo -n "reconfigure" > /var/run/c-icap/c-icap.ctl (**the -n parameter is required**).
Rules work like a firewall, from top to bottom. If a match occurs, a pass or block action is performed.
Rule objects are specified in quotation marks. Different objects can be mixed in a single rule, separated by spaces.
Objects to use:
Category: Site category number, determined by the iAdmin URL SDK based on the site name and full URL. For a description of categories, see Appendix A.
Site: Specifies exact site names, although the presence of www is significant.
Domain: Searches for an arbitrary string in the site name.
ClientIP: The rule will only match the specified IP addresses.
UserName: The rule will only apply to the specified usernames.
UserGroup: The rule will only apply to the specified user groups.

Time: The rule will only apply during the specified time (1st - Monday), from - to in the format H:M:S.

If HTTPS access is blocked, the client will report that a connection cannot be established, for example, ERR_TUNNEL_CONNECTION_FAILED. For an HTTPS request, or if HTTPS traffic is compromised, an "Access Denied" page will be returned.

APPENDIX A

List of categories and their identifiers. Category descriptions can be found on the website: https://www.iadmin.biz/content-filter/

Categories	
cat_id	cat_name
0	The category has not been assigned. There was a server error accessing the site, or its IP address could not be obtained.
1	Sport
2	Auto \ Moto
3	Games
4	Entertainment \ Lifestyle
5	Job Search
6	Travel \ Hotels
7	Goods \ Services
8	Music \ Video \ Images \ Torrents
9	Military \ Weapons
10	Business \ Economy
11	Education \ Science
12	Health \ Medicine
13	News \ Media
14	Industry \ Manufacturing
15	Computers \ Internet
16	Web based Email
17	Free hosting
18	Search Engines
19	Adult \ Mature \ Porno
20	Criminal
21	Anonymous proxy \ TOR \ VPN-proxy
22	Rligion \ Horoscop \ Magic
23	Social networks \ Online messaging
24	Government \ Law \ Politic
25	Kids \ School \ Family
26	Culture \ Art \ Classic
27	Advertisement \ Banners
28	Alcohol \ Tobacco
29	Illegal \ Questionable
30	Gambling
31	Hate \ Racism
32	Illegal Drugs
33	Forums \ Blogs \ Personal Sites
34	Reference

Categories	
cat_id	cat_name
35	Sex Education
36	Software Downloads
37	Money for surfing
38	Web Portals
39	Parked domains
40	Bitcoin
41	Charity
42	Bulletin Boards
43	Fashion and beauty
44	Malware \ Viruses
45	Phishing sites
46	Spyware
47	Literature \ Texts
48	Hacking \ Cracking
49	Online payments
50	Warez
51	Educational games
52	Nudism
53	Online auctions
54	Denied sites
55	Pets
56	Sects
57	Private IP
58	Humor
59	Hobby
60	Online shopping
61	Artnudes
62	Cooking \ Food \ Drink
63	Home \ Villa \ Repair
64	Design \ Architecture
65	Insurance
66	Celebrity
67	Non-profit organizations
68	Real estate
69	Foto
70	Remote Control
71	Trackers \ Counters
72	Web phone
73	Web TV

Categories	
cat_id	cat_name
74	Web radio
75	Animation
76	Online Games
77	Ethnicity
78	Agriculture \ Forestry