NetClean™ | WhiteBox™

Abusive web blocking
for ISPs

Behind every abusive image there is a child who needs your help.

Technological breakthroughs – for good and for bad

The technological breakthroughs over the last decades have been almost inconceivable. The breakthroughs have made the development of tools, instruments and services possible that would have been utterly unimaginable to even envisage, much less make real in the past. In the field of IT the technological upsurge has taken enormous proportions. The developent of the World Wide Web and the related infrastructure has fostered education, research and common knowledge. It has grown into a limitless network that supports both amusement, recreation and professional activities but nevertheless there are some inherent problems with this limitlessness.

Just like in society at large there exist malicious groups of people that take advantage of the system and uses it for criminal activities. The existence of these activities must be narrowed down as much as possible. One of these activities is the distribution of abusive images. The spreading and concesquently also the availability of material depicting sexually abused children are therefore both a social and a technological problem.

Each time this abusive material is shown, the children get abused once again. The images and videos will never disappear and will follow the victims throughout their lives due to the sustainability of Internet content. There are even commercial Internet sites that make profit in distributing abusive material. Such sites are not just illegal and deeply hurtful for the abused children but also serve as the financial engine for other criminal activites. Blocking access to these sites is therefore a vital step against a harmful industry and towards a safer world for our children.

NetClean WhiteBox™

NetClean Technologies is developing unique solutions for the protection of children on the Internet. NetClean WhiteBox™ is an extremely powerful tool for Internet Service Providers (ISP) designed to block access to Web sites containing abuse material. NetClean WhiteBox™ is a hybrid solution using BGP, packet inspection and a redirection mechanism that is robust. The solution is very flexible and can easily be deployed and managed. The benefits are many:

· Does not affect the performance in the ISP-CORE
· Very acurate, can match whole URL´s
· Easy to deploy
· No overblocking
· No proxying
· http-responses is routed the "normal" way, the WhiteBox™ sees only the http-requests.

Easy implementation

Once NetClean WhiteBox™ is set up it is very easy to implement filtering within an ISP. A few minutes of configuration of an ISP-router is all that is required as NetClean WhiteBox™ uses the Internet standard Border Gateway Protocol (BGP) to achieve the filtering.

How does it work?

NetClean WhiteBox™ uses a list of URLs to be blocked. This list is converted to a list of IP-addresses which are announced to the ISP network via BGP as host routes. Traffic destined to these IP-addresses are routed via NetClean WhiteBox™ which checks the HTTP-requests forURLs against the blocking list. If a match is made, the requestor is redirected to a URL of the ISP's choice. Otherwise the request proceeds normally without any changes for the client.

URL list flexibility

NetClean WhiteBox™ can be configured to use URL blocking lists provided by authorities within the ISP's own region. NetClean WhiteBox™ can also use lists provided by other authorities such as the one managed by the Internet Watch Foundation (IWF) in the UK. The IWF-list is included in WhiteBox™ and can be used as the default list. The IWF-list is updated twice a day.

Block exact URLs

NetClean WhiteBox™ is able to block single URLs as well as enitre sites. For example, if the list contains this URL, www.webcom/bad, this URL would be blocked, but the below URLs would still be reachable,
www.webcom/ and
www.webcom/good.

IP address checking

The IP-addresses of the URLs in the blocking list are checked often to ensure that the traffic to these sites is routed via NetClean WhiteBox™.
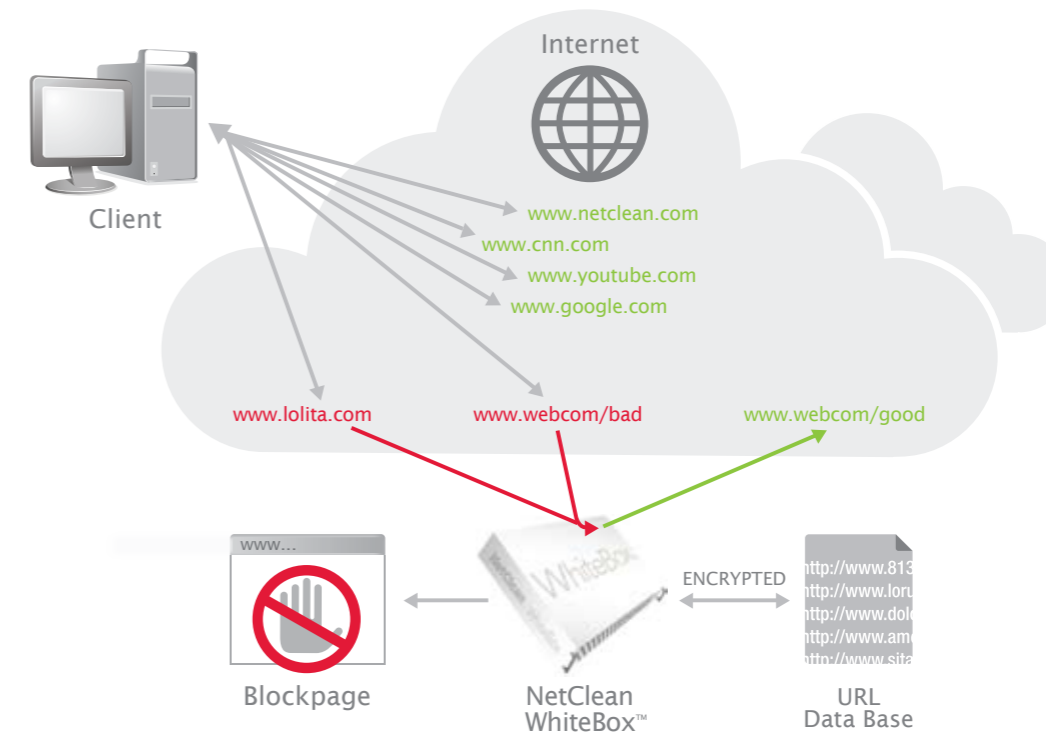
Server failures?

Although NetClean WhiteBox™ has direct access to the ISP via the BGP-setup, it will not create black holes or routing loops if it crashes for some reason (such as hardware-failure). This is due to the fact that the BGP-session will go down and the traffic will not be rerouted anymore. The only negative effect of a failure is that the filtering-service will be turned off in the ISP-network.

Dynamic reporting

NetClean WhiteBox™ makes it possible for the management to receive dynamic and flexible traffic reports.

Functional overview, highlighting the accuracy of NetClean WhiteBox™

Internet

Client

www.netclean.com
www.cnn.com
www.youtube.com
www.google.com

www.lolita.com
www.webcom/bad
www.webcom/good

ENCRYPTED

www...

Blockpage

NetClean WhiteBox™

URL Data Base

The server is designed as a filtering appliance and uses the BSD Unix variant as its operating system. It is configured via a web front-end and has a database consisting of the list of URLs that are to be blocked.
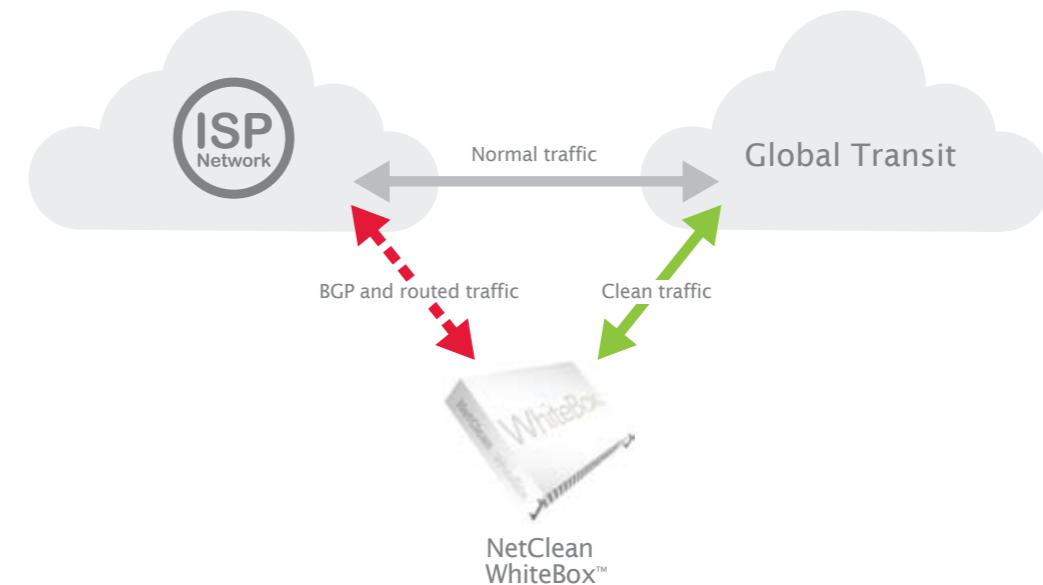
Installation

1. The servers (1U rackmounted servers) are installed in a data center and a connection to a router with a global transit is set up (either directly or via a tunnel)

2. A connection is set up between a router in the ISP network and the NetClean WhiteBox™ server (either directly or via a tunnel). BGP-peering is also set up via this connection.

3. The NetClean WhiteBox™ server distributes host routes via BGP to the ISP-CORE for the addresses obtained in Operation step 2.

Operation

1. The URLs to be blocked is loaded into the NetClean WhiteBox™ server. Please note; the filter can handle full URLs, should just part of sites be required to be blocked. The list can be automatically fetched via standard protocols such as https/ssh.

2. The server resolves the IP-address of each URL regularly to ensure that the traffic to the URLs are routed via NetClean WhiteBox™.

3. If a user within the ISP network tries to access a blocked web page, the request is routed via the NetClean WhiteBox™.

4. The NetClean WhiteBox™ server matches the HTTP requests for all URLs passing through the box, and for every match to the blocking list, a redirect is sent to an external blocking page by taking over the TCP-session of the request to the blocked URL.

5. If a HTTP request is to an URL not on the blocking list, the request passes through the NetClean White-Box™ unaltered, and the user receives the requested URL as expected. This traffic will be routed to a global tran sit which is unaware of the announced host routes to avoid routing-loops.

6. Traffic destined to other prefixes on the Internet will not be routed via NetClean WhiteBox™ and will be totally unaffected by the setup, only the host routes announced via the NetClean WhiteBox™ will be affected.

Routing setup for NetClean WhiteBox™

ISP Network

Global Transit

Normal traffic

BGP and routed traffic

Clean traffic

NetClean WhiteBox™

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Why NetClean WhiteBox™?

A NetClean system for ISPs
Powerful tool for ISPs, designed to block access to web sites containing Abusive Imagery.

Exact blocking
It blocks only the portion of the site that is required to be blocked.

Flexible
Configuration possible to use any URL blocking list containing child abuse images.

Quick and Easy
The system implementation require small or no changes in the ISP-Core due to the use of Border Gateway Protocol (BGP).

Dynamic reporting
Dynamic and flexible traffic reports.

No proxying
All non-blocked traffic is passed unaltered.