

# Sanewall Manual

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**Making sense of firewalling using Sanewall**

Sanewall Team

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# Chapter 1

## Introduction

### 1.1 Latest version

The latest version of this document will always be available [here](#). There are PDF and HTML versions.

### 1.2 Who should read this manual

This manual is aimed at those who wish to create and maintain firewalls with Sanewall.

There is a lack of basic and tutorial information currently. Sanewall is a fork of FireHOL and its documentation can be used to learn the configuration language. See the [FireHOL website](#).

### 1.3 Where to get help

The [Sanewall website](#).

The [mailing lists and archives](#).

The package comes with a complete set of manpages, a README and a brief INSTALL guide.

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## **Chapter 2**

# **Sanewall Reference**

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## 2.1 Sanewall program: sanewall

### Name

sanewall — an easy to use but powerful iptables stateful firewall

### Synopsis

```
sanewall
sudo -E sanewall panic [IP]
sanewall command [ -- conf-arg... ]
sanewall CONFIGFILE [start | debug | try] [ -- conf-arg... ]
```

### Description

Running **sanewall** invokes **iptables(8)** to manipulate your firewall.

Run without any arguments, **sanewall** will present some help on usage.

When given *CONFIGFILE*, **sanewall** will use the named file instead of `/etc/sanewall/sanewall.conf` as its configuration. If no command is given, **sanewall** assumes `try`.

It is possible to pass arguments for use by the configuration file separating any *conf-arg* values from the rest of the arguments with `--`. The arguments are accessible in the configuration using standard **bash(1)** syntax e.g. \$1, \$2, etc.

Sanewall is a fork of **FireHOL**. existing FireHOL configurations should be compatible with Sanewall, but please see the section called “[Compatibility](#)” for any differences in behaviour.

### Panic

To block all communication, invoke **sanewall** with the `panic` command.

Sanewall removes all rules from the running firewall and then DROPS all traffic on all iptables tables (mangle, nat, filter) and pre-defined chains (PREROUTING, INPUT, FORWARD, OUTPUT, POSTROUTING).

DROPIng is not done by changing the default policy to DROP, but by adding one rule per table/chain to drop all traffic. This allows systems which do not reset all the chains to ACCEPT when starting to function correctly.

When activating panic mode, Sanewall checks for the existence of the `SSH_CLIENT` shell environment variable, which is set by `ssh`. If it finds this, then panic mode will allow the established SSH connection specified in this variable to operate.

---

**Note**

In order for Sanewall to see the environment variable you must ensure that it is preserved. For **sudo** use the `-E` and for **su** omit the `-` (minus sign).

---

If `SSH_CLIENT` is not set, the `IP` after the `panic` argument allows you to give an IP address for which all established connections between the IP address and the host in `panic` will be allowed to continue.

**Commands****start, restart**

Activates the firewall configuration from `/etc/sanewall/sanewall.conf`.

Use of the term `restart` is allowed for compatibility with common `init` implementations.

**try** Activates the firewall, waiting for the user to type the word **commit**. If this word is not typed within 30 seconds, the previous firewall is restored.

**stop**

Stops a running `iptables` firewall by clearing all of the tables and chains and setting the default policies to `ACCEPT`. This will allow all traffic to pass unchecked.

**condrestart**

Starts the Sanewall firewall only if it is not already active. It does not detect a modified configuration file, only verifies that Sanewall has been started in the past and not stopped yet.

**status**

Shows the running firewall, using `/sbin/iptables -nxvL | less`.

**save**

Start the firewall and then save it using `/sbin/iptables-save` to `/etc/sysconfig/iptables`.

The required kernel modules are saved to an executable shell script `/var/spool/sanewall/last_save_modules.sh`, which can be called during boot if a firewall is to be restored.

---

**Note**

External changes may cause a firewall restored after a reboot to not work as intended where starting the firewall with Sanewall will work.

This is because as part of starting a firewall, Sanewall checks some changeable values. For instance the current kernel configuration is checked (for client port ranges), and RPC servers are queried (to allow correct functioning of the NFS service).

---

**debug**

Parses the configuration file but instead of activating it, Sanewall shows the generated `iptables` statements.

---

**explain**

Enters an interactive mode where Sanewall accepts normal configuration commands and presents the generated iptables commands for each of them, together with some reasoning for its purpose

Additionally, Sanewall automatically generates a configuration script based on the successful commands given.

Some extra commands are available in `explain` mode.

SPECIAL COMMANDS IN EXPLAIN MODE

**help**

Present some help

**show**

Present the generated configuration

**quit**

Exit interactive mode and quit

**helpme, wizard**

Tries to guess the Sanewall configuration needed for the current machine.

Sanewall will not stop or alter the running firewall. The configuration file is given in the standard output of `sAnewall`, thus `sanewall helpme > /tmp/sanewall.conf` will produce the output in `/tmp/sanewall.conf`.

The generated Sanewall configuration *must* be edited before use on your systems. You are required to take a number of decisions; the comments in the generated file will instruct you in the choices you must make.

**Compatibility**

Sanewall should be largely compatible with all existing FireHOL configurations.

If you are using any variable starting "FIREHOL\_" in your configuration, you will need to rename it to "SANEWALL\_". See [control variables: sanewall-variables\(5\)](#) for a list of all variables used to control Sanewall.

In addition the default values of SANEWALL\_\*\_ACTIVATION\_POLICY, for each of INPUT, OUTPUT and FORWARD have been changed to DROP. See the entries under [control variables: sanewall-variables\(5\)](#) for details and how to obtain the original behaviour.

**Files**

`/etc/sanewall/sanewall.conf`

---

**See Also**

[Sanewall configuration: sanewall.conf\(5\)](#)

[control variables: sanewall-variables\(5\)](#)

[Sanewall Manual: sanewall-manual.pdf](#)

[Sanewall Online Documentation](#)

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## 2.2 Sanewall configuration: sanewall.conf

### Name

sanewall.conf — Sanewall configuration file

### Description

`/etc/sanewall/sanewall.conf` is the default configuration file for [Sanewall program: sanewall\(1\)](#). It defines the stateful firewall that will be produced.

A configuration file starts with an optional version indicator which looks like this:

```
version 5
```

See [version config helper: sanewall-version\(5\)](#) for full details.

A configuration file contains one or more **interface** definitions, which look like this:

```
interface eth0 lan
  client all accept # This host can access any remote service
  server ssh accept # Remote hosts can access SSH on local server
  # ...
```

The above definition has name "lan" and specifies a network interface (eth0). A definition may contain zero or more subcommands. See [interface definition: sanewall-interface\(5\)](#) for full details.

A configuration file contains one or more **router** definitions, which look like this:

```
DMZ_IF=eth0
WAN_IF=eth1
router wan2dmz inface ${WAN_IF} outface ${DMZ_IF}
  route http accept # Hosts on WAN may access HTTP on hosts in DMZ
  server ssh accept # Hosts on WAN may access SSH on hosts in DMZ
  client pop3 accept # Hosts in DMZ may access POP3 on hosts on WAN
  # ...
```

The above definition has name "wan2dmz" and specifies incoming and outgoing network interfaces (eth1 and eth0) using variables. A definition may contain zero or more subcommands. Note that a router is not required to specify network interfaces to operate on. See [router definition: sanewall-router\(5\)](#) for full details.

It is simple to add extra service definitions which can then be used in the same way as those provided as standard. See the section called "[Adding Services](#)".

The configuration file is parsed as a **bash(1)** script, allowing you to set up and use variables, flow control and external commands.

---

Special [control variables](#): [sanewall-variables\(5\)](#) may be set up and used outside of any definition as can the functions in the section called “[Configuration Helper Commands](#)” and the section called “[Helper Commands](#)”.

## Variables Available

The following variables are made available in the Sanewall configuration file and can be accessed as `${VARIABLE}`.

### UNROUTABLE\_IPS

This variable includes the IPs from both `PRIVATE_IPS` and `RESERVED_IPS`. It is useful to restrict traffic on interfaces and routers accepting Internet traffic, for example:

```
interface eth0 internet src not "${UNROUTABLE_IPS}"
```

### PRIVATE\_IPS

This variable includes all the IP addresses defined as Private or Test by [RFC 3330](#).

You can override the default values by creating a file called `/etc/sanewall/PRIVATE_IPS`.

### RESERVED\_IPS

This variable includes all the IP addresses defined by [IANA](#) as reserved.

You can override the default values by creating a file called `/etc/sanewall/RESERVED_IPS`.

Now that IPv4 address space has all been allocated there is very little reason that this value will need to change in future.

### MULTICAST\_IPS

This variable includes all the IP addresses defined as Multicast by [RFC 3330](#).

You can override the default values by creating a file called `/etc/sanewall/MULTICAST_IPS`.

## Adding Services

To define new services you add the appropriate lines before using them later in the configuration file.

The following are required:

```
server_mysevice_ports="proto/sports"  
client_mysevice_ports="cports"
```

*proto* is anything [iptables\(8\)](#) accepts e.g. "tcp", "udp", "icmp", including numeric protocol values.

*sports* is the ports the server is listening at. It is a space-separated list of port numbers, names and ranges (from:to). The keyword *any* will match any server port.

---

*cports* is the ports the client may use to initiate a connection. It is a space-separated list of port numbers, names and ranges (from:to). The keyword *any* will match any client port. The keyword *default* will match default client ports. For the local machine (e.g. a **client** within an **interface**) it resolves to **sysctl** variable `net.ipv4.ip_local_port_range` (or `/proc/sys/net/ipv4/ip_local_port_range`). For a remote machine (e.g. a **client** within an **interface** or anything in a **router**) it resolves to the variable `DEFAULT_CLIENT_PORTS` (see [control variables: sanewall-variables\(5\)](#)).

The following are optional:

```
require_myservice_modules="modules"  
require_myservice_nat_modules="nat-modules"
```

The named kernel modules will be loaded when the definition is used. The NAT modules will only be loaded if `SANEWALL_NAT` is non-zero (see [control variables: sanewall-variables\(5\)](#)).

For example, for a service named `daftnet` that listens at two ports, port 1234 TCP and 1234 UDP where the expected client ports are the default random ports a system may choose, plus the same port numbers the server listens at, with further dynamic ports requiring kernel modules to be loaded:

```
version 5  
  
server_daftnet_ports="tcp/1234 udp/1234"  
client_daftnet_ports="default 1234"  
require_daftnet_modules="ip_conntrack_daftnet"  
require_daftnet_nat_modules="ip_nat_daftnet"  
  
interface eth0 lan0  
    server daftnet accept  
  
interface eth1 lan1  
    client daftnet reject  
  
router lan2lan inface eth0 outface eth1  
    route daftnet accept
```

Where multiple ports are provided (as per the example), Sanewall simply determines all of the combinations of client and server ports and generates multiple iptables statements to match them.

To create more complex rules, or stateless rules, you will need to create a bash function prefixed `rules_` e.g. `rules_myservice`. The best reference is the many such functions in the main **sanewall** executable.

When adding a service which uses modules, or via a custom function, you may also wish to include the following:

```
ALL_SHOULD_ALSO_RUN="{ALL_SHOULD_ALSO_RUN} myservice"
```

which will ensure your service is set-up correctly as part of the **all** service.

---

**Note**

To allow definitions to be shared you can instead create files and install them in the `/etc/sanewall/services` directory with a `.conf` extension.

The first line must read:

```
FHVER 1:213
```

1 is the service definition API version. It will be changed if the API is ever modified. 213 refers to a FireHOL version and is retained for compatibility.

Sanewall will refuse to run if the API version does not match the expected one. The minor number is ignored.

At version 1:213, the API and therefore service definitions are compatible with FireHOL.

---

**Definitions**

[interface definition: sanewall-interface\(5\)](#)

[router definition: sanewall-router\(5\)](#)

**Subcommands**

[policy command: sanewall-policy\(5\)](#)

[protection command: sanewall-protection\(5\)](#)

[server, route commands: sanewall-server\(5\)](#)

[client command: sanewall-client\(5\)](#)

[group command: sanewall-group\(5\)](#)

**Helper Commands**

These helpers can be used in **interface** and **router** definitions as well as before them.

[iptables helper: sanewall-iptables\(5\)](#)

[masquerade helper: sanewall-masquerade\(5\)](#)

This helper can be used in **router** definitions as well as before any **router** or **interface**.

[tcpmss helper: sanewall-tcpmss\(5\)](#)

**Configuration Helper Commands**

These helpers should only be used outside of **interface** and **router** definitions (i.e. before the first interface is defined).

---

version config helper: [sanewall-version\(5\)](#)  
action config helper: [sanewall-action\(5\)](#)  
blacklist config helper: [sanewall-blacklist\(5\)](#)  
classify config helper: [sanewall-classify\(5\)](#)  
connmark config helper: [sanewall-connmark\(5\)](#)  
dscp config helper: [sanewall-dscp\(5\)](#)  
mac config helper: [sanewall-mac\(5\)](#)  
mark config helper: [sanewall-mark\(5\)](#)  
nat, snat, dnat, redirect config helpers: [sanewall-nat\(5\)](#)  
transparent\_proxy, transparent\_squid helpers: [sanewall-transparent\\_proxy\(5\)](#)  
tos config helper: [sanewall-tos\(5\)](#)  
tosfix config helper: [sanewall-tosfix\(5\)](#)

## See Also

Sanewall program: [sanewall\(1\)](#)  
control variables: [sanewall-variables\(5\)](#)  
services list: [sanewall-services\(5\)](#)  
actions for rules: [sanewall-actions\(5\)](#)  
Sanewall Manual: [sanewall-manual.pdf](#)  
[Sanewall Online Documentation](#)

---

## 2.3 control variables: sanewall-variables

### Name

sanewall-variables — Variables controlling Sanewall

### Description

There are a number of variables that control the behaviour of Sanewall.

All variables may be set in the main Sanewall configuration file `/etc/sanewall/sanewall.conf`.

Variables which affect the runtime but not the created firewall may also be set as environment variables before running **sanewall**. These can change the default values but will be overwritten by values set in the configuration file. If a variable can be set by an environment variable it is specified below.

Sanewall also sets some variables before processing the configuration file which you can use as part of your configuration. These are described in [Sanewall configuration: sanewall.conf\(5\)](#).

### Variables

#### **DEFAULT\_INTERFACE\_POLICY**

This variable controls the default action to be taken on traffic not matched by any rule within an interface. It can be overridden using [policy command: sanewall-policy\(5\)](#).

Packets that reach the end of an interface without an action of return or accept are logged. You can control the frequency of this logging by altering `SANEWALL_LOG_FREQUENCY`.

Default:

```
DEFAULT_INTERFACE_POLICY="DROP"
```

Example:

```
DEFAULT_INTERFACE_POLICY="REJECT"
```

#### **DEFAULT\_ROUTER\_POLICY**

This variable controls the default action to be taken on traffic not matched by any rule within a router. It can be overridden using [policy command: sanewall-policy\(5\)](#).

Packets that reach the end of a router without an action of return or accept are logged. You can control the frequency of this logging by altering `SANEWALL_LOG_FREQUENCY`.

Default:

```
DEFAULT_ROUTER_POLICY="RETURN"
```

---

Example:

```
DEFAULT_ROUTER_POLICY="REJECT"
```

#### **UNMATCHED\_INPUT\_POLICY, UNMATCHED\_OUTPUT\_POLICY, UNMATCHED\_FORWARD\_POLICY**

These variables control the default action to be taken on traffic not matched by any interface or router definition that was incoming, outgoing or for forwarding respectively. Any supported value from [actions for rules: sanewall-actions\(5\)](#) may be set.

All packets that reach the end of a chain are logged, regardless of these settings. You can control the frequency of this logging by altering `SANEWALL_LOG_FREQUENCY`.

Defaults:

```
UNMATCHED_INPUT_POLICY="DROP"  
UNMATCHED_OUTPUT_POLICY="DROP "  
UNMATCHED_FORWARD_POLICY="DROP "
```

Example:

```
UNMATCHED_INPUT_POLICY="REJECT "  
UNMATCHED_OUTPUT_POLICY="REJECT "  
UNMATCHED_FORWARD_POLICY="REJECT "
```

#### **SANEWALL\_INPUT\_ACTIVATION\_POLICY, SANEWALL\_OUTPUT\_ACTIVATION\_POLICY, SANEWALL\_FORWARD\_ACTIVATION\_POLICY, SANEWALL\_ESTABLISHED\_ACTIVATION\_ACCEPT**

These variables control the default action to be taken on traffic during firewall activation for incoming, outgoing and forwarding respectively. Acceptable values are ACCEPT, DROP and REJECT. They may be set as environment variables.

During activation, Sanewall creates temporary rules to ALLOW already established traffic (new connections honour the appropriate variable). Set `SANEWALL_ESTABLISHED_ACTIVATION_ACCEPT` to 0 to prevent this.

Unlike **FireHOL** which defaults all values to ACCEPT, **Sanewall** defaults all values to DROP.

If you wish to reinstate the old **FireHOL** behaviour, set these values to ACCEPT. Please do not do so if you are using `all` or `any` to match traffic; connections established during activation will continue even if they would not be allowed once the firewall is established.

Defaults:

```
SANEWALL_INPUT_ACTIVATION_POLICY="DROP "  
SANEWALL_OUTPUT_ACTIVATION_POLICY="DROP "  
SANEWALL_FORWARD_ACTIVATION_POLICY="DROP "  
SANEWALL_ESTABLISHED_ACTIVATION_ACCEPT="1 "
```

Example:

---

```
UNMATCHED_INPUT_POLICY="ACCEPT"
UNMATCHED_OUTPUT_POLICY="ACCEPT"
UNMATCHED_FORWARD_POLICY="ACCEPT"
SANEWALL_ESTABLISHED_ACTIVATION_ACCEPT="0"
```

**SANEWALL\_LOG\_MODE**

This variable controls method that Sanewall uses for logging.

Acceptable values are LOG (normal syslog) and ULOG (netfilter ulogd). When ULOG is selected, SANEWALL\_LOG\_LEVEL is ignored.

Default:

```
SANEWALL_LOG_MODE="LOG"
```

Example:

```
SANEWALL_LOG_MODE="ULOG"
```

To see the available options run: `/sbin/iptables -j LOG --help` or `/sbin/iptables -j ULOG --help`

**SANEWALL\_LOG\_LEVEL**

This variable controls the level at which events will be logged to syslog.

To avoid packet logs appearing on your console you should ensure klogd only logs traffic that is more important than that produced by Sanewall.

Use the following option to choose an iptables log level (alpha or numeric) which is higher than the `-c` of klogd.

iptables	klogd	description
emerg (0)	0	system is unusable
alert (1)	1	action must be taken immediately
crit (2)	2	critical conditions
error (3)	3	error conditions
warning (4)	4	warning conditions
notice (5)	5	normal but significant condition
info (6)	6	informational
debug (7)	7	debug-level messages

Table 2.1: iptables/klogd levels

**Note**

The default for klogd is generally to log everything (7 and lower) and the default level for iptables is to log as warnings (4).

**SANEWALL\_LOG\_OPTIONS**

This variable controls the way in which events will be logged to syslog.

Default:

```
SANEWALL_LOG_OPTIONS="--log-level warning"
```

Example:

```
SANEWALL_LOG_OPTIONS="--log-level info \  
--log-tcp-options --log-ip-options"
```

To see the available options run: `/sbin/iptables -j LOG --help`

**SANEWALL\_LOG\_FREQUENCY, SANEWALL\_LOG\_BURST**

These variables control the frequency that each logging rule will write events to syslog. `SANEWALL_LOG_FREQUENCY` is set to the maximum average frequency and `SANEWALL_LOG_BURST` specifies the maximum initial number.

Default:

```
SANEWALL_LOG_FREQUENCY="1/second"  
SANEWALL_LOG_BURST="5"
```

Example:

```
SANEWALL_LOG_FREQUENCY="30/minute"  
SANEWALL_LOG_BURST="2"
```

To see the available options run: `/sbin/iptables -m limit --help`

**SANEWALL\_LOG\_PREFIX**

This value is added to the contents of each logged line for easy detection of Sanewall lines in the system logs. By default it is empty.

Default:

```
SANEWALL_LOG_PREFIX=""
```

Example:

```
SANEWALL_LOG_PREFIX="SANEWALL:"
```

**SANEWALL\_DROP\_INVALID**

If set to 1, this variable causes Sanewall to drop all packets matched as `INVALID` in the `iptables(8)` connection tracker.

---

**Note**

You can use [protection command: sanewall-protection\(5\)](#) to control matching of `INVALID` packets and others on per-interface and per-router basis.

---

**Default:**

```
SANEWALL_DROP_INVALID="0"
```

**Example:**

```
SANEWALL_DROP_INVALID="1"
```

**DEFAULT\_CLIENT\_PORTS**

This variable controls the port range that is used when a remote client is specified. For clients on the local host, Sanewall finds the exact client ports by querying the kernel options.

**Default:**

```
DEFAULT_CLIENT_PORTS="1000:65535"
```

**Example:**

```
DEFAULT_CLIENT_PORTS="0:65535"
```

**SANEWALL\_NAT**

If set to 1, this variable causes Sanewall to load the NAT kernel modules. If you make use of the NAT helper commands, the variable will be set to 1 automatically. It may be set as an environment variable.

**Default:**

```
SANEWALL_NAT="0"
```

**Example:**

```
SANEWALL_NAT="1"
```

**SANEWALL\_ROUTING**

If set to 1, this variable causes Sanewall to enable routing in the kernel. If you make use of **router** definitions or certain helper commands the variable will be set to 1 automatically. It may be set as an environment variable.

**Default:**

```
SANEWALL_ROUTING="0"
```

**Example:**

```
SANEWALL_ROUTING="1"
```

---

**SANEWALL\_AUTOSAVE**

This variable specifies the file that will be created when [Sanewall program: sanewall\(1\)](#) is called with the `save` argument. It may be set as an environment variable.

If the variable is empty, Sanewall will try to detect where to save the file. Currently `/etc/sysconfig/iptables` (RedHat) and `/var/lib/iptables/autosave` (Debian) are tried in order, based on the existence of the directory.

Default:

```
SANEWALL_AUTOSAVE=""
```

Example:

```
SANEWALL_AUTOSAVE="/tmp/sanewall-saved.txt"
```

**SANEWALL\_LOAD\_KERNEL\_MODULES**

If set to 0, this variable forces Sanewall to not load any kernel modules. It is needed only if the kernel has modules statically included and in the rare event that Sanewall cannot access the kernel configuration. It may be set as an environment variable.

Default:

```
SANEWALL_LOAD_KERNEL_MODULES="1"
```

Example:

```
SANEWALL_LOAD_KERNEL_MODULES="0"
```

**SANEWALL\_TRUST\_LOOPBACK**

If set to 0, the loopback device "lo" will not be trusted and you can write standard firewall rules for it.

**Warning**

If you do not set up appropriate rules, local processes will not be able to communicate with each other which can result in serious breakages.

---

By default "lo" is trusted and all INPUT and OUTPUT traffic is accepted (forwarding is not included).

Default:

```
SANEWALL_TRUST_LOOPBACK="1"
```

Example:

```
SANEWALL_TRUST_LOOPBACK="0"
```

---

**SANEWALL\_DROP\_ORPHAN\_TCP\_ACK\_FIN**

If set to 1, Sanewall will drop all TCP connections with ACK FIN set without logging them.

In busy environments the iptables connection tracker removes connection tracking list entries as soon as it receives a FIN. This makes the ACK FIN appear as an invalid packet which will normally be logged by Sanewall.

Default:

```
SANEWALL_DROP_ORPHAN_TCP_ACK_FIN="0"
```

Example:

```
SANEWALL_DROP_ORPHAN_TCP_ACK_FIN="1"
```

**WAIT\_FOR\_IFACE**

If set to the name of a network device (e.g. eth0), Sanewall will wait until the device is up (or until 60 seconds have elapsed) before continuing.

---

**Note**

This variable can *only* be set as an environment variable, since it determines when the main configuration file will be processed.

---

A device does not need to be up in order to have firewall rules created for it, so this option should only be used if you have a specific need to wait (e.g. the network must be queried to determine the hosts or ports which will be firewalled).

Default:

```
WAIT_FOR_IFACE=""
```

Example:

```
WAIT_FOR_IFACE="eth0"
```

**See also**

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[nat, snat, dnat, redirect config helpers: sanewall-nat\(5\)](#)

[administration tool for IPv4 firewalls: iptables\(8\)](#)

---

## 2.4 interface definition: sanewall-interface

### Name

sanewall-interface — create an interface definition

### Synopsis

```
interface real-interface name [rule-params]
```

### Description

An **interface** definition creates a firewall for protecting the host on which the firewall is running.

The default policy is DROP, so that if no subcommands are given, the firewall will just drop all incoming and outgoing traffic using this interface.

The behaviour of the defined interface is controlled by adding subcommands (listed in the section called “[See Also](#)”).

---

#### Note

Forwarded traffic is never matched by the **interface** rules, even if it was originally destined for the firewall but was redirected using NAT. Any traffic to be passed through the firewall for whatever reason must be in a **router** (see [router definition: sanewall-router\(5\)](#)).

---

### Parameters

#### ***real-interface***

This is the interface name as shown by **ip link show**. Generally anything **iptables** accepts is valid.

The + (plus sign) after some text will match all interfaces that start with this text.

Multiple interfaces may be specified by enclosing them within quotes, delimited by spaces for example:

```
interface "eth0 eth1 ppp0" myname
```

#### ***name***

This is a name for this interface. You should use short names (10 characters maximum) without spaces or other symbols.

A name should be unique for all Sanewall interface and router definitions.

---

***rule-params***

The set of rule parameters to further restrict the traffic that is matched to this interface.

See [optional rule parameters: sanewall-rule-params\(5\)](#) for information on the parameters that can be used. Some examples:

```
interface eth0 intranet src 192.0.2.0/24
interface eth0 internet src not "${UNROUTABLE_IPS}"
```

See [Sanewall configuration: sanewall.conf\(5\)](#) for an explanation of ``${UNROUTABLE_IPS}``.

**See Also**

[Sanewall program: sanewall\(1\)](#)  
[Sanewall configuration: sanewall.conf\(5\)](#)  
[router definition: sanewall-router\(5\)](#)  
[policy command: sanewall-policy\(5\)](#)  
[protection command: sanewall-protection\(5\)](#)  
[client command: sanewall-client\(5\)](#)  
[server, route commands: sanewall-server\(5\)](#)  
[group command: sanewall-group\(5\)](#)  
[iptables helper: sanewall-iptables\(5\)](#)  
[masquerade helper: sanewall-masquerade\(5\)](#)

---

## 2.5 router definition: sanewall-router

### Name

sanewall-router — create a router definition

### Synopsis

```
router name [rule-params]
```

### Description

A **router** definition consists of a set of rules for traffic passing through the host running the firewall.

The default policy for router definitions is RETURN, meaning packets are not dropped by any particular router. Packets not matched by any router are dropped at the end of the firewall.

The behaviour of the defined router is controlled by adding subcommands (listed in the section called “[See Also](#)”).

### Parameters

#### *name*

This is a name for this router. You should use short names (10 characters maximum) without spaces or other symbols.

A name should be unique for all Sanewall interface and router definitions.

#### *rule-params*

The set of rule parameters to further restrict the traffic that is matched to this router.

See [optional rule parameters: sanewall-rule-params\(5\)](#) for information on the parameters that can be used. Some examples:

```
router mylan inface ppp+ outface eth0 src not ${UNROUTABLE_IPS}
router myrouter
```

See [Sanewall configuration: sanewall.conf\(5\)](#) for an explanation of `${UNROUTABLE_IPS}`.

---

## Working with routers

Routers create stateful **iptables** rules which match traffic in both directions.

To match some client or server traffic, the input/output interface or source/destination of the request must be specified. All `inface/outface` and `src/dst` [optional rule parameters: sanewall-rule-params\(5\)](#) can be given on the router statement (in which case they will be applied to all subcommands for the router) or just within the subcommands of the router.

For example, to define a router which matches requests from any PPP interface and destined for eth0, and on this allowing HTTP servers (on eth0) to be accessed by clients (from PPP) and SMTP clients (from eth0) to access any servers (on PPP):

```
router mylan inface ppp+ outface eth0
  server http accept
  client smtp accept
```

---

### Note

The `client` subcommand reverses any optional rule parameters passed to the **router**, in this case the `inface` and `outface`.

---

Equivalently, to define a router which matches all forwarded traffic and within the the router allow HTTP servers on eth0 to be accessible to PPP and any SMTP servers on PPP to be accessible from eth0:

```
router mylan
  server http accept inface ppp+ outface eth0
  server smtp accept inface eth0 outface ppp
```

---

### Note

In this instance two `server` subcommands are used since there are no parameters on the router to reverse. Avoid the use of the `client` subcommand in routers unless the inputs and outputs are defined as part of the router.

---

Any number of routers can be defined and the traffic they match can overlap. Since the default policy is RETURN, any traffic that is not matched by any rules in one will proceed to the next, in order, until none are left.

---

**See Also**

Sanewall program: [sanewall\(1\)](#)  
Sanewall configuration: [sanewall.conf\(5\)](#)  
interface definition: [sanewall-interface\(5\)](#)  
policy command: [sanewall-policy\(5\)](#)  
protection command: [sanewall-protection\(5\)](#)  
client command: [sanewall-client\(5\)](#)  
server, route commands: [sanewall-server\(5\)](#)  
group command: [sanewall-group\(5\)](#)  
iptables helper: [sanewall-iptables\(5\)](#)  
masquerade helper: [sanewall-masquerade\(5\)](#)  
tcpmss helper: [sanewall-tcpmss\(5\)](#)

---

## 2.6 policy command: sanewall-policy

### Name

sanewall-policy — set default action for a definition

### Synopsis

*policy action*

### Description

The **policy** subcommand defines the default policy for an interface or router.

The *action* can be any of the actions listed in [actions for rules: sanewall-actions\(5\)](#).

---

#### Note

Change the default policy of a router only if you understand clearly what will be matched by the router statement whose policy is being changed.

It is common to define overlapping router definitions. Changing the policy to anything other than the default `return` may cause strange results for your configuration.



#### Warning

Do not set a policy to `accept` unless you fully trust all hosts that can reach the interface. Sanewall CANNOT create valid "accept by default" firewalls. See this [FireHOL bug report](#) for some more information and history.

---

### See Also

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[interface definition: sanewall-interface\(5\)](#)

[actions for rules: sanewall-actions\(5\)](#)

---

## 2.7 protection command: sanewall-protection

### Name

sanewall-protection — add extra protections to a definition

### Synopsis

```
protection [reverse] flood-protection-type [requests/period [burst]]
```

```
protection [reverse] strong [requests/period [burst]]
```

```
protection [reverse] bad-packets | packet-protection-type
```

### Description

The **protection** subcommand sets protection rules on an interface or router.

Flood protections honour the options `requests/period` and `burst`. They are used to limit the rate of certain types of traffic.

The default rate Sanewall uses is 100 operations per second with a burst of 50. Run **iptables -m limit --help** for more information.

The protection type `strong` will switch on all protections (both packet and flood protections) except `all-floods`. It has aliases `full` and `all`.

The protection type `bad-packets` will switch on all packet protections but not flood protections.

You can specify multiple protection types by using multiple **protection** commands or in a single command by enclosing the types in quotes.

---

#### Note

On a router, protections are normally set up on *iface*.

The `reverse` option will set up the protections on *outface*. You must use it as the first keyword.

---

### Packet protection types

#### invalid

Drops all incoming invalid packets, as detected INVALID by the connection tracker.

See also `SANEWALL_DROP_INVALID` in [control variables: sanewall-variables\(5\)](#) which allows setting this function globally.

---

**fragments**

Drops all packet fragments.

This rule will probably never match anything since **iptables(8)** reconstructs all packets automatically before the firewall rules are processed whenever connection tracking is running.

**new-tcp-w/o-syn**

Drops all TCP packets that initiate a socket but have not got the SYN flag set.

**malformed-xmas**

Drops all TCP packets that have all TCP flags set.

**malformed-null**

Drops all TCP packets that have all TCP flags unset.

**malformed-bad**

Drops all TCP packets that have illegal combinations of TCP flags set.

**Flood protection types****icmp-floods [requests/period [burst]]**

Allows only a certain amount of ICMP echo requests.

**syn-floods [requests/period [burst]]**

Allows only a certain amount of new TCP connections.

Be careful to not set the rate too low as the rule is applied to all connections regardless of their final result (rejected, dropped, established, etc).

**all-floods [requests/period [burst]]**

Allows only a certain amount of new connections.

Be careful to not set the rate too low as the rule is applied to all connections regardless of their final result (rejected, dropped, established, etc).

**Examples**

```
protection strong
protection "invalid new-tcp-w/o-syn"
protection syn-floods 90/sec 40
```

## Bugs

When using multiple types in a single command, if the quotes are forgotten, incorrect rules will be generated without warning.

When using multiple types in a single command, Sanewall will silently ignore any types that come after a group type (`bad-packets`, `strong` and its aliases). Only use group types on their own line.

## See Also

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[interface definition: sanewall-interface\(5\)](#)

[router definition: sanewall-router\(5\)](#)

---

## 2.8 server, route commands: sanewall-server

### Name

sanewall-server, sanewall-route — accept requests to a service

### Synopsis

```
server service action [rule-params]
```

```
route service action [rule-params]
```

### Description

The **server** subcommand defines a server of a service on an interface or router. Any *rule-params* given to a parent interface or router are inherited by the server.

For Sanewall a server is the destination of a request. Even though this is more complex for some multi-socket services, to Sanewall a server always accepts requests.

The **route** subcommand is an alias for **server** which may only be used in routers.

The *service* parameter is one of the supported service names from [services list: sanewall-services\(5\)](#). Multiple services may be specified, space delimited in quotes.

The *action* can be any of the actions listed in [actions for rules: sanewall-actions\(5\)](#).

The *rule-params* define a set of rule parameters to further restrict the traffic that is matched to this service. See [optional rule parameters: sanewall-rule-params\(5\)](#) for more details.

### Examples

```
server smtp accept
server "smtp pop3" accept
server smtp accept src 192.0.2.1
server smtp accept log "mail packet" src 192.0.2.1
```

**See Also**

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[interface definition: sanewall-interface\(5\)](#)

[router definition: sanewall-router\(5\)](#)

[services list: sanewall-services\(5\)](#)

[actions for rules: sanewall-actions\(5\)](#)

[optional rule parameters: sanewall-rule-params\(5\)](#)

---

## 2.9 client command: sanewall-client

### Name

sanewall-client — accept replies from a service

### Synopsis

```
client service action [rule-params]
```

### Description

The **client** subcommand defines a client of a service on an interface or router. Any `rule-params` given to a parent interface or router are inherited by the client, but are reversed.

For Sanewall a client is the source of a request. Even though this is more complex for some multi-socket services, to Sanewall a client always initiates the connection.

The `service` parameter is one of the supported service names from [services list: sanewall-services\(5\)](#). Multiple services may be specified, space delimited in quotes.

The `action` can be any of the actions listed in [actions for rules: sanewall-actions\(5\)](#).

The `rule-params` define a set of rule parameters to further restrict the traffic that is matched to this service. See [optional rule parameters: sanewall-rule-params\(5\)](#) for more details.

### Examples

```
client smtp accept
client "smtp pop3" accept
client smtp accept src 192.0.2.1
client smtp accept log "mail packet" src 192.0.2.1
```

**See Also**

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[interface definition: sanewall-interface\(5\)](#)

[router definition: sanewall-router\(5\)](#)

[services list: sanewall-services\(5\)](#)

[actions for rules: sanewall-actions\(5\)](#)

[optional rule parameters: sanewall-rule-params\(5\)](#)

---

## 2.10 group command: sanewall-group

### Name

sanewall-group — group commands with common options

### Synopsis

```
group with [rule-params]  
group end
```

### Description

The **group** command allows you to group together multiple **client** and **server** commands.

Grouping commands with common options (see [optional rule parameters: sanewall-rule-params\(5\)](#)) allows the option values to be checked only once in the generated firewall rather than once per service, making it more efficient.

Nested groups may be used.

### Examples

This:

```
interface any world  
  client all accept  
  server http accept  
  
  # Provide these services to trusted hosts only  
  server "ssh telnet" accept src "192.0.2.1 192.0.2.2"
```

can be replaced to produce a more efficient firewall by this:

```
interface any world  
  client all accept  
  server http accept  
  
  # Provide these services to trusted hosts only  
  group with src "192.0.2.1 192.0.2.2"  
    server ssh telnet  
    server ssh accept  
  group end
```

**See Also**

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[interface definition: sanewall-interface\(5\)](#)

[router definition: sanewall-router\(5\)](#)

[optional rule parameters: sanewall-rule-params\(5\)](#)

---

## 2.11 version config helper: sanewall-version

### Name

sanewall-version — set version number of configuration file

### Synopsis

```
version 5
```

### Description

The **version** helper command states the configuration file version.

If the value passed is newer than the running version of Sanewall supports, Sanewall will not run.

You do not have to specify a version number for a configuration file, but by doing so you will prevent Sanewall trying to process a file which it cannot handle.

The value that Sanewall expects is increased every time that the configuration file format changes.

### See Also

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

---

## 2.12 action config helper: sanewall-action

### Name

sanewall-action — set up custom filter actions

### Synopsis

```
action chain name action
```

### Description

The **action** helper command creates an iptables chain which can be used to control the action of other firewall rules once the firewall is running.

For example, you can setup the custom action ACT1, which by default is ACCEPT, but can be dynamically changed to DROP, REJECT or RETURN (and back) without restarting the firewall.

The *name* can be any chain name accepted by iptables. You should try to keep it within 5 and 10 characters.

---

#### Note

The *names* created with this command are case-sensitive.

---

The *action* can be any of those supported by Sanewall (see [actions for rules: sanewall-actions\(5\)](#)). Only ACCEPT, REJECT, DROP, RETURN have any meaning in this instance.

### Examples

To create a custom chain and have some rules use it:

```
action chain ACT1 accept

interface any world
  server smtp ACT1
  client smtp ACT1
```

Once the firewall is running you can dynamically modify the behaviour of the chain from the Linux command-line, as detailed below:

To insert a DROP action at the start of the chain to override the default action (ACCEPT):

---

```
iptables -t filter -I ACT1 -j DROP
```

To delete the DROP action from the start of the chain to return to the default action:

```
iptables -t filter -D ACT1 -j DROP
```

---

**Note**

If you delete all of the rules in the chain, the default will be to RETURN, in which case the behaviour will be as if any rules with the action were not present in the configuration file.

---

You can also create multiple chains simultaneously. To create 3 ACCEPT and 3 DROP chains you can do the following:

```
action chain "ACT1 ACT2 ACT3" accept  
action chain "ACT4 ACT5 ACT6" drop
```

**See Also**

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[actions for rules: sanewall-actions\(5\)](#)

[administration tool for IPv4 firewalls: iptables\(8\)](#)

---

## 2.13 blacklist config helper: sanewall-blacklist

### Name

sanewall-blacklist — set up a unidirectional or bidirectional blacklist

### Synopsis

```
blacklist [full | all] ip...
```

```
blacklist input | them | him | her | it | this | these ip...
```

### Description

The **blacklist** helper command creates a blacklist for the *ip* list given (which can be in quotes or not).

If the type `full` or one of its aliases is supplied, or no type is given, a bidirectional stateless blacklist will be generated. The firewall will **REJECT** all traffic going to the IP addresses and **DROP** all traffic coming from them.

If the type `input` or one of its aliases is supplied, a unidirectional stateful blacklist will be generated. Connections can be initiated to such IP addresses, but the IP addresses will not be able to connect to the firewall or hosts protected by it.

Any blacklists will affect all router and interface definitions. They must be declared before the first router or interface.

### Examples

```
blacklist full 192.0.2.1 192.0.2.2
blacklist input "192.0.2.3 192.0.2.4"
```

### See Also

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

---

## 2.14 classify config helper: sanewall-classify

### Name

sanewall-classify — classify traffic for traffic shapping tools

### Synopsis

```
classify class [rule-params]
```

### Description

The **classify** helper command puts matching traffic into the specified traffic shaping class.

The *class* is a class as used by **iptables** and **tc** (e.g. MAJOR:MINOR).

The *rule-params* define a set of rule parameters to match the traffic that is to be classified. See [optional rule parameters: sanewall-rule-params\(5\)](#) for more details.

Any **classify** commands will affect all traffic matched. They must be declared before the first router or interface.

### Examples

```
# Put all smtp traffic leaving via eth1 in class 1:1
classify 1:1 outface eth1 proto tcp dport 25
```

### See Also

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

administration tool for IPv4 firewalls: [iptables\(8\)](#)

show / manipulate traffic control settings: [tc\(8\)](#)

[Linux Advanced Routing & Traffic Control HOWTO](#)

---

## 2.15 connmark config helper: sanewall-connmark

### Name

sanewall-connmark — set a stateful mark on a connection

### Synopsis

```
connmark value | save | restore chain [rule-params]
```

### Description

The **connmark** helper command sets a mark on a whole connection. It applies to both directions.

---

#### Note

To set a mark on packets matching particular rules, regardless of any connection, see [mark config helper: sanewall-mark\(5\)](#).

---

The *value* is the mark value to set (a 32 bit integer). If you specify *save* then the mark on the matched packet will be turned into a connmark. If you specify *restore* then the matched packet will have its mark set to the current connmark.

The *chain* will be used to find traffic to mark. It can be any of the **iptables** built in chains belonging to the *mangle* table. The chain names are: INPUT, FORWARD, OUTPUT, PREROUTING and POSTROUTING. The names are case-sensitive.

The *rule-params* define a set of rule parameters to match the traffic that is to be marked within the chosen chain. See [optional rule parameters: sanewall-rule-params\(5\)](#) for more details.

Any **connmark** commands will affect all traffic matched. They must be declared before the first router or interface.

### Examples

Consider a scenario with 3 ethernet ports, where eth0 is on the local LAN, eth1 connects to ISP 'A' and eth2 to ISP 'B'. To ensure traffic leaves via the same ISP as it arrives from you can mark the traffic:

```
# mark connections when they arrive from the ISPs
connmark 1 PREROUTING inface eth1
connmark 2 PREROUTING inface eth2
```

---

```
# restore the mark (from the connmark) when packets arrive from the LAN
connmark restore OUTPUT
connmark restore PREROUTING inface eth0
```

It is then possible to use the commands from iproute2 such as **ip**, to pick the correct routing table based on the mark on the packets.

### See Also

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[mark config helper: sanewall-mark\(5\)](#)

administration tool for IPv4 firewalls: [iptables\(8\)](#)

show / manipulate routing, devices, policy routing and tunnels: [ip\(8\)](#)

[Linux Advanced Routing & Traffic Control HOWTO](#)

---

## 2.16 dscp config helper: sanewall-dscp

### Name

sanewall-dscp — set the DSCP field in the packet header

### Synopsis

```
dscp value | class classid chain [rule-params]
```

### Description

The **dscp** helper command sets the DSCP field in the header of packets traffic, to allow QoS shaping.

---

#### Note

There is also a **dscp** parameter which allows matching DSCP values within individual rules (see [optional rule parameters: sanewall-rule-params\(5\)](#)).

---

Set *value* to a decimal or hexadecimal (0xnn) number to set an explicit DSCP value or use *class classid* to use an iptables DiffServ class, such as EF, BE, CSxx or AFxx (see **iptables -j DSCP --help** for more information).

The *chain* will be used to find traffic to mark. It can be any of the **iptables** built in chains belonging to the *mangle* table. The chain names are: INPUT, FORWARD, OUTPUT, PREROUTING and POSTROUTING. The names are case-sensitive.

The *rule-params* define a set of rule parameters to match the traffic that is to be marked within the chosen chain. See [optional rule parameters: sanewall-rule-params\(5\)](#) for more details.

Any **dscp** commands will affect all traffic matched. They must be declared before the first router or interface.

### Examples

```
# set DSCP field to 32, packets sent by the local machine
dscp 32 OUTPUT

# set DSCP field to 32 (hex 20), packets routed by the local machine
dscp 0x20 FORWARD
```

---

```
# set DSCP to DiffServ class EF, packets routed by the local machine
#           and destined for port TCP/25 of 198.51.100.1
dscp class EF FORWARD proto tcp dport 25 dst 198.51.100.1
```

## See Also

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

administration tool for IPv4 firewalls: [iptables\(8\)](#)

show / manipulate routing, devices, policy routing and tunnels: [ip\(8\)](#)

[Linux Advanced Routing & Traffic Control HOWTO](#)

optional rule parameters: [sanewall-rule-params\(5\)](#)

---

## 2.17 mac config helper: sanewall-mac

### Name

sanewall-mac — ensure source IP and source MAC address match

### Synopsis

```
mac IP macaddr
```

### Description

Any **mac** commands will affect all traffic destined for the firewall host, or to be forwarded by the host. They must be declared before the first router or interface.

---

#### Note

There is also a **mac** parameter which allows matching MAC addresses within individual rules (see [optional rule parameters: sanewall-rule-params\(5\)](#)).

---

The **mac** helper command DROPS traffic from any *IP* address that was not sent using the *macaddr* specified.

When packets are dropped, a log is produced with the label "MAC MISSMATCH" (sic.). **mac** obeys the default log limits (see the section called “[Logging](#)” in [optional rule parameters: sanewall-rule-params\(5\)](#)).

---

#### Note

This command restricts an IP to a particular MAC address. The same MAC address is permitted send traffic with a different IP.

---

### Examples

```
mac 192.0.2.1    00:01:01:00:00:e6
mac 198.51.100.1 00:01:01:02:aa:e8
```

### See Also

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[optional rule parameters: sanewall-rule-params\(5\)](#)

---

## 2.18 mark config helper: sanewall-mark

### Name

sanewall-mark — mark traffic for traffic shaping tools

### Synopsis

```
mark value chain [rule-params]
```

### Description

The **mark** helper command sets a mark on packets that can be matched by traffic shaping tools for controlling the traffic.

---

#### Note

To set a mark on whole connections, see [connmark config helper: sanewall-connmark\(5\)](#). There is also a **mark** parameter which allows matching marks within individual rules (see [optional rule parameters: sanewall-rule-params\(5\)](#)).

---

The *value* is the mark value to set (a 32 bit integer).

The *chain* will be used to find traffic to mark. It can be any of the **iptables** built in chains belonging to the `mangle` table. The chain names are: INPUT, FORWARD, OUTPUT, PREROUTING and POSTROUTING. The names are case-sensitive.

The *rule-params* define a set of rule parameters to match the traffic that is to be marked within the chosen chain. See [optional rule parameters: sanewall-rule-params\(5\)](#) for more details.

Any **mark** commands will affect all traffic matched. They must be declared before the first router or interface.

---

#### Note

If you want to do policy based routing based on iptables marks, you will need to disable the Root Path Filtering on the interfaces involved (`rp_filter` in `sysctl`).

---

## Examples

```
# mark with 1, packets sent by the local machine
mark 1 OUTPUT

# mark with 2, packets routed by the local machine
mark 2 FORWARD

# mark with 3, packets routed by the local machine, sent from
#           192.0.2.2 destined for port TCP/25 of 198.51.100.1
mark 3 FORWARD proto tcp dport 25 dst 198.51.100.1 src 192.0.2.2
```

## See Also

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[connmark config helper: sanewall-connmark\(5\)](#)

[administration tool for IPv4 firewalls: iptables\(8\)](#)

[show / manipulate routing, devices, policy routing and tunnels: ip\(8\)](#)

[Linux Advanced Routing & Traffic Control HOWTO](#)

[optional rule parameters: sanewall-rule-params\(5\)](#)

---

## 2.19 nat, snat, dnat, redirect config helpers: sanewall-nat

### Name

sanewall-nat, sanewall-snat, sanewall-dnat, sanewall-redirect — set up NAT and port redirections

### Synopsis

```
snat [to] target [rule-params]
```

```
dnat [to] target [rule-params]
```

```
redirect [to] portrange [rule-params]
```

```
nat to-source | to-destination | redirect-to target [rule-params]
```

```
nat redirect-to portrange [rule-params]
```

### Description

---

#### Note

The *rule-params* are used only to determine the traffic that will be matched for NAT in these commands.

---

#### snat

The **snat** helper sets up a Source NAT rule for routed traffic by calling **nat to-source**. For example:

```
snat to 192.0.2.1 outface eth0 src 198.51.100.1 dst 203.0.113.1
```

#### dnat

The **dnat** helper sets up a Destination NAT rule for routed traffic by calling **nat to-destination**. For example:

```
dnat to 192.0.2.1 outface eth0 src 198.51.100.1 dst 203.0.113.1
```

---

## redirect

The **redirect** helper redirects matching traffic to *portrange* on the local host by calling **nat redirect-to**. For example:

```
redirect-to 8080 inface eth0 src 198.51.100.0/24 proto tcp dport 80
```

## nat

The **nat** helper takes one of the following sub-commands:

### to-source *target*

Defines a Source NAT (created in table NAT, chain POSTROUTING).

*target* is the source address to be set in packets matching *rule-params*.

If no rules are given, all forwarded traffic will be matched. *inface* should not be used in SNAT since the information is not available at the time the decision is made.

*target* accepts any `--to-source` values that **iptables(8)** accepts. Run **iptables -j SNAT --help** to for more information. Multiple *targets* may be specified by separating with spaces and enclosing with quotes.

### to-destination *target*

Defines a Destination NAT (created in table NAT, chain POSTROUTING).

*target* is the destination address to be set in packets matching *rule-params*.

If no rules are given, all forwarded traffic will be matched. *outface* should not be used in DNAT since the information is not available at the time the decision is made.

*target* accepts any `--to-destination` values that **iptables(8)** accepts. Run **iptables -j DNAT --help** to for more information. Multiple *targets* may be specified by separating with spaces and enclosing with quotes.

### redirect-to *portrange*

Redirect matching traffic to the local machine (created in table NAT, chain PREROUTING).

*portrange* is the port range (from-to) or single port that packets matching *rule-params* will be redirected to.

If no rules are given, all forwarded traffic will be matched. *outface* should not be used in REDIRECT since the information is not available at the time the decision is made.

## Examples

---

```
# Send to 192.0.2.1
# - all traffic arriving at or passing through the firewall
nat to-destination 192.0.2.1

# Send to 192.0.2.1
# - all traffic arriving at or passing through the firewall
# - which WAS going to 203.0.113.1
nat to-destination 192.0.2.1 dst 203.0.113.1

# Send to 192.0.2.1
# - TCP traffic arriving at or passing through the firewall
# - which WAS going to 203.0.113.1
nat to-destination 192.0.2.1 proto tcp dst 203.0.113.1

# Send to 192.0.2.1
# - TCP traffic arriving at or passing through the firewall
# - which WAS going to 203.0.113.1, port 25
nat to-destination 192.0.2.1 proto tcp dport 25 dst 203.0.113.1

# Other examples
nat to-source 192.0.2.1 outface eth0 src 198.51.100.1 dst 203.0.113.1
nat to-destination 192.0.2.2 outface eth0 src 198.51.100.2 dst 203.0.113.2
nat redirect-to 8080 inface eth0 src 198.51.100.0/24 proto tcp dport 80
```

## See Also

[Sanewall program: sanewall\(1\)](#)  
[Sanewall configuration: sanewall.conf\(5\)](#)  
[interface definition: sanewall-interface\(5\)](#)  
[router definition: sanewall-router\(5\)](#)  
[optional rule parameters: sanewall-rule-params\(5\)](#)  
[masquerade helper: sanewall-masquerade\(5\)](#)

---

## 2.20 transparent\_proxy, transparent\_squid helpers: sanewall-transparent\_proxy

### Name

sanewall-transparent\_proxy, sanewall-transparent\_squid — set up a transparent proxy

### Synopsis

```
transparent_proxy service port user [rule-params]
```

```
transparent_squid port user [rule-params]
```

### Description

The **transparent\_proxy** helper command sets up transparent caching for TCP traffic.

---

#### Note

The proxy application must be running on the firewall host at port *port* with the credentials of the local user *user* (which may be a space-delimited list enclosed in quotes) serving requests appropriate to the TCP port *service*.

---

The *rule-params* define a set of rule parameters to define the traffic that is to be proxied. See [optional rule parameters: sanewall-rule-params\(5\)](#) for more details.

For traffic destined for the firewall host or passing through the firewall, do not use the *outface* rule because the rules are applied before the routing decision and so the outgoing interface will not be known.

An empty *user* string ("") disables caching of locally-generated traffic. Otherwise, traffic starting from the firewall is captured, except traffic generated by the local user(s) *user*. The *inface*, *outface* and *src rule-params* are all ignored for locally-generated traffic.

The **transparent\_squid** helper command sets up the special case for HTTP traffic with *service* implicitly set to 80.

### Examples

```
transparent_proxy 80 3128 squid inface eth0 src 192.0.2.0/24
transparent_squid 3128 squid inface eth0 src 192.0.2.0/24

transparent_proxy "80 3128 8080" 3128 "squid privoxy root bin" \
  inface not "ppp+ ipsec+" dst not "a.not.proxied.server"
transparent_squid "80 3128 8080" "squid privoxy root bin" \
  inface not "ppp+ ipsec+" dst not "non.proxied.server"
```

---

**See Also**

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[interface definition: sanewall-interface\(5\)](#)

[router definition: sanewall-router\(5\)](#)

---

## 2.21 tos config helper: sanewall-tos

### Name

sanewall-tos — set the Type of Service (TOS) of packets

### Synopsis

```
tos value chain [rule-params]
```

### Description

The **tos** helper command sets the Type of Service (TOS) field in packet headers.

---

#### Note

There is also a **tos** parameter which allows matching TOS values within individual rules (see [optional rule parameters: sanewall-rule-params\(5\)](#)).

---

The *value* can be an integer number (decimal or hexadecimal) or one of the descriptive values accepted by **iptables** (run **iptables -j TOS --help** for a list).

The *chain* will be used to find traffic to mark. It can be any of the **iptables** built in chains belonging to the **mangle** table. The chain names are: INPUT, FORWARD, OUTPUT, PREROUTING and POSTROUTING. The names are case-sensitive.

The *rule-params* define a set of rule parameters to match the traffic that is to be marked within the chosen chain. See [optional rule parameters: sanewall-rule-params\(5\)](#) for more details.

Any **tos** commands will affect all traffic matched. They must be declared before the first router or interface.

### Examples

```
# set TOS to 16, packets sent by the local machine
tos 16 OUTPUT

# set TOS to 0x10 (16), packets routed by the local machine
tos 0x10 FORWARD

# set TOS to Maximize-Throughput (8), packets routed by the local
# machine, destined for port TCP/25 of 198.51.100.1
tos Maximize-Throughput FORWARD proto tcp dport 25 dst 198.51.100.1
```

---

**See Also**

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[tosfix config helper: sanewall-tosfix\(5\)](#)

[administration tool for IPv4 firewalls: iptables\(8\)](#)

[optional rule parameters: sanewall-rule-params\(5\)](#)

---

## 2.22 `tosfix` config helper: `sanewall-tosfix`

### Name

`sanewall-tosfix` — apply suggested TOS values to packets

### Synopsis

```
tosfix
```

### Description

The `tosfix` helper command sets the Type of Service (TOS) field in packet headers based on the suggestions given by Erik Hensema in [iptables and tc shapping tricks](#) .

The following TOS values are set:

- All TCP ACK packets with length less than 128 bytes are assigned Minimize-Delay, while bigger ones are assigned Maximize-Throughput
- All packets with TOS Minimize-Delay, that are bigger than 512 bytes are set to Maximize-Throughput, except for short bursts of 2 packets per second

The `tosfix` command must be used before the first router or interface.

### See Also

[Sanewall program: `sanewall\(1\)`](#)

[Sanewall configuration: `sanewall.conf\(5\)`](#)

[tos config helper: `sanewall-tos\(5\)`](#)

administration tool for IPv4 firewalls: [`iptables\(8\)`](#)

---

## 2.23 iptables helper: sanewall-iptables

### Name

sanewall-iptables — include custom iptables commands

### Synopsis

`iptables` *argument...*

### Description

The **iptables** helper command passes all of its arguments to the real **iptables(8)** at the appropriate point during run-time.

---

#### Note

When used in an **interface** or **router**, the result will not have a direct relationship to the enclosing definition as the parameters passed are only those you supply.

---

You should not use **/sbin/iptables** directly in a Sanewall configuration as it will run before Sanewall activates its firewall. This means they it be applied to the running firewall, not the new firewall, so will be removed when the new firewall is activated.

The **iptables** helper is provided to allow you to hook in commands safely.

### See Also

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

administration tool for IPv4 firewalls: [iptables\(8\)](#)

---

## 2.24 masquerade helper: sanewall-masquerade

### Name

sanewall-masquerade — set up masquerading (NAT) on an interface

### Synopsis

```
masquerade real-interface [rule-params]
```

```
masquerade [reverse] [rule-params]
```

### Description

The **masquerade** helper command sets up masquerading on the output of a real network interface (as opposed to a Sanewall interface definition).

If a *real-interface* is specified the command should be used before any interface or router definitions. Multiple values can be given separated by whitespace, so long as they are enclosed in quotes.

If used within an interface definition the definition's *real-interface* will be used.

If used within a router definition the definition's *outface*(s) will be used if specified. If the *reverse* option is given, then the definition's *iface*(s) will be used if specified.

Unlike most commands, **masquerade** does not inherit its parent definition's *rules-params*, it only honour's its own. The *iface* and *outface* parameters should not be used (iptables does not support *iface* in the POSTROUTING chain and *outface* will be overwritten by Sanewall using the rules above).

---

#### Note

The masquerade always applies to the output of the chosen network interfaces.

`SANEWALL_NAT` will be turned on automatically (see [control variables: sanewall-variables\(5\)](#)) and Sanewall will enable packet-forwarding in the kernel.

---

### Masquerading and SNAT

Masquerading is a special form of Source NAT (SNAT) that changes the source of requests when they go out and replaces their original source when they come in. This way a Linux host can become an Internet router for a LAN of clients having unroutable IP addresses. Masquerading takes care to re-map IP addresses and ports as required.

Masquerading is expensive compare to SNAT because it checks the IP address of the outgoing interface every time for every packet. If your host has a static IP address you should generally prefer SNAT.

---

## Examples

```
# Before any interface or router
masquerade eth0 src 192.0.2.0/24 dst not 192.0.2.0/24

# In an interface definition to masquerade the output of its real- ←
  interface
masquerade

# In a router definition to masquerade the output of its outface
masquerade

# In a router definition to masquerade the output of its inface
masquerade reverse
```

## See Also

[Sanewall program: sanewall\(1\)](#)  
[Sanewall configuration: sanewall.conf\(5\)](#)  
[interface definition: sanewall-interface\(5\)](#)  
[router definition: sanewall-router\(5\)](#)  
[optional rule parameters: sanewall-rule-params\(5\)](#)  
[nat, snat, dnat, redirect config helpers: sanewall-nat\(5\)](#)

---

## 2.25 tcpmss helper: sanewall-tcpmss

### Name

sanewall-tcpmss — set the MSS of TCP SYN packets for routers

### Synopsis

```
tcpmss mss | auto
```

### Description

The **tcpmss** helper command sets the MSS (Maximum Segment Size) of TCP SYN packets routed through the firewall. This can be used to overcome situations where Path MTU Discovery is not working and packet fragmentation is not possible.

A numeric *mss* will set MSS of TCP connections to the value given. Using the word `auto` will set the MSS to the MTU of the outgoing interface minus 40 (`clamp-mss-to-pmtu`).

If used within a router definition the MSS will be applied on the *outface(s)* of the router. If used before any router or interface definitions it will be applied to all traffic passing through the firewall.

---

#### Note

The **tcpmss** command cannot be used in an interface.

---

### Examples

```
tcpmss auto
```

```
tcpmss 500
```

### See Also

[Sanewall program: sanewall\(1\)](#)  
[Sanewall configuration: sanewall.conf\(5\)](#)  
[router definition: sanewall-router\(5\)](#)  
[TCPMSS target in the iptables tutorial](#)

---

## 2.26 optional rule parameters: sanewall-rule-params

### Name

sanewall-rule-params, sanewall-src, sanewall-dst, sanewall-srctype, sanewall-dsttype, sanewall-inface, sanewall-outface, sanewall-physin, sanewall-physout, sanewall-custom, sanewall-log, sanewall-loglimit, sanewall-proto, sanewall-uid, sanewall-gid, sanewall-mac-param, sanewall-mark-param, sanewall-tos-param, sanewall-dscp-param — optional rule parameters

### Synopsis

#### Common

src [not] *host*

dst [not] *host*

srctype [not] *type*

dsttype [not] *type*

proto [not] *protocol*

mac [not] *macaddr*

dscp [not] *value* | class *classid*

mark [not] *id*

tos [not] *id*

custom "*iptables-options...*"

#### Router Only

inface [not] *interface*

outface [not] *interface*

physin [not] *interface*

physout [not] *interface*

#### Interface Only

uid [not] *user*

gid [not] *group*

#### Logging

log "*log text*" [level *loglevel*]

loglimit "*log text*" [level *loglevel*]

---

## Description

Optional rule parameters are accepted by many commands to narrow the match they make. Not all parameters are accepted by all commands so you should check the individual commands for exclusions.

All matches are made against the REQUEST. Sanewall automatically sets up the necessary stateful rules to deal with replies in the reverse direction.

Use the option `not` to match any value other than the one(s) specified.

The logging parameters are unusual in that they do not affect the match, they just cause a log message to be emitted. Therefore, the logging parameters don't support the `not` option.

Sanewall is designed so that if you specify a parameter that is also used internally by the command then a warning will be issued (and the internal version will be used).

## Common

Use **src** and **dst** to define the source and destination IP addresses of the request respectively. *host* defines the IP or IPs to be matched. Examples:

```
server smtp accept src not 192.0.2.1
server smtp accept dst 198.51.100.1
server smtp accept src not 192.0.2.1 dst 198.51.100.1
```

Use **src`type`** or **dst`type`** to define the source or destination IP address type of the request. *type* is the address type category as used in the kernel's network stack. It can be one of:

### UNSPEC

an unspecified address (i.e. 0.0.0.0)

### UNICAST

a unicast address

### LOCAL

a local address

### BROADCAST

a broadcast address

### ANYCAST

an anycast address

### MULTICAST

a multicast address

### BLACKHOLE

a blackhole address

---

**UNREACHABLE**

an unreachable address

**PROHIBIT**

a prohibited address

**THROW, NAT, XRESOLVE**

undocumented

See **iptables(8)** or run **iptables -m addrtype --help** for more information. Examples:

```
server smtp accept srctype not "UNREACHABLE PROHIBIT"
```

Use **proto** to match by protocol. The *protocol* can be any accepted by **iptables(8)**.

Use **mac** to match by MAC address. The *macaddr* matches to the "remote" host. In an **interface**, "remote" always means the non-local host. In a **router**, "remote" refers to the source of requests for servers. It refers to the destination of requests for clients. Examples:

```
# Only allow pop3 requests to the e6 host
client pop3 accept mac 00:01:01:00:00:e6

# Only allow hosts other than e7/e8 to access smtp
server smtp accept mac not "00:01:01:00:00:e7 00:01:01:00:00:e8"
```

Use **dscp** to match the DSCP field on packets. For details on DSCP *values* and *classids*, see [dscp config helper: sanewall-dscp\(5\)](#).

```
server smtp accept dscp not "0x20 0x30"
server smtp accept dscp not class "BE EF"
```

Use **mark** to match marks set on packets. For details on mark *ids*, see [mark config helper: sanewall-mark\(5\)](#).

```
server smtp accept mark not "20 55"
```

Use **tos** to match the TOS field on packets. For details on TOS *ids*, see [tos config helper: sanewall-tos\(5\)](#).

```
server smtp accept tos not "Maximize-Throughput 0x10"
```

Use **custom** to pass arguments directly to **iptables(8)**. All of the parameters must be in a single quoted string. To pass an option to **iptables(8)** that itself contains a space you need to quote strings in the usual **bash(1)** manner. For example:

```
server smtp accept custom "--some-option some-value"
server smtp accept custom "--some-option 'some-value second-value' "
```

---

## Router Only

Use **iface** and **outface** to define the *interface* via which a request is received and forwarded respectively. Use the same format as [interface definition: sanewall-interface\(5\)](#). Examples:

```
server smtp accept iface not eth0
server smtp accept iface not "eth0 eth1"
server smtp accept iface eth0 outface eth1
```

Use **physin** and **physout** to define the physical *interface* via which a request is received or send in cases where the inface or outface is known to be a virtual interface; e.g. a bridge. Use the same format as [interface definition: sanewall-interface\(5\)](#). Examples:

```
server smtp accept physin not eth0
```

## Interface only

These parameters match information related to information gathered from the local host. They are silently ignored for incoming requests or requests that will be forwarded.

Use **uid** to match the operating system user sending the traffic. The *user* is a username, uid number or a quoted list of the two.

For example, to limit which users can access POP3 and IMAP:

```
client "pop3 imap" accept user not "user1 user2 user3"
```

This will allow all requests to reach the server but prevent replies unless the web server is running as apache:

```
server http accept user apache
```

Use **gid** to match the operating system group sending the traffic. The *group* is a group name, gid number or a quoted list of the two.

---

### Note

The Linux kernel infrastructure to match PID/SID and executable names with **pid**, **sid** and **cmd** has been removed so these options can no longer be used.

---

## Logging

Use **log** or **loglimit** to log matching packets to syslog. Unlike iptables(8) logging, this is not an action: Sanewall will produce multiple iptables commands to accomplish both the action for the rule and the logging.

Logging is controlled using the `SANEWALL_LOG_OPTIONS` and `SANEWALL_LOG_LEVEL` environment variables (see [control variables: sanewall-variables\(5\)](#)). **loglimit** additionally honours the `SANEWALL_LOG_FREQUENCY` and `SANEWALL_LOG_BURST` variables.

Specifying `level` (which takes the same values as `SANEWALL_LOG_LEVEL`) allows you to override the log level for a single rule.

## Internal use

In addition to the commands in the synopsis, Sanewall provides **limit**, **sport** and **dport** which are used internally. These should not normally be used in configuration files unless you really understand what you are doing.

**limit** requires the arguments *frequency* and *burst* and will limit the matching of traffic in both directions.

**sport** requires an argument *port* which can be a name, number, range (FROM:TO) or a quoted list of ports. It specifies the source port of a request.

**dport** requires an argument *port* which can be a name, number, range (FROM:TO) or a quoted list of ports. It specifies the destination port of a request.

## See Also

[Sanewall program: sanewall\(1\)](#)  
[Sanewall configuration: sanewall.conf\(5\)](#)  
[client command: sanewall-client\(5\)](#)  
[server, route commands: sanewall-server\(5\)](#)  
[interface definition: sanewall-interface\(5\)](#)  
[router definition: sanewall-router\(5\)](#)  
[mark config helper: sanewall-mark\(5\)](#)  
[tos config helper: sanewall-tos\(5\)](#)  
[dscp config helper: sanewall-dscp\(5\)](#)  
[control variables: sanewall-variables\(5\)](#)  
[administration tool for IPv4 firewalls: iptables\(8\)](#)

---

## 2.27 actions for rules: sanewall-actions

### Name

sanewall-actions, sanewall-accept, sanewall-deny, sanewall-drop, sanewall-reject, sanewall-return, sanewall-tarpit — rule actions

### Synopsis

accept

accept with limit *requests/period burst* [ *overflow action* ]

accept with recent *name seconds hits*

accept with knock *name*

reject [ with *message* ]

drop

deny

return

tarpit

### Description

These actions are the actions to be taken on traffic that has been matched by a particular rule.

Sanewall will also pass through any actions that **iptables(8)** accepts, however these definitions provide lowercase versions which accept arguments where appropriate and which could otherwise not be passed through.

---

#### Note

The **iptables(8)** LOG action is best used through the optional rule parameter `log` since the latter can be combined with one of these actions (Sanewall will generate multiple firewall rules to make this happen). For information on `log` and `loglimit`, see [optional rule parameters: sanewall-rule-params\(5\)](#).

---

The following actions are defined:

#### accept

**accept** allows the traffic matching the rules to reach its destination.

For example, to allow SMTP requests and their replies to flow:

---

```
server smtp accept
```

### accept with limit

**accept with limit** allows the traffic, with new connections limited to `requests/period` with a maximum `burst`. Run **iptables -m limit --help** for more information.

The default `overflow` action is to REJECT the excess connections (DROP would produce time-outs on otherwise valid service clients).

Examples:

```
server smtp accept with limit 10/sec 100
server smtp accept with limit 10/sec 100 overflow drop
```

### accept with recent

**accept with recent** allows the traffic matching the rules to reach its destination, limited per remote IP to `hits per seconds`. Run **iptables -m recent --help** for more information.

The `name` parameter is used to allow multiple rules to share the same table of recent IPs.

For example, to allow only 2 connections every 60 seconds per remote IP, to the smtp server:

```
server smtp accept with recent mail 60 2
```

---

#### Note

When a new connection is not allowed, the traffic will continue to be matched by the rest of the firewall. In other words, if the traffic is not allowed due to the limitations set here, it is not dropped, it is just not matched by this rule.

---

### accept with knock

**accept with knock** allows easy integration with **knockd**, a server that allows you to control access to services by sending certain packets to "knock" on the door, before the door is opened for service.

The `name` is used to build a special chain `knock_<name>` which contains rules to allow established connections to work. If `knockd` has not allowed new connections any traffic entering this chain will just return back and continue to match against the other rules until the end of the firewall.

For example, to allow HTTPS requests based on a knock write:

```
server https accept with knock hidden
```

then configure `knockd` to enable the HTTPS service with:

```
iptables -A knock_hidden -s %IP% -j ACCEPT
```

---

and disable it with:

```
iptables -D knock_hidden -s %IP% -j ACCEPT
```

You can use the same knock name in more than one Sanewall rule to enable/disable all the services based on a single knockd configuration entry.

---

**Note**

There is no need to match anything other than the IP in knockd. Sanewall already matches everything else needed for its rules to work.

---

**reject with *message*, reject**

**reject** discards the traffic matching the rules and sends a rejecting message back to the sender.

When used with *with* the specific message to return can be specified. Run **iptables -j REJECT --help** for a list of the `--reject-with` values which can be used for *message*. See the section called "[Reject With Messages](#)" for some examples.

The default (no message specified) is to send `tcp-reset` when dealing with TCP connections and `icmp-port-unreachable` for all other protocols.

For example:

```
UNMATCHED_INPUT_POLICY="reject with host-prohib"

policy reject with host-unreach

server ident reject with tcp-reset
```

**drop, deny**

**drop** discards the traffic matching the rules. It does so silently and the sender will need to timeout to conclude it cannot reach the service.

**deny** is a synonym for **drop**. For example, either of these would silently discard SMTP traffic:

```
server smtp drop

server smtp deny
```

**return**

**return** will return the flow of processing to the parent of the current command.

Currently, the only time **return** can be used meaningfully is as a policy for an interface definition. Unmatched traffic will continue being processed with the possibility of being matched by a later definition. For example:

```
policy return
```

---

**tarpit**

**tarpit** captures and holds incoming TCP connections open.

Connections are accepted and immediately switched to the persist state (0 byte window), in which the remote side stops sending data and asks to continue every 60-240 seconds.

Attempts to close the connection are ignored, forcing the remote side to time out the connection after 12-24 minutes.

Example:

```
server smtp tarpit
```

---

**Note**

As the kernel conntrack modules are always loaded by Sanewall, some per-connection resources will be consumed. See this [bug report](#) for details.

---

The following actions also exist but should not be used under normal circumstances:

**mirror**

**mirror** returns the traffic it receives by switching the source and destination fields. REJECT will be used for traffic generated by the local host.

**Warning**

The MIRROR target was removed from the Linux kernel due to its security implications. MIRROR is dangerous; use it with care and only if you understand what you are doing.

---

**redirect, redirect to-port *port***

**redirect** is used internally by Sanewall helper commands.

Only Sanewall developers should need to use this action directly.

**Reject With Messages**

The following RFCs contain information relevant to these messages:

[RFC 1812](#)

[RFC 1122](#)

[RFC 792](#)

---

**icmp-net-unreachable, net-unreach**

ICMP network unreachable

Generated by a router if a forwarding path (route) to the destination network is not available.

From RFC 1812, section 5.2.7.1. See RFC 1812 and RFC 792.

---

**Note**

Use with care. The sender and the routers between you and the sender may conclude that the whole network your host resides in is unreachable, and prevent other traffic from reaching you.

---

**icmp-host-unreachable, host-unreach**

ICMP host unreachable

Generated by a router if a forwarding path (route) to the destination host on a directly connected network is not available (does not respond to ARP).

From RFC 1812, section 5.2.7.1. See RFC 1812 and RFC 792.

---

**Note**

Use with care. The sender and the routers between you and the sender may conclude that your host is entirely unreachable, and prevent other traffic from reaching you.

---

**icmp-proto-unreachable, proto-unreach**

ICMP protocol unreachable

Generated if the transport protocol designated in a datagram is not supported in the transport layer of the final destination.

From RFC 1812, section 5.2.7.1. See RFC 1812 and RFC 792.

**icmp-port-unreachable, port-unreach**

ICMP port unreachable

Generated if the designated transport protocol (e.g. TCP, UDP, etc.) is unable to demultiplex the datagram in the transport layer of the final destination but has no protocol mechanism to inform the sender.

From RFC 1812, section 5.2.7.1. See RFC 1812 and RFC 792.

Generated by hosts to indicate that the required port is not active.

**icmp-net-prohibited, net-prohib**

ICMP communication with destination network administratively prohibited

This code was intended for use by end-to-end encryption devices used by U.S. military agencies. Routers SHOULD use the newly defined Code 13 (Communication Administratively Prohibited) if they administratively filter packets.

From RFC 1812, section 5.2.7.1. See RFC 1812 and RFC 1122.

---

**Note**

This message may not be widely understood.

---

**icmp-host-prohibited, host-prohib**

ICMP communication with destination host administratively prohibited

This code was intended for use by end-to-end encryption devices used by U.S. military agencies. Routers SHOULD use the newly defined Code 13 (Communication Administratively Prohibited) if they administratively filter packets.

From RFC 1812, section 5.2.7.1. See RFC 1812 and RFC 1122.

---

**Note**

This message may not be widely understood.

---

**tcp-reset**

TCP RST

The port unreachable message of the TCP stack.

See RFC 1122.

---

**Note**

`tcp-reset` is useful when you want to prevent timeouts on rejected TCP services where the client incorrectly ignores ICMP port unreachable messages.

---

**See Also**

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

[interface definition: sanewall-interface\(5\)](#)

[router definition: sanewall-router\(5\)](#)

[optional rule parameters: sanewall-rule-params\(5\)](#)

---

## 2.28 services list: sanewall-services

### Name

sanewall-services — Sanewall service list

### Services

This [Wikipedia list of ports](#) may be helpful if you need to define a new service.

AH - IPSEC AUTHENTICATION HEADER (AH)

### Example

Configuration sample:

```
server AH accept
```

### Server Ports

51/any

### Client Ports

any

### Links

[Wikipedia](#)

### Notes

For more information see this [Archive of the FreeS/WAN documentation](#) and [RFC 2402](#).

ALL - MATCH ALL TRAFFIC

### Example

Configuration sample:

```
server all accept
```

### Server Ports

all

### Client Ports

all

---

**Notes**

Matches all traffic (all protocols, ports, etc) while ensuring that required kernel modules are loaded.

This service may indirectly setup a set of other services, if they require kernel modules to be loaded.

The following complex services are activated:

[ftp](#) - File Transfer Protocol

[irc](#) - Internet Relay Chat

AMANDA - ADVANCED MARYLAND AUTOMATIC NETWORK DISK ARCHIVER

**Server Ports**

udp/10080

**Client Ports**

default

**Netfilter Modules**

nf\_conntrack\_amanda ([CONFIG\\_NF\\_CONTRACK\\_AMANDA](#))

**Netfilter NAT Modules**

nf\_nat\_amanda ([CONFIG\\_NF\\_NAT\\_AMANDA](#))

**Links**

[Homepage](#), [Wikipedia](#)

ANY - MATCH ALL TRAFFIC (WITHOUT MODULES OR INDIRECT)

**Example**

Configuration sample:

```
server any myname accept proto 47
```

**Server Ports**

all

**Client Ports**

all

**Notes**

Matches all traffic (all protocols, ports, etc), but does not care about kernel modules and does not activate any other service indirectly. In combination with the [optional rule parameters: sanewall-rule-params\(5\)](#) this service can match unusual traffic (e.g. GRE - protocol 47).

ANYSSTATELESS - MATCH ALL TRAFFIC STATELESSLY

---

**Example**

Configuration sample:

```
server anystateless myname accept proto 47
```

**Server Ports**

all

**Client Ports**

all

**Notes**

Matches all traffic (all protocols, ports, etc), but does not care about kernel modules and does not activate any other service indirectly. In combination with the [optional rule parameters: sanewall-rule-params\(5\)](#) this service can match unusual traffic (e.g. GRE - protocol 47).

This service is identical to "any" but does not care about the state of traffic.

**APCUPSD - APC UPS DAEMON****Example**

Configuration sample:

```
server apcupsd accept
```

**Server Ports**

tcp/6544

**Client Ports**

default

**Links**

[Homepage](#), [Wikipedia](#)

**Notes**

This service must be defined as "server apcupsd accept" on all machines not directly connected to the UPS (i.e. slaves).

Note that the port defined here is not the default port (6666) used if you download and compile APCUPSD, since the default conflicts with IRC and many distributions (like Debian) have changed this to 6544.

You can define port 6544 in APCUPSD, by changing the value of NETPORT in its configuration file, or overwrite this Sanewall service definition using the procedures described in the section called "[Adding Services](#)" of [Sanewall configuration: sanewall.conf\(5\)](#).

**APCUPSDNIS - APC UPS DAEMON NETWORK INFORMATION SERVER**

---

**Example**

Configuration sample:

```
server apcupsdnis accept
```

**Server Ports**

tcp/3551

**Client Ports**

default

**Links**

[Homepage](#), [Wikipedia](#)

**Notes**

This service allows the remote WEB interfaces of [APCUPSD](#), to connect and get information from the server directly connected to the UPS device.

APTPROXY - ADVANCED PACKAGING TOOL PROXY

**Example**

Configuration sample:

```
server aptproxy accept
```

**Server Ports**

tcp/9999

**Client Ports**

default

**Links**

[Wikipedia](#)

ASTERISK - ASTERISK PABX

**Example**

Configuration sample:

```
server asterisk accept
```

**Server Ports**

tcp/5038

**Client Ports**

default

---

**Links**

[Homepage](#), [Wikipedia](#)

**Notes**

This service refers only to the manager interface of asterisk. You should normally enable [sip - Session Initiation Protocol](#) , [h323 - H.323 VoIP](#) , [rtp - Real-time Transport Protocol](#) , etc. at the firewall level, if you enable the relative channel drivers of asterisk.

**CUPS - COMMON UNIX PRINTING SYSTEM****Example**

Configuration sample:

```
server cups accept
```

**Server Ports**

tcp/631 udp/631

**Client Ports**

any

**Links**

[Homepage](#), [Wikipedia](#)

**CUSTOM - CUSTOM DEFINITIONS****Example**

Configuration sample:

```
server custom myimap tcp/143 default accept
```

**Server Ports**

N/A

**Client Ports**

N/A

**Notes**

The full syntax is:

**subcommand** custom *name svr-proto/ports cli-ports action params*

This service is used by Sanewall to allow you create rules for services which do not have a definition.

**subcommand**, **action** and **params** have their usual meanings.

---

A name must be supplied along with server ports in the form *proto/range* and client ports which takes only a *range*.

To define services with the built-in extension mechanism to avoid the need for **custom** services, see the section called “[Adding Services](#)” of [Sanewall configuration: sanewall.conf\(5\)](#).

#### CVSPSERVER - CONCURRENT VERSIONS SYSTEM

##### Example

Configuration sample:

```
server cvspserver accept
```

##### Server Ports

tcp/2401

##### Client Ports

default

##### Links

[Homepage](#), [Wikipedia](#)

#### DARKSTAT - DARKSTAT NETWORK TRAFFIC ANALYSER

##### Example

Configuration sample:

```
server darkstat accept
```

##### Server Ports

tcp/666

##### Client Ports

default

##### Links

[Homepage](#)

#### DAYTIME - DAYTIME PROTOCOL

##### Example

Configuration sample:

```
server daytime accept
```

---

**Server Ports**

tcp/13

**Client Ports**

default

**Links**[Wikipedia](#)

DCC - DISTRIBUTED CHECKSUM CLEARINGHOUSE

**Example**

Configuration sample:

```
server dcc accept
```

**Server Ports**

udp/6277

**Client Ports**

default

**Links**[Wikipedia](#)**Notes**See also this [DCC FAQ](#).

DCPP - DIRECT CONNECT++ P2P

**Example**

Configuration sample:

```
server dcpp accept
```

**Server Ports**

tcp/1412 udp/1412

**Client Ports**

default

**Links**[Homepage](#)DHCP - DYNAMIC HOST CONFIGURATION PROTOCOL

---

**Example**

Configuration sample:

```
server dhcp accept
```

**Server Ports**

udp/67

**Client Ports**

68

**Links**

[Wikipedia](#)

**Notes**

The dhcp service is implemented as stateless rules.

DHCP clients broadcast to the network (src 0.0.0.0 dst 255.255.255.255) to find a DHCP server. If the DHCP service was stateful the iptables connection tracker would not match the packets and deny to send the reply.

Note that this change does not affect the security of either DHCP servers or clients, since only the specific ports are allowed (there is no random port at either the server or the client side).

Note also that the "server dhcp accept" or "client dhcp accept" commands should be placed within interfaces that do not have src and / or dst defined (because of the initial broadcast).

You can overcome this problem by placing the DHCP service on a separate interface, without a src or dst but with a policy return. Place this interface before the one that defines the rest of the services.

For example:

```
interface eth0 dhcp
~~~~policy return
~~~~server dhcp accept
~
interface eth0 lan src "$mylan" dst "$myip"
~~~~client all accept
```

**DHCPRELAY - DHCP RELAY****Example**

Configuration sample:

```
server dhcprelay accept
```

**Server Ports**

udp/67

---

**Client Ports**

67

**Links**[Wikipedia](#)**Notes**

From RFC 1812 section 9.1.2:

In many cases, BOOTP clients and their associated BOOTP server(s) do not reside on the same IP (sub)network. In such cases, a third-party agent is required to transfer BOOTP messages between clients and servers. Such an agent was originally referred to as a BOOTP forwarding agent. However, to avoid confusion with the IP forwarding function of a router, the name BOOTP relay agent has been adopted instead.

For more information about DHCP Relay see section 9.1.2 of [RFC 1812](#) and section 4 of [RFC 1542](#)

DICT - DICTIONARY SERVER PROTOCOL

**Example**

Configuration sample:

```
server dict accept
```

**Server Ports**

tcp/2628

**Client Ports**

default

**Links**[Wikipedia](#)**Notes**

See [RFC2229](#).

DISTCC - DISTRIBUTED CC

**Example**

Configuration sample:

```
server distcc accept
```

**Server Ports**

tcp/3632

**Client Ports**default

---

**Links**

[Homepage, Wikipedia](#)

**Notes**

For distcc security, please check the [distcc security design](#).

## DNS - DOMAIN NAME SYSTEM

**Example**

Configuration sample:

```
server dns accept
```

**Server Ports**

udp/53 tcp/53

**Client Ports**

any

**Links**

[Wikipedia](#)

**Notes**

On very busy DNS servers you may see a few dropped DNS packets in your logs. This is normal. The iptables connection tracker will timeout the session and lose unmatched DNS packets that arrive too late to be useful.

## ECHO - ECHO PROTOCOL

**Example**

Configuration sample:

```
server echo accept
```

**Server Ports**

tcp/7

**Client Ports**

default

**Links**

[Wikipedia](#)

EMULE - EMULE (DONKEY NETWORK CLIENT)

---

**Example**

Configuration sample:

```
client emule accept src 192.0.2.1
```

**Server Ports**

many

**Client Ports**

many

**Links**

[Homepage](#)

**Notes**

According to [eMule Port Definitions](#), Sanewall defines:

- Accept from any client port to the server at tcp/4661
- Accept from any client port to the server at tcp/4662
- Accept from any client port to the server at udp/4665
- Accept from any client port to the server at udp/4672
- Accept from any server port to the client at tcp/4662
- Accept from any server port to the client at udp/4672

Use the Sanewall [client command](#): [sanewall-client\(5\)](#) command to match the eMule client.

Please note that the eMule client is an HTTP client also.

**ESERVER - EDONKEY NETWORK SERVER****Example**

Configuration sample:

```
server eserver accept
```

**Server Ports**

tcp/4661 udp/4661 udp/4665

**Client Ports**

any

**Links**

[Wikipedia](#)

**ESP - IPSEC ENCAPSULATED SECURITY PAYLOAD (ESP)****Example**

Configuration sample:

---

```
server ESP accept
```

**Server Ports**

50/any

**Client Ports**

any

**Links**[Wikipedia](#)**Notes**For more information see this [Archive of the FreeS/WAN documentation RFC 2406](#).

FINGER - FINGER PROTOCOL

**Example**

Configuration sample:

```
server finger accept
```

**Server Ports**

tcp/79

**Client Ports**

default

**Links**[Wikipedia](#)

FTP - FILE TRANSFER PROTOCOL

**Example**

Configuration sample:

```
server ftp accept
```

**Server Ports**

tcp/21

**Client Ports**

default

**Netfilter Modules**nf\_conntrack\_ftp ([CONFIG\\_NF\\_CONNTRACK\\_FTP](#))

---

**Netfilter NAT Modules**

nf\_nat\_ftp ([CONFIG\\_NF\\_NAT\\_FTP](#))

**Links**

[Wikipedia](#)

**Notes**

The FTP service matches both active and passive FTP connections.

GIFT - giFT INTERNET FILE TRANSFER

**Example**

Configuration sample:

```
server gift accept
```

**Server Ports**

tcp/4302 tcp/1214 tcp/2182 tcp/2472

**Client Ports**

any

**Links**

[Homepage](#), [Wikipedia](#)

**Notes**

The gift Sanewall service supports:

Gnutella listening at tcp/4302

FastTrack listening at tcp/1214

OpenFT listening at tcp/2182 and tcp/2472

The above ports are the defaults given for the corresponding giFT modules.

To allow access to the user interface ports of giFT, use the [giftui - giFT Internet File Transfer User Interface](#) Sanewall service.

GIFTUI - GIFT INTERNET FILE TRANSFER USER INTERFACE

**Example**

Configuration sample:

```
server giftui accept
```

**Server Ports**

tcp/1213

---

**Client Ports**

default

**Links**[Homepage](#), [Wikipedia](#)**Notes**

This service refers only to the user interface ports offered by giFT. To allow gift accept P2P requests, use the [gift - giFT Internet File Transfer](#) Sanewall service.

GKRELLMD - GKRELLM DAEMON

**Example**

Configuration sample:

```
server gkrellmd accept
```

**Server Ports**

tcp/19150

**Client Ports**

default

**Links**[Homepage](#), [Wikipedia](#)

GRE - GENERIC ROUTING ENCAPSULATION

**Example**

Configuration sample:

```
server GRE accept
```

**Server Ports**

47/any

**Client Ports**

any

**Netfilter Modules**nf\_conntrack\_proto\_gre ([CONFIG\\_NF\\_CT\\_PROTO\\_GRE](#))**Netfilter NAT Modules**nf\_nat\_proto\_gre ([CONFIG\\_NF\\_NAT\\_PROTO\\_GRE](#))**Links**[Wikipedia](#)

**Notes**

Protocol No 47.

For more information see RFC [RFC 2784](#).

H323 - H.323 VOIP

**Example**

Configuration sample:

```
server h323 accept
```

**Server Ports**

tcp/1720

**Client Ports**

default

**Netfilter Modules**

nf\_conntrack\_h323 ([CONFIG\\_NF\\_CONTRACK\\_H323](#))

**Netfilter NAT Modules**

nf\_nat\_h323 ([CONFIG\\_NF\\_NAT\\_H323](#))

**Links**

[Wikipedia](#)

HEARTBEAT - HEARTBEAT

**Example**

Configuration sample:

```
server heartbeat accept
```

**Server Ports**

udp/690:699

**Client Ports**

default

**Links**

[Homepage](#)

**Notes**

This Sanewall service has been designed such a way that it will allow multiple heartbeat clusters on the same LAN.

---

## HTTP - HYPERTEXT TRANSFER PROTOCOL

### Example

Configuration sample:

```
server http accept
```

### Server Ports

tcp/80

### Client Ports

default

### Links

[Wikipedia](#)

## HTTPALT - HTTP ALTERNATE PORT

### Example

Configuration sample:

```
server httpalt accept
```

### Server Ports

tcp/8080

### Client Ports

default

### Links

[Wikipedia](#)

### Notes

This port is commonly used by web servers, web proxies and caches where the standard [http - Hypertext Transfer Protocol](#) port is not available or can or should not be used.

## HTTPS - SECURE HYPERTEXT TRANSFER PROTOCOL

### Example

Configuration sample:

```
server https accept
```

### Server Ports

tcp/443

---

**Client Ports**

default

**Links**[Wikipedia](#)

HYLAFAX - HYLAFAX

**Example**

Configuration sample:

```
server hylafax accept
```

**Server Ports**

many

**Client Ports**

many

**Links**[Homepage](#), [Wikipedia](#)**Notes**

This complex service allows incoming requests to server port tcp/4559 and outgoing from server port tcp/4558.

The correct operation of this service has not been verified.

USE THIS WITH CARE. A HYLAFAX CLIENT MAY OPEN ALL TCP UNPRIVILEGED PORTS TO ANYONE (from port tcp/4558).

IAX - INTER-ASTERISK EXCHANGE

**Example**

Configuration sample:

```
server iax accept
```

**Server Ports**

udp/5036

**Client Ports**

default

**Links**[Homepage](#), [Wikipedia](#)

---

**Notes**

This service refers to IAX version 1. There is also [iax2 - Inter-Asterisk eXchange v2](#) .

IAX2 - INTER-ASTERISK EXCHANGE V2

**Example**

Configuration sample:

```
server iax2 accept
```

**Server Ports**

udp/5469 udp/4569

**Client Ports**

default

**Links**

[Homepage](#), [Wikipedia](#)

**Notes**

This service refers to IAX version 2. There is also [iax - Inter-Asterisk eXchange](#) .

ICMP - INTERNET CONTROL MESSAGE PROTOCOL

**Example**

Configuration sample:

```
server icmp accept
```

**Server Ports**

icmp/any

**Client Ports**

any

**Links**

[Wikipedia](#)

ICMP - INTERNET CONTROL MESSAGE PROTOCOL

**Alias**

See [icmp - Internet Control Message Protocol](#)

ICP - INTERNET CACHE PROTOCOL

---

**Example**

Configuration sample:

```
server icp accept
```

**Server Ports**

udp/3130

**Client Ports**

3130

**Links**[Wikipedia](#)

IDENT - IDENTIFICATION PROTOCOL

**Example**

Configuration sample:

```
server ident reject with tcp-reset
```

**Server Ports**

tcp/113

**Client Ports**

default

**Links**[Wikipedia](#)

IMAP - INTERNET MESSAGE ACCESS PROTOCOL

**Example**

Configuration sample:

```
server imap accept
```

**Server Ports**

tcp/143

**Client Ports**

default

**Links**[Wikipedia](#)

---

---

## IMAPS - SECURE INTERNET MESSAGE ACCESS PROTOCOL

### Example

Configuration sample:

```
server imaps accept
```

### Server Ports

tcp/993

### Client Ports

default

### Links

[Wikipedia](#)

## IPSEC/NAT - NAT TRAVERSAL AND IPSEC

### Server Ports

udp/4500

### Client Ports

any

### Links

[Wikipedia](#)

## IRC - INTERNET RELAY CHAT

### Example

Configuration sample:

```
server irc accept
```

### Server Ports

tcp/6667

### Client Ports

default

### Netfilter Modules

nf\_conntrack\_irc ([CONFIG\\_NF\\_CONNTRACK\\_IRC](#))

### Netfilter NAT Modules

nf\_nat\_irc ([CONFIG\\_NF\\_NAT\\_IRC](#))

---

**Links**

[Wikipedia](#)

ISAKMP - INTERNET SECURITY ASSOCIATION AND KEY MANAGEMENT PROTOCOL (IKE)

**Example**

Configuration sample:

```
server isakmp accept
```

**Server Ports**

udp/500

**Client Ports**

any

**Links**

[Wikipedia](#)

**Notes**

For more information see the [Archive of the FreeS/WAN documentation](#)

JABBER - EXTENSIBLE MESSAGING AND PRESENCE PROTOCOL

**Example**

Configuration sample:

```
server jabber accept
```

**Server Ports**

tcp/5222 tcp/5223

**Client Ports**

default

**Links**

[Wikipedia](#)

**Notes**

Allows clear and SSL client-to-server connections.

JABBERD - EXTENSIBLE MESSAGING AND PRESENCE PROTOCOL (SERVER)

**Example**

Configuration sample:

---

```
server jabberd accept
```

**Server Ports**

tcp/5222 tcp/5223 tcp/5269

**Client Ports**

default

**Links**

[Wikipedia](#)

**Notes**

Allows clear and SSL client-to-server and server-to-server connections.

Use this service for a jabberd server. In all other cases, use the [jabber - Extensible Messaging and Presence Protocol](#) service.

L2TP - LAYER 2 TUNNELING PROTOCOL

**Server Ports**

udp/1701

**Client Ports**

any

**Links**

[Wikipedia](#)

LDAP - LIGHTWEIGHT DIRECTORY ACCESS PROTOCOL

**Example**

Configuration sample:

```
server ldap accept
```

**Server Ports**

tcp/389

**Client Ports**

default

**Links**

[Wikipedia](#)

LDAPS - SECURE LIGHTWEIGHT DIRECTORY ACCESS PROTOCOL

---

**Example**

Configuration sample:

```
server ldaps accept
```

**Server Ports**

tcp/636

**Client Ports**

default

**Links**

[Wikipedia](#)

**LPD - LINE PRINTER DAEMON PROTOCOL****Example**

Configuration sample:

```
server lpd accept
```

**Server Ports**

tcp/515

**Client Ports**

any

**Links**

[Wikipedia](#)

**Notes**

LPD is documented in [RFC 1179](#).

Since many operating systems incorrectly use the non-default client ports for LPD access, this definition allows any client port to access the service (in addition to the RFC defined 721 to 731 inclusive).

**MICROSOFT\_DS - DIRECT HOSTED (NETBIOS-LESS) SMB****Example**

Configuration sample:

```
server microsoft_ds accept
```

**Server Ports**

tcp/445

---

**Client Ports**

default

**Notes**

Direct Hosted (i.e. NETBIOS-less SMB)

This is another NETBIOS Session Service with minor differences with [netbios\\_ssn - NETBIOS Session Service](#) . It is supported only by Windows 2000 and Windows XP and it offers the advantage of being independent of WINS for name resolution.

It seems that samba supports transparently this protocol on the [netbios\\_ssn - NETBIOS Session Service](#) ports, so that either direct hosted or traditional SMB can be served simultaneously.

Please refer to the [netbios\\_ssn - NETBIOS Session Service](#) service for more information.

MMS - MICROSOFT MEDIA SERVER

**Example**

Configuration sample:

```
server mms accept
```

**Server Ports**

tcp/1755 udp/1755

**Client Ports**

default

**Netfilter Modules**

See [here](#).

**Netfilter NAT Modules**

See [here](#).

**Links**

[Wikipedia](#)

**Notes**

Microsoft's proprietary network streaming protocol used to transfer unicast data in Windows Media Services (previously called NetShow Services).

MSN - MICROSOFT MSN MESSENGER SERVICE

**Example**

Configuration sample:

```
server msn accept
```

**Server Ports**

tcp/1863 udp/1863

**Client Ports**

default

MSNP - MSNP

**Example**

Configuration sample:

```
server msnp accept
```

**Server Ports**

tcp/6891

**Client Ports**

default

MS\_DS - DIRECT HOSTED (NETBIOS-LESS) SMB

**Alias**See [microsoft\\_ds - Direct Hosted \(NETBIOS-less\) SMB](#)

MULTICAST - MULTICAST

**Example**

Configuration sample:

```
server multicast reject with proto-unreach
```

**Server Ports**

N/A

**Client Ports**

N/A

**Links**[Wikipedia](#)**Notes**

The multicast service matches all packets sent to 224.0.0.0/4 using IGMP or UDP.

MYSQL - MYSQL

---

**Example**

Configuration sample:

```
server mysql accept
```

**Server Ports**

tcp/3306

**Client Ports**

default

**Links**[Homepage, Wikipedia](#)**NETBACKUP - VERITAS NETBACKUP SERVICE****Example**

Configuration sample:

```
server netbackup accept  
client netbackup accept
```

**Server Ports**

tcp/13701 tcp/13711 tcp/13720 tcp/13721 tcp/13724 tcp/13782 tcp/13783

**Client Ports**

any

**Links**[Wikipedia](#)**Notes**

To use this service you must define it as both client and server in NetBackup clients and NetBackup servers.

**NETBIOS\_DGM - NETBIOS DATAGRAM DISTRIBUTION SERVICE****Example**

Configuration sample:

```
server netbios_dgm accept
```

**Server Ports**udp/138

---

**Client Ports**

any

**Links**[Wikipedia](#)**Notes**

See also the [samba - Samba](#) service.

Keep in mind that this service broadcasts (to the broadcast address of your LAN) UDP packets. If you place this service within an interface that has a `dst` parameter, remember to include (in the `dst` parameter) the broadcast address of your LAN too.

NETBIOS\_NS - NETBIOS NAME SERVICE

**Example**

Configuration sample:

```
server netbios_ns accept
```

**Server Ports**

udp/137

**Client Ports**

any

**Links**[Wikipedia](#)**Notes**

See also the [samba - Samba](#) service.

NETBIOS\_SSN - NETBIOS SESSION SERVICE

**Example**

Configuration sample:

```
server netbios_ssn accept
```

**Server Ports**

tcp/139

**Client Ports**

default

**Links**[Wikipedia](#)

---

**Notes**

See also the [samba - Samba](#) service.

Please keep in mind that newer NETBIOS clients prefer to use port 445 ([microsoft\\_ds - Direct Hosted \(NETBIOS-less\) SMB](#)) for the NETBIOS session service, and when this is not available they fall back to port 139 (netbios\_ssn). Versions of samba above 3.x bind automatically to ports 139 and 445.

If you have an older samba version and your policy on an interface or router is DROP, clients trying to access port 445 will have to timeout before falling back to port 139. This timeout can be up to several minutes.

To overcome this problem you can explicitly REJECT the [microsoft\\_ds - Direct Hosted \(NETBIOS-less\) SMB](#) service with a tcp-reset message:

```
server microsoft_ds reject with tcp-reset
```

**NFS - NETWORK FILE SYSTEM****Example**

Configuration sample:

```
client nfs accept dst 192.0.2.1
```

**Server Ports**

many

**Client Ports**

N/A

**Links**

[Wikipedia](#)

**Notes**

The NFS service queries the RPC service on the NFS server host to find out the ports nfsd, mountd, lockd and rquotad are listening. Then, according to these ports it sets up rules on all the supported protocols (as reported by RPC) in order the clients to be able to reach the server.

For this reason, the NFS service requires that:

- the firewall is restarted if the NFS server is restarted

- the NFS server must be specified on all nfs statements (only if it is not the localhost)

Since NFS queries the remote RPC server, it is required to also be allowed to do so, by allowing the [portmap - Open Network Computing Remote Procedure Call - Port Mapper](#) service too. Take care that this is allowed by the running firewall when Sanewall tries to query the RPC server. So you might have to setup NFS in two steps: First add the portmap service and activate the firewall, then add the NFS service and restart the firewall.

To avoid this you can setup your NFS server to listen on pre-defined ports, as documented in [NFS Howto](#). If you do this then you will have to define the the ports using the procedure described in the section called “[Adding Services](#)” of [Sanewall configuration: sanewall.conf\(5\)](#).

---

---

## NIS - NETWORK INFORMATION SERVICE

### Example

Configuration sample:

```
client nis accept dst 192.0.2.1
```

### Server Ports

many

### Client Ports

N/A

### Links

[Wikipedia](#)

### Notes

The nis service queries the RPC service on the nis server host to find out the ports ypserv and yppasswdd are listening. Then, according to these ports it sets up rules on all the supported protocols (as reported by RPC) in order the clients to be able to reach the server.

For this reason, the nis service requires that:

- the firewall is restarted if the nis server is restarted

- the nis server must be specified on all nis statements (only if it is not the localhost)

Since nis queries the remote RPC server, it is required to also be allowed to do so, by allowing the [portmap - Open Network Computing Remote Procedure Call - Port Mapper](#) service too. Take care that this is allowed by the running firewall when Sanewall tries to query the RPC server. So you might have to setup nis in two steps: First add the portmap service and activate the firewall, then add the nis service and restart the firewall.

This service was added to FireHOL by [Carlos Rodrigues](#). His comments regarding this implementation, are:

These rules work for client access only!

Pushing changes to slave servers won't work if these rules are active somewhere between the master and its slaves, because it is impossible to predict the ports where yppush will be listening on each push.

Pulling changes directly on the slaves will work, and could be improved performance-wise if these rules are modified to open fypxfrd. This wasn't done because it doesn't make that much sense since pushing changes on the master server is the most common, and recommended, way to replicate maps.

## NNTP - NETWORK NEWS TRANSFER PROTOCOL

### Example

Configuration sample:

---

```
server nntp accept
```

**Server Ports**

tcp/119

**Client Ports**

default

**Links**[Wikipedia](#)

NNTPS - SECURE NETWORK NEWS TRANSFER PROTOCOL

**Example**

Configuration sample:

```
server nntps accept
```

**Server Ports**

tcp/563

**Client Ports**

default

**Links**[Wikipedia](#)

NRPE - NAGIOS NRPE

**Server Ports**

tcp/5666

**Client Ports**

default

**Links**[Wikipedia](#)

NTP - NETWORK TIME PROTOCOL

**Example**

Configuration sample:

```
server ntp accept
```

**Server Ports**

udp/123 tcp/123

**Client Ports**

any

**Links**[Wikipedia](#)

NUT - NETWORK UPS TOOLS

**Example**

Configuration sample:

```
server nut accept
```

**Server Ports**

tcp/3493 udp/3493

**Client Ports**

default

**Links**[Homepage](#)

NXSERVER - NOMACHINE NX SERVER

**Example**

Configuration sample:

```
server nxserver accept
```

**Server Ports**

tcp/5000:5200

**Client Ports**

default

**Links**[Wikipedia](#)**Notes**

Default ports used by NX server for connections without encryption.

Note that nxserver also needs the [ssh - Secure Shell Protocol](#) service to be enabled.

This information has been extracted from this [The TCP ports used by nxserver are 4000 + DISPLAY\\_BASE to 4000 + DISPLAY\\_BASE + DISPLAY\\_LIMIT. DISPLAY\\_BASE and DISPLAY\\_LIMIT are set in /usr/NX/etc/node.conf and the defaults are DISPLAY\\_BASE=1000 and DISPLAY\\_LIMIT=200.](#)

For encrypted nxserver sessions, only [ssh - Secure Shell Protocol](#) is needed.

---

**OPENVPN - OPENVPN****Server Ports**

tcp/1194 udp/1194

**Client Ports**

default

**Links**[Homepage, Wikipedia](#)**ORACLE - ORACLE DATABASE****Example**

Configuration sample:

```
server oracle accept
```

**Server Ports**

tcp/1521

**Client Ports**

default

**Links**[Wikipedia](#)**OSPF - OPEN SHORTEST PATH FIRST****Example**

Configuration sample:

```
server OSPF accept
```

**Server Ports**

89/any

**Client Ports**

any

**Links**[Wikipedia](#)**PING - PING (ICMP ECHO)**

---

**Example**

Configuration sample:

```
server ping accept
```

**Server Ports**

N/A

**Client Ports**

N/A

**Links**[Wikipedia](#)**Notes**

This services matches requests of protocol ICMP and type echo-request (TYPE=8) and their replies of type echo-reply (TYPE=0).

The ping service is stateful.

POP3 - POST OFFICE PROTOCOL

**Example**

Configuration sample:

```
server pop3 accept
```

**Server Ports**

tcp/110

**Client Ports**

default

**Links**[Wikipedia](#)

POP3S - SECURE POST OFFICE PROTOCOL

**Example**

Configuration sample:

```
server pop3s accept
```

**Server Ports**tcp/995

---

**Client Ports**

default

**Links**[Wikipedia](#)

PORTMAP - OPEN NETWORK COMPUTING REMOTE PROCEDURE CALL - PORT MAPPER

**Example**

Configuration sample:

```
server portmap accept
```

**Server Ports**

udp/111 tcp/111

**Client Ports**

any

**Links**[Wikipedia](#)

POSTGRES - POSTGRESQL

**Example**

Configuration sample:

```
server postgres accept
```

**Server Ports**

tcp/5432

**Client Ports**

default

**Links**[Wikipedia](#)

PPTP - POINT-TO-POINT TUNNELING PROTOCOL

**Example**

Configuration sample:

```
server pptp accept
```

---

**Server Ports**

tcp/1723

**Client Ports**

default

**Netfilter Modules**nf\_conntrack\_pptp ([CONFIG\\_NF\\_CONNTRACK\\_PPTP](#)), nf\_conntrack\_proto\_gre ([CONFIG\\_NF\\_CT\\_PROTO\\_GRE](#))**Netfilter NAT Modules**nf\_nat\_pptp ([CONFIG\\_NF\\_NAT\\_PPTP](#)), nf\_nat\_proto\_gre ([CONFIG\\_NF\\_NAT\\_PROTO\\_GRE](#))**Links**[Wikipedia](#)

PRIVOXY - PRIVACY PROXY

**Example**

Configuration sample:

```
server privoxy accept
```

**Server Ports**

tcp/8118

**Client Ports**

default

**Links**[Homepage](#)

RADIUS - REMOTE AUTHENTICATION DIAL IN USER SERVICE (RADIUS)

**Example**

Configuration sample:

```
server radius accept
```

**Server Ports**

udp/1812 udp/1813

**Client Ports**

default

**Links**[Wikipedia](#)

---

---

**RADIUSOLD - REMOTE AUTHENTICATION DIAL IN USER SERVICE (RADIUS)****Example**

Configuration sample:

```
server radiusold accept
```

**Server Ports**

udp/1645 udp/1646

**Client Ports**

default

**Links**[Wikipedia](#)**RADIUSOLDPROXY - REMOTE AUTHENTICATION DIAL IN USER SERVICE (RADIUS)****Example**

Configuration sample:

```
server radiusoldproxy accept
```

**Server Ports**

udp/1647

**Client Ports**

default

**Links**[Wikipedia](#)**RADIUSPROXY - REMOTE AUTHENTICATION DIAL IN USER SERVICE (RADIUS)****Example**

Configuration sample:

```
server radiusproxy accept
```

**Server Ports**

udp/1814

**Client Ports**

default

---

**Links**

[Wikipedia](#)

RDP - REMOTE DESKTOP PROTOCOL

**Example**

Configuration sample:

```
server rdp accept
```

**Server Ports**

tcp/3389

**Client Ports**

default

**Links**

[Wikipedia](#)

**Notes**

Remote Desktop Protocol is also known also as Terminal Services.

RNDC - REMOTE NAME DAEMON CONTROL

**Example**

Configuration sample:

```
server rndc accept
```

**Server Ports**

tcp/953

**Client Ports**

default

**Links**

[Wikipedia](#)

RSYNC - RSYNC PROTOCOL

**Example**

Configuration sample:

```
server rsync accept
```

---

**Server Ports**

tcp/873 udp/873

**Client Ports**

default

**Links**[Homepage](#), [Wikipedia](#)

RTP - REAL-TIME TRANSPORT PROTOCOL

**Example**

Configuration sample:

```
server rtp accept
```

**Server Ports**

udp/10000:20000

**Client Ports**

any

**Links**[Wikipedia](#)**Notes**

RTP ports are generally all the UDP ports. This definition narrows down RTP ports to UDP 10000 to 20000.

SAMBA - SAMBA

**Example**

Configuration sample:

```
server samba accept
```

**Server Ports**

many

**Client Ports**

default

**Links**[Homepage](#), [Wikipedia](#)

---

**Notes**

The samba service automatically sets all the rules for [netbios\\_ns - NETBIOS Name Service](#) , [netbios\\_dgm - NETBIOS Datagram Distribution Service](#) , [netbios\\_ssn - NETBIOS Session Service](#) and [microsoft\\_ds - Direct Hosted \(NETBIOS-less\) SMB](#) .

Please refer to the notes of the above services for more information.

NETBIOS initiates based on the broadcast address of an interface (request goes to broadcast address) but the server responds from its own IP address. This makes the "server samba accept" statement drop the server reply, because of the way the iptables connection tracker works.

This service definition includes a hack, that allows a Linux samba server to respond correctly in such situations, by allowing new outgoing connections from the well known [netbios\\_ns - NETBIOS Name Service](#) port to the clients high ports.

However, for clients and routers this hack is not applied because it would open all unprivileged ports to the samba server. The only solution to overcome the problem in such cases (routers or clients) is to build a trust relationship between the samba servers and clients.

**SANE - SANE SCANNER SERVICE****Server Ports**

tcp/6566

**Client Ports**

default

**Netfilter Modules**

nf\_conntrack\_sane ([CONFIG\\_NF\\_CONNTRACK\\_SANE](#))

**Netfilter NAT Modules**

N/A

**Links**

[Homepage](#)

**SIP - SESSION INITIATION PROTOCOL****Example**

Configuration sample:

```
server sip accept
```

**Server Ports**

udp/5060

**Client Ports**

5060 default

---

**Netfilter Modules**

nf\_conntrack\_sip ([CONFIG\\_NF\\_CONNTRACK\\_SIP](#))

**Netfilter NAT Modules**

nf\_nat\_sip ([CONFIG\\_NF\\_NAT\\_SIP](#))

**Links**

[Wikipedia](#)

**Notes**

[SIP](#) is an IETF standard protocol (RFC 2543) for initiating interactive user sessions involving multimedia elements such as video, voice, chat, gaming, etc. SIP works in the application layer of the OSI communications model.

SMTP - SIMPLE MAIL TRANSPORT PROTOCOL

**Example**

Configuration sample:

```
server smtp accept
```

**Server Ports**

tcp/25

**Client Ports**

default

**Links**

[Wikipedia](#)

SMTPS - SECURE SIMPLE MAIL TRANSPORT PROTOCOL

**Example**

Configuration sample:

```
server smtps accept
```

**Server Ports**

tcp/465

**Client Ports**

default

**Links**

[Wikipedia](#)

---

## SNMP - SIMPLE NETWORK MANAGEMENT PROTOCOL

### Example

Configuration sample:

```
server snmp accept
```

### Server Ports

udp/161

### Client Ports

default

### Links

[Wikipedia](#)

## SNMPTRAP - SNMP TRAP

### Example

Configuration sample:

```
server snmptrap accept
```

### Server Ports

udp/162

### Client Ports

any

### Links

[Wikipedia](#)

### Notes

An SNMP trap is a notification from an agent to a manager.

## SOCKS - SOCKET SECURE

### Example

Configuration sample:

```
server socks accept
```

### Server Ports

tcp/1080 udp/1080

---

**Client Ports**

default

**Links**[Wikipedia](#)**Notes**See also [RFC 1928](#).

SQUID - SQUID WEB CACHE

**Example**

Configuration sample:

```
server squid accept
```

**Server Ports**

tcp/3128

**Client Ports**

default

**Links**[Homepage](#), [Wikipedia](#)

SSH - SECURE SHELL PROTOCOL

**Example**

Configuration sample:

```
server ssh accept
```

**Server Ports**

tcp/22

**Client Ports**

default

**Links**[Wikipedia](#)

STUN - SESSION TRAVERSAL UTILITIES FOR NAT

**Example**Configuration sample:

---

```
server stun accept
```

**Server Ports**

udp/3478 udp/3479

**Client Ports**

any

**Links**

[Wikipedia](#)

**Notes**

**STUN** is a protocol for assisting devices behind a NAT firewall or router with their packet routing.

SUBMISSION - SMTP OVER SSL/TLS SUBMISSION

**Example**

Configuration sample:

```
server submission accept
```

**Server Ports**

tcp/587

**Client Ports**

default

**Links**

[Wikipedia](#)

**Notes**

Submission is essentially normal SMTP with an SSL/TLS negotiation.

SUNRPC - OPEN NETWORK COMPUTING REMOTE PROCEDURE CALL - PORT MAPPER

**Alias**

See [portmap - Open Network Computing Remote Procedure Call - Port Mapper](#)

SWAT - SAMBA WEB ADMINISTRATION TOOL

**Example**

Configuration sample:

```
server swat accept
```

**Server Ports**

tcp/901

**Client Ports**

default

**Links**[Homepage](#)

SYSLOG - SYSLOG REMOTE LOGGING PROTOCOL

**Example**

Configuration sample:

```
server syslog accept
```

**Server Ports**

udp/514

**Client Ports**

syslog default

**Links**[Wikipedia](#)

TELNET - TELNET

**Example**

Configuration sample:

```
server telnet accept
```

**Server Ports**

tcp/23

**Client Ports**

default

**Links**[Wikipedia](#)

TFTP - TRIVIAL FILE TRANSFER PROTOCOL

**Example**Configuration sample:

---

```
server tftp accept
```

**Server Ports**

udp/69

**Client Ports**

default

**Netfilter Modules**nf\_conntrack\_tftp ([CONFIG\\_NF\\_CONNTRACK\\_TFTP](#))**Netfilter NAT Modules**nf\_nat\_tftp ([CONFIG\\_NF\\_NAT\\_TFTP](#))**Links**[Wikipedia](#)

TIME - TIME PROTOCOL

**Example**

Configuration sample:

```
server time accept
```

**Server Ports**

tcp/37 udp/37

**Client Ports**

default

**Links**[Wikipedia](#)

TIMESTAMP - ICMP TIMESTAMP

**Example**

Configuration sample:

```
server timestamp accept
```

**Server Ports**

N/A

**Client Ports**

N/A

**Links**

[Wikipedia](#)

**Notes**

This services matches requests of protocol ICMP and type timestamp-request (TYPE=13) and their replies of type timestamp-reply (TYPE=14).

The timestamp service is stateful.

TOMCAT - HTTP ALTERNATE PORT

**Alias**

See [httpalt - HTTP alternate port](#)

UPNP - UNIVERSAL PLUG AND PLAY

**Example**

Configuration sample:

```
server upnp accept
```

**Server Ports**

udp/1900 tcp/2869

**Client Ports**

default

**Links**

[Homepage](#), [Wikipedia](#)

**Notes**

For a Linux implementation see: [Linux IGD](#).

UUCP - UNIX-TO-UNIX COPY

**Example**

Configuration sample:

```
server uucp accept
```

**Server Ports**

tcp/540

**Client Ports**

default

---

**Links**

[Wikipedia](#)

VMWARE - VMWARE

**Example**

Configuration sample:

```
server vmware accept
```

**Server Ports**

tcp/902

**Client Ports**

default

**Notes**

Used from VMWare 1 and up. See the [VMWare KnowledgeBase](#).

VMWAREAUTH - VMWAREAUTH

**Example**

Configuration sample:

```
server vmwareauth accept
```

**Server Ports**

tcp/903

**Client Ports**

default

**Notes**

Used from VMWare 1 and up. See the [VMWare KnowledgeBase](#).

VMWAREWEB - VMWAREWEB

**Example**

Configuration sample:

```
server vmwareweb accept
```

**Server Ports**

tcp/8222 tcp/8333

---

**Client Ports**

default

**Notes**

Used from VMWare 2 and up. See [VMWare Server 2.0 release notes](#) and the [VMWare KnowledgeBase](#).

VNC - VIRTUAL NETWORK COMPUTING

**Example**

Configuration sample:

```
server vnc accept
```

**Server Ports**

tcp/5900:5903

**Client Ports**

default

**Links**[Wikipedia](#)**Notes**

VNC is a graphical desktop sharing protocol.

WEBCACHE - HTTP ALTERNATE PORT

**Alias**See [httpalt - HTTP alternate port](#)

WEBMIN - WEBMIN ADMINISTRATION SYSTEM

**Example**

Configuration sample:

```
server webmin accept
```

**Server Ports**

tcp/10000

**Client Ports**

default

**Links**[Homepage](#)

---

## WHOIS - WHOIS PROTOCOL

### Example

Configuration sample:

```
server whois accept
```

### Server Ports

tcp/43

### Client Ports

default

### Links

[Wikipedia](#)

## XBOX - XBOX LIVE

### Example

Configuration sample:

```
client xbox accept
```

### Server Ports

many

### Client Ports

default

### Notes

Complex service definition for the Xbox live service.

See program source for contributor details.

## XDMCP - X DISPLAY MANAGER CONTROL PROTOCOL

### Example

Configuration sample:

```
server xdmcp accept
```

### Server Ports

udp/177

### Client Ports

default

---

**Links**

[Wikipedia](#)

**Notes**

See [Gnome Display Manager](#) for a discussion about XDMCP and firewalls (Gnome Display Manager is a replacement for XDM).

**See Also**

[Sanewall program: sanewall\(1\)](#)

[Sanewall configuration: sanewall.conf\(5\)](#)

---

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