TCP-Relay

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	TITLE : TCP-Relay		
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Contents

1 Introduction

tcprelay is a TCP connection forwarder with load balancing capabilities. If compiled with TLS support, it may be used as SSL encryption wrapper.

1.1 Download

Source and documentation are available from http://www.pro-bono-publico.de/projects/.

2 Operation

This section gives a brief and basic overview how to run **tcprelay**.

In earlier versions, **tcprelay** wasn't a standalone program but had to be invoked by **spawnd**. This has changed, as **spawnd** is now part of the **tcprelay** binary. However, using a dedicated **spawnd** process is still possible and, more importantly, the **spawnd** configuration options and documentation remain valid.

tcprelay may use auxilliary **MAVIS** backend modules for authentication and authorization.

2.1 Command line syntax

The only mandatory argument is the path to the configuration file:

```
tcprelay [ -P ] [ -d level ]  [ -i child_id ] configuration-file [ id ]
```

If the program was compiled with CURL support, *configuration-file* may be an URL.

Keep the `-P` option in mind - it is imperative that the configuration file supplied is syntactically correct, as the daemon won't start if there are any parsing errors at start-up.

The `-d` switch enables debugging. You most likely don't want to use this. Read the source if you need to.

The `-i` option is only honoured if the build-in **spawnd** functionality is used. In that case, it selects the configuration ID for **tcprelay**, while the optional last argument *id* sets the ID of the **spawnd** configuration section.

2.2 Signals

Both the master (that's the process running the **spawnd** code) and the child processes (running the **tcprelay** code) intercept the `SIGHUP` signal:

- The master process will restart upon reception of `SIGHUP`, re-reading the configuration file. The child processes will recognize that the master process is no longer available. It will continue to serve the existing connections and terminate when idle.
- If `SIGHUP` is sent to a child process it will stop accepting new connections from its master process. It will continue to serve the existing connections and terminate when idle.

2.3 Event mechanism selection

Several level-triggered event mechanisms are supported. By default, the one best suited for your operating system will be used. However, you may use the environment variable `IO_POLL_MECHANISM` to select a specific one.

The following event mechanisms are supported (in order of preference):

- port (Sun Solaris 10 and higher only, `IO_POLL_MECHANISM=32`)

- kqueue (*BSD and Darwin only, `IO_POLL_MECHANISM=1`)
- /dev/poll (Sun Solaris only, `IO_POLL_MECHANISM=2`)
- epoll (Linux only, `IO_POLL_MECHANISM=4`)
- poll (`IO_POLL_MECHANISM=8`)
- select (`IO_POLL_MECHANISM=16`)

Environment variables can be set in the configuration file at top-level:

```
setenv IO_POLL_MECHANISM = 4
```

2.4 Configuration Syntax

A single configuration file is sufficient for configuring both **spawnd** and **tcprelay**. The basic format for this file is:

```
id = spawnd {
    # spawnd configuration directives
}

id = tcprelay {
    # tcprelay configuration directives
}
```

For example, the `spawnd` section could look similar to:

```
    listen = { port = 80}
    spawn = { exec /usr/local/libexec/tcprelay }
```

This tells spawnd to accept connections on the port given, and feed them to a **tcprelay** process. Please see the **spawnd** documentation for more configuration details.

tcprelay has its own set of configuration directives:

- `local address` = *addr*

  Specifies the local address used for outgoing connections.

- `rebalance` = *n*

  Re-balances peers after *n* requests. May be used to reactivate dead peers. Use with care. Default: unset.

- `remote` ={ ... }

  The `remote` sections tell **tcprelay** where to relay connections to. Valid configuration directives inside the curly brackets are:

  – `address` = *IPAddress*
  – `port` = *TCPPort*
  – `protocol` = (`TCP` | `SCTP`)
  – `weight` = *Weight*

  Both the `address` and `port` directives are mandatory. The load balancing factor *weight* is optional and defaults to 1. Its value should somehow correspond to the load a destination can handle.

- `retire` = *count*

  If set, the daemon will terminate after processing *count* sessions, what may be useful to remedy the effects of memory leaks. By default, this is not set.

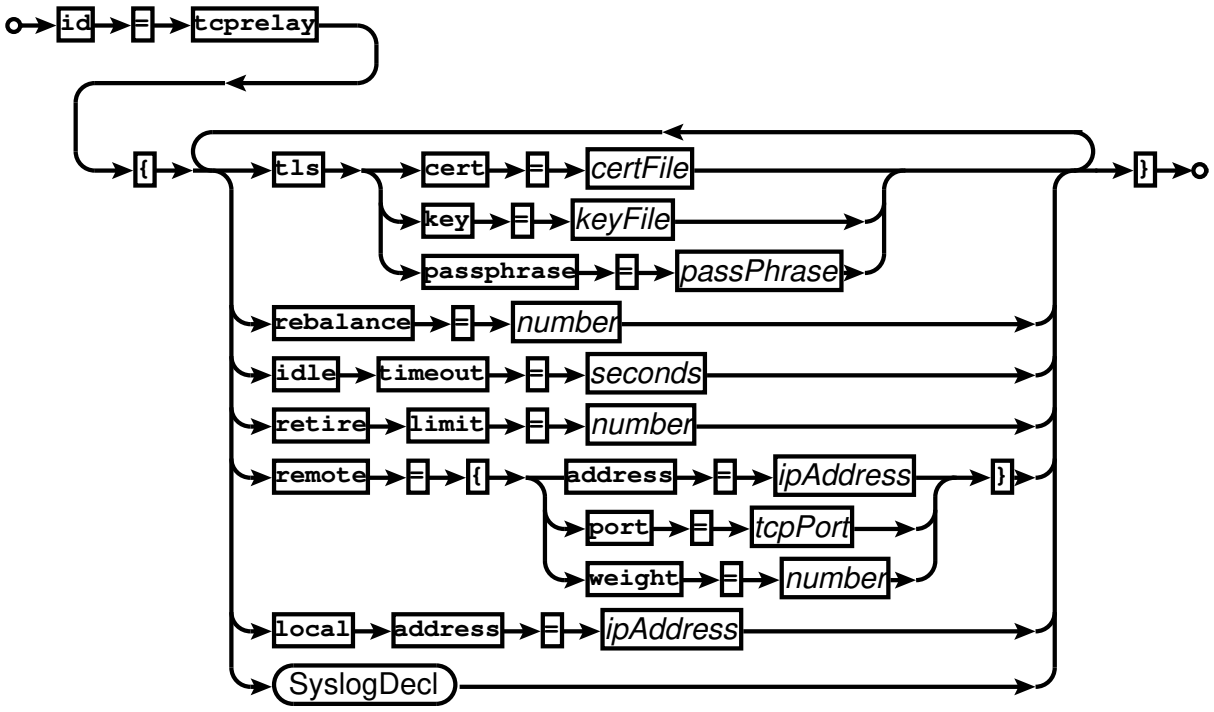
- `syslog` ((`ident` = Ident) | (`level` = Level) | (`facility` = Facility))

  Selects syslog *ident*, *level* and *facility*. Defaults to:

```
syslog ident = program-name
syslog facility = UUCP
syslog level = INFO
```

- `idle timeout =`*Seconds*
  Set session timeout (default: `0`).
- `tls certfile =` *CertFile*
  `tls keyfile =` *KeyFile*
  `tls passphrase =` *PassPhrase*
  If compiled with TLS/SSL, *PassPhrase*, *CertFile* and *KeyFile* may be specified using this option.
  KeyFile may be omitted, it defaults to *CertFile*.

2.4.1 Railroad Diagram



Railroad diagram: TcprelayConfig

2.5 Sample configuration

```
#!/usr/local/sbin/spawnd
id = spawnd {
    listen = { port = 2222 }
    listen = { address = ::0 port = 2222 }
    listen = { ::0 port = 2224 }
    listen = { port = 2225 tls = yes }
    spawn {
        users max = 4000
        users min = 10
        servers min = 1
        servers max = 20
    }
```

```
}

id = tcprelay {
  remote = { address = 169.254.1.2 port = 22 }
  ssl cert = /some/where/sample.pem
  ssl passphrase =  12345
}
```

3 Bugs

- TLS re-negotiation is currently untested and may or may not work.
- There may still be some nasty bugs lurking in the code. Please contact the author via the "Event-Driven Servers" Google Group at event-driven-servers@googlegroups.com or http://groups.google.com/group/event-driven-servers if you think you've found one.

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- **The following applies if the software was compiled with TLS support:**

  This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/).

  This product includes cryptographic software written by Eric Young (eay@cryptsoft.com").

- **Portions of the parsing code are taken from Cisco's tac_plus developers kit which is distributed under the following license:**

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