



Quick Note 8

OSPF configuration and the OSPF file (ospf.conf)

Digi Technical Support

February 2016

1 INTRODUCTION

This Quick Note will detail the steps and options that are involved in configuring OSPF on a TransPort. It is not a step by step "how-to". The syntax of the OSPF configuration file will be explained and some useful debug commands will also be shown.

1.1 Version

Version	Status
1.0	Published
2.0	Updated and rebranded
2.1	Updated for new GUI
2.2	Updated screenshots and instructions for new web interface, rebranding (Feb 2016)

2 CONFIGURATION

There are two parts to configuring OSPF on the TransPort. The first section deals with the configuration of the OSPF daemon via a configuration file. The second section deals with the OSPF configuration settings on the web interface.

2.1 Configuration file

The configuration of OSPF on a TransPort is held in a separate text file, usually named *ospf.conf*. This file will need to be manually created using a text editor then placed on to the TransPort via FTP for example.

Below is an example *ospf.conf* file with two areas. Please note that an interface can only exist in one area. A '#' symbol is used to denote a comment; as can be seen from the example, there are three distinct sections to the config file.

```
# macros
hi=10
# global configuration
redistribute default
router-id 192.168.1.1
#areas
area 0.0.0.0 {
    interface eth0 {
        hello-interval $hi
    }
    interface eth1 {
        passive
    }
    interface ppp1 {
        passive
    }
    interface tun0 {
        hello-interval 20
        metric 15
    }
}
area 0.0.0.90 {
    interface eth2 {
        passive
    }
    interface tun1 {
        hello-interval $hi
        metric 20
    }
}
```

NOTE: Ensure there is a carriage return (i.e. press enter) after the last '}'

The sections are:

Macros – These are user defined variables that set values of parameters used in the rest of the configuration.

Global configuration – Any of the area or interface configuration option can be set to a default value here to help simplify the configuration.

Areas – At least one area must exist. An area groups interfaces together. Any parameters set in the areas will override any global options. Valid interfaces are ethx, pppx and tunx, where the x is the interface number.

Please see section 4 for a complete list of all available commands and their functions.

2.2 Web interface configuration

There is also a small amount of setup required, in the TransPort's web interface; this can be found by navigating to the following section:

[Configuration - Network](#) > [IP Routing/Forwarding](#) > [OSPF](#)

▼ OSPF

Enable OSPF

OSPF Configuration Filename:

Restart OSPF after configuration file is saved

Restart OSPF if a fatal error occurs

OSPF Tracing

Ignore MTU indications

Use Interface IPsec source IP

To view the debug output, connect to the TransPort via a serial connection and type `ospf 0 debug on` and `debug x` (where *x* is the ASY port number e.g. 0,1,2 or 3), or `debug t` if you are connecting via Telnet. All of the OSPF debug information will now be displayed. To stop the debug information, alter the debug level back to off and then disable and re-enable OSPF. To turn off other debug, type "debug off".

3 CHECKING OSPF

There are a number of commands for checking the status of the OSPF routing process. The commands and their functions are listed below

- **ospfctl show interface** – Lists all of the interfaces on the TransPort and their status within OSPF, i.e. if they are up or down.
- **ospfctl show database** – Displays the contents of the OSPF database and the routing entries that are contained within it. This will show learned routes and routes that are local to the router.
- **ospfctl show rib** – Displays the Routing Information Base (rib) table, which holds all of the available routes on the router. There may be duplicate routes to the same destination in this table.
- **ospfctl show fib** – Displays the Forward Information Base (fib) table. This table holds the routes which the router will actually use to forward traffic, therefore there will be no duplicate routes held in this table.
- **ospfctl show neighbour** – Displays a list of the OSPF neighbours that are connected to the LAN segments which are attached to this router. The current state of each neighbour will also be displayed in the table.

It is also worth checking the routing table via the web interface, or the command line interface (CLI).

- **route print** – Displays the entries in the routing table, shows networks that are attached to interfaces, static routes but also it will include routes learned dynamically from both BGP and OSPF.

4 LIST OF THE OSPF.CONF PARAMETERS

DESCRIPTION

The OSPF daemon on a TransPort router implements the Open Shortest Path First protocol version 2 as described in RFC 2328.

SECTIONS

The ospfd.conf config file is divided into three main sections.

Macros

User-defined variables may be defined and used later, simplifying the configuration file.

Global Configuration

Global settings for OSPF. A number of global settings can be overruled in specific areas or interfaces.

Areas

An OSPF router must be a member of at least one area. Areas are used to group interfaces, simplifying configuration.

MACROS

Macros can be defined that will later be expanded in context. Macro names must start with a letter, and may contain letters, digits, and underscores. Macro names may not be reserved words (for example, area, interface, or hello-interval).

For example:

```
hi=5
area 0.0.0.0 {
    interface em0 {
        hello-interval $hi
    }
}
```

The same can be accomplished by specifying the hello-interval globally or within the area declaration.

GLOBAL CONFIGURATION

All interface related settings can be configured globally, per area and per interface. The only settings that can be set globally and not overruled are listed below.

[no] redistribute (static|connected|default)

If set to connected, routes to directly attached networks will be announced over OSPF. If set to static, static routes will be announced over OSPF. If set to default, a default route pointing to this router will be announced over OSPF. Redistribute statements are evaluated in sequential order, from first to last. The first matching rule decides if a route should be redistributed or not. Matching rules starting with no will force the route to be not announced. The only exception is default, which will be set no matter what, and additionally no cannot be used together with it.

rfc1583compat (yes|no)

If set to yes, decisions regarding AS-external routes are evaluated according to RFC 1583. The default is no.

router-id address

Set the router ID; if not specified, the lowest IP address of the router will be used.

spf-delay seconds

Set SPF delay in seconds. The delay between receiving an update to the link state database and starting the shortest path first calculation. The default value is 1; valid range is 1-10 seconds.

spf-holdtime seconds

Set the SPF holdtime in seconds. The minimum time between two consecutive shortest path first calculations. The default value is 5 seconds; the valid is range 1-5 seconds.

AREAS

Areas are used for grouping interfaces. All interface specific parameters can be configured per area, overruling the global settings.

area address

Specify an area section, grouping one or more interfaces.

```
area 0.0.0.0 {
    interface ppp0 {
    }
    interface eth1 {
    }
}
```

INTERFACES

Each interface can have several parameters configured individually, otherwise they are inherited.

```
interface ppp0 {  
}
```

Interface specific parameters are listed below.

auth-key key

Set the authentication key for simple authentication. Up to 8 characters can be specified.

auth-md key-id key

Set the authentication key-id and key for crypt authentication. The valid range for key-id is 0-255. Up to 16 characters can be specified for key. Multiple keys may be specified.

auth-md-keyid key-id

Configure the key-id to use for crypt authentication. The valid range for key-id is 0-255. The default key-id is 1. While key-id 0 is valid, it is unavailable on Cisco devices.

auth-type (none|simple|crypt)

Set the authentication type. The default is none. Simple authentication uses a plaintext password, up to 8 characters. Crypt authentication uses an MD5 hash.

hello-interval seconds

Set the hello interval. The default value is 10; valid range is 1-65535 seconds.

metric cost

Set the interface metric a.k.a. cost. The default value is 10; valid range is 1-65535.

passive

Prevent transmission and reception of OSPF packets on this interface. The specified interface will be announced as a stub network.

retransmit-interval seconds

Set retransmit interval. The default value is 5 seconds; valid range is 5-3600 seconds.

router-dead-time seconds

Set the router dead time, a.k.a. neighbor inactivity timer. The default value is 40 seconds; valid range is 2-2147483647 seconds. When a neighbor has been inactive for router-dead-time its state is set to DOWN. Neighbors that have been inactive for more than 24 hours are completely removed.

router-priority priority

Set the router priority. The default value is 1; valid range is 0-255. If set to 0 the router is not eligible as a Designated Router or Backup Designated Router.

transmit-delay seconds

Set the transmit delay. The default value is 1; valid range is 1-3600 seconds.