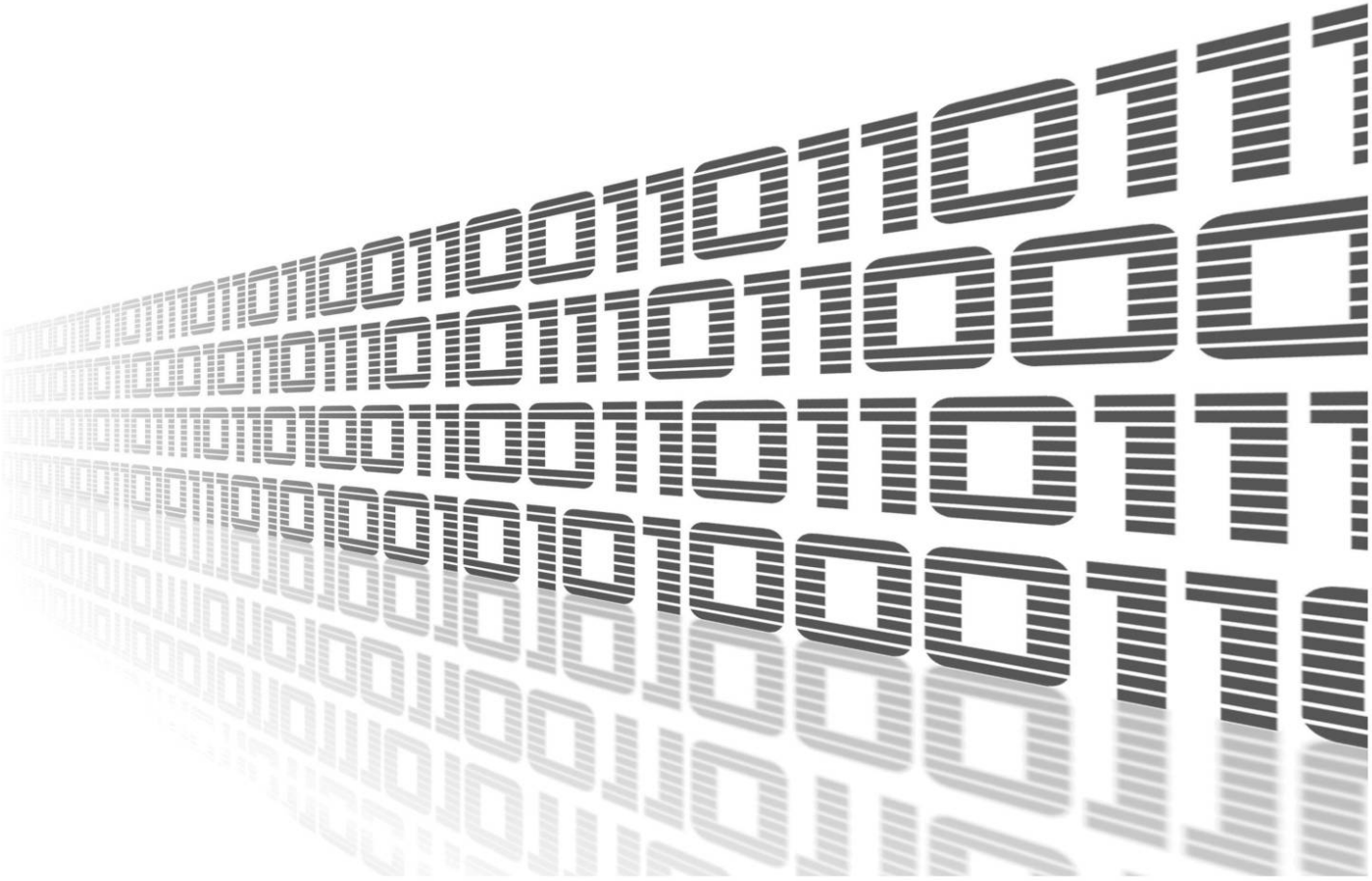
ADVANTECH

RouterApp

Protocol OSPF



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Used symbols

Danger – Information regarding user safety or potential damage to the router.

Attention – Problems that can arise in specific situations.

Information – Useful tips or information of special interest.

Example – Example of function, command or script.

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1. Changelog

1.1 Protocol OSPF Changelog

v1.0.0 (2012-01-19)

- First release

v1.1.0 (2012-12-04)

- Added support of module IS-IS

v1.2.0 (2013-01-29)

- Updated Quagga version to 0.99.21

v1.3.0 (2013-11-04)

- Derived daemon Zebra

v1.4.0 (2016-03-14)

- Added support of FW 4.0.0+

v1.5.0 (2017-03-20)

- Recompiled with new SDK

v1.6.0 (2018-08-08)

- Updated quagga version to 1.2.4
- Modified cmd "write" to store configuration via vty

v1.6.1 (2019-01-02)

- Added licenses information

v1.6.2 (2019-08-22)

- Fixed crashing RIP protocol

v1.7.0 (2020-06-04)

- Added support of IPv6

v1.8.0 (2020-10-01)

- Updated CSS and HTML code to match firmware 6.2.0+
- Linked statically with c-ares 1.16.1

2. Description of router app

Router app *Protocol OSPF* is not contained in the standard router firmware. Uploading of this router app is described in the Configuration manual (see Chapter Related Documents).

Due to this module the OSPF routing protocol is available. This protocol is designed for exchanging routing information within an autonomous system. The OSPF is a link state protocol, which means that routers maintain a map of the network (link state database) that is updated after any change to the network topology. To computes the shortest (least cost) path between the router and all the networks is used Dijkstra's algorithm. Then these data are filled in the routing table.

OSPF router app is based on software called Quagga. It is a routing software package that provides TCP/IP based routing services. The Quagga is composed of several deamons. The most important is the *zebra* deamon, which collects routing information, cooperates with the system core and adjusts its routing tables. The rest of deamons including the *ospfd* deamon serves as an interface of the central deamon (zebra) for routing protocols. Each deamon has its own configuration file.

For configuration *ospfd* and *zebra* deamons are available web interfaces, which are invoked by pressing the *OSPF* or *ZEBRA* item on the *Router apps* page of the router web interface. The left part of both web interfaces (ie. menu) contains only the *Return* item, which switches these web interfaces to the interface of the router. In the right part is always field for configuring corresponding daemon.

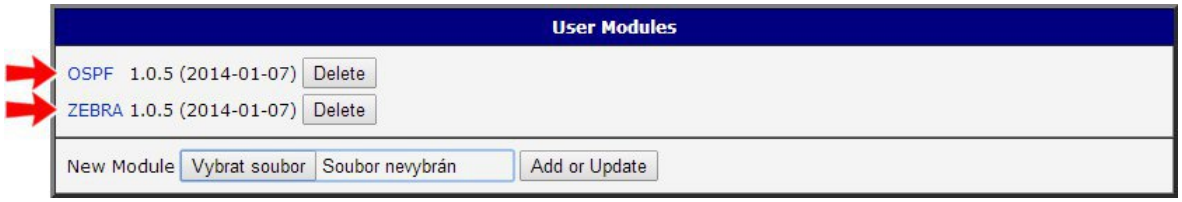

Figure 1: Choice of web interface

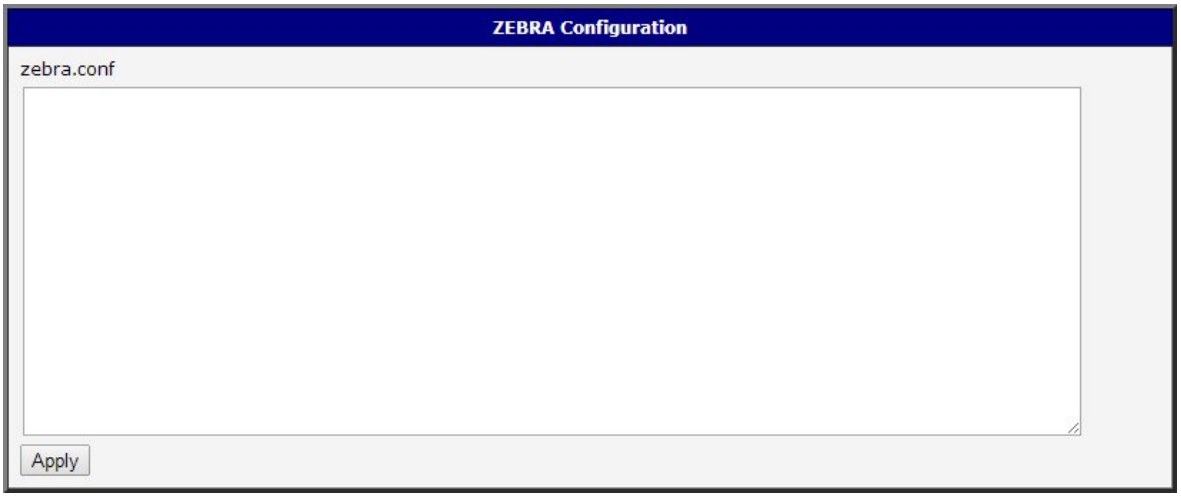

Figure 2: ZEBRA web interface

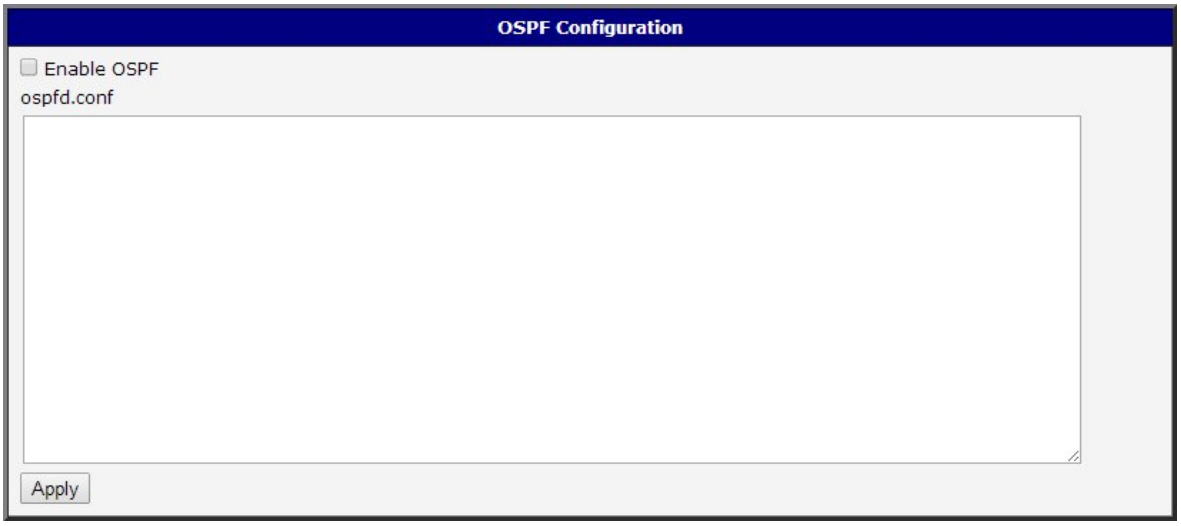

Figure 3: OSPF web interface

Important notices:

- Using telnet is vty interface of zebra and ospfd deamons available only via the loopback interface 127.0.0.1.
- New configuration files should be created only by an experienced user!

2.1 Example of configuration

The figure below shows a model situation of using the *OSPF* router app. Then there are mentioned examples of configuration files of *zebra* and *ospfd* deamons. In this form are entered in the configuration form in the web interface *OSPF* or *ZEBRA*.

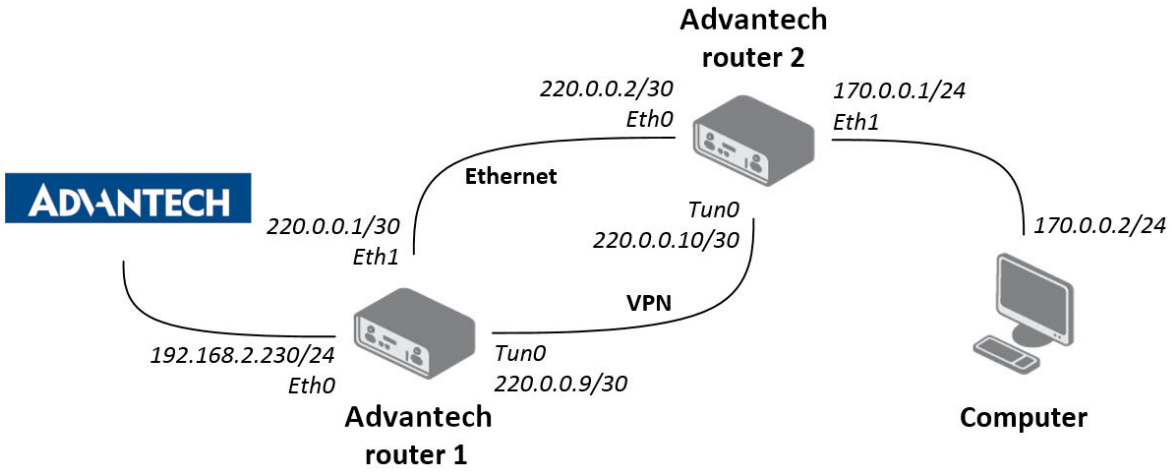

Figure 4: Example of configuration

An example of the zebra configuration file (*zebra.conf*):

```
!
password conel
enable password conel
log syslog
!
interface eth0
!
interface eth1
!
interface tun0
!
interface ppp0
!
!
line vty
!
```

2.1.1 IPv4 Configuration

An example of the *ospfd.conf* configuration file for a device which is referred to as *Advantech router 1* in the figure above:

```
!
password conel
enable password conel
!
log syslog
!
! interface ven
! interface eth0
! interface ppp0
! po eth
interface eth1
ip ospf cost 1
ip ospf dead-interval 40
ip ospf hello-interval 10
!
! tunelem
interface tun0
ip ospf cost 100
ip ospf dead-interval 40
ip ospf hello-interval 30
!
!
router ospf
ospf router-id 220.0.0.1
redistribute connected metric-type 1
redistribute static metric-type 1
!
network 220.0.0.0/24 area 0
!
line vty
!
```

An example of the *ospfd.conf* configuration file for a device which is referred to as *Advantech router 2* in the figure above:

```
!
password conel
enable password conel
!
log syslog
!
! interface ven
! interface eth0
! interface ppp0
! po eth
interface eth0
ip ospf cost 1
ip ospf dead-interval 40
ip ospf hello-interval 10
!
! tunelem
interface tun0
ip ospf cost 100
ip ospf dead-interval 40
ip ospf hello-interval 30
!
!
router ospf
ospf router-id 220.0.0.2
redistribute connected metric-type 1
redistribute static metric-type 1
!
network 220.0.0.0/24 area 0
!
line vty
!
```

2.1.2 IPv6 Configuration

An example of the *ospf6d.conf* configuration file for a device which is referred to as *Advantech router 1* in the figure above:

```
!
password conel
enable password conel
!
log syslog
!
interface eth1
ipv6 ospf6 instance-id 1
ipv6 ospf6 cost 1
ipv6 ospf6 dead-interval 40
ipv6 ospf6 hello-interval 10
ipv6 ospf6 retransmit-interval 5
!
interface tun0
ipv6 ospf6 instance-id 2
ipv6 ospf6 cost 1
ipv6 ospf6 dead-interval 40
ipv6 ospf6 hello-interval 10
ipv6 ospf6 retransmit-interval 5
!
!
router ospf6
router-id 220.0.0.1
redistribute connected
redistribute static
interface eth0 area 0.0.0.0
interface eth1 area 0.0.0.0
```

An example of the *ospf6d.conf* configuration file for a device which is referred to as *Advantech router 2* in the figure above:

```
!
password conel
enable password conel
!
log syslog
!
interface eth0
ipv6 ospf6 instance-id 1
ipv6 ospf6 cost 1
ipv6 ospf6 dead-interval 40
ipv6 ospf6 hello-interval 10
ipv6 ospf6 retransmit-interval 5
!
interface tun0
ipv6 ospf6 instance-id 2
ipv6 ospf6 cost 1
ipv6 ospf6 dead-interval 40
ipv6 ospf6 hello-interval 10
ipv6 ospf6 retransmit-interval 5
!
!
router ospf6
router-id 220.0.0.2
redistribute connected
redistribute static
interface eth0 area 0.0.0.0
interface eth1 area 0.0.0.0
```

3. Basic commands

The following table lists basic commands which can be used when editing *ospfd.conf* and *ospf6d.conf* files and description of these commands:

Command	Description
router ospf	Enables the OSPF process
no router ospf	Disables the OSPF process
ospf router-id *<ip-address>*	Sets the router-ID of the OSPF process
no ospf router-id	Forces OSPF to use the previous OSPF router-id behavior
log-adjacency-changes	Configures the router to send a syslog message when an OSPF neighbor goes up or down
no log-adjacency-changes	Turns off *log-adjacency-changes* function
network *<address>* area *<areaid>*	Defines the interfaces on which OSPF runs and defines the area ID for those interfaces
no network *<address>* area *<area-id>*	Disables OSPF routing for interfaces defined with *address*
area *<area-id>* range *<address mask>*	Consolidates and summarizes routes at an area boundary
no area *<area-id>* range *<address mask>*	Disables this function
area *<area-id>* authentication	Enables authentication for an OSPF area
no area *<area-id>* authentication	Removes an area's authentication
ip ospf authentication-key *<password>*	Assigns a password to be used by neighboring routers that are using OSPF's simple password authentication
no ip ospf authentication-key *<password>*	Removes a previously assigned OSPF password
ip ospf cost *<cost>*	Specifies the cost of sending packet on an interface
no ip ospf cost	Resets the path cost to the default value
ip ospf dead-interval *<seconds>*	Sets how long hello packets must not have been seen before its neighbors declare the router down
no ip ospf dead-interval	Returns to the default time
ip ospf hello-interval *<seconds>*	Specifies the interval between hello packets that are sending on the interface
no ip ospf hello-interval	Returns to the default time
ip ospf priority *<number>*	Sets the router priority (0-255)
redistribute *<protocol>*	Redistributes routes from one routing domain into another domain

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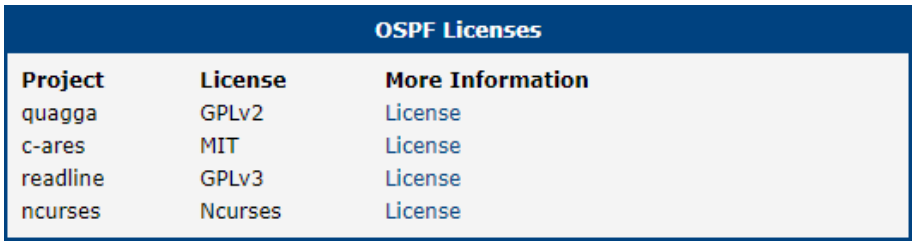
Command	Description
no redistribute *<protocol>*	Disables redistribution
default-metric	Sets default metric values for the OSPF routing protocol
no default-metric	Returns to the default state
show ip ospf	Displays general information about OSPF routing processes
show ip ospf interface	Displays OSPF-related interface information
show ip ospf neighbor	Displays OSPF-neighbor information

Table 1: Basic commands

4. Licenses

Summarizes Open-Source Software (OSS) licenses used by this module.



OSPF Licenses

Project	License	More Information
quagga	GPLv2	License
c-ares	MIT	License
readline	GPLv3	License
ncurses	Ncurses	License

Figure 5: Licenses

5. Related Documents

You can obtain product-related documents on *Engineering Portal* at *icr.advantech.cz* address.

To get your router's *Quick Start Guide*, *User Manual*, *Configuration Manual*, or *Firmware* go to the *Router Models* page, find the required model, and switch to the *Manuals* or *Firmware* tab, respectively.

The *Router Apps* installation packages and manuals are available on the *Router Apps* page.

For the *Development Documents*, go to the *DevZone* page.