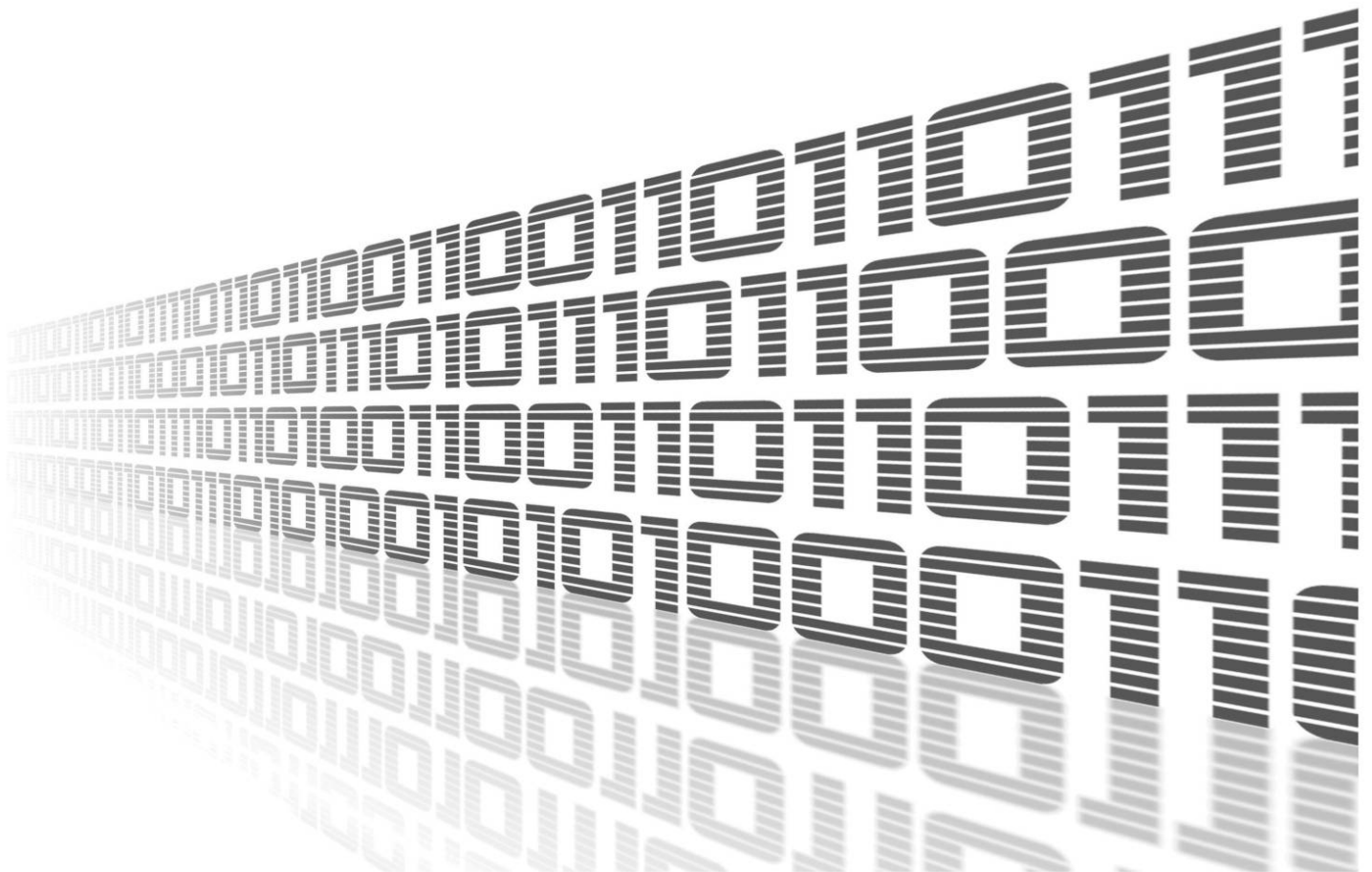




## NHRP



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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 NHRP Changelog

### **v1.0.0 (2013-05-02)**

- First release.

### **v1.0.1 (2013-05-07)**

- Fixed init script.

### **v1.0.2 (2015-02-04)**

- Added new version of opennhrp package.

### **v1.0.3 (2015-02-11)**

- Added support of IPSec-tools.
- Fixed symlinks to binary utils.

### **v1.1.0 (2017-03-20)**

- Recompiled with new SDK.

### **v1.1.1 (2019-01-02)**

- Added license information.

### **v1.2.0 (2020-10-01)**

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

### **v1.2.1 (2020-12-21)**

- Added ip-up script.

### **v1.2.2 (2021-05-04)**

- Added debug level option.
- Changed default configuration - replaced "racoon" by "service ipsec start/stop".

## 2. Description of the module



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

*The Next Hop Resolution Protocol (NHRP)* plays a role in Dynamic Multipoint Virtual Private Network (DMVPN). A limitation of NHRP is its inability to improve multicast protocols.

# 3. Installation

Like every other Router App, the NHRP is installed in *Router Apps* section in the router configuration page. Once the installation of the Router App is complete, the App is listed among other installed Apps. The router app contains GUI with Status and Configuration section which can be found showcased in the chapter below.

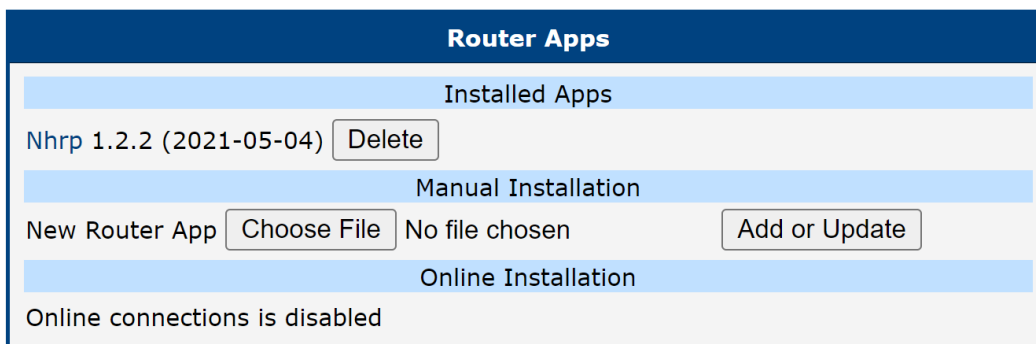
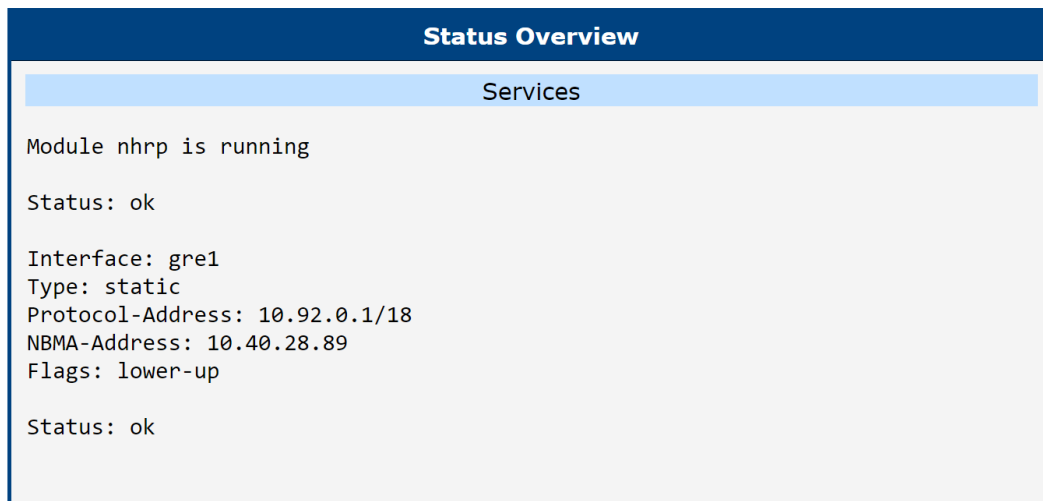


Figure 1: Router Apps

# 4. How to use

## 4.1 Status

Status Overview section showcases the current state of the NHRP and information about current configuration.



The screenshot shows a web interface titled "Status Overview". Under the "Services" section, it displays the following information:

```
Module nhrp is running

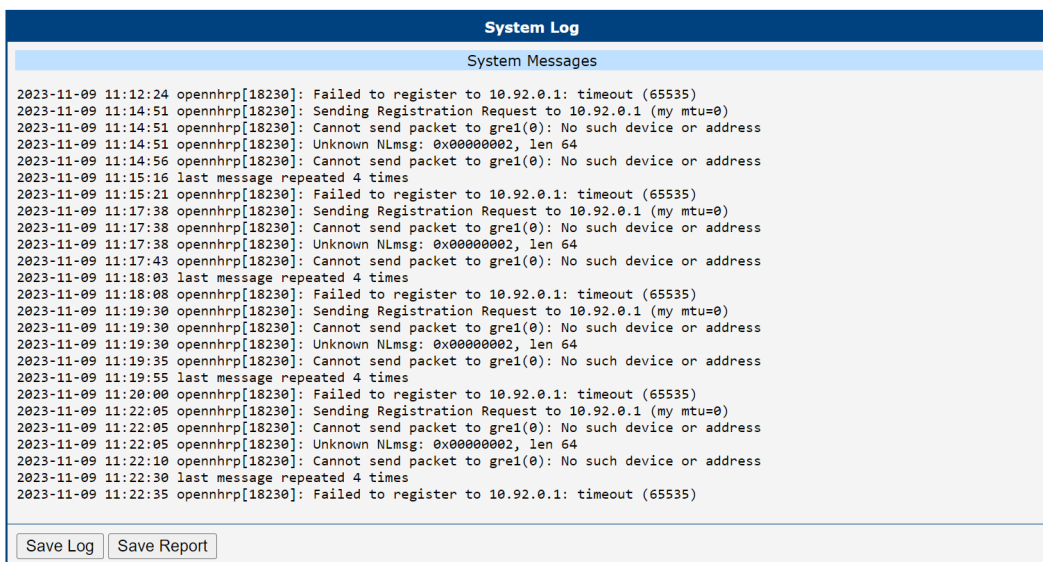
Status: ok

Interface: gre1
Type: static
Protocol-Address: 10.92.0.1/18
NBMA-Address: 10.40.28.89
Flags: lower-up

Status: ok
```

Figure 2: Status Overview

Status System Log contains record of system messages of the device.



The screenshot shows a web interface titled "System Log". Under the "System Messages" section, it displays a list of system messages:

```
2023-11-09 11:12:24 opennhp[18230]: Failed to register to 10.92.0.1: timeout (65535)
2023-11-09 11:14:51 opennhp[18230]: Sending Registration Request to 10.92.0.1 (my mtu=0)
2023-11-09 11:14:51 opennhp[18230]: Cannot send packet to gre1(0): No such device or address
2023-11-09 11:14:51 opennhp[18230]: Unknown Nlmsg: 0x00000002, len 64
2023-11-09 11:14:56 opennhp[18230]: Cannot send packet to gre1(0): No such device or address
2023-11-09 11:15:16 last message repeated 4 times
2023-11-09 11:15:21 opennhp[18230]: Failed to register to 10.92.0.1: timeout (65535)
2023-11-09 11:17:38 opennhp[18230]: Sending Registration Request to 10.92.0.1 (my mtu=0)
2023-11-09 11:17:38 opennhp[18230]: Cannot send packet to gre1(0): No such device or address
2023-11-09 11:17:38 opennhp[18230]: Unknown Nlmsg: 0x00000002, len 64
2023-11-09 11:17:43 opennhp[18230]: Cannot send packet to gre1(0): No such device or address
2023-11-09 11:18:03 last message repeated 4 times
2023-11-09 11:18:08 opennhp[18230]: Failed to register to 10.92.0.1: timeout (65535)
2023-11-09 11:19:30 opennhp[18230]: Sending Registration Request to 10.92.0.1 (my mtu=0)
2023-11-09 11:19:30 opennhp[18230]: Cannot send packet to gre1(0): No such device or address
2023-11-09 11:19:30 opennhp[18230]: Unknown Nlmsg: 0x00000002, len 64
2023-11-09 11:19:35 opennhp[18230]: Cannot send packet to gre1(0): No such device or address
2023-11-09 11:19:55 last message repeated 4 times
2023-11-09 11:20:00 opennhp[18230]: Failed to register to 10.92.0.1: timeout (65535)
2023-11-09 11:22:05 opennhp[18230]: Sending Registration Request to 10.92.0.1 (my mtu=0)
2023-11-09 11:22:05 opennhp[18230]: Cannot send packet to gre1(0): No such device or address
2023-11-09 11:22:05 opennhp[18230]: Unknown Nlmsg: 0x00000002, len 64
2023-11-09 11:22:10 opennhp[18230]: Cannot send packet to gre1(0): No such device or address
2023-11-09 11:22:30 last message repeated 4 times
2023-11-09 11:22:35 opennhp[18230]: Failed to register to 10.92.0.1: timeout (65535)
```

At the bottom of the log, there are two buttons: "Save Log" and "Save Report".

Figure 3: System Log



## 4.2 Configuration

Go to the *Router Apps* page and then *NHRP* to configure the *NHRP* router app. Tick the *Enable NHRP* box and insert the configuration commands in the fields.

### NHRP Configuration

Enable NHRP

`/var/nhrp/opennhrp.conf`

```
interface gre1
map 192.168.234.1/24 10.40.29.128 register
holding-time 60
shortcut
redirect
non-caching
```

`/var/nhrp/opennhrp-script`

```
#!/bin/sh

case $1 in
interface-up)
    ip route flush proto 42 dev $NHRP_INTERFACE
    ip neigh flush dev $NHRP_INTERFACE
    ;;
peer-register)
    ;;
peer-up)
    if [ -n "$NHRP_DESTMTU" ]; then
        ARGS=`ip route get $NHRP_DESTNBMA from $NHRP_SRCNBMA | head -1`
        ip route add $ARGS proto 42 mtu $NHRP_DESTMTU
    fi
    echo "Create link from $NHRP_SRCADDR ($NHRP_SRCNBMA) to $NHRP_DESTADDR ($NHRP_DESTNBMA)"
    /etc/init.d/ipsec start
    ..

```

Debug Error ▼

Figure 4: Configuration

Field `/var/nhrp/opennhrp.conf` – insert the following configuration. It is to register the proper interface to the NHRP headquarter hub router and other needed parameters (edit to your own needs).

```
interface gre1
map 192.168.234.1/24 10.40.29.128 register
holding-time 60
shortcut
redirect
non-caching
```

Field `/var/nhrp/opennhrp-script` – this is the *OpenNHRP* script to define the behavior in various situations. You can left it unchanged. If you accidentally edit it, you can copy it from the next page.

Press the *Apply* button to save the changes. Use the same procedure for all spokes – the *NHRP Configuration* remains the same for all the spoke routers.

Field `/var/nhrp/opennhrp-script`

```
#!/bin/sh

case $1 in
interface-up)
ip route flush proto 42 dev $NHRP_INTERFACE
ip neigh flush dev $NHRP_INTERFACE
;;
peer-register)
;;
peer-up)
if [ -n "$NHRP_DESTMTU" ]; then
ARGS='ip route get $NHRP_DESTNBMA from $NHRP_SRCNBMA | head -1'
ip route add $ARGS proto 42 mtu $NHRP_DESTMTU
fi
echo "Create link from $NHRP_SRCADDR ($NHRP_SRCNBMA) to $NHRP_DESTADDR ($NHRP_DESTNBMA)"
/etc/init.d/ipsec start
;;
peer-down)
echo "Delete link from $NHRP_SRCADDR ($NHRP_SRCNBMA) to $NHRP_DESTADDR ($NHRP_DESTNBMA)"
if [ "$NHRP_PEER_DOWN_REASON" != "lower-down" ]; then
/etc/init.d/ipsec stop
fi
ip route del $NHRP_DESTNBMA src $NHRP_SRCNBMA proto 42
;;
route-up)
echo "Route $NHRP_DESTADDR/$NHRP_DESTPREFIX is up"
ip route replace $NHRP_DESTADDR/$NHRP_DESTPREFIX proto 42 via $NHRP_NEXTHOP dev
    $NHRP_INTERFACE
ip route flush cache
;;
route-down)
echo "Route $NHRP_DESTADDR/$NHRP_DESTPREFIX is down"
ip route del $NHRP_DESTADDR/$NHRP_DESTPREFIX proto 42
ip route flush cache
;;
esac

exit 0
```

## 5. Related Documents

[1] NHRP Manual Pages: <https://docs.frrouting.org/en/latest/nhrpd.html>

You can obtain product-related documents on *Engineering Portal* at [icr.advantech.cz](http://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.