Redistribution to the OSPF protocol

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Route redistribution from ODR to OSPF

Let's look at an example of routing information redistribution from the ODR protocol to the OSPF protocol, using the network scheme described in the main document (Figure 1).

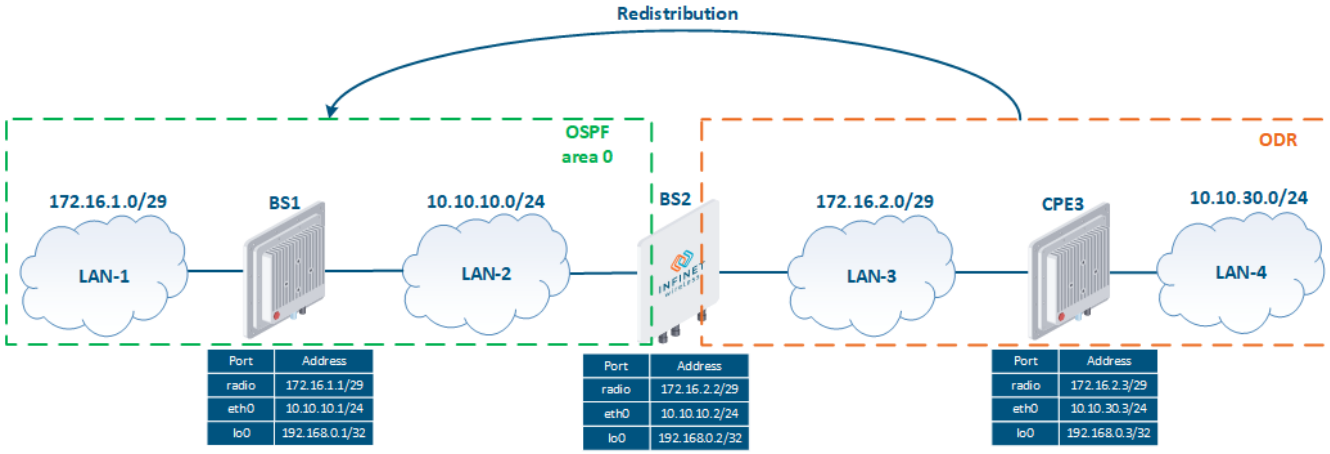

Figure 1 - Route redistribution from ODR to OSPF

Pre-configuration

Description	Perform a preliminary configuration of the devices, consisting of the following steps: • Configure the device IDs. • Remove the svi1 interface. • Assign IP addresses to the network interfaces, according to the scheme. • Disable switching. • Establish the wireless links.

Title

BS1	Set the device ID system prompt BS_1 Remove the svi1 interface ifc svi1 destroy Assign IP addresses ifc eth0 10.10.10.1/24 ifc rf5.0 172.16.1.1/29 ifc lo0 192.168.0.1/32 Disable switching switch stop Establish the radio link rf rf5.0 band 20 rf rf5.0 freq 5100 mint rf5.0 -name "BS_1" mint rf5.0 -type master
BS2	Set the device ID system prompt BS_2 Remove the svi1 interface ifc svi1 destroy Assign IP addresses ifc eth0 10.10.10.2/24 ifc rf5.0 172.16.2.2/29 ifc lo0 192.168.0.2/32 Disable switching switch stop Establish the radio link rf rf5.0 band 20 rf rf5.0 freq 5000 mint rf5.0 -name "BS_2" mint rf5.0 -type master
CPE3	Set the device ID system prompt CPE_3 Remove the svi1 interface ifc svi1 destroy Assign IP addresses ifc eth0 10.10.30.3/24 ifc rf5.0 172.16.2.3/29 ifc lo0 192.168.0.3/32 Disable switching switch stop Establish the radio link mint rf5.0 -name "CPE_3" mint rf5.0 -type slave mint rf5.0 prof 1 -band 20 -freq 5000 -type slave

Title

ODR configuration

Description	Configure the ODR protocol: **Step 1:** launch the ODR protocol on the radio interfaces of the BS2 and CPE3 routers. BS2 will be configured as hub, CPE3 - as spoke. **Step 2:** advertise the directly connected networks on the CPE3 router.
BS1	No changes are required.
BS2	`Start ODR:` `mint rf5.0 -odr hub`

CPE3	`Start ODR:`
	`mint rf5.0 -odr spoke`
	
	`Advertise the directly connected networks:`
	`mint rf5.0 -odr spoke connected`

OSPF configuration

Description	Configure the OSPF protocol: **Step 1:** start the OSPF daemon on the BS1 and BS2 routers. **Step 2:** set the router IDs. The identifiers will be equal to the IP addresses assigned to the loopback interface. **Step 3:** define the interfaces where OSPF should be started. **Step 4:** redistribute the routes from the ODR protocol. Such routes have a kernel type. **Step 5:** redistribute the directly connected networks on the BS2 router. During route redistribution from ODR, only the routes received from the devices having a spoke role will be imported. Thus, to transmit routing information about the networks 172.16.2.0/29 and 192.168.0.2/32, it is necessary to advertise the directly connected networks on BS2.

BS1	`Start OSPF:`
	`ospf start`
	
	`Set the router-id:`
	`ospf`
	`config`
	`router`
	`router-id 192.168.0.1`
	
	`Start OSPF on the interfaces:`
	`ospf`
	`config`
	`router`
	`network 172.16.1.0/29 area 0.0.0.0`
	`network 192.168.0.1/32 area 0.0.0.0`
	`network 10.10.10.0/24 area 0.0.0.0`

BS2	Start OSPF:
	`ospf start`
	
	Set the router-id:
	`ospf`
	`config`
	`router`
	`router-id 192.168.0.2`
	
	Start OSPF on the interfaces:
	`ospf`
	`config`
	`router`
	`network 10.10.10.0/24 area 0.0.0.0`
	
	Route redistribution from ODR:
	`ospf`
	`config`
	`router`
	`redistribute kernel`
	
	Advertise the directly connected networks:
	`ospf`
	`config`
	`router`
	`redistribute connected`

CPE3	No changes are required.

Command output analysis

Routing table

Description	Analyze the routing table on each device. The routing tables of the wireless devices contain entries about each subnet shown in the scheme. This means that the route redistribution from ODR to OSPF was performed successfully. CPE3's routing table consists of the routes to the directly connected networks and a default route. This confirms the statement about the unidirectional redistribution.

BS1	`BS_1#1> netstat -r`
	`Routing tables`
	`Destination  Gateway  Flags  Refs  Use  Interface`
	`10.10.10.0/24  link#2  UC  0  0  eth0`
	`10.10.30.0/24  10.10.10.2  UG3  0  0  eth0`
	`127.0.0.1  127.0.0.1  UH  3  19  lo0`
	`172.16.1.0/29  link#3  UC  0  0  rf5.0`
	`172.16.2.0/29  10.10.10.2  UG3  0  0  eth0`
	`192.168.0.1  192.168.0.1  UH  0  0  lo0`
	`192.168.0.2  10.10.10.2  UGH3  0  0  eth0`
	`192.168.0.3  10.10.10.2  UGH3  0  0  eth0`
	`224.0.0.0/8  127.0.0.1  UGS  1  335  lo0`

BS2

```
BS_2#1> netstat -r
Routing tables
Destination        Gateway            Flags     Refs     Use  Interface
10.10.10.0/24      link#2             UC           0       0  eth0
10.10.30.0/24      00:04:35:13:5e:4e  ULO          0       0  rf5.0
127.0.0.1          127.0.0.1          UH           3      27  lo0
172.16.1.0/29      10.10.10.1         UG3          0       0  eth0
172.16.2.0/29      link#3             UC           0       0  rf5.0
192.168.0.1        10.10.10.1         UGH3         0       0  eth0
192.168.0.2        192.168.0.2        UH           0       0  lo0
192.168.0.3        00:04:35:13:5e:4e  UHLO         0       0  rf5.0
224.0.0.0/8        127.0.0.1          UGS          1     167  lo0
```

CPE3

```
CPE_3#1> netstat -r
Routing tables
Destination        Gateway            Flags     Refs     Use  Interface
mintGateway        BS_2                                rf5.0
10.10.30.0/24      link#2             UC           0       0  eth0
127.0.0.1          127.0.0.1          UH           1       0  lo0
172.16.2.0/29      link#3             UC           0       0  rf5.0
192.168.0.3        192.168.0.3        UH           0       0  lo0
224.0.0.0/8        127.0.0.1          UGS          0       0  lo0
```

Route redistribution from RIP to OSPF

Let's look at an example of routing information redistribution from RIP to OSPF using the scheme described in the main document (Figure 2).

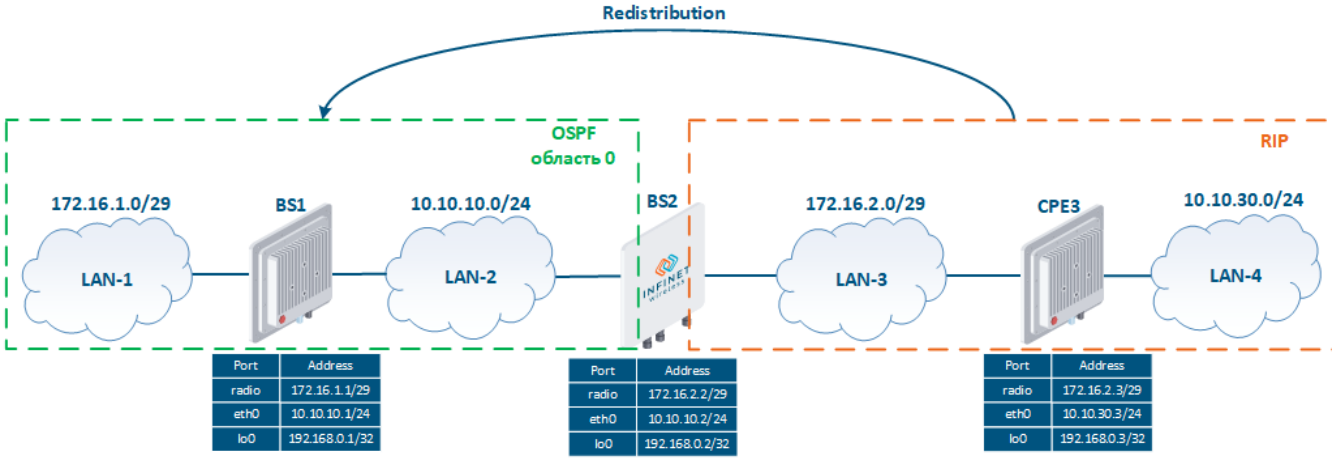

Figure 2 - Route redistribution from RIP to OSPF

Pre-configuration

Description	Perform a preliminary configuration of the devices, consisting of the following steps: • Configure the device ID. • Remove the svi1 interface. • Assign IP addresses to the network interfaces, according to the scheme. • Disable switching. • Establish the wireless links.

Title

BS1	`Set the device ID`
	`system prompt BS_1`
	
	`Remove the svi1 interface`
	`ifc svi1 destroy`
	
	`Assign IP addresses`
	`ifc eth0 10.10.10.1/24`
	`ifc rf5.0 172.16.1.1/29`
	`ifc lo0 192.168.0.1/32`
	
	`Disable switching`
	`switch stop`
	
	`Establish the radio link`
	`rf rf5.0 band 20`
	`rf rf5.0 freq 5100`
	
	`mint rf5.0 -name "BS_1"`
	`mint rf5.0 -type master`

BS2	`Set the device ID`
	`system prompt BS_2`
	
	`Remove the svi1 interface`
	`ifc svi1 destroy`
	
	`Assign IP addresses`
	`ifc eth0 10.10.10.2/24`
	`ifc rf5.0 172.16.2.2/29`
	`ifc lo0 192.168.0.2/32`
	
	`Disable switching`
	`switch stop`
	
	`Establish the radio link`
	`rf rf5.0 band 20`
	`rf rf5.0 freq 5000`
	
	`mint rf5.0 -name "BS_2"`
	`mint rf5.0 -type master`

CPE3	`Set the device ID`
	`system prompt CPE_3`
	
	`Remove the svi1 interface`
	`ifc svi1 destroy`
	
	`Assign IP addresses`
	`ifc eth0 10.10.30.3/24`
	`ifc rf5.0 172.16.2.3/29`
	`ifc lo0 192.168.0.3/32`
	
	`Disable switching`
	`switch stop`
	
	`Establish the radio link`
	`mint rf5.0 -name "CPE_3"`
	`mint rf5.0 -type slave`
	`mint rf5.0 prof 1 -band 20 -freq 5000 -type slave`

RIP configuration

Description	Configure RIP on the BS2 and CPE3 devices. **Step 1:** Start RIP on the routers. **Step 2:** define the interfaces through which routing information should exchanged.
BS1	No changes are required.

BS2	`Start RIP:`
	`arip start`
	
	`Start RIP on the interfaces:`
	`arip`
	`config`
	`router`
	`network 172.16.2.0/29`

CPE3	`Start RIP:`
	`arip start`
	
	`Start RIP on the interfaces:`
	`arip`
	`config`
	`router`
	`network 10.10.30.0/24`
	`network 172.16.2.0/29`
	`network 192.168.0.3/32`

OSPF protocol configuration

Title

Description	Configure the OSPF protocol: **Step 1:** start the OSPF daemon on the BS1 and BS2 routers. **Step 2:** set the routers IDs. The identifiers will be equal to the IP addresses assigned to the loopback interface. **Step 3:** define the interfaces where OSPF should be started. **Step 4:** redistribute the routes from the RIP protocol. Such routes have a "rip" type. **Step 5:** advertise the directly connected networks on the BS2 router to announce the route towards the loopback interface at BS1.

BS1	`Start OSPF:`
	`ospf start`
	
	`Set the router-id:`
	`ospf`
	`config`
	`router`
	`router-id 192.168.0.1`
	
	`Start OSPF on the interfaces:`
	`ospf`
	`config`
	`router`
	`network 172.16.1.0/29 area 0.0.0.0`
	`network 192.168.0.1/32 area 0.0.0.0`
	`network 10.10.10.0/24 area 0.0.0.0`

BS2	`Start OSPF:`
	`ospf start`
	
	`Set the router-id:`
	`ospf`
	`config`
	`router`
	`router-id 192.168.0.2`
	
	`Start OSPF on the interfaces:`
	`ospf`
	`config`
	`router`
	`network 10.10.10.0/24 area 0.0.0.0`
	
	`Route redistribution from RIP:`
	`ospf`
	`config`
	`router`
	`redistribute rip`
	
	`Advertise the directly connected networks:`
	`ospf`
	`config`
	`router`
	`redistribute connected`

CPE3	No changes are required.

Command output analysis

Routing table

Title

Description	Analyze the routing table on each device. The routing tables of BS1 and BS2 are synchronized and contain entries about each subnet shown in the scheme. This means that the route redistribution from RIP to OSPF was performed successfully. CPE3's routing table consists of routes to the directly connected networks and a default route. This confirms the statement about the unidirectional redistribution.

BS1	`BS_1#1> netstat -r`
	`Routing tables`
	`Destination Gateway Flags Refs Use Interface`
	`10.10.10.0/24 link#2 UC 0 0 eth0`
	`10.10.30.0/24 10.10.10.2 UG3 0 0 eth0`
	`127.0.0.1 127.0.0.1 UH 3 35 lo0`
	`172.16.1.0/29 link#3 UC 0 0 rf5.0`
	`172.16.2.0/29 10.10.10.2 UG3 0 0 eth0`
	`192.168.0.1 192.168.0.1 UH 0 0 lo0`
	`192.168.0.2 10.10.10.2 UGH3 0 0 eth0`
	`192.168.0.3 10.10.10.2 UGH3 0 0 eth0`
	`224.0.0.0/8 127.0.0.1 UGS 1 862 lo`

BS2	`BS_2#1> netstat -r`
	`Routing tables`
	`Destination Gateway Flags Refs Use Interface`
	`10.10.10.0/24 link#2 UC 0 0 eth0`
	`10.10.30.0/24 172.16.2.3 UG3 0 0 rf5.0`
	`127.0.0.1 127.0.0.1 UH 5 60 lo0`
	`172.16.1.0/29 10.10.10.1 UG3 0 0 eth0`
	`172.16.2.0/29 link#3 UC 0 0 rf5.0`
	`192.168.0.1 10.10.10.1 UGH3 0 0 eth0`
	`192.168.0.2 192.168.0.2 UH 0 0 lo0`
	`192.168.0.3 172.16.2.3 UGH3 0 0 rf5.0`
	`224.0.0.0/8 127.0.0.1 UGS 1 462 lo`

CPE3	`AS_3#1> netstat -r`
	`Routing tables`
	`Destination Gateway Flags Refs Use Interface`
	`10.10.30.0/24 link#2 UC 0 0 eth0`
	`127.0.0.1 127.0.0.1 UH 3 60 lo0`
	`172.16.2.0/29 link#3 UC 0 0 rf5.0`
	`192.168.0.3 192.168.0.3 UH 0 0 lo0`
	`224.0.0.0/8 127.0.0.1 UGS 0 91 lo`

Additional materials

Webinars

1. Typical scenario of routing setting using Infinet Wireless devices. Part I.
2. Typical scenario of routing setting using Infinet Wireless devices. Part II

Other

1. Ifconfig command (interfaces configuration)
2. mint command (MINT version)
3. mint command (TDMA version)
4. ARDA (Aqua Router Daemon)
5. OSPF command
6. arip command