Dynamic routing

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Table of contents

Dynamic routing

Static routing has the following critical disadvantages:

- **scalability:** adding a new router in the network requires changing the configuration of all the existing nodes;
- **operation:** changes in the network will require updating the routing information on all network nodes;
- **speed:** device or link failures require changes to the routing tables of the devices, which must be performed manually.

Dynamic routing protocols are free from all the mentioned disadvantages of the static routing. Besides that, some of them have the following additional benefits:

- **traffic balancing:** if there are several paths towards the same destination, the router balances the data between the communication channels, ensuring an even distribution of the devices and of the channel utilization;
- **fault tolerance:** automatic transition to the backup infrastructure in case of failure of the main one.

Dynamic routing protocols exchange routing information and update it automatically. Despite their basic functionality being similar, the protocols can be classified in the following way:

- **By the application area:**
  - *internal:* dynamic routing protocols used within an autonomous system, i.e. a set of devices and communication channels under common management (for example, ODR, RIP, OSPF);
  - *external:* dynamic routing protocols used to exchange routing information between autonomous systems (for example, BGP).
- **By the operational principles:**
  - *distance-vector:* the devices exchange the routing tables. The network nodes operate only with information about their directly connected neighbors and only with routing information received from them (for example RIP, ODR);
  - *link state:* the devices exchange the whole topology tables. Each network node operates with information about the structure of the entire network and can reproduce the entire scheme (for example, OSPF).

The dynamic routing protocols are supported by the InfiNet devices of the InfiLINK 2x2, InfiMAN 2x2, InfiLINK Evolution, InfiMAN Evolution families. All further examples will be provided for the devices of these families.

In general, a separate module in the device's architecture is responsible for the operation of each dynamic routing protocol, however, for the operation of the RIP and the OSPF protocols, an ARDA module has been added (ARDA (Aqua Router Daemon)), which performs a coordination function and integration with the general system (Figure 1). The OSPF and RIP configurations are performed via ARDA.

Title

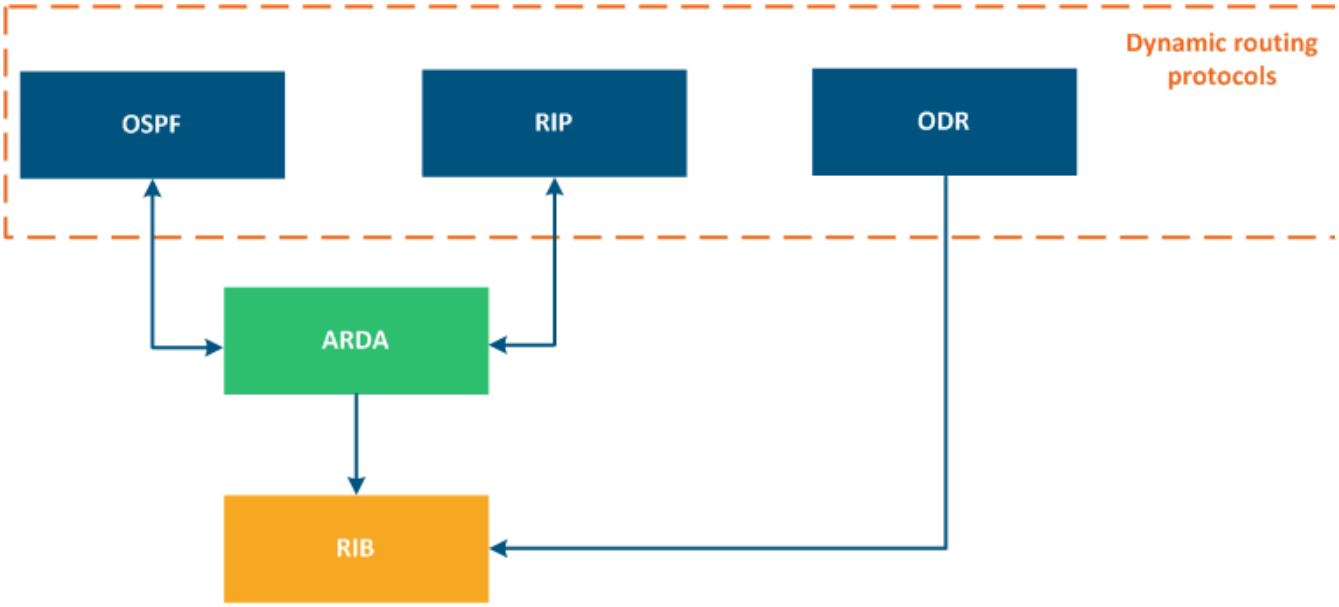

Figure 1 - Internal architecture of the dynamic routing modules in the InfiLINK 2x2, InfiMAN 2x2, InfiLINK Evolution, InfiMAN Evolution devices

Description of the dynamic routing protocols

The attached documents contain a description of the dynamic routing protocols: ODR, RIP, OSPF. The child pages contain configuration examples for each protocol:

- ODR protocol
  - ODR protocol configuration
- OSPF protocol
  - OSPF protocol's configuration
- RIP protocol
  - RIP configuration
- Joint use of the dynamic routing protocols
  - Redistribution to the OSPF protocol
  - Redistribution to the RIP protocol

Additional materials

Online courses

1. InfiLINK 2x2 / InfiMAN 2x2: Initial Link Configuration and Installation.
2. InfiLINK 2x2 and InfiMAN 2x2: Switching

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. Network configuration via web interface for InfiLINK 2x2, InfiMAN 2x2.
2. Network configuration via Web interface for InfiLINK Evolution, InfiMAN Evolution families devices.
3. Ifconfig command (interfaces configuration)
4. route command (static routes configuration)
5. mint command (MINT version)
6. mint command (TDMA version)
7. ARDA (Aqua Router Daemon)