

Dynamic Routing - ECMP

The acronym ECMP stands for Equal-Cost Multi-Path, it is a multipath routing method that allows the balancing of network traffic, effectively allowing the traffic of packets to a specific destination to be done by several equal routes priority. ECMP has methods to define the best path, making the distribution of the packages according to which of the routes has the best performance. In this way, it is possible to add 2 or more static routes, to the same destination, with the same distance and the system will execute load balance, based on the IP of origin of the connection, ECMP will use its algorithms to choose the shortest distance to reach the destination.



It is important to note that for the ECMP to act correctly, the same value for "Administrative Distance" must be registered in the multiple static routes registered.

If several routes with different distances are registered, routes that have a shorter distance value will have priority.



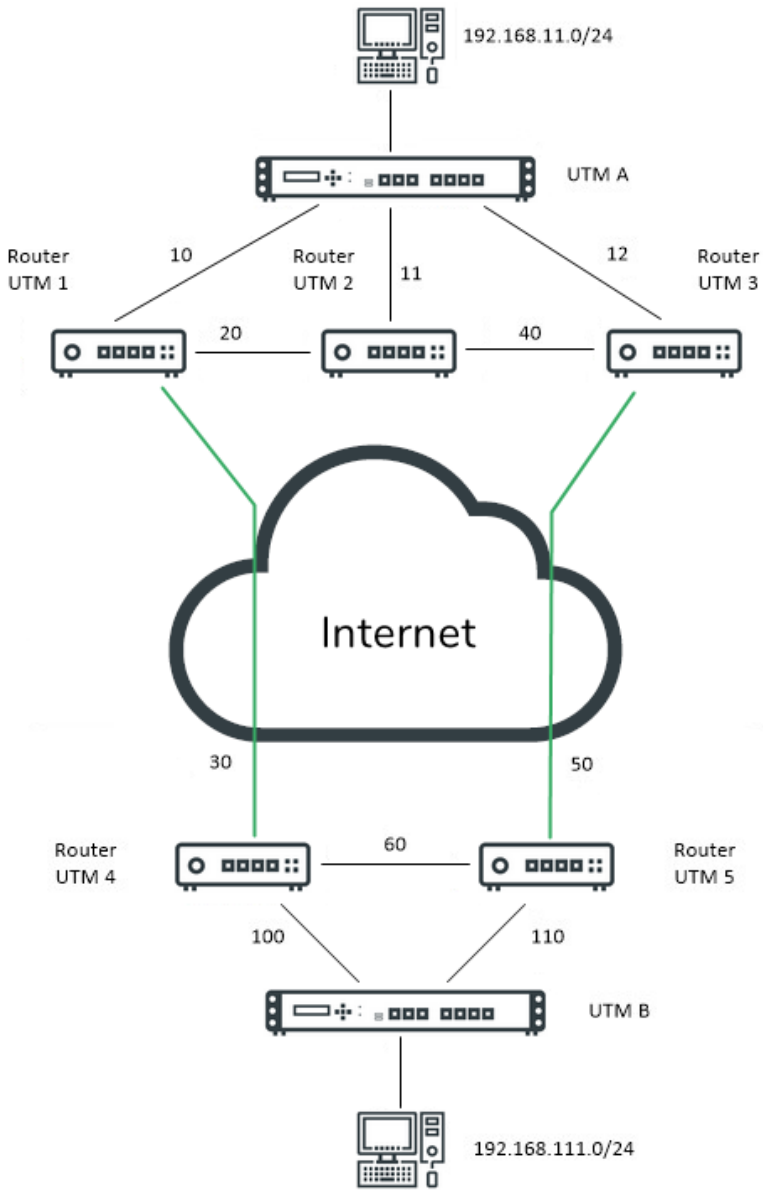
Taking into account the prioritization according to the distance value, it is possible to use it to determine the priority of the services according to their static or dynamic routing.

If the UTM loses communication with the Gateway, routing is automatically interrupted by this path until this link is reestablished. Drop and return detection occurs through ARP (Address Resolution Protocol) and RARP (Reverse Address Resolution Protocol).

Regarding SD-WAN, although similar, the options available in static routing do not interfere with policies based on SD-WAN, however, the latter has higher priority than static routing rules regardless of what is defined in Administrative Distances.

Below we will demonstrate a step by step how to connect two UTMs using ECMP to perform dynamic routing. This demonstration will take into account the following structure:

Dynamic Routing



UTM A (BB 100)
 Lan: 192.168.11.0/24
 Link 1: 10.0.0.0/30
 Link 2: 11.0.0.0/30
 Link 3: 12.0.0.0/30

UTM B (BB 100)
 Lan: 192.168.111.0/24
 Link 1: 100.0.0.0/30
 Link 2: 110.0.0.0/30

Router UTM 1 (BB 2)
 Link 1: 10.0.0.0/30
 Link 2: 20.0.0.0/30
 Link 3: 30.0.0.0/30

Router UTM 2 (BB 2)
 Link 1: 11.0.0.0/30
 Link 2: 20.0.0.0/30
 Link 3: 40.0.0.0/30

Router UTM 3 (BB 2)
 Link 1: 12.0.0.0/30
 Link 2: 40.0.0.0/30
 Link 3: 50.0.0.0/30

Router UTM 4 (BB 2)
 Link 1: 100.0.0.0/30
 Link 2: 30.0.0.0/30
 Link 3: 60.0.0.0/30

Router UTM 5 (BB 2)
 Link 1: 110.0.0.0/30
 Link 2: 50.0.0.0/30
 Link 3: 60.0.0.0/30

Dynamic Routing - Structure

In this structure, two UTMs will be interconnected with multiple links connected through several routers. The following IPs will be used in this example:

ECMP - IP addressing

Name	LAN IP address	Links
UTM A	192.168.11.0/24	10.0.0.0/30
		11.0.0.0/30
		12.0.0.0/30
UTM B	192.168.111.0/24	100.0.0.0/30

The steps we will take in this demonstration will be:

1. [Configuring the Interfaces on UTM A;](#)
2. [Configuration of static routes in UTM A;](#)
3. [Configuration of Interfaces on UTM B;](#)
4. [Configuration of static routes in UTM B;](#)
5. [Validation of Static Routing Configuration.](#)

We will start the demo by configuring the [UTM A](#) interfaces.