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# Setting

## Setting up subnets for balancing

Balancing applies only to IP addresses belonging to the AS defined as `local` in `asnum.dscp`.

1. Define an autonomous system with IP addresses that are used by subscribers:

```
vi aslocal.txt
10.0.0.0/8 64511
172.16.0.0/12 64511
192.168.0.0/16 64511
cat aslocal.txt | as2bin /etc/dpi/aslocal.bin
```

1. [Examples for IPv4](#)
2. [Example for IPv6](#)

2. Mark a given autonomous system as local:

```
vi my_as_dscp.txt
64511 local
10415 local
cat my_as_dscp.txt | as2dscp /etc/dpi/asnum.dscp
```

You can use either a custom AS or a public AS as the AS.  
Read more [at the link](#)

3. A reload must be performed to apply the parameters:

```
service fastdpi reload
```

## Setting `/etc/dpi/fastdpi.conf`

1. Define the input and output interfaces in the configuration file.  
The input interfaces to which the traffic mirror is fed are specified in the `in_dev` parameter, and the output interfaces are specified in `out_dev`.  
Interfaces do not form pairs and species constructs are allowed:

```
in_dev=05-00.0:05-00.1:05-00.2:05-00.3:0b-00.0:0b-00.1:0b-00.2:0b-00.3
out_dev=08-00.0:08-00.1:08-00.2:08-00.3
```

Or

```
in_dev=05-00.0
out_dev=out_dev=08-00.0:08-00.1:08-00.2:08-00.3
```

2. Enable balancing mode in the `enable_l2_lb` parameter, where:
  - 0 — deactivate balancing;

- 1 — activate balancing.
3. Determine by what value to initialize the hash table in the `lb_hash_out_dev_type` parameter, where:
- 0 — use the internal index of the output interface;
  - 1 — use the interface name from `[in|out]_dev`.
4. Select an engine to handle thread dispatchers in the `dpdk_engine` parameter, where:
- 0 — read/write **default** engine, one dispatcher for everything;
  - 1 — read/write engine with two dispatcher threads: a dispatcher for each direction;
  - 2 — Read/write engine with RSS support: for each direction, `dpdk_rss` dispatchers are created (default `dpdk_rss=2`), so total number of dispatchers =  $2 * dpdk\_rss$ — to work with `in_dev`, and a separate dispatcher to work with `out_dev`.  
When the parameter value is 2, the `mrx_lb_engine` engine is activated. The principle of operation is the same as in the usual mode `dpdk_engine=2`, only rss is enabled on `in_dev`, and only one rx queue is created on `out_dev`.

Learn more about the `dpdk_engine` parameter by [clicking here](#).

5. Set the parameter `lb_hash_type` to 0 to use the maglev traffic balancing algorithm (algorithm with a fixed-size hash table). The hash for balancing is calculated as follows:
- if both `src` and `dst` IPs are local, the hash is calculated based on these two addresses;
  - if only the `src` IP is local, the hash is calculated based on the `src` IP;
  - if only the `dst` IP is local, the hash is calculated based on the `dst` IP;
  - otherwise, the hash is calculated based on `src` and `dst` IPs.

The calculated hash value is then used to determine the output interface by finding the index of the hash table cell that contains the interface index from the array of output interfaces.