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# Traffic termination

## Activation

The FastDPI BRAS can terminate the outgoing LAN→WAN traffic and to interconnect the incoming WAN→LAN traffic.

Traffic termination is performed at the L2 level and is enabled by the following settings in the **fastdpi.conf** file:

```
bras_terminate_l2=1
bras_gateway_ip=192.168.0.1
bras_gateway_mac=aa:bb:cc:dd:ee:ff
```

`bras_terminate_l2` specifies:

- 1 - enabled
- 0 - disabled.

When the L2 termination mode is enabled, the parameters of the border/gateway behind the fastDPI should be specified:

- `bras_gateway_ip` - gateway IP address
- `bras_gateway_mac` - gateway MAC address

When L2-termination is enabled, all the L2 headers of outgoing packets will contain: srcMAC = `bras_arp_mac`, dstMAC = `bras_gateway_mac`.



For the incoming (from inet) packages: srcMAC = `bras_arp_mac`, dstMAC = subscriber MAC address. The MAC address of a subscriber is determined by its IP; if it can not be determined the packet will be dropped.



## VLAN tags

Also, termination means that the VLAN tags of outgoing packets will be removed, instead the traffic origination imply adding VLAN tags corresponding to the destination IP-address.

The VLAN traffic termination mode is enabled by the `bras_vlan_terminate` configuration option. If it equals to 0 (it corresponds to the default value) - VLAN termination is disabled, is it is non-zero value - termination is enabled. The following VLAN termination modes are available:

- `bras_vlan_terminate=1` - [“honest” termination](#) - VLAN tags are cut from the packets
- `bras_vlan_terminate=2` - [VLAN tags substitution](#)

- `bras_vlan_terminate=3` - [VLAN tags conversion](#) (the Stingray Service Gateway version 7.4 and above)

The L2 termination and VLAN termination modes can be used independently of each other.

It is possible to specify for a specific subscriber in which VLAN to terminate its packets on the subs → inet path. To do this, in the Access-Accept authorization response, add the `VasExperts-OutVLAN` VSA attribute, which specifies the VLAN tag (only one). The `VasExperts-OutVLAN` VSA has the following assignment:

```
ATTRIBUTE VasExperts-OutVLAN 9 integer
```

If the subscriber has the `outVLAN` property, it has the highest priority in `bras_vlan_terminate` modes 2 and 3.



The SSG 7.4+: [AS termination](#) mode is added: in this mode, termination is performed only if the AS for the source IP is marked as `term`. For incoming traffic, its origination is performed only if the AS for the destination IP (the gray one, i.e. besides the NAT) is marked as `term`.



SSG 9.3+: You can find the details of VLAN termination compatibility with [VLAN translation](#) right [here](#)

## Termination at L3 Authorization

New 9.2 version of SSG allows to indicate at [L3-authorization](#) that the subscriber is actually L2 and it is possible to apply L2-termination to him. To do this, you have to specify VSA-attribute in the L3-authorization [Access-Accept](#) response.

```
VasExperts-L2-User=1
```

In this case SSG saves the subscriber's L2-properties in the UDR (his MAC, VLANs) from the incoming package and will process such subscriber as an L2, - handle the termination and operating his traffic.

The attribute `VasExperts-L2-User=1` is used only for L3-authorization. This attribute is ignored in all the other authorization types (DHCP, ARP, PPPoE, etc), and is not considered a mistake.

In the output of the `fdpi_ctrl list --ip_prop` such subscribers will be marked with the special type "L3-auth". If the subscriber is already authorized by DHCP, ARP or PPPoE, specifying `VasExperts-L2-User=1` will not change his session type to "L3-auth". That is, the "L3-auth" type is the least priority.

If the subscriber in SSG UDR is "L3-auth" (meaning that in L3-authorization `Access-Accept` response previously indicated `VasExperts-L2-User=1`, and the next L3 authorization does not contain this attribute), then DPI considers the subscriber cannot be terminated anymore and removes his L2-properties (MAC, VLAN) from the UDR.