Dynamic Shaping Module 'utm5_dynashape' Configuration Manual

Purpose:

dynamic bandwidth limiting dependent on amount of downloaded traffic.

Component parts:

A. Billing system core module: `liburfa-dynashape.so`

B. Application for installing on a router: `utm5_dynashape`

Principle of operation:

For definite tariff plans it forms (liburfa-dynashape) and executes (utm5_dynashape) certain bandwidth shaping rules on a router.

Configuration:

Billing system side:

- Load a dynamic library `liburfa-dynashape` in the core of the UTM5 billing system. That may be realized either by using the *Administrator Control Center* (UTM5_Admin.jar) («Additional Features» - «LibURFA Plugins» - «Load») or by adding the module in *utm5.cfg* (`urfa_lib_file=/netup/utm5/lib/utm5_core/liburfa-dynashape.so`)

- For a selected tariff plan in «Options» - «Parameters» add information for dynamic shaping in the format: variable: {tariff ID}, value: bandwidth value depending on amount of downloaded traffic (GB) in the current accounting period. For example:

0-512;1-256;2-128;5-64;

That means that for a defined tariff plan, on consuming up to 1GB of data, the bandwidth is 512 units; from 1 GB to 2 GB – 245 units, etc. For more than 5 GB the bandwidth is 64 units.

Router side:

- Create a configuration file `dynashape.cfg` in the directory `/netup/utm5/`

Configuration file parameters:

core_host=127.0.0.1 – IP-address of the UTM server

core_port=11758 – TCP port where the core listens

core_login=init – login of a system user permitted to log in the billing system and call an urfa-function with ID = 0x12001

core_password=init – password of the system user

t_class=10,20 – traffic classes to be summed up for calculating consumed traffic

firewall_path=/sbin/firewall – path to the executable script containing commands for shaper management on a router (for FreeBSD – ipfw + dummynet, for Linux – iptables + iproute2)

fw_rule_offset=2000 – rule id offset

vpn_only=0 (1,2) ; 0 – take only physical IP-addresses, 1 – only VPN IP-address, 2 – take both IP-addresses of a user

tmp_file=/netup/utm5/log/dynashape.log – a file for keeping results of a previous launch

Example:

A user has a tariff plan with dynamic shaping enabled.

ACCOUNT_ID=1
IP = 10.0.0.1
MASK = 255.255.255.255
BITMASK=32
MASK=255.255.255.255
SPEED=512
INET_STATUS=1

On launching utm5_dynashape the following command is executed:

{firewall_path} {ACCOUNT_ID+fw_rule_offset} {IP} {BITMASK} {MASK} {SPEED} {INET_STATUS} {OPER_STATUS}

Where {OPER_STATUS} equals:

0 – for the user it should be applied only removing rules
1 – only adding ones
2 – keep it with no changes
3 – change only bandwidth

For FreeBSD the script may be of the following type:

```
#!/bin/sh
case "$7" in
0)
       /sbin/ipfw delete $1
       /sbin/ipfw pipe delete $1
        ;;
1)
        /sbin/ipfw pipe $1 config bw $5Kbit/s
        /sbin/ipfw add $1 pipe $1 ip from $2/$3 to any
        ;;
2)

        ;;
3)
        /sbin/ipfw pipe $1 config bw $6Kbit/s
        ;;
esac
```