Rate-limit

Ingress rate-limit
Topology:
mceclip0.png

Pre-configuration:
Based on default configuration, removing "BGP_NEIGHBOR" and "INTERFACE"
Down speed to 1G on Ethernet1 and Ethernet5
admin@sonic:~$ sudo config interface breakout Ethernet5 '4x10G[1G]' -y
admin@sonic:~$ sudo config interface speed Ethernet1 1000
admin@sonic:~$ sudo config interface speed Ethernet5 1000
Created the VLAN and allowed the VLAN member to the port.(refer to [Edgecore SONiC] VLAN & Inter-VLAN Routing)
admin@sonic:~$ show vlan brief

VLAN ID	IP Address	Ports	Port Tagging	DHCP Helper Address	DHCP Source	DHCP Link Selection	Proxy ARP Interface
100		Ethernet1	untagged		disabled		
		Ethernet5	untagged				

Procedure:
202111.1 version:
Step 1: Create the rate limit for ingress to 40mbps on Ethernet1.

admin@sonic:~$ sudo config interface rate-limit add --help
Usage: config interface rate-limit add [OPTIONS] <interface_name>

Options:
  --meter-type <meter_type> [required]
  --rate <rate>   Maximum rate of ingress traffic in kbps or pps. If meter-type is bytes, it can specify a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000) [required]
  --burst-size <burst_size> The burst size in bytes or packets. If meter-type is bytes, it can specify a decimal number followed by the abbreviation k (2^10)), m (2^20)
  -?, -h, --help   Show this message and exit.

admin@sonic:~$ sudo config interface rate-limit add Ethernet1 --meter-type bytes --rate 40m
"--meter_type": "packets"/"bytes"
"--rate"
- meter_type = bytes
The format is a decimal number or a decimal number followed by the abbreviation k (1,000), m (1,000,000), or g (1,000,000,000). Minimum: 8 kbps (32 kbps for AS8000 and AS9716-32D). Maximum: 400,000,000 kbps. For example: "10", "10k".
- meter_type = packets
Minimum: 1 pps. Maximum: 148,809,523 pps.
"burst-size:
- meter_type = bytes:
The format is a decimal number of a decimal number followed by the abbreviation k (210), or m (220). Minimum: 2,000 bytes. Maximum: 256,000,000 bytes. For example: "100", "100k".
- meter_typ e= packets

```
Minimum: 1 pps. Maximum: 536,576 pps.
Step 2: check the status

admin@sonic:~$ show interfaces rate-limit
Interface    Meter Type    Rate     Burst Size
-----------  ------------  -------  ------------
Ethernet1   bytes         40 Mbps  48 KiB


202111.0 version:
Step 1: Create the rate limit for ingress to 40mbps on Ethernet1. (40000000/8
bits=5000000 bytes)

admin@sonic:~$ sudo config interface rate-limit add --help
Usage: config interface rate-limit add [OPTIONS] <interface_name> <meter_type>
                                       <pir>

Options:
  --burst INTEGER RANGE  Maximum bandwidth burst  [required]
  -h, -?, --help         Show this message and exit.


admin@sonic:~$ sudo config interface rate-limit add Ethernet1 bytes 5000000 --
burst 8192
"meter_type": "packets"/"bytes"
"pir (peak information rate)": max rate in pps (packet per second)
"PBS (peak burst size)": max burst size in packets
Step 2: check the status

admin@sonic:~$ show interfaces rate-limit
Ethernet1
Profile               Meter Type       Rate    Burst
--------------------  ------------  -------  -------
Ethernet1_rate_limit  bytes         5000000     8192


202012 version:
Step 1. Create the scheduler profile, limit the ingress to 40mbps.(40000000/8
bits=5000000 bytes)

admin@sonic:~$ sudo config qos scheduler add --help
Usage: config qos scheduler add [OPTIONS] <profile_name>

Add QoS-Scheduler profile.

Options:
--meter_type [bytes|packets] Meter type
--pir INTEGER RANGE Maximum bandwidth rate [required]
--pbs INTEGER RANGE Maximum bandwidth burst [required]
-h, -?, --help Show this message and exit.

admin@sonic:~$ sudo config qos scheduler add ingress-Ethernet1 --meter_type
bytes --pir 5000000 --pbs 8192
"meter_type": "packets"/"bytes"
"pir": max rate in pps (packet per second)
"pbs": max burst size in packets
Step 2. Bind the profile to specific port.

admin@sonic:~$ sudo config interface rate-limit --help
Usage: config interface rate-limit [OPTIONS] <op> <dir> <interface_name>
<profile_name>

Rate limit configuration.
```

```
Options:
-q, --queue INTEGER RANGE queue
-?, -h, --help Show this message and exit.

admin@sonic:~$ sudo config interface rate-limit bind in Ethernet1 ingress-
Ethernet1
"op": "bind/unbind"
"dir": direction("in/out")
Step 3. Send unicast traffic from "Port//8/3" to "Port//8/4".

Result:
Check the configuration for scheduler profile
admin@sonic:~$ show qos scheduler
Name               Meter Type        PIR    PBS
-----------------  ------------  -------  -----
ingress-Ethernet1  bytes         5000000   8192
Check the scheduler profile binding.
admin@sonic:~$ show qos interface
Interface    Ingress Port Rate Limit    Egress Port Rate Limit
-----------  -------------------------  ------------------------
Ethernet1    ingress-Ethernet1
Traffic monitor for Steps 3.(40000416/8=5000052)
mceclip1.png

Egress rate-limit
Restriction:
202111 version doesn't support the Egress rate limit.
AS4630-54PE doesn't support rate-limit for egress.
Pre-configuration:
Based on Ingress rate-limit configuration and unbind the scheduler
configuration.

admin@sonic:~$ sudo config interface rate-limit unbind in Ethernet1 ingress-
Ethernet1
admin@sonic:~$ sudo config qos scheduler del ingress-Ethernet1
Procedure:
Step 1. Create the scheduler profile, limit the egress to 20mbps.(20000000/8
bits=2500000 bytes)

admin@sonic:~$ sudo config qos scheduler add egress-Ethernet5 --meter_type bytes
--pir 2500000 --pbs 8192
Step 2. Bind the profile to specific port.

admin@sonic:~$ sudo config interface rate-limit bind out Ethernet5 egress-
Ethernet5
Step 3. Send unicast traffic from "Port//8/3" to "Port//8/4".

Result:
Check the configuration for scheduler profile
admin@sonic:~$ show qos scheduler
Name               Meter Type        PIR    PBS
-----------------  ------------  -------  -----
egress-Ethernet1   bytes         2500000   8192
Check the scheduler profile binding.
admin@sonic:~$ show qos interface
Interface    Ingress Port Rate Limit    Egress Port Rate Limit
-----------  -------------------------  ------------------------
Ethernet5                               egress-Ethernet5
Traffic monitor for Steps 3.(20001056/8=2500132)
mceclip2.png

Appendix:
Ingress-Ethernet1:
admin@sonic:~$ sonic-cfggen -j /etc/sonic/config_db.json --var-json=SCHEDULER
```

```
{
    "ingress-Ethernet1": {
        "meter_type": "bytes",
        "pbs": "8192",
        "pir": "5000000"
    }
}
admin@sonic:~$ sonic-cfggen -j /etc/sonic/config_db.json --var-json=PORT_QOS_MAP
{
    "Ethernet1": {
        "ing_scheduler": "[SCHEDULER|ingress-Ethernet1]"

    },
}
egress-Ethernet5:
admin@sonic:~$ sonic-cfggen -j /etc/sonic/config_db.json --var-json=SCHEDULER
{
    "egress-Ethernet5": {
        "meter_type": "bytes",
        "pbs": "8192",
        "pir": "2500000"
    }
}
admin@sonic:~$ sonic-cfggen -j /etc/sonic/config_db.json --var-json=PORT_QOS_MAP
{
    "Ethernet5": {
        "egr_scheduler": "[SCHEDULER|egress-Ethernet5]"
    }
}
```