

Dynamic QoS

RouterOS v6.3



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About Me



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MikroTik Training Center

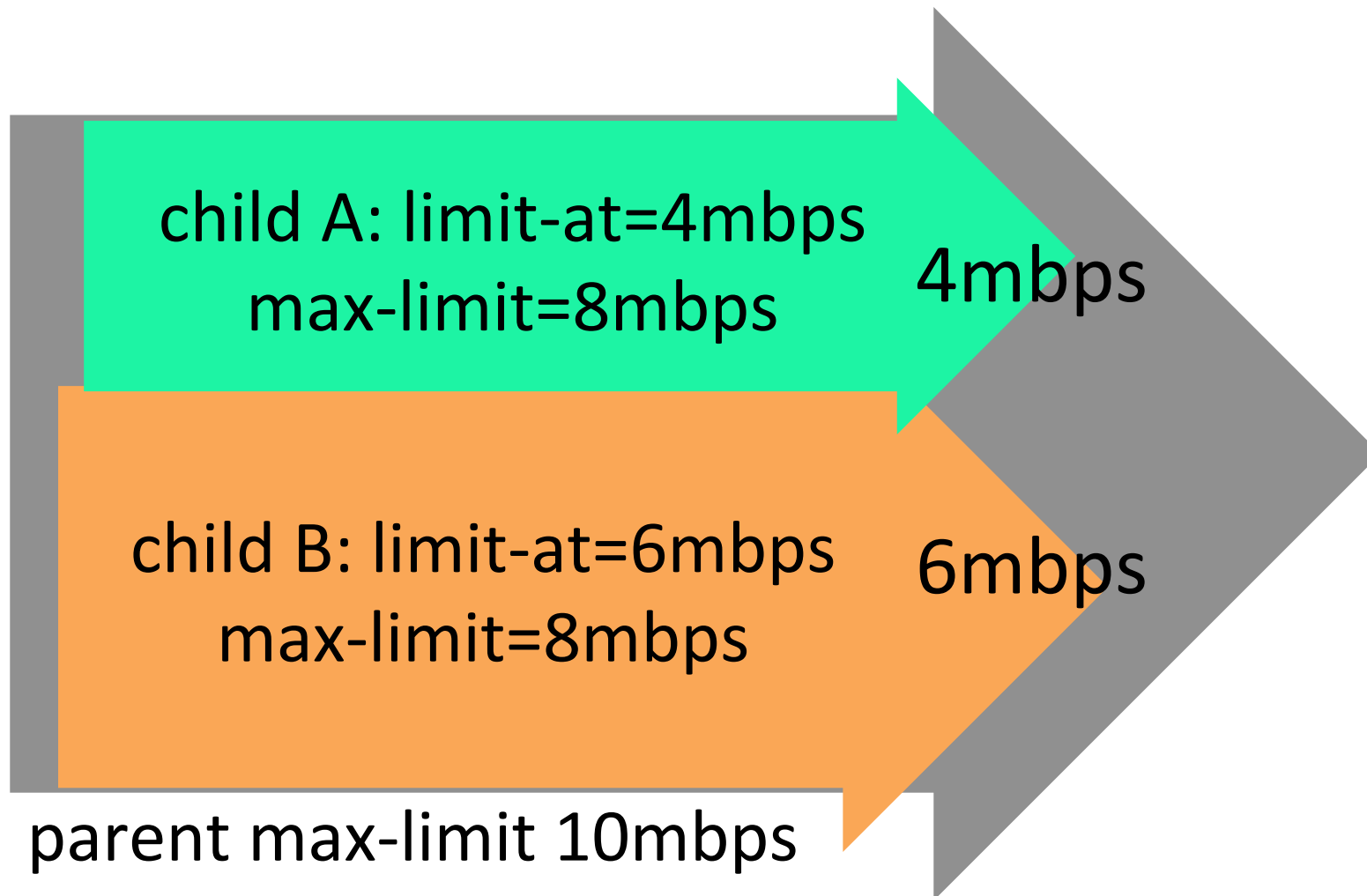
- The first MikroTik Training Center in Asia Pasific, has at least 2200 participants (112 classes).
- Mikrotik Academy Coordinator.

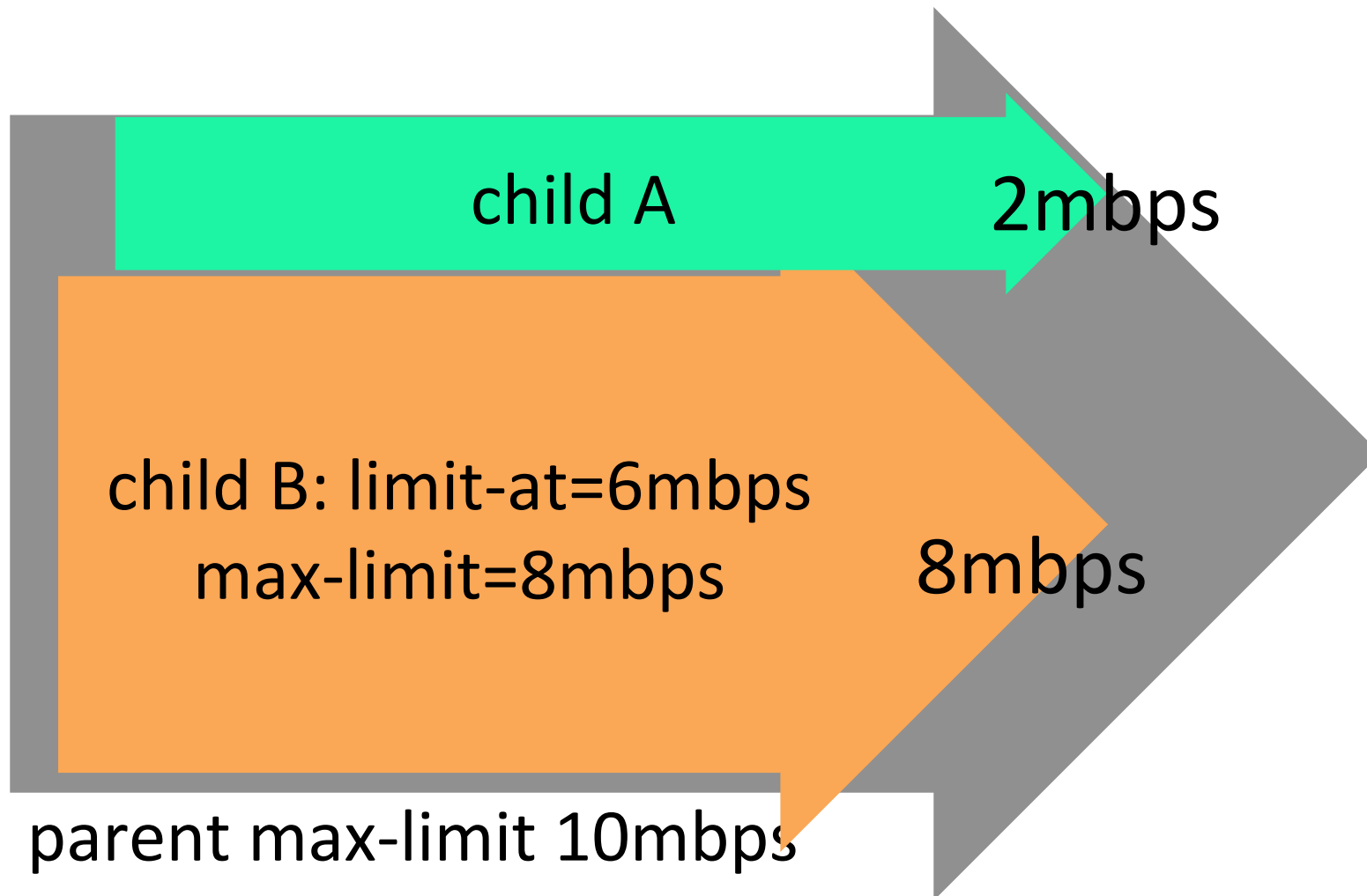


QoS concept

Queue Parameter

- limit-at (CIR)
- max-limit (MIR)
- burst (threshold, limit, time)
- queue type (FIFO, RED, SFQ, PCQ)
- parent







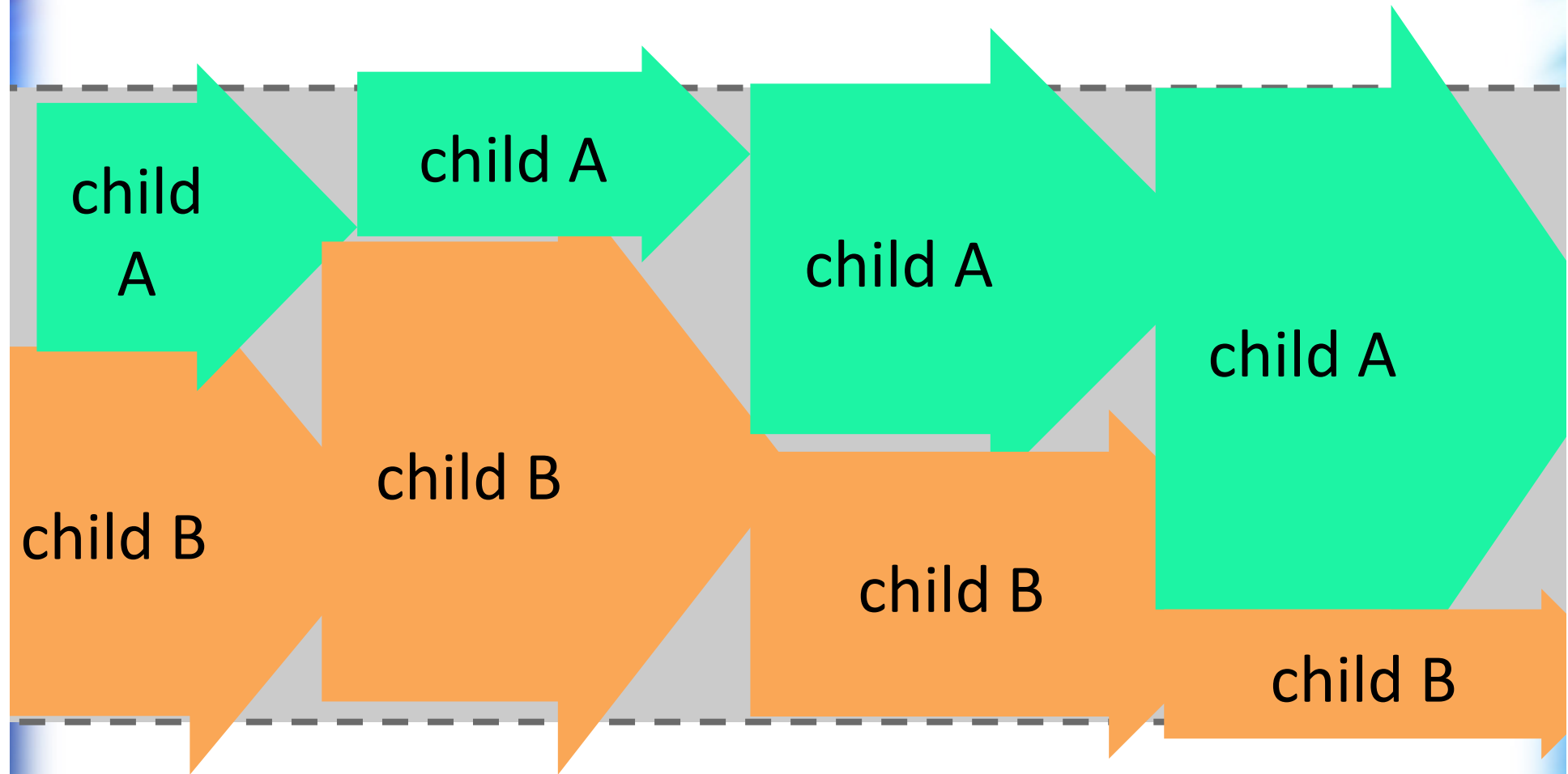
child A : 0mbps

child B: limit-at=6mbps
max-limit=8mbps

8mbps

parent max-limit 10mbps

without parent, with 10mbps link





Without parent, limit-at
and priority will be
ignored

Check my presentation 5 years ago:

<http://mum.mikrotik.com/presentations/US09/Valens-MUM2009USA.pdf>

dynamic queue?

Queue which is created automatically at simple queue from DHCP, Hotspot, PPP, etc.

rate-limit

`rx-rate[/tx-rate] [rx-burst-rate[/tx-burst-rate] [rx-burst-threshold[/tx-burst-threshold] [rx-burst-time[/tx-burst-time]]]]].`

All rates should be numbers with optional 'k' (1,000s) or 'M' (1,000,000s). If tx-rate is not specified, rx-rate is as tx-rate too. Same goes for tx-burst-rate and tx-burst-threshold and tx-burst-time. If both rx-burst-threshold and tx-burst-threshold are not specified (but burst-rate is specified), rx-rate and tx-rate is used as burst thresholds. If both rx-burst-time and tx-burst-time are not specified, 1s is used as default

Dynamic QoS

DHCP Lease <202.65.114.132, 202.65.114.132>

General

Active

Address:

202.65.114.132

MAC Address:

78:AC:C0:90:11:A2

☐ Use Src. MAC Address

Client ID:

Server:

dhcp_sec

Lease Time:

☐ Block Access

☐ Always Broadcast

Rate Limit:

5M/5M 10M/10M 3M/3M 8/8

Simple Queue <dhcp<78:AC:C0:90:11:A2//dhcp_sec>>

General

Advanced

Statistics

Traffic

Total

...

Name:

dhcp<78:AC:C0:90:11:A2//dhcp_sec>

Target Address:

202.65.114.132

☒ Target Upload

☒ Target Download

Max Limit:

5M

5M

Burst

Burst Limit:

10M

10M

Burst Threshold:

3M

3M

Burst Time:

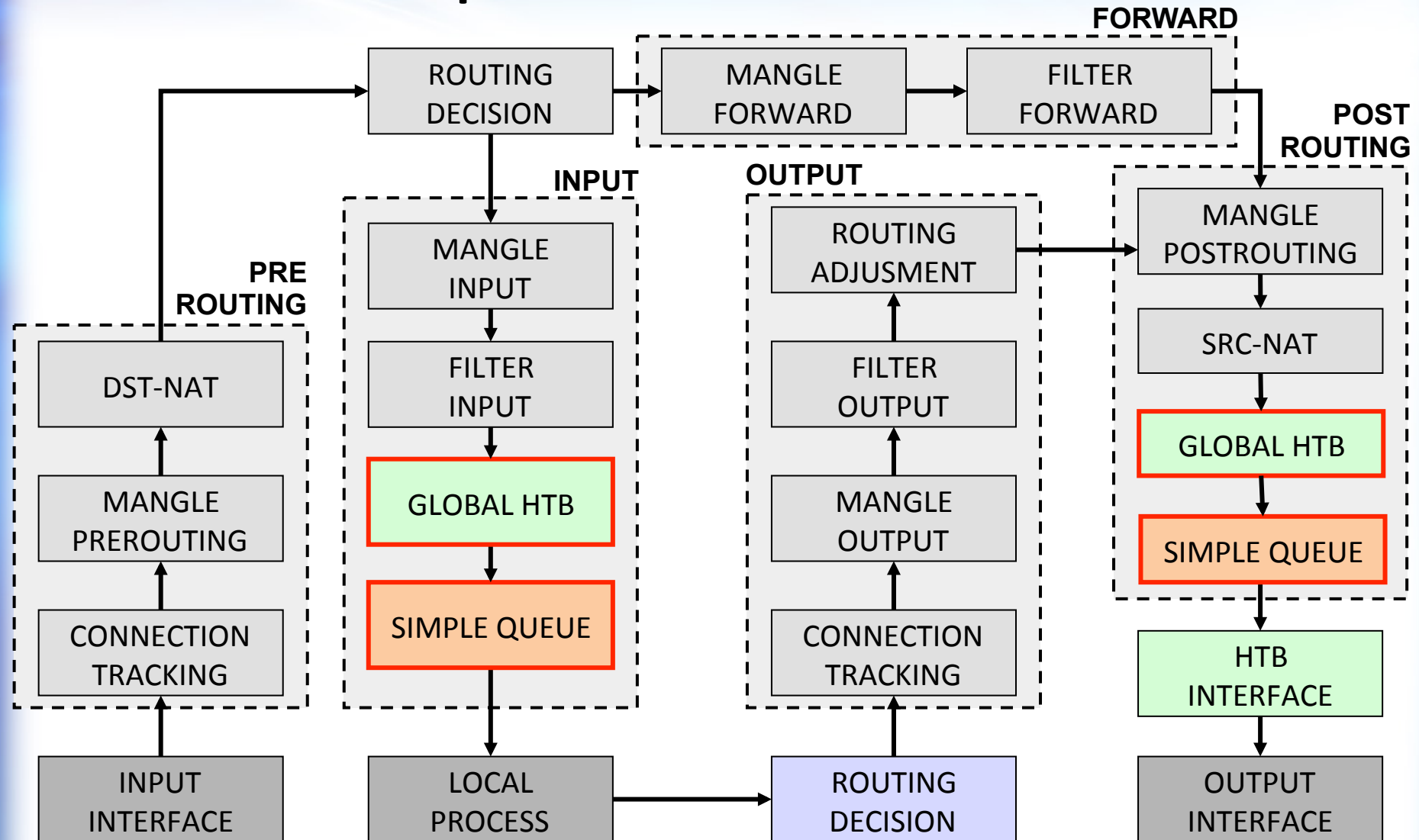
8

8

Simple Queue at RoS v6

- Re-build from scratch, build in kernel, faster
- 9 times faster if there are at least 32 parent queues on router with multi core processor
- Located after HTB global in chain input and postrouting

Simple Packet Flow v6



Dynamic Queue - DHCP

It's possible to set simple queue position after created automatically.

New DHCP Lease

General Active

Address: 0.0.0.0

MAC Address: 00:00:00:00:00:00

☐ Use Src. MAC Address

Client ID:

Server: all

Lease Time:

☐ Block Access

☐ Always Broadcast

DHCP Options:

DHCP Option Set:

Rate Limit:

Insert Queue Before: first

Address List: first, hs-<hotspot1>, queue1

PPP & Hotspot & Queue

- Since RoS v6.3, we can set queue type and parent queue parameter on dynamic queue from PPP and Hotspot
- This feature makes HTB (limit-at and priority) could work optimal.

PPPoE Server

PPPoE Service <service1>	PPP Secret <test>
Service Name: <input type="text" value="service1"/>	Name: <input type="text" value="test"/>
Interface: <input type="text" value="wlan1"/> ▼	Password: <input type="text" value="test1"/> ▲
Max MTU: <input type="text" value="1480"/>	Service: <input type="text" value="any"/> ▼
Max MRU: <input type="text" value="1480"/>	Caller ID: <input type="text" value=""/> ▼
MRRU: <input type="text" value=""/> ▼	Profile: <input type="text" value="default"/> ▼
Keepalive Timeout: <input type="text" value="10"/> ▲	Local Address: <input type="text" value="172.19.1.1"/> ▲
Default Profile: <input type="text" value="default"/> ▼	Remote Address: <input type="text" value="172.19.1.2"/> ▲
<input type="checkbox"/> One Session Per Host	Remote IPv6 Prefix: <input type="text" value=""/> ▼
Max Sessions: <input type="text" value=""/> ▼	Routes: <input type="text" value=""/> ▼
– Authentication –	
<input checked="" type="checkbox"/> pap	<input checked="" type="checkbox"/> chap
<input checked="" type="checkbox"/> mschap1	<input checked="" type="checkbox"/> mschap2
<input type="text" value="enabled"/>	

PPP Profile - Limits

The screenshot shows the 'PPP Profile <default>' configuration window with the 'Limits' tab selected. The window contains several fields and a list of rate limits. Callouts identify the following parameters:

- max-limit**: Points to the 'max-limit' field.
- burst threshold**: Points to the 'burst threshold' field.
- priority**: Points to the 'priority' field.
- burst-limit**: Points to the 'burst-limit' field.
- burst-time**: Points to the 'burst-time' field.
- limit-at**: Points to the 'limit-at' field.

The 'Rate Limit (rx/tx):' list contains the following entries:

Rate Limit (rx/tx)
5M/5M
10M/10M
2M/2M
8/8
1
2M/2M

PPP Profile - Queue

PPP Profile <default>

General Protocols Limits Queue

Insert Queue Before: ▼

Parent Queue: ▼ ▲

Queue Type: ▼ ▲

PPPoE Client

PPP							
Interface		PPPoE Servers	Secrets	Profiles	Active Connections		
		PPP Scanner		PPTP Server	SSTP Server	L2TP Server	OVPN
	Name	Type	L2 MTU	Tx	Rx	Tx	
DR	<<pppoe-test>	PPPoE Server Binding		0 bps	352 bps		

Queue List							
Simple Queues		Interface Queues	Queue Tree	Queue Types			
		Reset Counters		Reset All Counters			
#		Name	Target	Upload Max Limit	Download Max Limit	Pa	
0		queue1	0.0.0.0/0	unlimited	unlimited		
1	D	<pppoe-test>	<pppoe-test>	5M	5M		

Dynamic Queue from PPPoE

Simple Queue <<pppoe-test>>

General Advanced Statistics Traffic Total ...

Name: <pppoe-test>

Target: <pppoe-test>

Dst.:

	Target Upload	Target Download
Max Limit:	5M	5M

—▲— Burst —

Burst Limit:	10M	10M
Burst Threshold:	2M	2M
Burst Time:	8	8

Simple Queue <<pppoe-test>>

General Advanced Statistics Traffic Total ...

Packet Marks:

	Target Upload	Target Download
Limit At:	2M	2M
Priority:	1	1
Queue Type:	default-small	default-small

Parent: queue1

Hotspot User Profile

Hotspot User Profile <default>

General Queue Advertise Scripts

Name: default

Address Pool: none

Session Timeout:

Idle Timeout: none

Keepalive Timeout: 00:00

Shared Users:

Rate Limit (rx/tx): 5M/5M 10M/10M 2M/2M 8/8 1 2M/2M

Add MAC Cookie

Hotspot User Profile <default>

General Queue Advertise Scripts

Insert Queue Before:

Parent Queue: queue1

Queue Type: ethernet-default

max-limit

burst threshold

priority

burst-limit


burst-time




limit-at

Hotspot Client

Hotspot

UsersUser ProfilesActiveHostsIP BindingsService PortsWalled GardenWalled Garden IP

	Server	User	Domain	Address	Uptime	Idle Time	Session
	 hotspot1	user		10.3.3.3	00:00:30	00:00:01	

#		Name	Target	Upload Max Limit	Download Max Limit	Pa
2	D	 hs- <hotspot1>	ether5	unlimited	unlimited	
1		 queue1	0.0.0.0/0	unlimited	unlimited	
0	D	 <hotspot-user>	10.3.3.3	5M	5M	

Dynamic Queue

Simple Queue <<hotspot-user>>

General | Advanced | Statistics | Traffic | Total | ...

Name: <hotspot-user>

Target: 10.3.3.3

Dst.:

	Target Upload	Target Download
Max Limit:	5M	5M

▲ Burst

Burst Limit:	10M	10M
Burst Threshold:	2M	2M
Burst Time:	8	8

▼ Time

Simple Queue <<hotspot-user>>

General | Advanced | Statistics | Traffic | Total | ...

Packet Marks:

	Target Upload	Target Download
Limit At:	2M	2M
Priority:	1	1
Queue Type:	ethernet-default	ethernet-default

Parent: queue1

HTB with Dynamic Queue

Because we can set limit-at, parent, and priority on the queue, HTB will work well, and we can work with a lot of QoS/HTB scenarios.

User 1 Configuration

Hotspot User <user1>	Hotspot User Profile <default>
General Limits Statistics	General Queue Advertise Scripts
Server: <input type="text" value="all"/>	Name: <input type="text" value="default"/>
Name: <input type="text" value="user1"/>	Address Pool: <input type="text" value="none"/>
Password: <input type="text" value="user"/>	Session Timeout: <input type="text"/>
Address: <input type="text"/>	Idle Timeout: <input type="text" value="none"/>
MAC Address: <input type="text"/>	Keepalive Timeout: <input type="text" value="00:02:00"/>
Profile: <input type="text" value="default"/>	Status Autorefresh: <input type="text" value="00:01:00"/>
Routes: <input type="text"/>	Shared Users: <input type="text" value="1"/>
Email: <input type="text"/>	Rate Limit (rx/tx): <input type="text" value="1M/1M 1M/1M 1M/1M 8/8 1 512k/512k"/>

User 2 Configuration

Hotspot User <user2>	Hotspot User Profile <prof2>
General Limits Statistics	General Queue Advertise Scripts
Server: <input type="text" value="all"/>	Name: <input type="text" value="prof2"/>
Name: <input type="text" value="user2"/>	Address Pool: <input type="text" value="none"/>
Password: <input type="text" value="user"/>	Session Timeout: <input type="text"/>
Address: <input type="text"/>	Idle Timeout: <input type="text" value="none"/>
MAC Address: <input type="text"/>	Keepalive Timeout: <input type="text" value="00:02:00"/>
Profile: <input type="text" value="prof2"/>	Status Autorefresh: <input type="text" value="00:01:00"/>
Routes: <input type="text"/>	Shared Users: <input type="text" value="1"/>
Email: <input type="text"/>	Rate Limit (rx/tx): <input type="text" value="1M/1M 1M/1M 1M/1M 8/8 2 512k/512k"/>

Queue Parent

Hotspot User Profile <prof2>

General Queue Advertise Scripts

Insert Queue Before: ▼

Parent Queue: ▼ ▲

Queue Type: ▼ ▲

Queue List

Simple Queues Interface Queues Queue Tree Queue Types								
<div> </div> <div> </div>								
#	Name	Target	Upload Max Limit	Download Max Limit	Upload Avg. Rate	Download Avg. R...	To	
0	queue1	0.0.0.0/0	1500k	1500k	1272 bps	5.3 kbps		
0 D	<hotspot-user2>	10.3.3.5	1M	1M	1272 bps	5.1 kbps		
0 D	<hotspot-user1>	10.3.3.4	1M	1M		168 bps		
1 D	hs-<hotspot1>	bridge-hs	unlimited	unlimited				

Queue List

Simple Queues Interface Queues Queue Tree Queue Types								
<div> </div> <div> </div>								
#	Name	Target	Upload Max Limit	Download Max Limit	Upload Avg. Rate	Download Avg. R...	To	
0	queue1	0.0.0.0/0	1500k	1500k	1005.0 kbps	1005.6 kbps		
0 D	<hotspot-user2>	10.3.3.5	1M	1M	1005.0 kbps	1005.0 kbps		
0 D	<hotspot-user1>	10.3.3.4	1M	1M		656 bps		
1 D	hs-<hotspot1>	bridge-hs	unlimited	unlimited				

Queue List

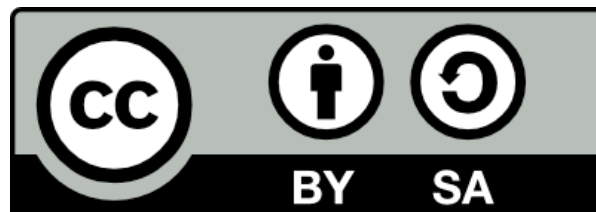
Simple Queues Interface Queues Queue Tree Queue Types								
<div> </div> <div> </div>								
#	Name	Target	Upload Max Limit	Download Max Limit	Upload Avg. Rate	Download Avg. R...	To	
0	queue1	0.0.0.0/0	1500k	1500k	1494.3 kbps	1484.0 kbps		
0 D	<hotspot-user2>	10.3.3.5	1M	1M	660.1 kbps	408.6 kbps		
0 D	<hotspot-user1>	10.3.3.4	1M	1M	963.9 kbps	959.9 kbps		
1 D	hs-<hotspot1>	bridge-hs	unlimited	unlimited				

Thank you

Comments and suggestions:

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 @valensriyadi



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