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Using

Queue Tree in Mikrotik Hotspot



About Presenter



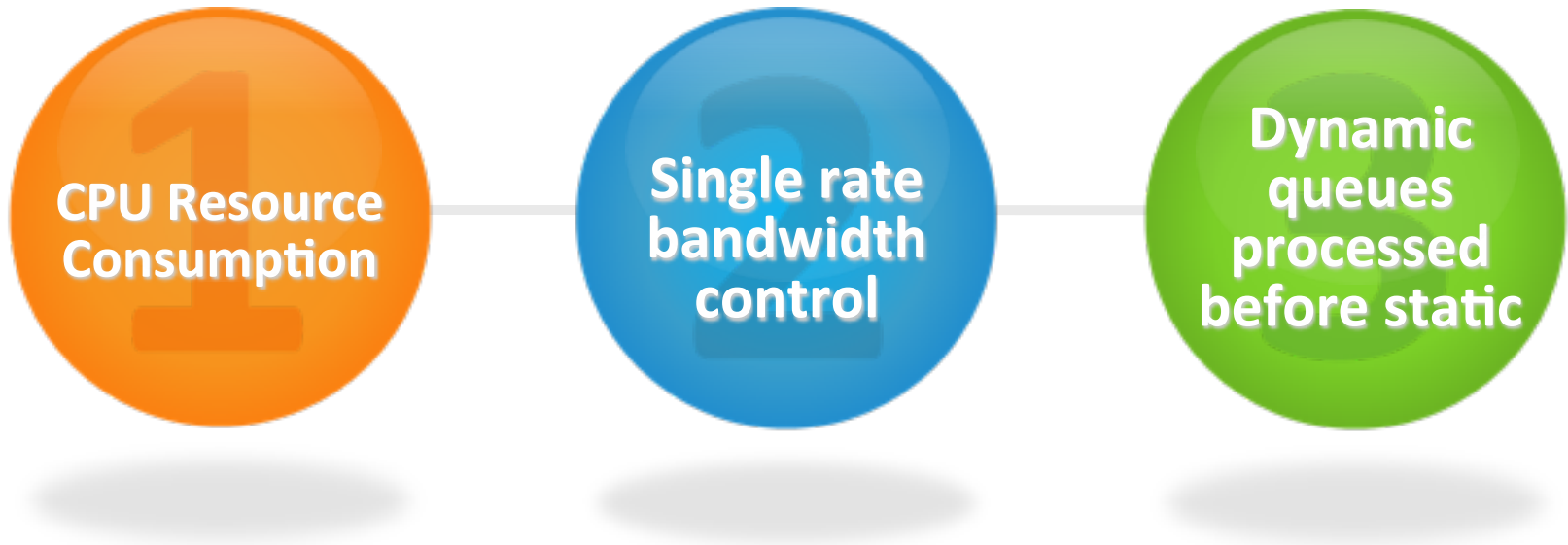
- ❑ 15 years IT experience
- ❑ 6 years experience on Mikrotik
- ❑ Article in Mikrotik Wiki
- ❑ CNE,CCNA,CWSE,CCIE(Written)

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Problem of Simple Queue in Hotspot



Step 1: No bandwidth control in hotspot user-profiles

- ☐ Bandwidth control per hotspot user-profiles are not defined.
- ☐ Simple queues are not created dynamically at user logon
- ☐ Hotspot user-profile is configured to mark packet for the member users.

```
/ip hotspot user profile
add idle-timeout=none incoming-packet-mark=Gold_IN keepalive-timeout=2m
name=Gold outgoing-packet-mark=Gold_OUT shared-users=1 status-
autorefresh=1m transparent-proxy=no

add idle-timeout=none incoming-filter=Silver_IN keepalive-timeout=2m
name=Silver outgoing-filter=Silver_OUT shared-users=1 status-autorefresh=1m
transparent-proxy=no

add idle-timeout=none incoming-filter=Bronze_IN keepalive-timeout=2m
name=Bronze outgoing-filter=Bronze_OUT shared-users=1 status-autorefresh=1m
transparent-proxy=no
```

Step 2: Define Queue Types for bandwidth plans

- ❑ Use PCQ for the queue types.
- ❑ Define queue bandwidth for the plans Gold (1Mbps), Silver(512kbps), Bronze(256kbps)

```
/queue type
add kind=pcq name=Gold_download pcq-burst-rate=0 pcq-burst-threshold=0 pcq-burst-
time=10s pcq-classifier=dst-address pcq-dst-address-mask=32 pcq-dst-address6-mask=128 \
    pcq-limit=50 pcq-rate=1024k pcq-src-address-mask=32 pcq-src-address6-mask=128 pcq-
total-limit=2000
add kind=pcq name=Gold_upload pcq-burst-rate=0 pcq-burst-threshold=0 pcq-burst-time=10s
pcq-classifier=src-address pcq-dst-address-mask=32 pcq-dst-address6-mask=128 \
    pcq-limit=50 pcq-rate=1024k pcq-src-address-mask=32 pcq-src-address6-mask=128 pcq-
total-limit=2000
```

Step 3: Configure Mangle

- ☐ Hotspot creates upload and download packet mark per user IP Address.
- ☐ Packet marks are done on hotspot chain
- ☐ Forward chain is made to jump to hotspot chain so that packet marks work.

```
/ip firewall mangle  
add action=jump chain=forward disabled=no jump-target=hotspot
```



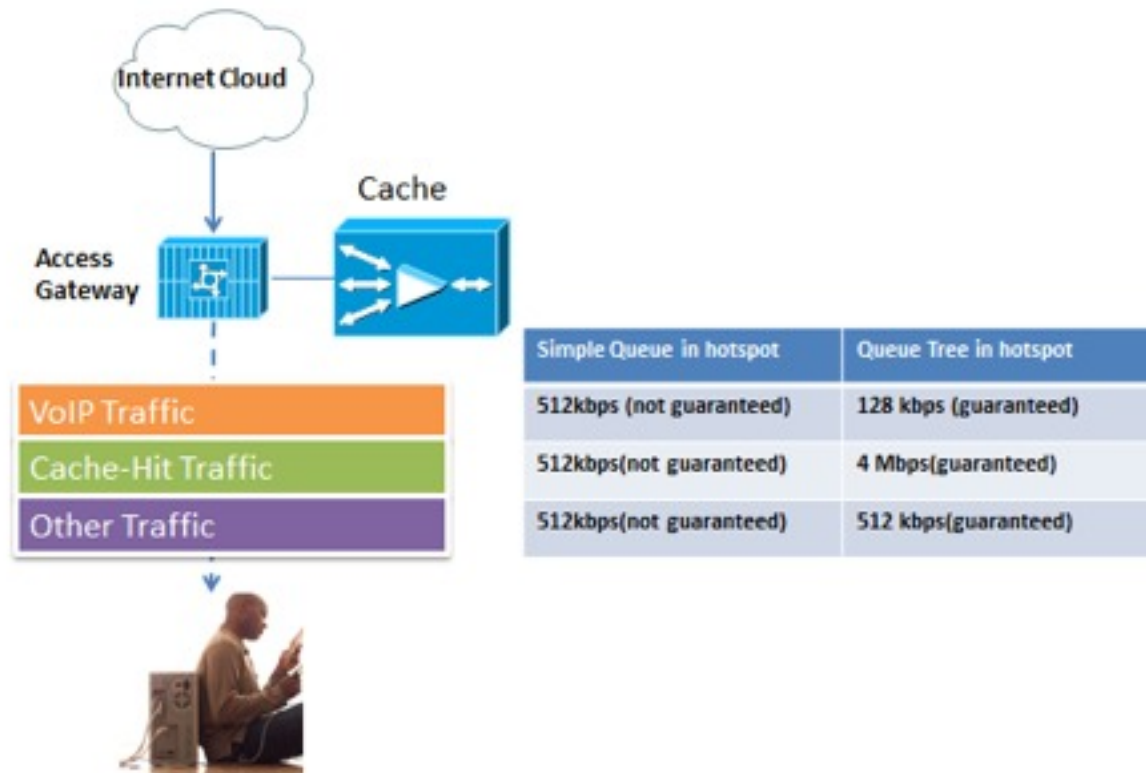
Step 4: Configure Queue Tree

- ❑ Queue tree is configured for upload and download traffic for users.
- ❑ PCQ configured earlier is used as the queue type.
- ❑ Only “Global Out” is used for parent for download and upload.

```
/queue tree
add burst-limit=0 burst-threshold=0 burst-time=0s disabled=no limit-at=0 max-limit=0
name=Gold_Download packet-mark=Gold_OUT parent=global-out priority=8 queue=\
  Gold_download
add burst-limit=0 burst-threshold=0 burst-time=0s disabled=no limit-at=0 max-limit=0
name=Gold_Upload packet-mark=Gold_IN parent=global-out priority=8
queue=Gold_upload
```

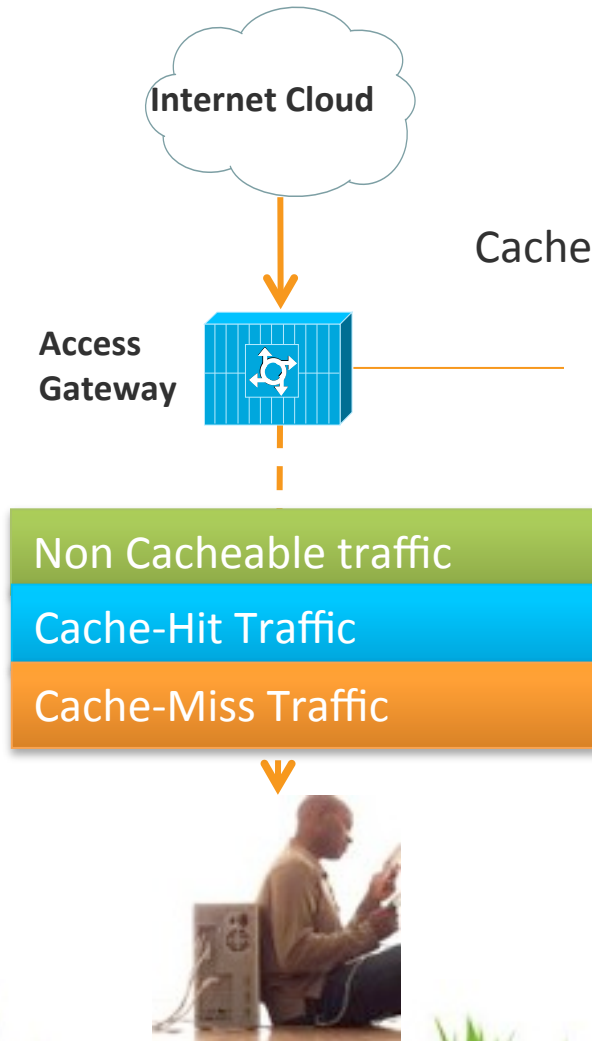
Multi-rate Capping for the subscribers

- ❑ VoIP traffic is marked separately and can be shaped differently
- ❑ If the ISP has a cache, Cache-hit traffic may be capped differently for enhancing QoE.
- ❑ Different Packet marks can be used in queue tree for allocating different bandwidth limits for VoIP, Cache-hit and generic internet traffic



Multi-rate Capping for the subscribers: Increase ARPU

ARPU: Average Revenue Per User



Tariff Plan of 1 Mbps - Regular

Non Cacheable traffic:	1Mbps
Cache-Miss Traffic:	1Mbps
Cache-Hit Traffic:	1Mbps
Content Acceleration:	Not available
Youtube Experience:	Choppy, buffered
1GB Movie download:	4-5 hours or more

Subscriber Pays: 500INR

Tariff Plan of 1 Mbps - Accelerated

Non Cacheable traffic:	1Mbps
Cache-Miss Traffic:	1Mbps
Cache-Hit Traffic:	6Mbps
Content Acceleration:	6x
Youtube Experience:	smooth
1GB Movie download:	20 minutes

Subscriber Pays: 650INR

ARPU Increased: 30%



THANK YOU