# Handling Microburst on Cisco ASR 920 Platforms

### What are Microbursts?

Commonly, Microbursts are referred to as small spikes in network traffic.

In Service Provider Access networks, Microbursts commonly occur in speed mismatch scenarios where a traffic flow enters the router from a high speed interface like 10GE and egresses out through a low speed interface like 1 GE.

### Problems caused by MIcrobursts.

Jitters, latency, followed by Packet drops are the most common causes. There are several parameters of a router that is used to evaluate its capability to handle microbursts.

### ASIC Clocking Rate

Higher the ASIC clock speed more linear the router is in switching packets. Lack of finer linearity introduces buffering, which adds Latency and Jitter. Networks built with routers that have lower clock speeds tend to add latency at every node leading to packet drops.

### Buffers

Some of the packet drops can be mitigated by allocating more buffers to the queues, buffering packets avoids packet drops, albeit bigger buffers introduce higher latencies, and hence having bigger buffers does not alleviate issues all the times.

### Comparing ME3600X and ASR 920

A series of tests were performed to compare ME3600X and ASR 920.  ASR 920 is viewed as a next generation of the ME3600X. The switching ASIC used in ASR 920 has higher (faster) clock speed when compared to the ASIC used in ME3600X. This was substantiated with the tests performed on ASR 920 and ME3600X, and observing the latency values. The latency values exhibited by ME3600X was more as compared to ASR 920.

Traffic flow with rates from 0 to 1Gbps were from a 10GE interface through the router and out of a 1GE interface, and the following observations were made:

- ASR920 - The latency values were around 6 microseconds for traffic rates from 0 to 1Gbps.

- ME3600X – The latency values started from around 11 microseconds, after 600 Mbps the latency values climbed gradually, extending significantly after 800mbps to reach 500 microseconds at 1Gbps with some packet drops.

### Cisco ASR 920 Buffer

Cisco ASR 920 is the Next Generation Converged Access Portfolio. The total Buffer available on board is 12 MB. The Default Buffer allocated for queues created on 1GE interface is 48KB and for the queues created on 10 GE interface is 120KB. When the Bursts propagate from 10GE interface to a 1GE interface, sometimes the default buffer size may have to be increased to accommodate additional packets. This can be achieved using the command queue-limit.

ASR920(config-pmap-c)#queue-limit ?

  <1-2097152>  in bytes, <1-1677721> in us, <1-8192000> in packets by default

  percent      % of threshold

## Configuration Example

```
!
policy-map p1
class cos1
class class-default
  queue-limit percent 100
!
interface GigabitEthernet0/0/11
no ip address
media-type sfp
negotiation auto
service instance 100 ethernet
  encapsulation dot1q 100
  service-policy output p1
  bridge-domain 100
!
```

## Conclusion

The ASR 920 with a higher clocked ASIC can handle microburst better when compared to the older generation platforms with lower clock speed ASIC. And hence the ASR 920 does not need as deep buffers as the older generation platforms to handle microbursts.