



Congestion Avoidance by Contention Management

Nader Vije
nader@lanterncom.com

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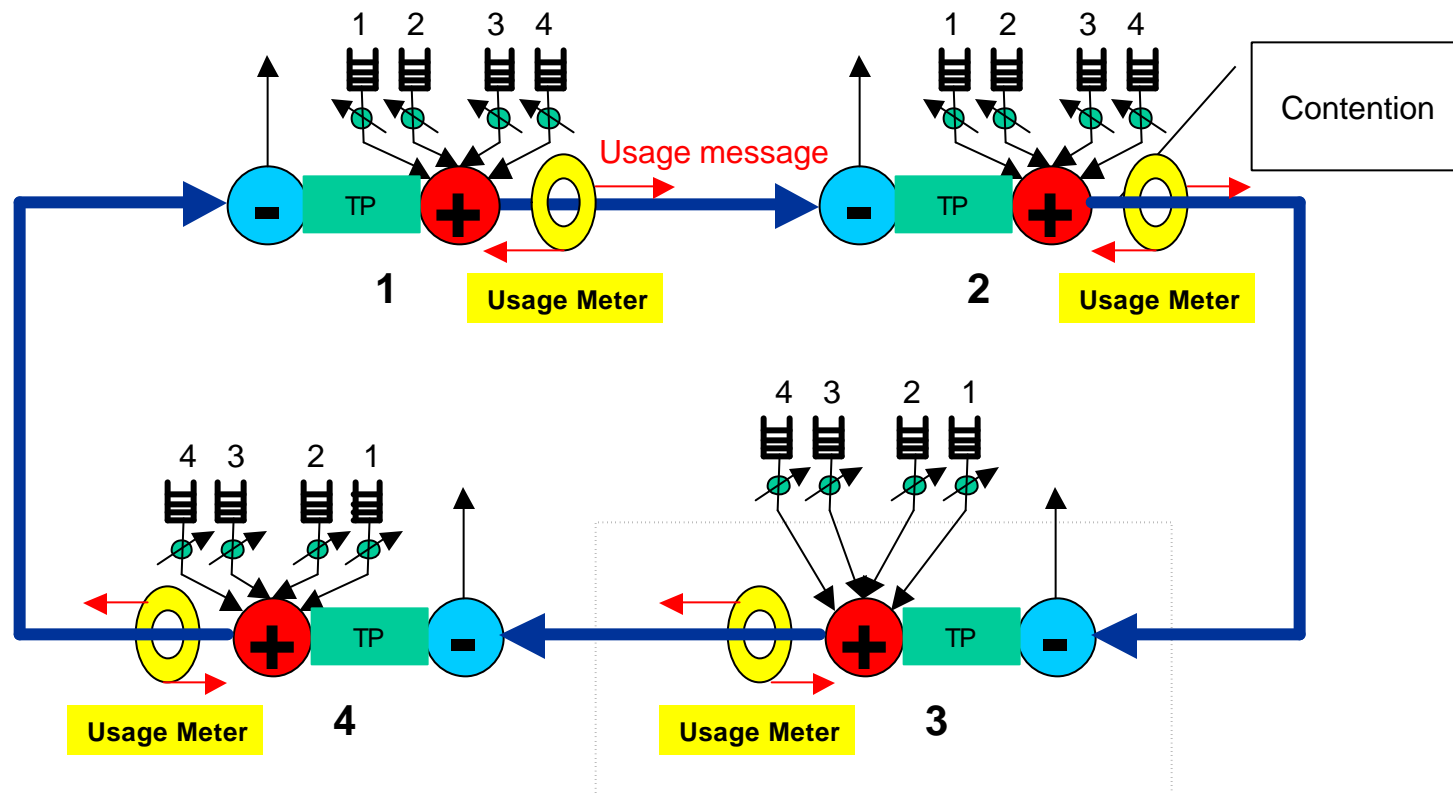


Dynamic BW Management

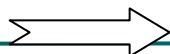
- ◆ Manage Contention
- ◆ Avoid Congestion
- ◆ Signal (Advertise) available egress link BW (ABF)
 - ◆ This allows transmit to be shaped efficiently above the MAC
- ◆ Avoid Head-of-line (HOL) blocking
 - ◆ Insert packets on the ring when there is bandwidth available on the path to destination
 - ◆ Use Rate Control Messages to control flow of packets from a source MAC to a destination MAC
- ◆ Divide bandwidth fairly (weighted proportionally)



Example



TP: Transit Path



Head of Line Blocking



Virtual Output Queue Model



MAC - Client Signaling/Behavior



MAC Implementation



Possible Client Implementations



Interoperability Modes



Congestion Avoidance Messaging



MAC Signaling



MAC Behavior



Client Behavior



MAC Block Diagram



Weighted Fair Congestion Avoidance (WFCA)



VoQ WFCA



WFCA State Diagram



IEEE format State Machine goes here

VoQ Rate Pacer S



IEEE format State Machine goes here

Request_to_send FSM



IEEE format State Machine goes here



Possible Client Implementations

- ◆ Single FIFO
- ◆ VoQ
- ◆ CoS
- ◆ Per-SLA Q

Single FIFO



VoQ



CoS



Per-SLA



Congestion Avoidance Messaging



- ◆ Hop-by-Hop mode
- ◆ Broadcast Mode

Message Format



ASIC Implementation



Gate Count

