Dynamic Path Sélection Based on Application
draft-aumuganainar-rtgwg-dps-00

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Outline

- ➢ **Problem statement**

- ➢ **Solution overview**

- ➢ **DPS Architectural frame work**

- ➢ **Current implementation**

- ➢ **Future work**

Challenges and Solutions on the IP Network

Network availability

Achieved through redundant paths and Routing protocol convergence

Network performance

Achieved through Quality of Service techniques

Score Card

– Availability :- Excellent . 99.999 Availability is reality today

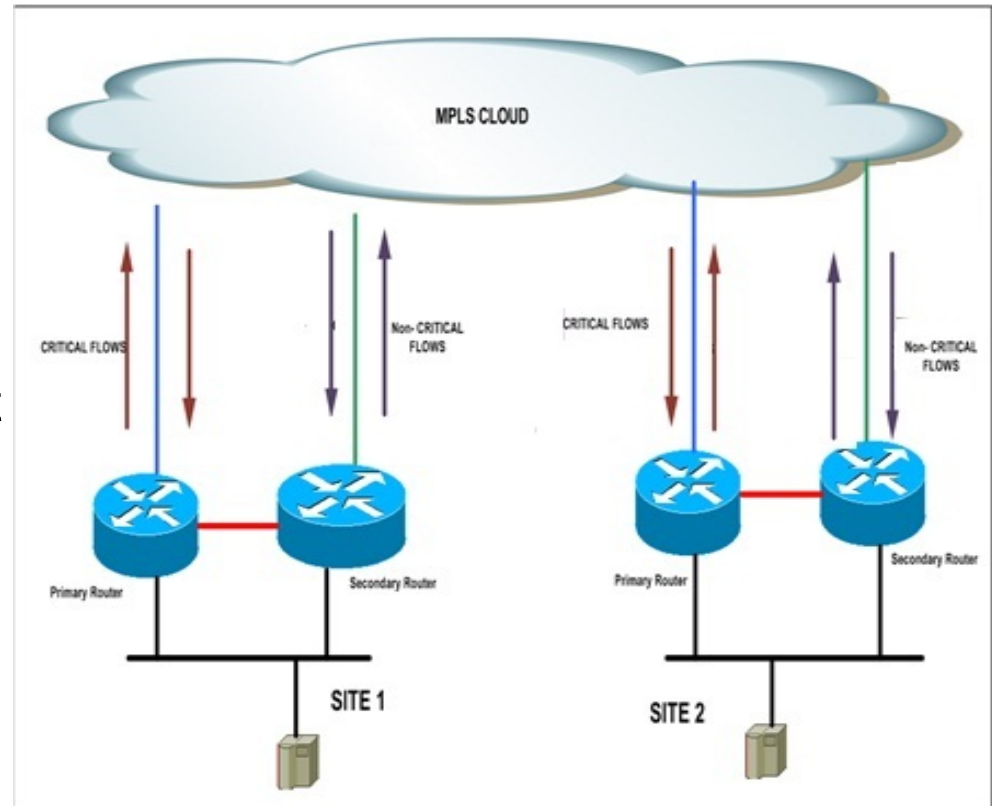– Application performance is still a challenge

What is the problem with QOS?

It provides symptomatic Treatment . Does not eradicate the root cause (congestion caused by aggressive non-critical applications)

MPLS CLOUD

Outbound QoS
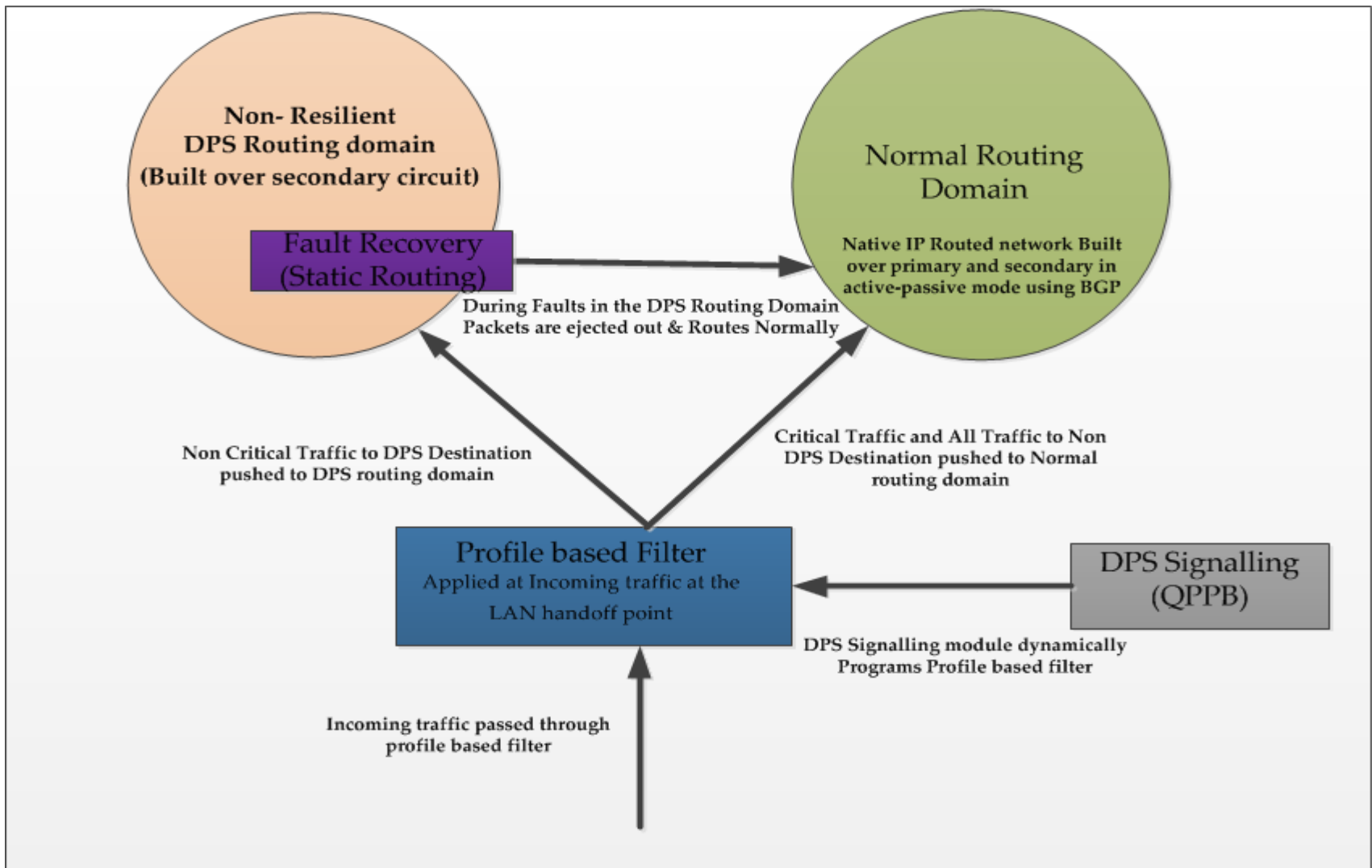Does Congestion Management and
not congestion avoidance
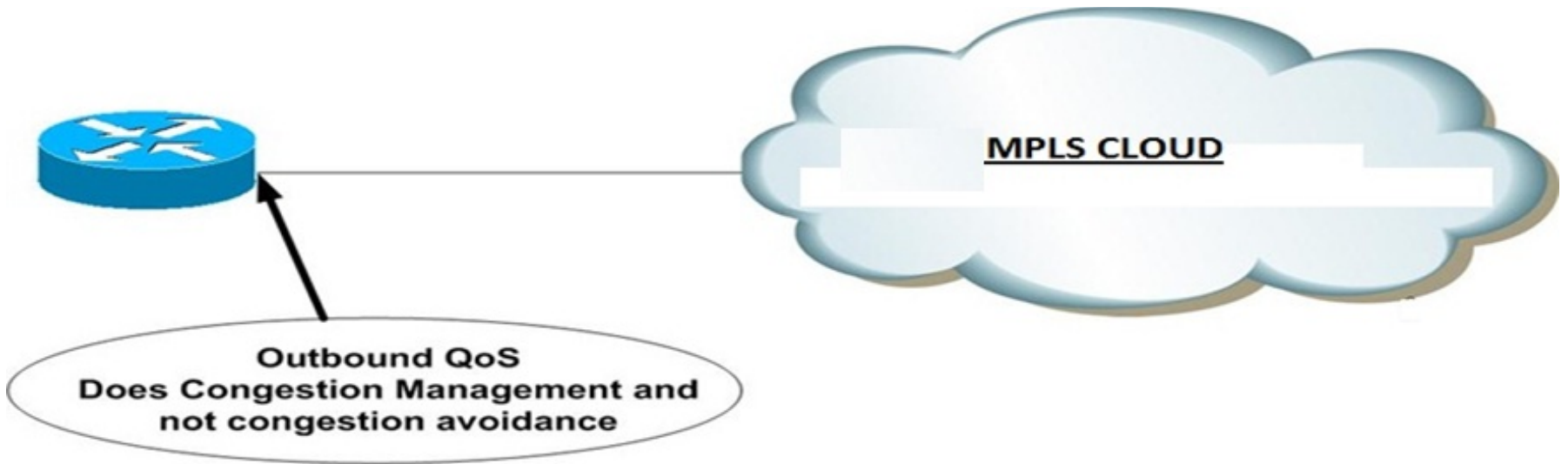
DPS Solution Overview

- Separate traffic as critical and non-critical based on application port numbers

- Ensure that the separated application flows over different path in the network

- Ensure that there is no asymmetric routing.

DPS Architectural frame work

Non- Resilient
DPS Routing domain
(Built over secondary circuit)

Fault Recovery
(Static Routing)

Normal Routing
Domain

Native IP Routed network Built
over primary and secondary in
active-passive mode using BGP

During Faults in the DPS Routing Domain
Packets are ejected out & Routes Normally

Non Critical Traffic to DPS Destination
pushed to DPS routing domain

Critical Traffic and All Traffic to Non
DPS Destination pushed to Normal
routing domain

Profile based Filter
Applied at Incoming traffic at the
LAN handoff point

DPS Signalling
(QPPB)

DPS Signalling module dynamically
Programs Profile based filter

Incoming traffic passed through
profile based filter

Current Implementations

DPS Building blocks	Implementation route
DPS Signalling	BGP Communities and QPPB (QoS Policy Propagation via BGP)
DPS Routing Domain	VRF Lite, DMPN and OSPF
DPS Profile based Filters	PBR and IP Precedence based ACLs
Fault Recovery	OSPF and Default Static routing

Future Work

DPS frame work is very flexible. Individual components can be developed independently

Following areas of enhancements are currently being explored

Challenge 1:-

- **DPS** Signalling currently implemented at Layer 3.
- With little bit of work Signalling can be implemented at Layer 4
- Layer 4 implementation will be state full and hence we can achieve advanced traffic management

Challenge 2:-
  - Profile based filtering is done via PBR. Hence this comes with performance limitations
  - A Light weight mechanism need to be developed to over come the performance limitation

Questions???