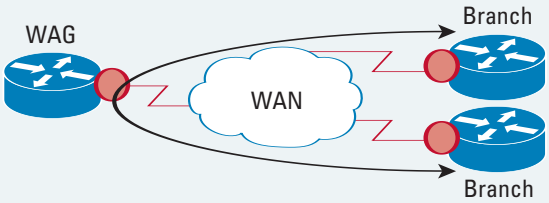
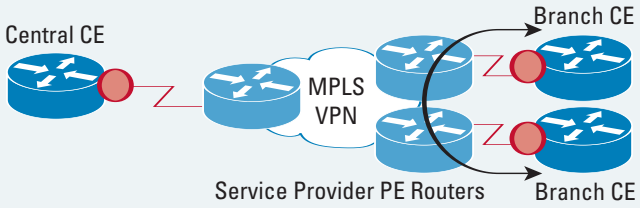
QoS DESIGN FOR MPLS VPN SUBSCRIBERS
AT–A–GLANCE

QoS design for an enterprise subscribing to a Multiprotocol Label Switching (MPLS) VPN requires a major paradigm shift from private-WAN QoS design.

This happens because with private-WAN design, the enterprise principally controlled QoS. The WAN Aggregator (WAG) provisioned QoS for not only Campus-to-Branch traffic, but also for Branch-to-Branch traffic (which was homed through the WAG).



However, due to the any-to-any/full-mesh nature of MPLS VPNs, Branch-to-Branch traffic is no longer homed through the WAG. While Branch-to-MPLS VPN QoS is controlled by the enterprise (on their Customer-Edge—CE—routers), MPLS VPN-to-Branch QoS is controlled by the service provider (on their Provider Edge—PE—routers).



Therefore, to guarantee end-to-end QoS, enterprises must co-manage QoS with their MPLS VPN service providers; their policies must be both consistent and complementary.

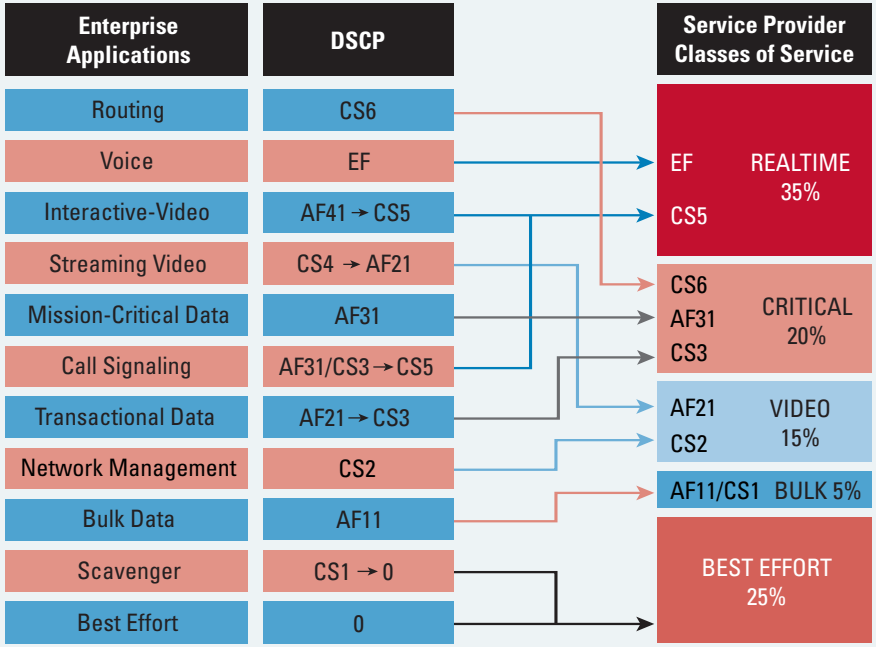
MPLS VPN service providers offer classes of service to enterprise subscribers.

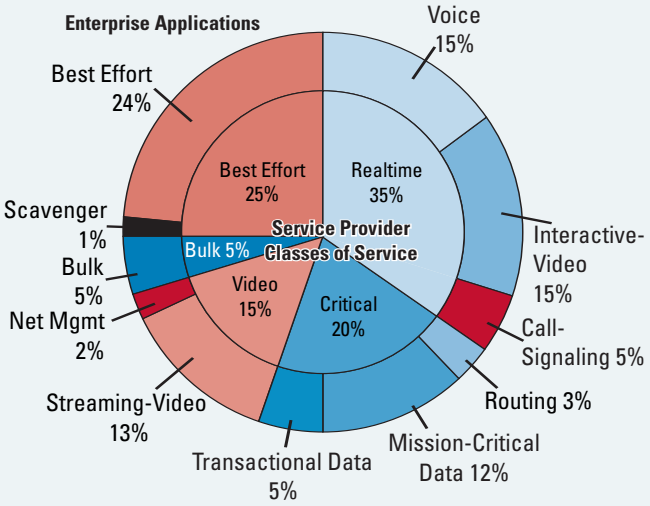
Admission criteria for these classes is the DSCP markings of enterprise traffic. Thus, enterprises may have to remark application traffic to gain admission into the required service provider class.

Some best practices to consider when assigning enterprise traffic to service provider classes of service include:

- Do not put Voice and Interactive-Video into the Realtime class on slow-speed (≤ 768 kbps) CE-to-PE links
- Do not put Call-Signaling into the Realtime class on slow-speed CE-to-PE links
- Do not mix TCP applications with UDP applications within a single service provider class (whenever possible); UDP applications may dominate the class when congested

Example—enterprise subscriber DSCP Remarking Diagram and CE Edge Bandwidth Allocation Diagram.





A general DiffServ principle is to mark or trust traffic as close to the source as administratively and technically possible. However, certain traffic types might need to be re-marked before handoff to the service provider to gain admission to the correct class. If such re-marking is required, it is recommended that the re-marking be performed at the CE's egress edge, not within the campus. This is because service-provider service offerings likely will evolve or expand over time, and adjusting to such changes will be easier to manage if re-marking is performed only at CE egress edges.

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