

Munged QoS Profile Overview

QoS profile attachments affect the queuing configuration of all the forwarding interfaces stacked above the attachment point. The subtree of the interface hierarchy stacked above the attachment point is the scope of the attachment. When multiple QoS profiles are attached beneath a forwarding interface, the forwarding interface lies in the scope of all the QoS profiles. Rules from all the QoS profiles are combined in a process called mungeing. The set of rules used for a given forwarding interface is called the munged QoS profile.

When a QoS profile is attached to an interface, the router searches the interface stack, from the point of attachment down to the port interface at the base of the interface hierarchy, to find all QoS profiles attached under that interface. The rules are combined to form the munged QoS profile. The router reconfigures queues for all forwarding interfaces in the scope of the attachment to conform to the munged profile.

The munge algorithm works as follows:

1. Start with the rules in the QoS profile being attached.
2. Traverse down the stack of interfaces until another QoS profile attachment is found.
3. Add rules from the lower-attached QoS profile to the munged QoS profile. Conflicting rules from the lower-attached QoS profile are not added: rules in higher-attached QoS profiles override or eclipse rules in lower-attached QoS profiles.
4. Repeat Steps 2 and 3 until a port interface is reached at the bottom of the interface stack.
 - a. If there is a QoS profile attached at the port, add the profile's rules to the munged QoS profile, and the munge algorithm is then complete.
 - b. If there is no QoS profile attached at the port, then locate the QoS profile indicated in the **qos-port-type-profile** command that corresponds to the interface type of the port. For example, if the port is an ATM interface, the default QoS port-type profile for type ATM is named atm-default. Add the rules in the QoS port-type profile to the munged QoS profile.

The entries in the QoS profile specified in the corresponding **qos-port-type-profile** command have the lowest precedence.

After the munged QoS profile is complete, the router reprocesses the queues for all forwarding interfaces in the scope of the attachment, adding, deleting, or modifying the scheduler hierarchy as required by the munged QoS profile rules. Conflicting node rules operate differently than this.

With conflicting node rules, the mungeing algorithm for QoS nodes start at the base of the interface hierarchy (usually near the physical interface), instead of at the top of the interface column. If a QoS profile is not attached to the port, nodes are added to the interface column according to the QoS port-type profile. Nodes are subsequently added from profiles that are attached higher in the interface column until all node

rules from the interface column have been added, or the maximum hierarchy of three nodes has been reached. Higher level nodes can not eclipse lower-attached nodes. For example, if a QoS hierarchy is Ethernet node > Ethernet group node > VLAN node > queue, an IP node from a higher-attached QoS profile cannot eclipse the VLAN node.

In Step 3, the router must decide which rules from a QoS profile conflict with rules already contained within the munged QoS profile. Queue rules are identified by their {interface type, traffic class} pair; two queue rules with the same interface type and traffic class are deemed conflicting. Node rules are identified by their {interface type, traffic-class group} pair; two node rules with the same interface type and traffic-class *group* are deemed conflicting.

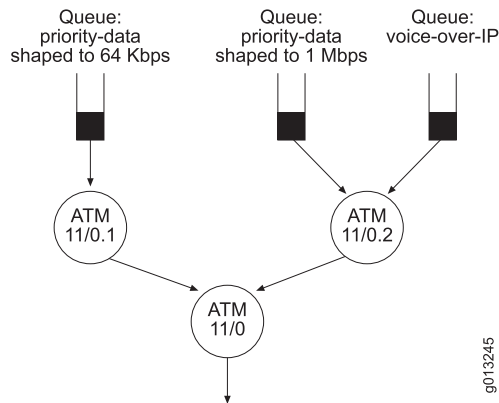


NOTE: The munge algorithm is modified when you configure QoS for 802.3ad link aggregation interfaces.

Sample Munged QoS Profile Process

Figure 1 shows the relationship between a port-attached QoS profile and a QoS profile that is attached to the specific interface, ATM 11/0.2.

Figure 1: Munged Profile Example



The port-attached QoS profile on ATM 11.0 contains the following queue rule:

```

host1(config)#qos-profile atmPort
host1(config-qos-profile)#ip queue traffic-class priority-data scheduler-profile 64kbps
host1(config-qos-profile)#exit
  
```

All forwarding interfaces stacked above the port are within the scope of the attachment, so all IP interfaces stacked above the port will be provisioned with a queue in the priority-data traffic class, shaped to 64 Kbps.

The QoS profile attached at subinterface ATM 11/0.2 contains the following two rules:

```

host1(config)#qos-profile atmVc
host1(config-qos-profile)#ip queue traffic-class priority-data scheduler-profile 1mbps
  
```

```
host1(config-qos-profile)#ip queue traffic-class voice-over-ip
host1(config-qos-profile)#exit
```

The queue rule for {interface type IP, traffic-class priority-data} in the QoS profile that is attached to ATM 11/0.2 effectively overrides the queue rule for the same interface type and traffic class in the port-attached QoS profile on ATM11.0.

The second queue rule, which is for the voice-over-ip traffic-class, is not conflicting. In this configuration, the provider has configured a 64 Kbps priority-data queue for each IP interface stacked above the port. But the IP interface above the ATM 11/0.2 attachment provides 1 Mbps for priority-data, and also has a second queue provisioned for VoIP.



NOTE: When a QoS profile is attached to an interface, the router first searches to determine if a munged QoS profile already exists. If you modify an existing QoS profile, the router automatically updates all munged QoS profiles that are dependent on the modified profile.

Related Topics ■ For more information about the munge algorithm and 802.3ad link aggregation interfaces, see [\[Unresolved xref\]](#)

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