

- AutoQoS -

AutoQoS

AutoQoS is a Cisco feature that was originally developed to automate QoS deployment for VoIP. Subsequently, Cisco released an updated version called **AutoQoS Enterprise**, which added support for video and other data types. AutoQoS Enterprise is *only* supported on Cisco routers, not switches.

Deploying AutoQoS Enterprise requires two steps:

- Using NBAR to automatically discover and classify traffic types.
- Generating and implementing QoS policies.

AutoQoS's generated configuration can be modified using the Modular QoS CLI (MQC). Note that the original AutoQoS did not support a discovery phase, and only supported the automatic generation of MQC policies.

AutoQoS Enterprise can be enabled on the following interface types:

- Serial interfaces, with PPP or HDLC encapsulation.
- Frame-Relay point-to-point subinterfaces.
- ATM point-to-point subinterfaces.
- Frame Relay-to-ATM links.

AutoQoS Enterprise can enable the following features on router interfaces:

- **Low Latency Queuing (LLQ)**
- **RTP header compression (cRTP)**
- **Link fragmentation and interleaving (LFI)**

AutoQoS can also enable monitoring and reporting using of SNMP traps, via an SNMP community of *AutoQoS*.

AutoQoS Enterprise has specific requirements and restrictions:

- CEF must be enabled on each interface where AutoQoS is implemented, as NBAR is dependent on CEF.
- A QoS service-policy cannot already be applied to the interface.
- A map-class cannot already be applied for a Frame Relay DLCI.
- An accurate *bandwidth* command must be enabled on interfaces and sub-interfaces.
- Slow interfaces (768kbps or less) must be configured with an IP address.

(Reference: http://www.cisco.com/en/US/docs/ios/qos/configuration/guide/autoqos_enterprise.pdf)

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Configuring AutoQoS

To enable AutoQoS Enterprise discovery on a specific interface:

```
Router(config)# ip cef
Router(config)# interface serial0/0
Router(config-if)# auto discovery qos
```

AutoQoS discovery provides more accurate traffic statistics and classification the longer it is permitted to run on an interface. By default, discovery will run for **three days**.

To allow the AutoQoS discovery process to utilize or *trust* QoS markings already present in traffic:

```
Router(config)# interface serial0/0
Router(config-if)# auto discovery qos trust
```

Once the discovery process has finished, AutoQoS Enterprise can generate MQC policies, based on the gathered traffic statistics:

```
Router(config)# interface Serial0/0
Router(config-if)# auto qos
```

As described above, the generated policies can be configured to *trust* QoS markings already present in traffic:

```
Router(config)# interface Serial0/0
Router(config-if)# auto qos trust
```

Cisco Catalyst switches do not support AutoQoS Enterprise, only the original AutoQoS VoIP implementation:

```
Switch(config)# interface FastEthernet0/0
Switch(config-if)# auto qos voip
```

If a Cisco VoIP phone is connected to a switch interface, the switch can be configured to *trust* the QoS markings from the VoIP phone:

```
Switch(config)# interface FastEthernet0/0
Switch(config-if)# auto qos voip cisco-phone
```

This requires that CDPv2 is enabled between the switch and the phone.

(Reference: http://www.cisco.com/en/US/docs/ios/qos/configuration/guide/autoqos_enterprise.pdf)

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Troubleshooting AutoQoS

AutoQoS's generated configuration can be modified using the Modular QoS CLI (MQC). This can become necessary if AutoQoS generated *too many* traffic classes, or if the policies do not fit the business requirements.

Also, AutoQoS *does not* dynamically adapt to changing network conditions. Changes to the network environment may require manual changes to the generated policy. Otherwise, AutoQoS must be disabled, and the discovery process and policy generation must be completed again in its entirety.

The *show auto discovery qos* command will display statistics on all discovered traffic types. It will additionally display the suggested QoS policy, based on the statistics gathered up to that point:

Router# *show auto discovery qos*

```
Serial0/0
AutoQoS Discovery enabled for applications
Discovery up time: 12 hours, 42 minutes
AutoQoS Class information:
Class Voice
Recommended Minimum Bandwidth40 Kbps/31% (PeakRate)
Detected applications and data:
Application/           AverageRate           PeakRate           Total
Protocol              (kbps/%)             (kbps/%)           (bytes)
-----
 rtp audio             14/<1                199/12             124563
Class Interactive Video
No data found.

<remaining output snipped for brevity>
```

Once a policy has been generated, the *show auto qos* command will display the AutoQoS-generated class-maps, policy-maps, access-lists, SNMP traps, and interface configurations:

Router# *show auto qos*

```
policy-map AutoQoS-Policy-Se0/0
class AutoQoS-Voice-Se0/0
priority percent 50
set dscp ef
!
class-map match-any AutoQoS-Voice-Se0/0
match protocol rtp audio

<remaining output snipped for brevity>
```

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