

VoIP QoS check on iDirect Velocity

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1 Introduction

This document is written to support customers to check that the VoIP QoS is implemented correctly at the Terminal side. Either at the Terminal site, or from a remote location. When requesting a new Terminal to be activated, a customer may order VoIP QoS in the SOF, the Service Order Form, as an optional service.

The customer must be able to access the Terminal via CLI, locally or remotely, while performing a VoIP test call.

The VoIP QoS check is limited to the Terminals upstream direction. The QoS filter applied on downstream should be identical to the upstream, hence a check of the upstream should be valid for both directions.

2 VoIP QoS basic testing

You may verify that your VoIP call is protected from other network traffic.

1. Perform a VoIP call, and verify that it is stable.
2. Add additional network traffic, preferably enough to stress and congest the link, since intention is to simulate network congestion during peak hours.
3. While network is in congestion, verify that VoIP continue to be stable.
4. VoIP should not be affected by other Terminal network traffic, if the VoIP QoS filter is implemented correctly.

3 VoIP QoS filter verification

You may verify that the VoIP is hitting the correct QoS queue at the Terminal side via CLI.

This may be performed by:

1. Access the X7 satellite router via CLI
2. Log on to the "Falcon" process on the X7 satellite router
3. Issue "qos status" command in Falcon
4. Evaluate "qos status" results

The chapter below describes the details.

3.1 Access the X7 satellite router via CLI

Terminal CLI can be accessed in three ways:

1. SSH to the Admin VLAN on the ETH0 Terminal interface
 - a. IP 192.168.1.1 on VLAN 1. (Fixed IP for all Terminals.)
 - i. Normally used when accessing from site / behind the Terminal
2. SSH to the Admin VLAN on the SAT0 Terminal interface
 - a. IP 10.14x.x.x on VLAN 1. (Individual IP for each Terminal.)
 - i. Normally used when accessing from NOC/ HQ / remotely
3. Serial to X7 satellite routers «console port»
 - a. If the Console port is available, a COM1 serial connection to the X7 satellite router may be used to access CLI.
 - b. NOTE: Some antenna installations require to use the X7 satellite routers «console port», in this case CLI must be accessed via SSH to admin IPs.
 - c. Normally used when accessing from site / behind the Terminal

When logging on you will be prompted for a user and password.

- The default user/pwd is «root/iDirect».

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3.2 Log on to the “Falcon” process on the X7 satellite router

When logged on to the CLI, log on to the «Falcon» process:

1. Log on to the Falcon application by executing “Telnet 0”
2. The default user/pwd is «admin/iDirect».

3.3 Issue “qos status” command in Falcon

1. Execute command “qos status”
 - o “qos status” will list the different queues that Terminal has in the upstream direction.
 - See example 1 below
 - o NOTE: The fifth parameter is the «DropPkts»

Example 1:

> qos status

| VR-Id | SL-Id | Serv Lvl Name | Depth | Bytes | DepthPkts | TxBytes | TxPkts | DropPkts | RjtPkts | InBps | InPps | OutBps | OutPps |
|-------|-------|----------------------------|--------|-------|-----------|---------|--------|----------|---------|-------|-------|--------|--------|
| 1 | 5 | NMS_SL_ICMP_UPSTREAM | 0 | 0 | 0 | 4260 | 142 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 6 | NMS_SL_TCP_UPSTREAM | 0 | 0 | 0 | 77561 | 203 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 7 | NMS_SL_UDP_UPSTREAM | 0 | 0 | 0 | 2664 | 36 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 8 | VoIP_SSPP_UDP_UPSTREAM | 0 | 0 | 0 | 32575 | 22780 | 0 | 0 | 112 | 10 | 114400 | 10 |
| 2 | 4 | VoIP_SSPP_TCP_UPSTREAM | 0 | 0 | 0 | 880 | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | Traffic_SSPP_ICMP_UPSTREAM | 0 | 0 | 0 | 57669 | 4120 | 0 | 0 | 114 | 1 | 11440 | 1 |
| 2 | 3 | Traffic_SSPP_TCP_UPSTREAM | 0 | 0 | 0 | 16218 | 2934 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 2 | Traffic_SSPP_UDP_UPSTREAM | 249372 | 175 | 138199675 | 669 | 0 | 573 | 501 | 534 | 468 | | |

Management SL details:

| VR-Id | SL-Id | Name | Depth | Bytes | DepthPkts | TxBytes | TxPkts | DropPkts | RjtPkts | InBps | InPps | OutBps | OutPps |
|-------|-------|-----------------|-------|-------|-----------|---------|--------|----------|---------|-------|-------|--------|--------|
| 1 | 1 | iDirect Mgmt SL | 0 | 0 | 0 | 191052 | 1166 | 0 | 0 | 0 | 0 | 0 | 0 |

Example 2:

```
> qos status[13:47:25:363967] UpdateRxxer::ProcessInventoryQuery -- dispatch current inventory
[13:47:25:431670] VR-Id SL-Id Serv Lvl Name DepthBytes DepthPkts TxBytes TxPkts DropPkts RjtPkts
[13:47:25:432108] 1 5 NMS_SL_ICMP_UPSTREAM 0 0 93202 2917 0 0
[13:47:25:432715] 1 6 NMS_SL_TCP_UPSTREAM 1743 3 3941944 6747 66 0
[13:47:25:433129] 1 7 NMS_SL_UDP_UPSTREAM 0 0 3036 40 0 0
[13:47:25:433539] 2 4 VoIP_UDP_UP 0 0 524923 6776 0 0
[13:47:25:434016] 2 3 VoIP_TCP_UP 0 0 0 0 0 0
[13:47:25:434427] 2 0 Default_ICMP_UP 0 0 2425691 29387 83 0
[13:47:25:434861] 2 2 Default_TCP_UP 0 0 1189846 18435 0 0
[13:47:25:435267] 2 8 Default_UDP_UP 0 0 50621 619 0 0
[13:47:25:435297] Management SL details:
[13:47:25:435726] 1 1 iDirect Mgmt SL 0 0 16964902 102020 0 0
```

3.4 Evaluate “qos status” results

- The «qos status» list may be used to verify that your VoIP call is hitting the correct queue.
 - o See VoIP queue shown in blue above, called «VoIP_SSPP_UDP_UPSTREAM» & «VoIP_SSPP_TCP_UPSTREAM»
- When you are in a VoIP call, you may verify that the counters are incrementing on the correct queue.
 - o This validates the QoS filter of the VoIP QoS filters.
- When you are adding additional network traffic, you may verify that the counters are incrementing on the correct queue.
 - o Traffic queues may start dropping packets if network is congested.
 - o VoIP queues should not start dropping packets.
 - See parameters shown in red
- If your VoIP is hitting the correct queue – it should be protected from other network traffic

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4 VoIP QoS in Managed Services

This chapter gives a short introduction to how VoIP QoS is implemented in Managed Services. This information is also given in the Service Order Form, where VoIP QoS is ordered.

4.1 VoIP Introduction

- The VoIP Client usually connects to a VoIP Gateway at the Internet side.
- To ensure as low jitter and latency as possible, the VoIP call may be given higher priority than other network traffic from the same Terminal.
- TSBC support VoIP QoS priority for VoIP clients using one or more fixed IP addresses at the VoIP Gateway side. These parameters is entered in the SOF, the Service Order Form.

4.2 Capacity allocated to the VoIP call

- The VoIP call will not be allocated new bandwidth from separate pool, but will be prioritized within the existing bandwidth allocated to the Terminal. (Priority based in the iDirect Velocity system.)
- The VoIP calls may consume all bandwidth allocated to a Terminal if necessary, hence VoIP calls may/will limit other network traffic.
- VoIP should never be guaranteed for higher bandwidth rates then the CIR, to ensure a stable service. In extreme congestion, a Terminal may be left with only CIR.

4.3 Implementation

- Customer specifies the VoIP Gateway IP addresses used by the VoIP client.
- System Engineer at Nittedal creates a VoIP filter detecting all traffic to and from these VoIP Gateways.
 - Both VoIP TCP and VoIP UDP will be defined in the filter.
- System Engineer at Nittedal assigns the VoIP filter to the Customer remote.
 - The same filter may be used on all remotes using the same VoIP solution.
- The remote will be rebooted.