

Measurement Group

Scopemon is configured via parameters. This reference lists all available parameters, default values, allowed values, and use examples for the measurement.

Table of Contents

- 1. General 4
 - 1.1. measurement_description 4
 - 1.2. measurement_start_offset 4
 - 1.3. reconnect_interval 4
 - 1.4. robust_mode_max_cbd 5
 - 1.5. user_id 5
- 2. Topology 5
 - 2.1. primary_probe_hostname 5
 - 2.2. primary_probe_port 6
 - 2.3. use_secondary_probe 6
 - 2.4. secondary_probe_hostname 6
 - 2.5. secondary_probe_port 7
 - 2.6. primary_probe_placement 7
 - 2.7. primary_probe_interface_index 7
 - 2.8. secondary_probe_interface_index 8
 - 2.9. secondary_probe_placement 8
 - 2.10. nat_between_probes 9
- 3. Filtering 9
 - 3.1. packet_filter_mode 9
 - 3.2. packet_filter 10
- 4. Senders 10
 - 4.1. primary_probe_senders_pure_mac_method_enabled 10
 - 4.2. primary_probe_senders_eth_mode 11
 - 4.3. primary_probe_senders_eth_address_list 11
 - 4.4. primary_probe_senders_ipv4_mode 11
 - 4.5. primary_probe_senders_ipv4_address_list 12
 - 4.6. primary_probe_senders_ipv6_mode 12
 - 4.7. primary_probe_senders_ipv6_address_list 12
 - 4.8. secondary_probe_senders_pure_mac_method_enabled 12
 - 4.9. secondary_probe_senders_eth_mode 13
 - 4.10. secondary_probe_senders_eth_address_list 13
 - 4.11. secondary_probe_senders_ipv4_mode 13
 - 4.12. secondary_probe_senders_ipv4_address_list 14
 - 4.13. secondary_probe_senders_ipv6_mode 14
 - 4.14. secondary_probe_senders_ipv6_address_list 15
- 5. Measurement Details 15
 - 5.1. averaging_interval 15
 - 5.2. packet_id_method 15
 - 5.3. packet_loss_timer 16
 - 5.4. pk_delay_threshold 16
 - 5.5. pk_jitter_threshold 17
 - 5.6. use_promiscuous_mode 17
- 6. QoE Averaging 17
 - 6.1. use_qoe_swa 17
 - 6.2. use_qoe_wma 18
 - 6.3. qoe_swa_window_size 18
 - 6.4. qoe_wma_weight_newest 18

7. Results	19
7.1. get_average_results	19
7.2. get_flow_results	19
7.3. get_packet_results	19
7.4. get_secondary_probe_average_results	19
7.5. use_results_distribution	20
7.6. results_distribution_destinations	20
7.7. write_average_results	20
7.8. write_flow_results	21
7.9. write_packet_results	21
7.10. write_absolute_results (deprecated)	21
7.11. write_multiple_files	22
7.12. write_date_code_format	22
7.13. write_filename_suffix	22
7.14. write_path	23
8. Measurement Group (GQoSM)	23
8.1. qoe_gqosm_cbl_form	23
8.2. qoe_gqosm_cbl_threshold	24
8.3. qoe_gqosm_delay_form	24
8.4. qoe_gqosm_delay_threshold	24
8.5. qoe_gqosm_jitter_form	25
8.6. qoe_gqosm_jitter_threshold	25
8.7. qoe_gqosm_packet_loss_form	25
8.8. qoe_gqosm_packet_loss_threshold	26
8.9. use_qoe_gqosm	26
8.10. use_qoe_gqosm_cbl	26
8.11. use_qoe_gqosm_delay	27
8.12. use_qoe_gqosm_jitter	27
8.13. use_qoe_gqosm_packet_loss	27
9. Measurement Group (PSQA)	28
9.1. qoe_psqa_codec_list	28
9.2. qoe_psqa_fec_conv	28
9.3. qoe_psqa_fec_list	28
9.4. qoe_psqa_mode	29
9.5. qoe_psqa_pi	29
9.6. qoe_psqa_speex_rate	29
9.7. qoe_psqa_video_resolution	30
9.8. qoe_psqa_video_motion	30
9.9. qoe_psqa_video_ec	30
9.10. qoe_psqa_video_cmq	31
9.11. use_qoe_psqa	31
10. Glossary	32

1. General

1.1. measurement_description

Verbose description of the measurement. This value is written to results files as metadata.

- Type: `string`
- Default: `[empty]`

Example

To name this measurement “My measurement”, define this parameter as:

```
[Measurement]
measurement_description=My measurement
```

1.2. measurement_start_offset

Artificially delay the start of the measurement by the given time. If the value is 0, the measurement starts as soon as possible once triggered.

- Unit: `milliseconds`
- Precision: `integer`
- Minimum: `0`
- Default: `0`

Example

To delay the start of the measurement by 1 second, define this parameter as:

```
[Measurement]
measurement_start_offset=1000
```



This feature is used in particular scenarios and is rarely needed

1.3. reconnect_interval

If a connection cannot be established to the primary Probe, Scopemon waits for a duration specified by this parameter and then attempts to reconnect.

- Unit: `milliseconds`
- Precision: `integer`
- Minimum: `0`
- Default: `1000`

Example

To attempt a reconnection after 500 milliseconds, define this parameter as:

```
[Measurement]  
reconnect_interval=500
```

1.4. robust_mode_max_cbd

This parameter defines the maximum connection break duration allowed in the QMCP connections related to the measurement session. If a connection break is longer than the defined value, the measurement session will end to a timeout error.

- Unit: `minutes`
- Precision: `integer`
- Minimum: `1`
- Default: `10`

Example

To allow connection breaks of maximum of three minutes, define this parameter as:

```
[Measurement]  
robust_mode_max_cbd=3
```

1.5. user_id

User ID can be used to identify a controller, i.e., the Qosium Scopemon instance in this case. You can set this freely. The set value will appear in the results, where it can be used as a parameter to find results. Thus, you can use this as you wish as an identifier for your measurement, devices, etc., in a large-scale measurement setup.

- Precision: `integer`
- Minimum: `0`
- Maximum: `4294967295`
- Default: `0`

Example

To set an id of 6 for this client, define this parameter as:

```
[Measurement]  
user_id=6
```

2. Topology

2.1. primary_probe_hostname

The hostname (or directly the IPv4 address) of the primary Probe. This can be omitted if the Probe is located on the same device where Scopemon is used.

- Type: `string`
- Default: `127.0.0.1`

Example

If the primary Probe is installed in another device at *myhost.home*, define this parameter as:

```
[Measurement]
primary_probe_hostname=myhost.home
```

2.2. primary_probe_port

The port number of the primary Probe. This can be typically omitted unless the port where Probe serves control connections has been changed in Probe configuration.

- Precision: `integer`
- Minimum: `0`
- Maximum: `65535`
- Default: `8177`

Example

If Probe is configured to serve control connections on port 9776, define this parameter as:

```
[Measurement]
primary_probe_port=9776
```

2.3. use_secondary_probe

By default, measurement is performed with one Probe. With this setting, it's possible to set a two-point measurement.

- Values:
 - `true` - Perform a two-point measurement
 - `false` - Perform a single-point measurement
- Default: `false`

Example

To perform a two-point measurement using the Probe at 192.168.1.14 and interface #4, set as follows:

```
[Measurement]
use_secondary_probe=false
secondary_probe_hostname=192.168.1.14
secondary_probe_interface_index=4
```



If secondary Probe is not used, i.e., the measurement is a single-point one, all the secondary Probe parameters are just ignored.



Single-point measurement significantly limits the number of available measurement result types.

2.4. secondary_probe_hostname


The hostname (or directly the IPv4 address) of the secondary Probe.

- Type: `string`
- Default: `127.0.0.1`

Example

If a secondary Probe is installed in another device at IP address *192.168.1.43*, define this parameter as:

```
[Measurement]
secondary_probe_hostname=192.168.1.43
```

 This parameter has no effect when the secondary Probe is disabled

2.5. secondary_probe_port


The port number of the secondary Probe. This can be typically omitted unless the port where Probe serves control connections has been changed in Probe configuration.

- Precision: `integer`
- Minimum: `0`
- Maximum: `65535`
- Default: `8177`

Example

If Probe is configured to serve control connections on port 9778, define this parameter as:

```
[Measurement]
secondary_probe_port=9778
```

 This parameter has no effect when the secondary Probe is disabled

2.6. primary_probe_placement

The topological placement of the primary Probe.

- Values:
 - `10` Measurement end-point - Probe is in either one of the endpoints of the measured traffic. In other words, the device Probe is installed to is either sending or receiving the measured network traffic.
 - `100` Within measured path - Probe is not located at either one of the end-points but instead resides somewhere along the path where the measured traffic traverses.
 - `200` Off-path - Probe is not located within the measurement path at all. This is the case, e.g., when the Probe is located in a separate device where the traffic to be measured is mirrored.
- Default: `10`

2.7. primary_probe_interface_index

This parameter defines the capture interface of the primary Probe to be used in the measurement. The interface numbering in a device is unique per Qosium installation. Thus, once Qosium Probe is installed on a device, a particular NIC will always have the same interface index. The numbering can change if Qosium

Probe is removed and reinstalled.

- Precision: `integer`
- Minimum: `0`
- Default: `0`

Example

If desired the capture interface has index of 2, define this parameter as:

```
[Measurement]
primary_probe_interface_index=2
```



To see the available interfaces and their indices start Scopemon and check its log.

2.8. secondary_probe_interface_index

This parameter defines the capture interface of the secondary Probe to be used in the measurement.

- Precision: `integer`
- Minimum: `0`
- Default: `0`

Example

If the index of the desired capture interface is 2, define this parameter as:

```
[Measurement]
secondary_probe_interface_index=2
```



This parameter has no effect when the secondary Probe is disabled

2.9. secondary_probe_placement

The topological placement of the secondary Probe.

- Values:
 - `10` Measurement end-point - Probe is in either one of the endpoints of the measured traffic. In other words, the device Probe is installed to is either sending or receiving the measured network traffic
 - `100` Within measured path - Probe is not located at either one of the end-points but instead resides somewhere along the path where the measured traffic traverses
 - `200` Off-path - Probe is not located within the measurement path at all. This is the case, e.g., when the Probe is located in a separate device where the traffic to be measured is mirrored.
- Default: `10`



This parameter has no effect when the secondary Probe is disabled

2.10. nat_between_probes

Qosium needs to be aware if a *NAT* occurs between Probes. If this is the case, enable this parameter.

- Values:
 - `true` - There's a NAT occurring between Probes
 - `false` - No NAT is occurring between Probes
- Default: `false`



This parameter has no effect when the secondary Probe is disabled

3. Filtering

Packet filter is one of the most important parameters, as it defines which traffic is measured. The packet filter needs to be strict enough so that no irrelevant traffic is captured. Otherwise, the results may not be useful.

3.1. packet_filter_mode

This parameter determines the mode in which packets are filtered. In most cases, the selection is between *Automatic*, which generates an automatic filter, or *Manual*, which allows the use of a manual filter defined in [packet_filter](#). For more information, see [Packet Filters in Qosium](#).

- Values:
 - `220` Manual - Packet filter is defined manually in [packet_filter](#). In a two-point measurement, this filter is used in the secondary Probe as well.
 - `240` Automatic - Generates automatically a filter, which includes all IP traffic between the hosts (a two-point measurement) or the measurement point's own IP traffic (a single-point measurement). The parameter [packet_filter](#) will be ignored.
 - `231` Automatic for secondary (strict) - This mode is meant for cases where a *NAT* is between the measurement points in a two-point measurement. The filter is set manually for the primary Probe, but Qosium generates an automatic filter for the secondary Probe. The generated filter will be [strict](#), focusing on a single flow, so define the primary Probe filter to be strict as well.
 - `233` Automatic for secondary (light) - This mode is similar to the previous, but now a [loose](#) automatic filter is generated for the secondary Probe. A *loose filter* includes only addresses, so all traffic traveling between these addresses will be included. Remember to define the primary Probe's manual filter to be loose as well.
- Default: `240`

Example

```
[Measurement]  
packet_filter_mode=231
```



Only end-point placements of Probes allow the Packet filter to be calculated automatically.

3.2. packet_filter

When [packet_filter_mode](#) is Manual, use this parameter to define the filter. In addition, when using the *NAT* automatic filtering modes, the primary Probe filter is defined here.

- Type: `string`
- Default: `ip`

For more information, see [Packet Filters in Qosium](#).

Example

To enable monitoring only for *UDP* traffic going through ports 6889 or 6890, define this parameter as:

```
[Measurement]
packet_filter=udp port 6889 or udp port 6890
```



If you are running Scopemon in Flow Monitor Measurer mode, the manual filter defined here will be overruled by the filter defined under FlowMonitorMeasurer.

4. Senders

Sometimes it is not clear which way the traffic is traveling in the network. In these cases, you need to tell it to Qosium by defining senders manually. See [Direction of Traffic and Senders](#) under concepts section for more information what the senders mean.

In a single-point measurement, you need to define the senders manually if Probe's [placement](#) is *Off-path*.

In a two-point measurement, you need to define the senders manually in the following cases:

- If both Probes are *Off-path*, you need to define senders for both manually.
- If one Probe is *Off-path* and the other is *Within path*, you need to define the senders manually for the *Off-path* Probe.

Otherwise, Qosium defines the senders automatically, and the following parameters in this category are ignored.

4.1. primary_probe_senders_pure_mac_method_enabled

Determines whether the pure MAC method is used for defining primary Probe senders. When enabled, the senders are defined only based on MAC addresses and no other senders settings are required for the primary Probe.

- Values:
 - `true` - Pure MAC method is used
 - `false` - Pure MAC method is not used
- Default: `false`



This mode works only if the measured traffic contains Ethernet-like MAC addresses.

4.2. primary_probe_senders_eth_mode

The Ethernet senders mode of the primary Probe.

- Values:
 - `0` Auto-search - Use the Ethernet addresses of the device's interfaces as senders.
 - `249` Manual - Input sender addresses manually.
 - `250` Inverse definition - The senders are defined according to the senders of the secondary Probe.
 - `252` Mask - Define the senders manually by using a mask instead of individual addresses.
- Default: `0`

Example

```
[Measurement]
primary_probe_senders_eth_mode=249
```

4.3. primary_probe_senders_eth_address_list

The manual Ethernet senders list of the local Probe. Used only when [primary_probe_senders_eth_mode](#) is set to *manual* or *mask* mode.

Example (Manual mode)

```
[Measurement]
primary_probe_senders_eth_address_list/size=2
primary_probe_senders_eth_address_list/1/address=12:34:56:78:9a:bc
primary_probe_senders_eth_address_list/2/address=12:34:56:78:9a:bd
```

4.4. primary_probe_senders_ipv4_mode

The IPv4 senders mode of the primary Probe.

- Values:
 - `0` Auto-search - Use the IPv4 addresses of the device's interfaces as senders.
 - `249` Manual - Input sender addresses manually.
 - `250` Inverse definition - The senders are defined according to the senders of the secondary Probe.
 - `252` Mask - Define the senders manually by using a network mask instead of individual addresses.
- Default: `0`

Example

```
[Measurement]
primary_probe_senders_ipv4_mode=252
```



When using the Inverse definition or Pure MAC method, the Packet filter cannot be calculated automatically.

4.5. primary_probe_senders_ipv4_address_list

The manual IPv4 senders list of the local Probe. Used only when [primary_probe_senders_ipv4_mode](#) is set to *Manual* or *Mask* mode.

Example (Mask mode)

```
[Measurement]
primary_probe_senders_ipv4_address_list/size=1
primary_probe_senders_ipv4_address_list/1/address=192.168.1.0
primary_probe_senders_ipv4_address_list/1/value=255.255.255.0
```

4.6. primary_probe_senders_ipv6_mode

The IPv6 senders mode of the primary Probe.

- Values:
 - **0** Auto-search - Use the IPv6 addresses of the device's interfaces as senders.
 - **249** Manual - Input sender addresses manually.
 - **250** Inverse definition - The senders are defined according to the senders of the secondary Probe.
 - **252** Mask - Define the senders manually by using a network mask instead of individual addresses.
- Default: **0**

Example

```
[Measurement]
primary_probe_senders_ipv6_mode=249
```



When using the Inverse definition or Pure MAC method, the Packet filter cannot be calculated automatically.

4.7. primary_probe_senders_ipv6_address_list

The manual IPv6 senders list of the local Probe. Used only when [primary_probe_senders_ipv6_mode](#) is set to *Manual* or *Mask* mode.

Example (Manual mode)

```
[Measurement]
primary_probe_senders_ipv6_address_list/size=1
primary_probe_senders_ipv6_address_list/1/address=fe80:12ab:c839:8df9::1
```

4.8. secondary_probe_senders_pure_mac_method_enabled

Determines whether the pure MAC method is used for defining secondary Probe senders. When enabled, the senders are defined only based on MAC addresses and no other senders settings are required for the secondary Probe.

- Values:
 - **true** - Pure MAC method is used

- `false` - Pure MAC method is not used
- Default: `false`



This mode works only if the measured traffic contains Ethernet-like MAC addresses.



This parameter has no effect when the secondary Probe is disabled

4.9. secondary_probe_senders_eth_mode

The Ethernet senders mode of the secondary Probe.

- Values:
 - `0` Auto-search - Use the Ethernet addresses of the device's interfaces as senders.
 - `249` Manual - Input sender addresses manually.
 - `250` Inverse definition - The senders are defined according to the senders of the secondary Probe.
 - `252` Mask - Define the senders manually by using a network mask instead of individual addresses.
- Default: `250`

Example

```
[Measurement]
secondary_probe_senders_eth_mode=252
```



This parameter has no effect when the secondary Probe is disabled

4.10. secondary_probe_senders_eth_address_list

The manual Ethernet senders list of the secondary Probe. Used only when [secondary_probe_senders_eth_mode](#) is set to *manual* or *mask*.

Example (Mask)

```
[Measurement]
secondary_probe_senders_eth_address_list/size=1
secondary_probe_senders_eth_address_list/1/address=12:34:56:78:9a:00
secondary_probe_senders_eth_address_list/1/value=ff:ff:ff:ff:ff:00
```



This parameter has no effect when the secondary Probe is disabled

4.11. secondary_probe_senders_ipv4_mode

The IPv4 senders mode of the secondary Probe.

- Values:
 - `0` Auto-search - Use the IPv4 addresses of the device's interfaces as senders.
 - `249` Manual - Input sender addresses manually.

- [250](#) Inverse definition - The senders are defined according to the senders of the secondary Probe.
- [252](#) Mask - Define the senders manually by using a network mask instead of individual addresses.
- Default: [250](#)

Example

```
[Measurement]  
secondary_probe_senders_ipv4_mode=249
```



When using the Inverse definition or Pure MAC method, the Packet filter cannot be calculated automatically.



This parameter has no effect when the secondary Probe is disabled

4.12. secondary_probe_senders_ipv4_address_list

The manual IPv4 senders list of the secondary Probe. Used only when [secondary_probe_senders_ipv4_mode](#) is set to *Manual* or *Mask*.

Example (Manual)

```
[Measurement]  
secondary_probe_senders_ipv4_address_list/size=3  
secondary_probe_senders_ipv4_address_list/1/address=10.0.0.1  
secondary_probe_senders_ipv4_address_list/2/address=10.0.0.4  
secondary_probe_senders_ipv4_address_list/3/address=10.0.0.12
```



This parameter has no effect when the secondary Probe is disabled

4.13. secondary_probe_senders_ipv6_mode

The IPv6 senders mode of the secondary Probe.

- Values:
 - [0](#) Auto-search - Use the IPv6 addresses of the device's interfaces as senders.
 - [249](#) Manual - Input sender addresses manually.
 - [250](#) Inverse definition - The senders are defined according to the senders of the secondary Probe.
 - [252](#) Mask - Define the senders manually by using a network mask instead of individual addresses.
- Default: [250](#)

Example

```
[Measurement]  
secondary_probe_senders_ipv6_mode=252
```



When using the Inverse definition or Pure MAC method, the Packet filter cannot be calculated automatically.



This parameter has no effect when the secondary Probe is disabled

4.14. secondary_probe_senders_ipv6_address_list

The manual IPv6 senders list of the secondary Probe. Used only when [secondary_probe_senders_ipv6_mode](#) is set to *Manual* or *Mask*.

Example (Mask)

```
[Measurement]
secondary_probe_senders_ipv6_address_list/size=1
secondary_probe_senders_ipv6_address_list/1/address=fe80:1234:5678::0
secondary_probe_senders_ipv6_address_list/1/value=ffff:ffff:ffff::0
```



This parameter has no effect when the secondary Probe is disabled

5. Measurement Details

5.1. averaging_interval

Determines how often quality is measured for the ongoing measurement. Lower value gives more detailed results and consumes more resources. A higher value gives smoother values.

- Unit: `milliseconds`
- Precision: `integer`
- Minimum: `50`
- Default: `1000`



If you are seeking packet-level resolution for the statistics, do not try to do it by decreasing Averaging interval. Instead, consider using Packet QoS Statistics

Example

To make Scopemon collect quality results twice per second (i.e., every 500 ms), define this parameter as:

```
[Measurement]
averaging_interval=500
```

5.2. packet_id_method

This parameter defines how Probes identify packets during a measurement. The mode Automatic is the recommended one.

See Qosium Scope's [Packet Identification Method](#) for more details of this parameter.

- Values:
 - `10` Automatic - Qosium selects the method from the options below based on the measurement scenario.
 - `50` IPv4 ID Field - Qosium uses the *Identification field* in the IPv4 header for packet identification.

- **60** RTP Sequence Number - Qosium uses the *Sequence number field* in the *RTP* header for packet identification.
- **100** Payload-Based ID - Qosium calculates the identification based on the packet payload. If a packet has no payload, *IP4 ID Field*, when present, is used.
- **110** Extended Payload-Based ID - Qosium calculates the identification based on the packet payload, including some parts of the transport layer header.
- **120** Pure Payload-Based ID - This is a very similar method with *Payload-Based ID*, but packets without payload are just ignored from QoS calculation.
- **200** NAT bypasser + Payload based ID - Operates as *Payload-Based ID* but with NAT bypasser functionality enabled.
- **210** NAT Bypasser + Pure Payload Based ID - Operates as *Pure Payload-Based ID* but with NAT bypasser functionality enabled.
- Default: **10**

Example

```
[Measurement]  
packet_id_method=50
```

5.3. packet_loss_timer

This parameter defines how long to wait for a packet before considering it lost. Thus, selecting a small value may cause delayed packets to be considered lost even though they would later arrive at the destination. The Automatic setup is recommended for most use cases.

- Unit: **milliseconds**
- Precision: **integer**
- Special value: **0** - Automatic
- Minimum: **1**
- Default: **0**

Example

To allow packet delay up to 2 seconds, define this parameter as:

```
[Measurement]  
packet_loss_timer=2000
```



Keep this at least on the same level as the Averaging Interval, unless you are using a long Averaging Interval (> 5 s).



If your measured application has strict delay limits that you wish to take into account in the measurement, do not try to use this parameter to turn delayed packets into packet loss. Instead, use `pk_delay_threshold` parameter to calculate exactly the number of packets that experience higher delay than the set threshold.

5.4. pk_delay_threshold

Packets with a delay above this threshold are counted in [QoS Statistics: Th. ex. delay pkts.](#)

- Precision: **integer**

- Unit: `microseconds`
- Minimum: `0`
- Default: `100000`

Example

To count packets that have a delay of 500 ms (500000 μ s), define this parameter as:

```
[Measurement]
pk_delay_threshold=500000
```

5.5. pk_jitter_threshold

Packets with a jitter above this threshold are counted in [QoS Statistics: Th. ex. jitter pkts.](#)

- Precision: `integer`
- Unit: `microseconds`
- Minimum: `0`
- Default: `100000`

Example

To count packets that have a jitter of 100 ms (100000 μ s), define this parameter as:

```
[Measurement]
pk_jitter_threshold=100000
```

5.6. use_promiscuous_mode

Promiscuous mode allows the detection of incoming traffic that is not directed to the selected network interface. This scenario is common when capturing mirrored traffic, e.g., from a switch.

- Values:
 - `true` - Allow detection of all incoming traffic
 - `false` - Allow detection of incoming traffic destined only for this interface
- Default: `true`

Example

To disable detection of traffic not designated to the network interface, define this parameter as:

```
[Measurement]
use_promiscuous_mode=false
```

6. QoE Averaging

When using QoE methods, it is recommended to use averaging because it resembles better how humans perceive connection quality.

6.1. use_qoe_swa

Enable or disable sliding window averaging (SWA) for quality estimates.

- Values:
 - `true` - Enable SWA
 - `false` - Disable SWA
- Default: `true`

Example

```
[Measurement]  
use_qoe_swa=true
```

6.2. use_qoe_wma

Enable or disable weighted moving averaging (WMA) for quality estimates.

- Values:
 - `true` - Enable WMA
 - `false` - Disable WMA
- Default: `true`

Example

```
[Measurement]  
use_qoe_wma=false
```

6.3. qoe_swa_window_size

SWA window size.

- Precision: `unsigned integer`
- Unit: `Averaging samples`
- Minimum: `0`
- Default: `5`

Example

```
[Measurement]  
qoe_swa_window_size=2
```

6.4. qoe_wma_weight_newest

- Weight of the newest sample in WMA.
- Precision: `Real number`
 - Minimum: `0.0`
 - Default: `0.5`

Example

```
[Measurement]  
qoe_wma_weight_newest=1.0
```

7. Results

7.1. get_average_results

Enable reception of average results during measurement.

- Values:
 - `true` - Gather average results from the primary Probe
 - `false` - Do not gather average results
- Default: `true`



This setting was introduced in Scopemon version of 1.6.0.0->.

7.2. get_flow_results

Enable reception of flow results during measurement.

- Values:
 - `true` - Gather flow results from the primary Probe
 - `false` - Do not gather flow results
- Default: `false`



This setting was introduced in Scopemon version of 1.6.0.0->.

7.3. get_packet_results

Enable reception of packet results during measurement. In a single-point measurement, the results include information of every packet matching the measurement filter. In a two-point measurement, also the QoS statistics (delay and jitter) are received for every single packet matching the measurement filter.

- Values:
 - `true` - Gather packet results
 - `false` - Do not gather packet results
- Default: `false`



This setting was introduced in Scopemon version of 1.6.0.0->. A lot of results data is received when measuring traffic with a high data rate.

7.4. get_secondary_probe_average_results

Enable reception of single-point average statistics from the secondary Probe during measurement.

- Values:
 - `true` - Gather average results from the secondary Probe
 - `false` - Do not gather average results from the secondary Probe
- Default: `false`

7.5. use_results_distribution

Enable or disable result distribution directly from primary Probe to external result receivers.

- Values:
 - `true` - Enable result distribution
 - `false` - Disable result distribution
- Default: `false`

7.6. results_distribution_destinations

Qosium Probe can send measurement results to additional receivers during measurement. These receivers must be running the Qosium server, such as Qosium Storage.

- Type: `Array`
- Fields:
 - `address` The IPv4 address of the receiver
 - `port` The port number of the receiver

Example

To send Qosium results to destinations `127.0.0.1:7700` and `192.168.1.3:7710`, define this parameter as:

```
[Measurement]
use_results_distribution=true
results_distribution_destinations/size=2
results_distribution_destinations/1/address=127.0.0.1
results_distribution_destinations/1/port=7700
results_distribution_destinations/2/address=192.168.1.3
results_distribution_destinations/2/port=7710
```

7.7. write_average_results

When true, average measurement results are written in a file. The filename has the format "averages_[suffix].txt", and new measurements are appended to the file. This setting overrides [get_average_results](#).

- Values:
 - `true` - Results are written in a file
 - `false` - Results are not written in a file
- Default: `false`

Example

```
[Measurement]
write_average_results=true
```

7.8. write_flow_results

When true, flow measurement results are written in a file. The filename has the format “flows_[suffix].txt”; new measurements are appended to the file. This data only contains the flow map detected during the measurement. This setting overrides [get_flow_results](#).

- Values:
 - `true` - Results are written in a file
 - `false` - Results are not written in a file
- Default: `false`

Example

```
[Measurement]
write_flow_results=true
```

7.9. write_packet_results

When true, packet measurement results are written in a file. In the single-point measurement scenario, the filename has the format “pk_info[suffix].txt”. In a two-point measurement, two files are generated, and the filenames have the format *pk_qosDL[suffix].txt* and *pk_qosUL[suffix].txt*. Results from new measurements are appended to the file. This setting overrides [get_packet_results](#).

- Values:
 - `true` - Results are written in a file
 - `false` - Results are not written in a file
- Default: `false`

Example

```
[Measurement]
write_packet_results=true
```



In Scopemon versions of 1.6.0.0->, this setting also comprises the deprecated `write_absolute_results`.

7.10. write_absolute_results (deprecated)

When true, Packet QoS measurement results are written in a file. Two files are generated, and the filenames have format *pk_qosDL[suffix].txt* and *pk_qosUL[suffix].txt*, and new measurements are appended to the files.

- Values:
 - `true` - Results are written in a file(s)
 - `false` - Results are not written in a file(s)

- Default: `false`

Example

```
[Measurement]
write_absolute_results=true
```



This setting is deprecated in Scopemon versions of 1.6.0.0-> and is replaced by the setting `write_packet_results`.

7.11. write_multiple_files

When true, measurement results are written to multiple files. By default, one file is created for each day. For configuring multiple file writing frequency, see [write_date_code_format](#).

- Values:
 - `true` - Results are written in multiple files
 - `false` - All results are written in a single file
- Default: `false`

Example

```
[Measurement]
write_average_results=true
write_flows=true
write_multiple_files=true
```



This settings has effect only when `write_absolute_results`, `write_average_results`, `write_flow_results`, and/or `write_packet_results` is set to true.

7.12. write_date_code_format

Date code format governs the frequency of file creation when `write_multiple_files`. Whenever Scopemon detects a change in the date code, it automatically triggers new result files. A timestamp with this date code is then appended to the filename.

- Type: `string`
- Default: `yyyyMMdd`

Example

To write results every hour, define this parameter as:

```
[Measurement]
write_multiple_files=true
write_date_code_format=yyyyMMdd-hh
```

7.13. write_filename_suffix

File suffix string when forming a filename for measurement result files.

- Type: `string`
- Default: Empty

Example

If defined for example as “test”, filenames will begin with the suffix and underscore, e.g. *averages_test.txt*.

```
[Measurement]
write_average_results=true
write_filename_suffix=test
```



This settings has effect only when `write_absolute_results`, `write_average_results`, `write_flow_results`, and/or `write_packet_results` is set to true.

7.14. write_path

Set to override the path where measurement result files are stored. Use `/` as the directory separator.

- Type: `string`
- Default: Scopemon root directory

Example

```
[Measurement]
write_path=c:/temp
```



This settings has effect only when `write_absolute_results`, `write_average_results`, `write_flow_results`, and/or `write_packet_results` is set to true.

8. Measurement Group (GQoSM)

Scopemon is configured via parameters. This reference lists all available parameters, default values, allowed values, and examples for GQoSM configuration.

8.1. qoe_gqosm_cbl_form

The form factor for connection break length.

- Precision: `float`
- Minimum: `0.0`
- Maximum: `1.0`
- Default: `0.3`



Ignored if `use_qoe_gqosm_cbl` is false

Example

```
[Measurement]
use_qoe_gqosm_cbl=true
qoe_gqosm_cbl_form=0.4
```

8.2. qoe_gqosm_cbl_threshold

Bad performance limit for connection break length.

- Unit: `packets`
- Precision: `integer`
- Minimum: `0`
- Default: `5`



Ignored if `use_qoe_gqosm_cbl` is false

Example

```
[Measurement]
use_qoe_gqosm_cbl=true
qoe_gqosm_cbl_threshold=2
```

8.3. qoe_gqosm_delay_form

The form factor for the delay.

- Precision: `float`
- Minimum: `0.0`
- Maximum: `1.0`
- Default: `0.3`



Ignored if `use_qoe_gqosm_delay` is false

Example

```
[Measurement]
use_qoe_gqosm_delay=true
qoe_gqosm_delay_form=0.4
```

8.4. qoe_gqosm_delay_threshold

Bad performance limit for the delay.

- Unit: `seconds`
- Precision: `float`
- Minimum: `0.0`
- Default: `0.3`



Ignored if use_qoe_gqosm_delay is false

Example

```
[Measurement]
use_qoe_gqosm_delay=true
qoe_gqosm_delay_threshold=0.5
```

8.5. qoe_gqosm_jitter_form

The form factor for jitter.

- Precision: `float`
- Minimum: `0.0`
- Maximum: `1.0`
- Default: `0.3`



Ignored if use_qoe_gqosm_jitter is false

Example

```
[Measurement]
use_qoe_gqosm_jitter=true
qoe_gqosm_jitter_form=0.1
```

8.6. qoe_gqosm_jitter_threshold

Bad performance limit for jitter.

- Unit: `seconds`
- Precision: `float`
- Minimum: `0.0`
- Default: `0.1`



Ignored if use_qoe_gqosm_jitter is false

Example


```
[Measurement]
use_qoe_gqosm_jitter=true
qoe_gqosm_jitter_threshold=0.07
```

8.7. qoe_gqosm_packet_loss_form

The form factor for packet loss.

- Precision: `float`
- Minimum: `0.0`

- Maximum: 1.0
- Default: 0.3

 Ignored if use_qoe_gqosm_packet_loss is false


Example

```
[Measurement]
use_qoe_gqosm_packet_loss=true
qoe_gqosm_packet_loss_form=0.4
```

8.8. qoe_gqosm_packet_loss_threshold

Bad performance limit for packet loss.

- Unit: fraction
- Precision: float
- Minimum: 0.0
- Maximum: 1.0
- Default: 0.03

 Ignored if use_qoe_gqosm_packet_loss is false

Example

```
[Measurement]
use_qoe_gqosm_packet_loss=true
qoe_gqosm_packet_loss_threshold=0.08
```

8.9. use_qoe_gqosm

Determines if GQoSM quality model calculations are performed. When false, GQoSM results are not available in results.

- Values:
 - true - GQoSM quality model is calculated
 - false - GQoSM quality model is not calculated
- Default: true

Example

```
[Measurement]
use_qoe_gqosm=true
```

8.10. use_qoe_gqosm_cbl

Determines if connection break length parameter should be used in quality assessment.

- Values:
 - `true` - Parameter is used
 - `false` - Parameter is not used
- Default: `false`

Example

```
[Measurement]  
use_qoe_gqosm_cb1=true
```

8.11. use_qoe_gqosm_delay

Determines if delay parameter should be used in quality assessment.

- Values:
 - `true` - Parameter is used
 - `false` - Parameter is not used
- Default: `true`

Example

```
[Measurement]  
use_qoe_gqosm_delay=false
```

8.12. use_qoe_gqosm_jitter

Determines if jitter parameter should be used in quality assessment.

- Values:
 - `true` - Parameter is used
 - `false` - Parameter is not used
- Default: `true`

Example

```
[Measurement]  
use_qoe_gqosm_jitter=false
```

8.13. use_qoe_gqosm_packet_loss

Determines if packet loss parameter should be used in quality assessment.

- Values:
 - `true` - Parameter is used
 - `false` - Parameter is not used
- Default: `true`

Example

```
[Measurement]  
use_qoe_gqosm_packet_loss=false
```

9. Measurement Group (PSQA)

Scopemon is configured via parameters. This reference lists all available parameters, default values, allowed values, and examples for PSQA configuration.

9.1. qoe_psqa_codec_list

The audio codec for VoIP listening mode.

- Values:
 - `0` PCM - PCM codec is used
 - `1` GSM - GSM codec is used
- Default: `0`

Example

```
[Measurement]  
qoe_psqa_codec_list=1
```

9.2. qoe_psqa_fec_conv

Forward error correction for VoIP conversational mode.

- Values:
 - `0` Off - FEC is off
 - `10` Low - FEC is low
 - `11` High - FEC is high
- Default: `0`

Example

```
[Measurement]  
qoe_psqa_fec_conv=0
```

9.3. qoe_psqa_fec_list

Forward error correction offset for VoIP listening mode.

- Values:
 - `0` Off - FEC is off
 - `1` FEC 1 - FEC offset = 1.0
 - `2` FEC 2 - FEC offset = 2.0
 - `3` FEC 3 - FEC offset = 3.0

- Default: 0

Example

```
[Measurement]  
qoe_psqa_fec_list=2
```

9.4. qoe_psqa_mode

The neural network model of PSQA.

- Values:
 - 1 VoIP listening - PSQA is used for VoIP in listening mode
 - 2 VoIP conversational - PSQA is used for VoIP in conversational mode
 - 3 Video AV - Video in streaming audiovisual mode
 - 4 Video AV MLP - Video in streaming audiovisual mode (MPL)
- Default: 1

Example

```
[Measurement]  
qoe_psqa_mode=1
```

9.5. qoe_psqa_pi

Packetization interval for VoIP listening mode.

- Values:
 - 0 20 ms - Packetization interval is 20 ms
 - 1 40 ms - Packetization interval is 40 ms
 - 2 80 ms - Packetization interval is 80 ms
- Default: 0

Example

```
[Measurement]  
qoe_psqa_pi=2
```

9.6. qoe_psqa_speex_rate

Speex codec data rate for VoIP conversational mode.

- Values:
 - 10 2.4 - Speex rate: 2.4 kbit/s
 - 11 4.0 - Speex rate: 4.0 kbit/s
 - 12 6.0 - Speex rate: 6.0 kbit/s
 - 13 8.0 - Speex rate: 8.0 kbit/s
 - 14 11.2 - Speex rate: 11.2 kbit/s

- [15](#) 14.2 - Speex rate: 14.2 kbit/s
- [16](#) 18.4 - Speex rate: 18.4 kbit/s
- [17](#) 24.8 - Speex rate: 24.8 kbit/s
- Default: [10](#)

Example

```
[Measurement]  
qoe_psqa_codec_conv=11
```

9.7. qoe_psqa_video_resolution

The resolution of the video content.

- Values:
 - [0](#) 480p - Video resolution is 480p
 - [1](#) 720p - Video resolution is 720p
 - [2](#) 1080p - Video resolution is 1080p
- Default: [0](#)

Example

```
[Measurement]  
qoe_psqa_video_resolution=1
```

9.8. qoe_psqa_video_motion

The amount of motion in the video content.

- Values:
 - [0](#) Low - Low motion (e.g., news)
 - [1](#) Moderate - Moderate motion (e.g., typical TV shows)
 - [2](#) High - High motion (e.g., sports)
- Default: [0](#)

Example

```
[Measurement]  
qoe_psqa_video_motion=1
```

9.9. qoe_psqa_video_ec

The error concealment mode of the video content (valid only for the Video AV MLP mode).

- Values:
 - [0](#) Off - Error concealment is off
 - [1](#) On - Error concealment is on

- Default: 0

Example

```
[Measurement]  
qoe_psq_video_ec=1
```

9.10. qoe_psq_video_cmq

Calculated movement quantity of the video content (valid only for the Video AV MLP mode).

- Unit: `percentage`
- Precision: `float`
- Minimum: `0.0`
- Maximum: `100.0`
- Default: `0.0`

Example

```
[Measurement]  
qoe_psq_video_cmq=1.15
```

9.11. use_qoe_psq

Determines if PSQA quality model calculations are performed. When false, PSQA results are not available in results.

- Values:
 - `true` - PSQA quality model is calculated
 - `false` - PSQA quality model is not calculated
- Default: `false`

Example

```
[Measurement]  
use_qoe_psq=true
```

10. Glossary

Network Address Translation

A technique for remapping an IP address space

[Wikipedia article on Network Address Translation](#)

User Datagram Protocol

A simple, fast, unreliable transport protocol.

Real-time Transport Protocol

A transport protocol for applications with real-time constraints, such as video streams, VoIP, and remote control.