

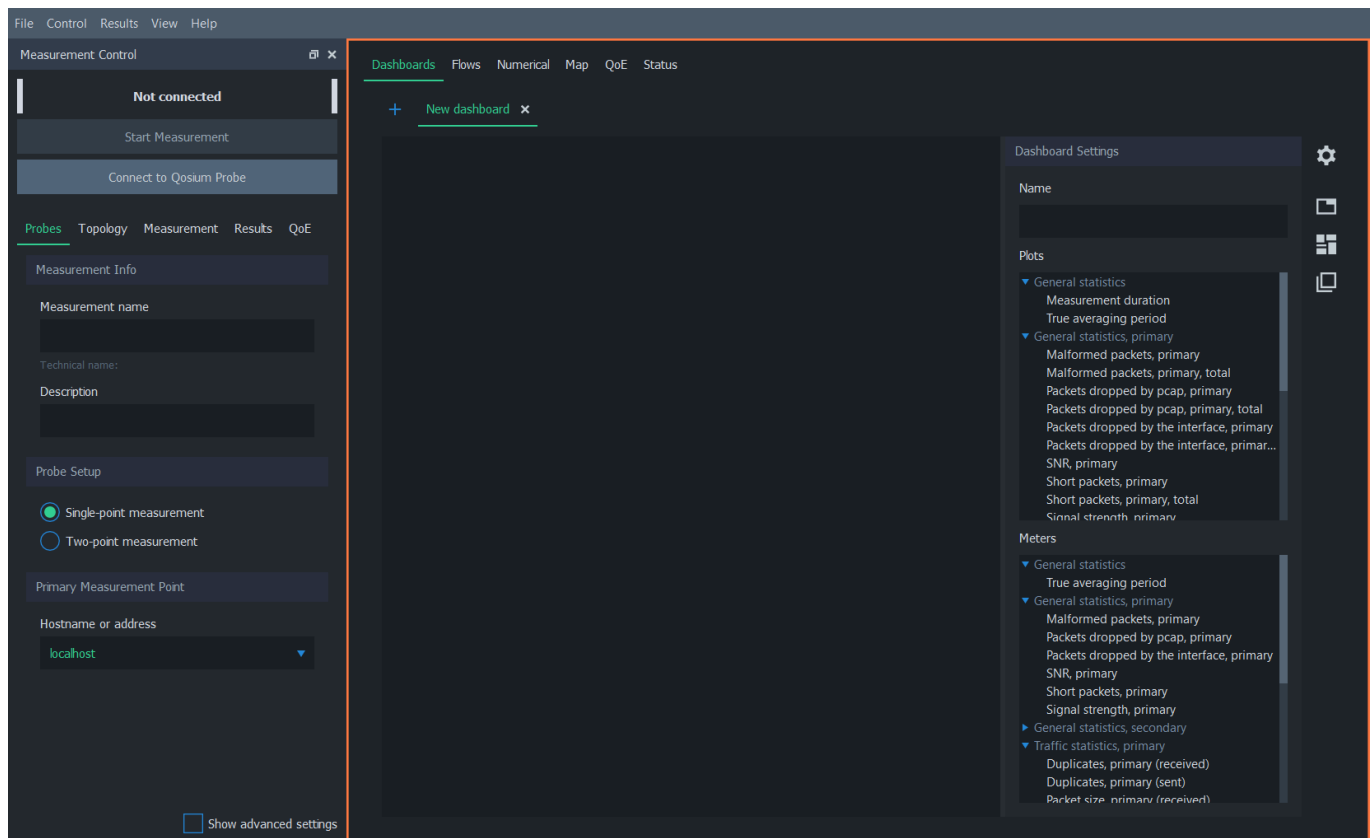
Workspace Area

The workspace area in Scope hosts the result visualization views. In this area, measurement results can be configured, viewed, and analyzed.

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The workspace area is on the right side of the window:



The workspace area is divided into six main tabs, which offer various methods to view and analyze measurement results. See the subsections below for more information on each tab.

1. Dashboards Tab

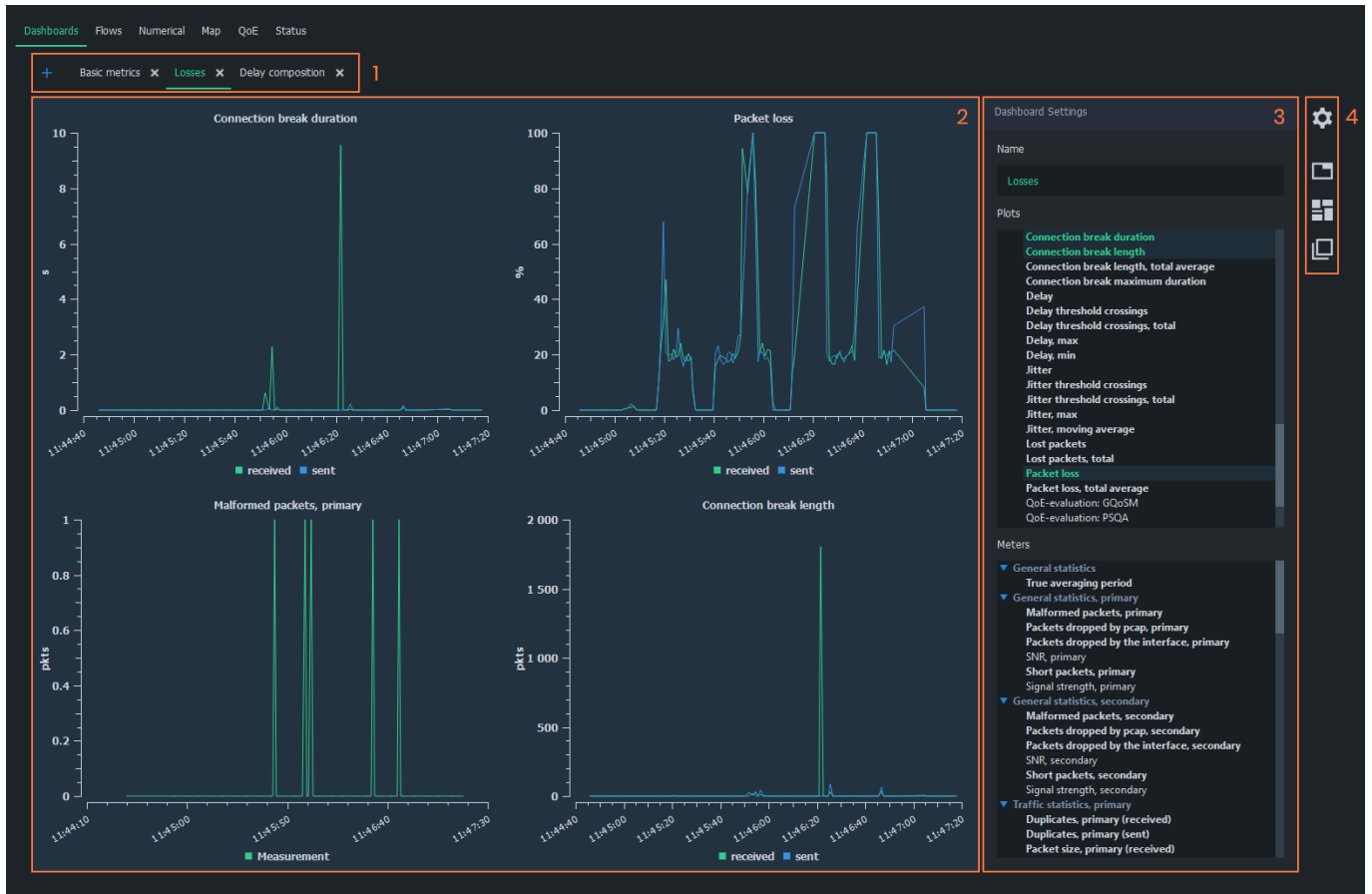
Visualizing average results in charts is the most common way to analyze measurement results in Qosium Scope. This can be done in the dashboards tab.

1.1. Overview

The dashboards tab contains, as the name implies, dashboards. Dashboards visualize *average results* with plots and charts. Each dashboard has its own tab, and you can freely create, remove, and switch between tabs, even during an ongoing measurement.

Dashboards tab has four main elements. These elements are further explained in the following sections.

1. **Dashboard Tabs** - List of created dashboards
2. **Charts Area** - Active plots and meters in the current dashboard
3. **Settings** - Settings for the current dashboard
4. **Toolbar** - Quick actions for the current dashboard

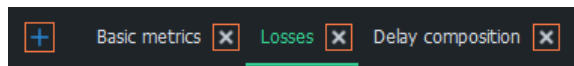



1.2. Dashboard Tabs

The dashboard tabs panel is used to organize and browse dashboards. In a typical, simple measurement, a single dashboard is sufficient. However, when viewing many various statistics, organizing the charts in multiple dashboards helps keep the interface neat and tidy.

Dashboards can be freely added and removed to allow better organization of measurement results. For example, you can add plots in one dashboard and meters in another. Also, arranging different statistics in their own dashboards is a good option.

- To add a new empty dashboard, click the *blue plus-sign* on the left side of the tab panel
- To remove an existing dashboard, click the *white x* next to the dashboard name in the tab panel



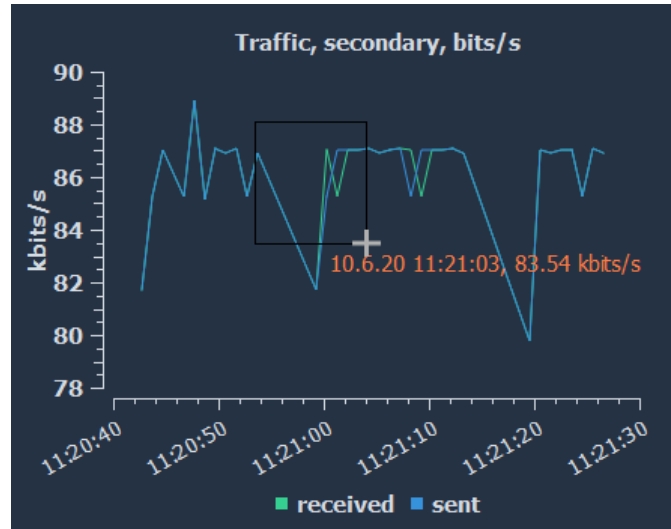
 Removing dashboards does not remove any measurement results

1.3. Chart Area

This region of the dashboard shows the opened charts. Each chart represents a single statistic in average results. Some plots have the combined *sent* and *received* directions of the same metric.

Plots have a few mouse controls available for viewing the results. Hover cursor over plots lines to inspect values. To zoom, draw a rectangle over the area of interest with the left mouse button. Use the right mouse

button to zoom back out.

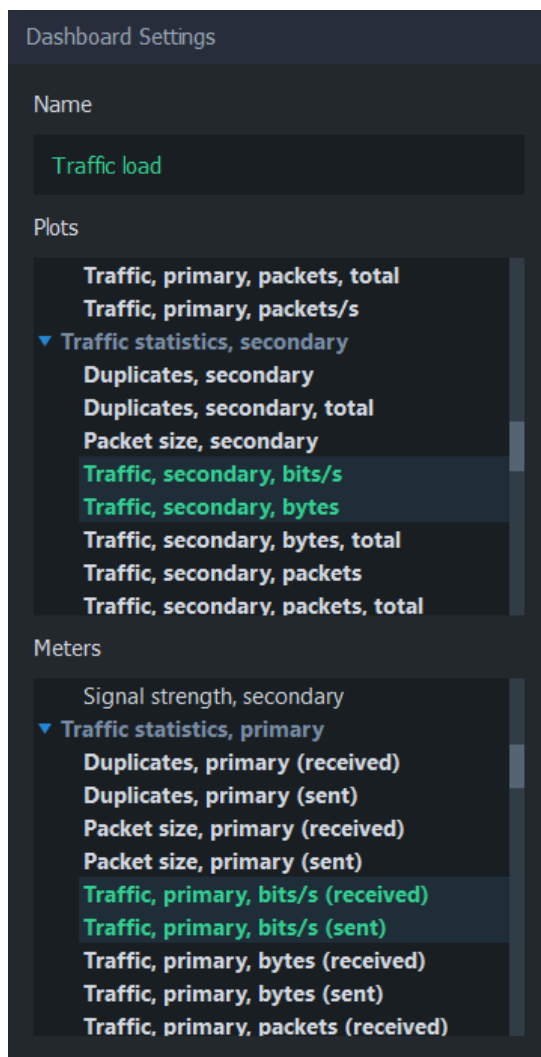


1.4. Settings

Each dashboard has its own settings panel, where you can select the charts from two categories: plots and meters. You can also give the dashboard a name, shown in the dashboard tabs panel, for easy recognition.

Use the *blue triangles* to expand/collapse each statistics group in *Plots* and *Meters* lists. Left-click on any statistics to display them immediately in the charts area. To select multiple statistics, press and drag with the left mouse button over the preferred statistics. Statistics, which have results, are marked with *bold* text. Clicking an active statistic removes the corresponding chart from the chart area.

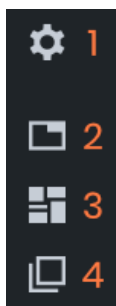
For more information on each statistic in average results, see [Average Results](#).



1.5. Toolbar

The buttons on the right side of each dashboard can be used to control the settings group's visibility and the arrangement of charts.

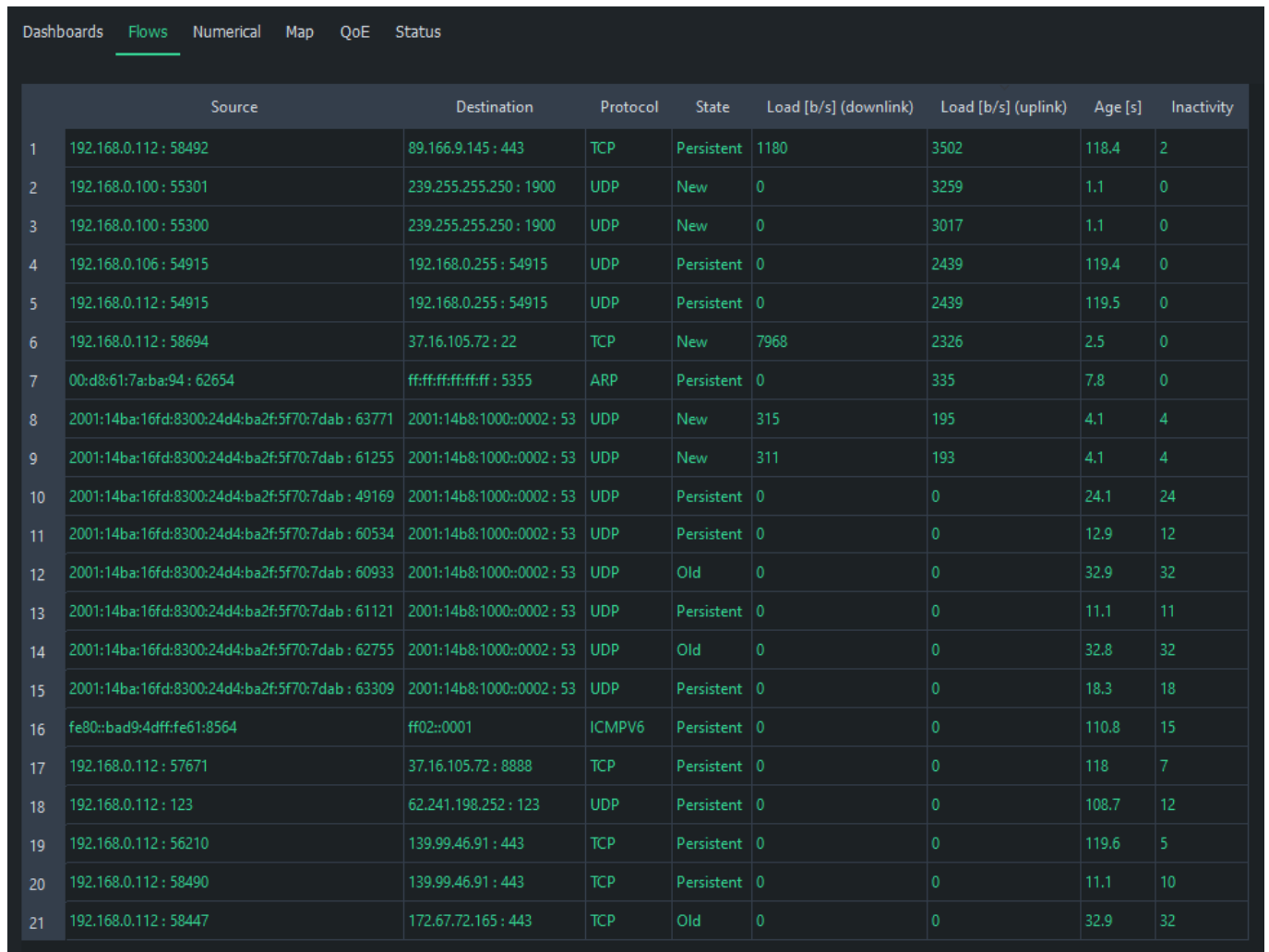
1. **Dashboard Settings** - Show/hide [Dashboard settings](#)
2. **Arrange in Tabs** - Arrange charts in tabs, where only one chart can be visible at a time
3. **Arrange in Tiles** - Arrange charts in tiles, where charts are stacked in a grid-like format (*default*)
4. **Arrange Freely** - Move and resize charts manually



2. Flows Tab

The Flows tab of Scope contains the flow map, which lists currently active flows and their statistics in a table.

The flow monitor in Scope is very useful, showing the individual traffic flows composing the total captured traffic in the monitored interface with the given packet filter. It also has a security aspect, allowing you to easily detect if there are flows that should not be. In addition, you can use it to verify that the packet filter is functioning as expected, especially in complex measurement scenarios.



	Source	Destination	Protocol	State	Load [b/s] (downlink)	Load [b/s] (uplink)	Age [s]	Inactivity
1	192.168.0.112 : 58492	89.166.9.145 : 443	TCP	Persistent	1180	3502	118.4	2
2	192.168.0.100 : 55301	239.255.255.250 : 1900	UDP	New	0	3259	1.1	0
3	192.168.0.100 : 55300	239.255.255.250 : 1900	UDP	New	0	3017	1.1	0
4	192.168.0.106 : 54915	192.168.0.255 : 54915	UDP	Persistent	0	2439	119.4	0
5	192.168.0.112 : 54915	192.168.0.255 : 54915	UDP	Persistent	0	2439	119.5	0
6	192.168.0.112 : 58694	37.16.105.72 : 22	TCP	New	7968	2326	2.5	0
7	00:d8:61:7a:ba:94 : 62654	ff:ff:ff:ff:ff:ff : 5355	ARP	Persistent	0	335	7.8	0
8	2001:14ba:16fd:8300:24d4:ba2f:5f70:7dab : 63771	2001:14b8:1000::0002 : 53	UDP	New	315	195	4.1	4
9	2001:14ba:16fd:8300:24d4:ba2f:5f70:7dab : 61255	2001:14b8:1000::0002 : 53	UDP	New	311	193	4.1	4
10	2001:14ba:16fd:8300:24d4:ba2f:5f70:7dab : 49169	2001:14b8:1000::0002 : 53	UDP	Persistent	0	0	24.1	24
11	2001:14ba:16fd:8300:24d4:ba2f:5f70:7dab : 60534	2001:14b8:1000::0002 : 53	UDP	Persistent	0	0	12.9	12
12	2001:14ba:16fd:8300:24d4:ba2f:5f70:7dab : 60933	2001:14b8:1000::0002 : 53	UDP	Old	0	0	32.9	32
13	2001:14ba:16fd:8300:24d4:ba2f:5f70:7dab : 61121	2001:14b8:1000::0002 : 53	UDP	Persistent	0	0	11.1	11
14	2001:14ba:16fd:8300:24d4:ba2f:5f70:7dab : 62755	2001:14b8:1000::0002 : 53	UDP	Old	0	0	32.8	32
15	2001:14ba:16fd:8300:24d4:ba2f:5f70:7dab : 63309	2001:14b8:1000::0002 : 53	UDP	Persistent	0	0	18.3	18
16	fe80::bad9:4dff:fe61:8564	ff02::0001	ICMPV6	Persistent	0	0	110.8	15
17	192.168.0.112 : 57671	37.16.105.72 : 8888	TCP	Persistent	0	0	118	7
18	192.168.0.112 : 123	62.241.198.252 : 123	UDP	Persistent	0	0	108.7	12
19	192.168.0.112 : 56210	139.99.46.91 : 443	TCP	Persistent	0	0	119.6	5
20	192.168.0.112 : 58490	139.99.46.91 : 443	TCP	Persistent	0	0	11.1	10
21	192.168.0.112 : 58447	172.67.72.165 : 443	TCP	Old	0	0	32.9	32

The view has a set of fixed columns. For more information on the columns and flow results in general, see [Flow Results](#).

Column Header	Description
Source	The source address and port (if port number is available)
Destination	The source address and port, (if port number is available)
Protocol	The protocol above the address layer
State	New => Persistent => Old

Column Header	Description
Load [b/s] (downlink)	The current throughput in the downlink (received direction)
Load [b/s] (uplink)	The current throughput in the uplink (sent direction)
Age [s]	The age of the flow in seconds
Inactivity	The time passed in seconds since the last packet detected in this flow

Each flow has a **state**, which can have one of three values:

- **New** - The flow is new and reported for the first time
- **Persistent** - The flow has traffic or has been inactive less than the set limit
- **Old** - The flow has been inactive longer than the set limit and will be removed the next time flow results arrive

The *inactivity* counts duration from the last observed packet in the flow. If the flow is active, this number remains at or near zero. When inactivity begins to increase, the flow has stopped, i.e., no more packets are observed related to that. Once it reaches the set limit, i.e., [Flow timeout](#), the flow is deemed ended and will be removed from the visualization.

No flows

If flows do not appear in the flow monitor during measurement:

- Check that flow results are selected in the [Results Tab](#)
- Check that [the capture interface](#) is pointing to the correct interface
- If using [manual packet filter](#), make sure that the packet filter is not too strict
 - Test by switching to automatic filtering and see if flows begin to appear in the flow map

3. Numerical Tab

The numerical tab in Scope has two sub-tabs: Average results and Packet results. As the names imply, these two tabs show the corresponding result types in numerical table format.

3.1. Average Results Tab

This tab displays the average results in a table format. The table has a set of columns that can be selected for view. For more information on the columns and average results in general, see [Average Results in Qosium](#).

Dashboards Flows **Numerical** Map QoE Status

Average Results Packet Results

	Jitter (received)	Jitter (sent)	Traffic, primary, bytes (received)	Traffic, secondary, bytes (received)
10.6.2020 15:08:01.812	956 us	509 us	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:02.813	370 us	1.362 ms	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:03.813	923 us	466 us	888 bytes	1.11 kbytes
10.6.2020 15:08:04.812	379 us	738 us	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:05.811	1.889 ms	1.439 ms	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:06.813	511 us	791 us	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:07.812	1.033 ms	693 us	1.11 kbytes	888 bytes
10.6.2020 15:08:08.812	615 us	819 us	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:09.812	668 us	1.115 ms	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:10.811	3.99 ms	1.096 ms	888 bytes	1.11 kbytes
10.6.2020 15:08:11.813	684 us	1.366 ms	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:12.813	152 us	1.148 ms	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:13.811	7.061 ms	1.752 ms	1.11 kbytes	888 bytes
10.6.2020 15:08:14.813	1.338 ms	3.219 ms	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:15.813	1.519 ms	896 us	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:16.812	1.456 ms	1.153 ms	888 bytes	1.11 kbytes
10.6.2020 15:08:17.813	2.555 ms	902 us	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:18.812	1.042 ms	1.111 ms	1.11 kbytes	1.11 kbytes
10.6.2020 15:08:19.811	830 us	777 us	1.11 kbytes	888 bytes
10.6.2020 15:08:20.811	1.098 ms	636 us	888 bytes	1.11 kbytes

Table Settings

Table columns

- Jitter threshold crossings, total (received)
- Jitter threshold crossings, total (sent)
- Jitter, max (received)
- Jitter, max (sent)
- Jitter, moving average (received)
- Jitter, moving average (sent)
- Lost packets (received)
- Lost packets (sent)
- Lost packets, total (received)
- Lost packets, total (sent)
- Packet loss (received)
- Packet loss (sent)
- Packet loss, total average (received)
- Packet loss, total average (sent)
- QoE-evaluation: GQoSIM (received)
- QoE-evaluation: GQoSIM (sent)
- QoE-evaluation: PSQA (received)
- QoE-evaluation: PSQA (sent)
- QoS samples (received)
- QoS samples (sent)
- Sent info is not found (received)
- Sent info is not found (sent)
- Sent info is not found, total (received)
- Sent info is not found, total (sent)

Freeze table

Auto Column Width (include headers)

Auto Column Width (exclude headers)

Table columns lists all available average results. Use the *blue triangles* to expand/collapse each statistics group. Left-click on any statistics to display it immediately in the table as a column. Left-clicking an active statistic again will remove the column. To select multiple statistics, press and drag with the left mouse button. Statistics, which have results, are shown with bold text.

Freeze table stops automatic update of the table. This is especially helpful if there's a need to study the results in more detail during the measurement.

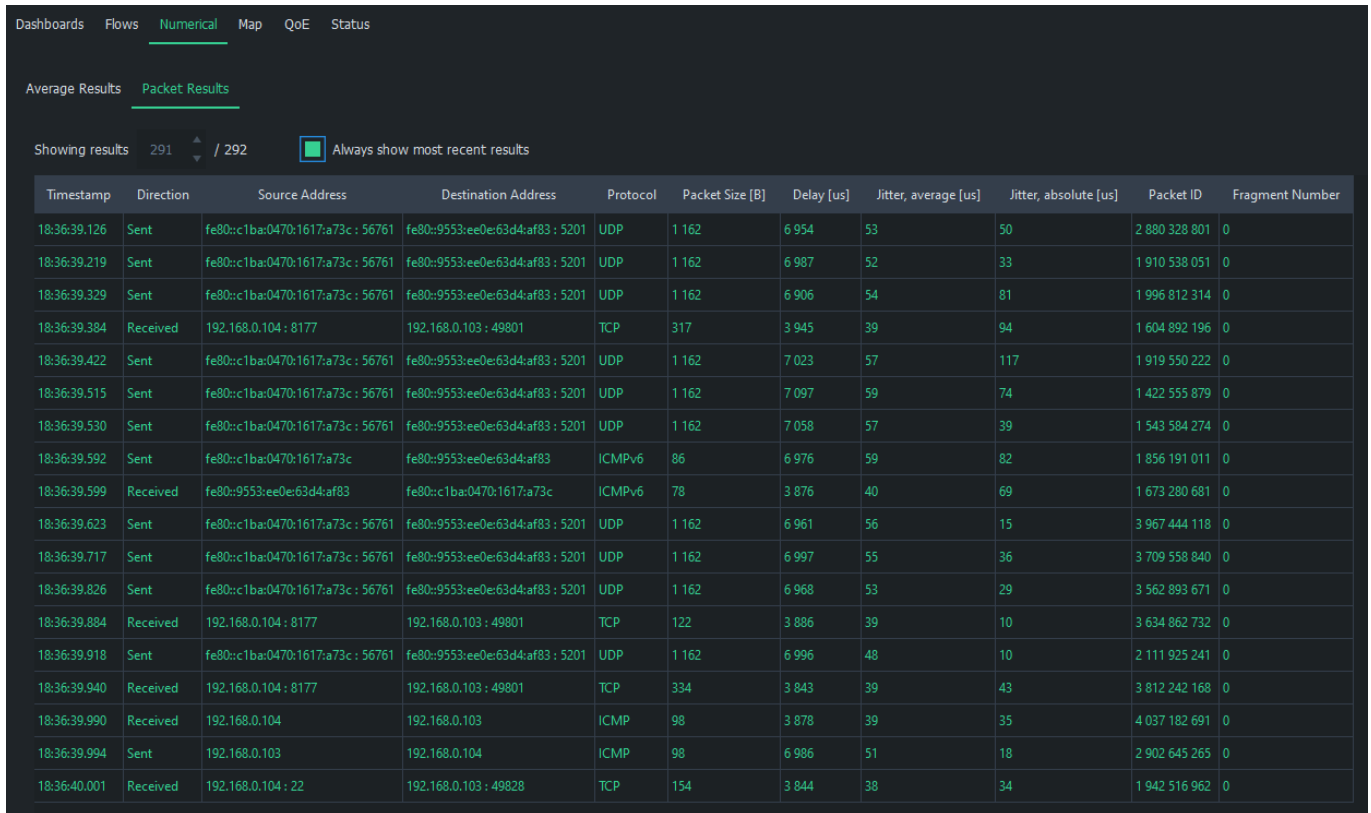
Auto Column Width (Include Headers) resizes columns according to the widest row. If you want to resize columns without taking the header row's width into account, use **Auto Column Width (Exclude Headers)**.

i Tip

Double-click a result row to see the corresponding packet results in [Packet Results Tab](#).

3.2. Packet Results Tab

This tab displays the packet results in a table format. The table has a set of fixed columns. For more information on the columns and packet results in general, see [Packet Results in Qosium](#).



The screenshot shows the 'Numerical' tab in the Qosium workspace. It displays a table of network traffic results. The table has the following columns: Timestamp, Direction, Source Address, Destination Address, Protocol, Packet Size [B], Delay [us], Jitter, average [us], Jitter, absolute [us], Packet ID, and Fragment Number. The table contains 20 rows of data, showing various protocols like UDP, TCP, and ICMPv6, with associated IP addresses and performance metrics.

Timestamp	Direction	Source Address	Destination Address	Protocol	Packet Size [B]	Delay [us]	Jitter, average [us]	Jitter, absolute [us]	Packet ID	Fragment Number
18:36:39.126	Sent	fe80::c1ba:0470:1617:a73c : 56761	fe80::9553:ee0e:63d4:af83 : 5201	UDP	1 162	6 954	53	50	2 880 328 801	0
18:36:39.219	Sent	fe80::c1ba:0470:1617:a73c : 56761	fe80::9553:ee0e:63d4:af83 : 5201	UDP	1 162	6 987	52	33	1 910 538 051	0
18:36:39.329	Sent	fe80::c1ba:0470:1617:a73c : 56761	fe80::9553:ee0e:63d4:af83 : 5201	UDP	1 162	6 906	54	81	1 996 812 314	0
18:36:39.384	Received	192.168.0.104 : 8177	192.168.0.103 : 49801	TCP	317	3 945	39	94	1 604 892 196	0
18:36:39.422	Sent	fe80::c1ba:0470:1617:a73c : 56761	fe80::9553:ee0e:63d4:af83 : 5201	UDP	1 162	7 023	57	117	1 919 550 222	0
18:36:39.515	Sent	fe80::c1ba:0470:1617:a73c : 56761	fe80::9553:ee0e:63d4:af83 : 5201	UDP	1 162	7 097	59	74	1 422 555 879	0
18:36:39.530	Sent	fe80::c1ba:0470:1617:a73c : 56761	fe80::9553:ee0e:63d4:af83 : 5201	UDP	1 162	7 058	57	39	1 543 584 274	0
18:36:39.592	Sent	fe80::c1ba:0470:1617:a73c	fe80::9553:ee0e:63d4:af83	ICMPv6	86	6 976	59	82	1 856 191 011	0
18:36:39.599	Received	fe80::9553:ee0e:63d4:af83	fe80::c1ba:0470:1617:a73c	ICMPv6	78	3 876	40	69	1 673 280 681	0
18:36:39.623	Sent	fe80::c1ba:0470:1617:a73c : 56761	fe80::9553:ee0e:63d4:af83 : 5201	UDP	1 162	6 961	56	15	3 967 444 118	0
18:36:39.717	Sent	fe80::c1ba:0470:1617:a73c : 56761	fe80::9553:ee0e:63d4:af83 : 5201	UDP	1 162	6 997	55	36	3 709 558 840	0
18:36:39.826	Sent	fe80::c1ba:0470:1617:a73c : 56761	fe80::9553:ee0e:63d4:af83 : 5201	UDP	1 162	6 968	53	29	3 562 893 671	0
18:36:39.884	Received	192.168.0.104 : 8177	192.168.0.103 : 49801	TCP	122	3 886	39	10	3 634 862 732	0
18:36:39.918	Sent	fe80::c1ba:0470:1617:a73c : 56761	fe80::9553:ee0e:63d4:af83 : 5201	UDP	1 162	6 996	48	10	2 111 925 241	0
18:36:39.940	Received	192.168.0.104 : 8177	192.168.0.103 : 49801	TCP	334	3 843	39	43	3 812 242 168	0
18:36:39.990	Received	192.168.0.104	192.168.0.103	ICMP	98	3 878	39	35	4 037 182 691	0
18:36:39.994	Sent	192.168.0.103	192.168.0.104	ICMP	98	6 986	51	18	2 902 645 265	0
18:36:40.001	Received	192.168.0.104 : 22	192.168.0.103 : 49828	TCP	154	3 844	38	34	1 942 516 962	0

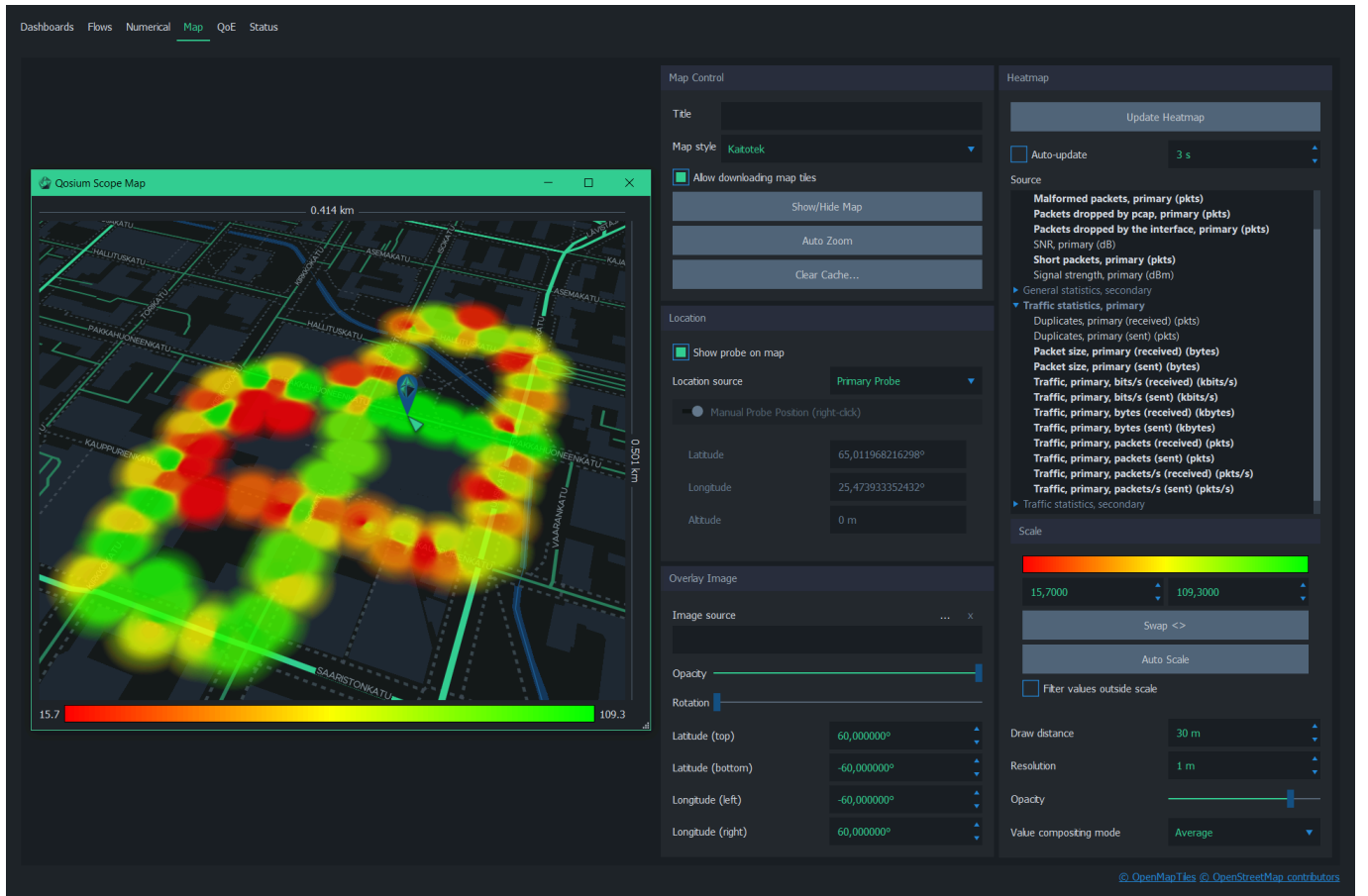
When **Always show most recent results** is checked, Scope will automatically switch to the newest complete result. Unchecking it allows you to select any result index.

4. Map Tab

The map tab in the Scope workspace area is used to draw heatmaps on a geographical map. This type of visualization is beneficial when measuring Quality of Service or Quality of Experience in a real location.

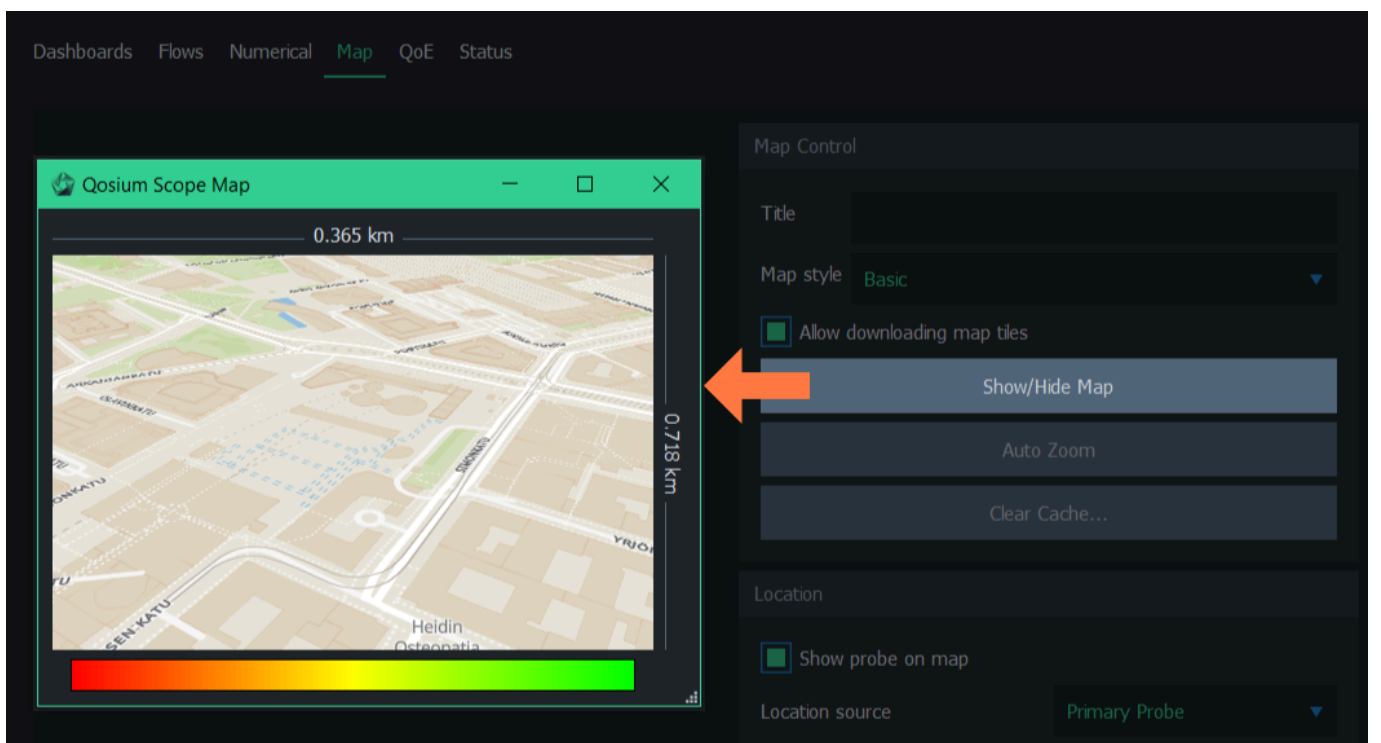
4.1. Overview

The map tab consists of two main elements: *Map Window* and *Settings*. See the following subsections for more information on these elements. For a practical example of using this tab, see [resources/documentation/how-to-guides/qos-heatmaps-with-scope](#).



4.2. Map Window

To open the map window, press **Show/Hide Map** in the *Map Control* settings group.



The window can be moved, scaled, maximized, and minimized normally as any other window. The map can be navigated with a few mouse/keyboard controls:

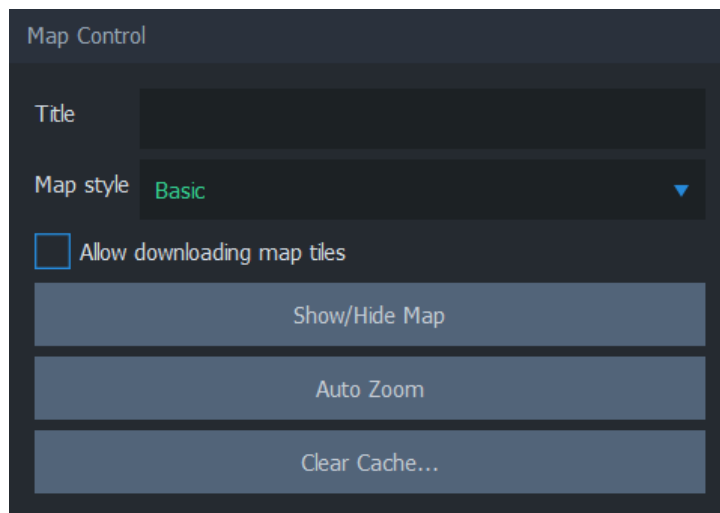
- **Zoom in/out** - Mouse wheel up/down
- **Pan map** - Press and hold the left mouse button and drag
- **Pitch/rotate map** - Press and hold either left or right *Ctrl* button on the keyboard, then simultaneously press and hold the left mouse button and drag

4.3. Settings

The map is configured via settings displayed on the right side of the tab. See the following subsections for more information on each settings group.

4.3.1. Map Control

The map control group has controls for showing/hiding the map window, selecting map theme, and controlling map data download and caching.



When **Allow downloading map tiles** is checked, Scope can download map data from the map cloud service. It is recommended to keep this option checked when preparing a measurement but unchecked during measurement if there's a risk that the traffic between Scope and map cloud service will disrupt measurement results.

Show/Hide Map toggles the visibility of the map window.

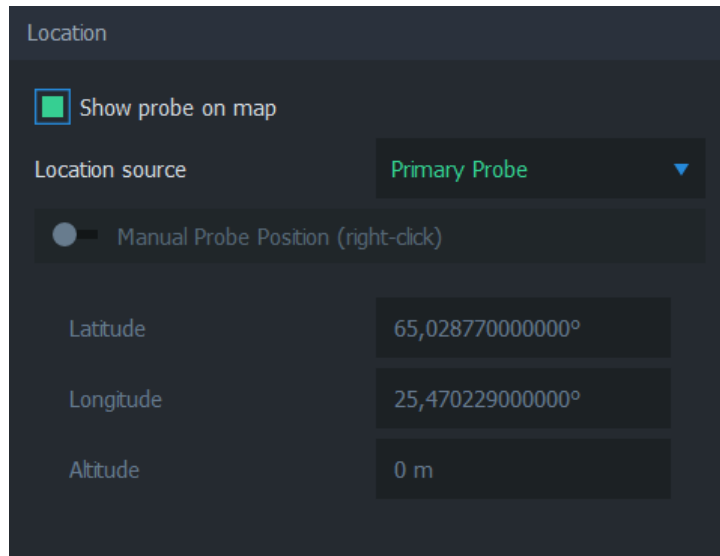
Use **Auto Zoom** to reset pitch and rotation. Auto-zoom also sets location and zoom according to the following priority:

- Focus on the heatmap, if available
- Focus on overlay image, if available
- If neither heatmap nor overlay image is visible, focus on the map cursor

Clear Cache... removes the map cache file from the computer. Use it to release disk space (typically ~10-60MB). Removing the cache file can be helpful when resolving issues related to map data download & rendering. Removing the map cache does not affect heatmap or measurement results.

4.3.2. Location

The location group considers the geographical location of the Probes.



Show Probe on map toggles the visibility of the selected source Probe icon on the map. The icon appears on the map as follows:



If the Probe icon is not visible on the map even when this option is checked, it may be due to the Probe having no location info yet, or the map hasn't been updated.

Manual Probe Position allows placing the location of the source Probe manually. This is useful functionality when you are performing, e.g., indoor measurements, where it is not possible to enable GNSS or other automatic positioning systems to Probe. During measurement, enable this option, then right-click anywhere on the map. The map cursor appears in this location. Manual positioning is available only when the measurement is running.



4.3.3. Overlay Image

The overlay image can be used to add an image on top of the map. Typically, this feature is used to add a floor plan for an interior measurement or another layout image of a known location whenever the map itself is visually inadequate.

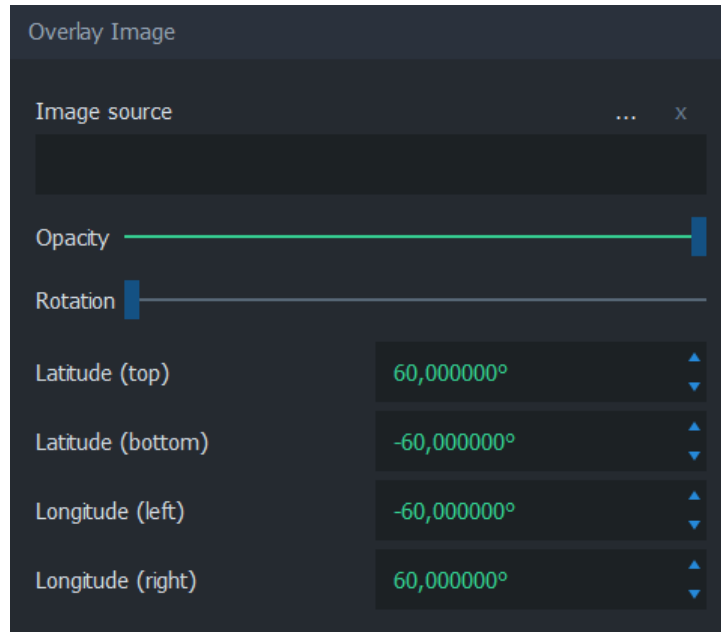


Image source indicates the filename of the current overlay image. Use ... to select the image file or x to remove the current overlay image.

Opacity controls the transparency of the image. By default, the overlay image is fully opaque. Adjust the opacity to allow map visuals to pass through the overlay image partially.

Rotation allows adjusting the overlay image orientation if the source image is not aligning with the map projection.

Latitude (top), **Latitude (bottom)**, **Longitude (left)**, and **Longitude (right)** are used to align the overlay image on top of the map.

4.3.4. Heatmap

The heatmap group contains controls for drawing and displaying the QoS heatmap on the geographical map.

The screenshot displays a control panel for a heatmap. At the top is a button labeled "Update Heatmap". Below it is a checkbox for "Auto-update" set to "10 s". The "Source" section is a tree view with the following items: "General statistics" (expanded) containing "True averaging period (s)"; "General statistics, primary" (expanded) containing "Malformed packets, primary (pkts)", "Packets dropped by pcap, primary (pkts)", "Packets dropped by the interface, primary (pkts)", "SNR, primary (dB)", "Short packets, primary (pkts)", and "Signal strength, primary (dBm)"; "General statistics, secondary" (collapsed); and "Traffic statistics, primary" (expanded) containing "Duplicates, primary (received) (pkts)", "Duplicates, primary (sent) (pkts)", "Packet size, primary (received) (bytes)", "Packet size, primary (sent) (bytes)", "Traffic, primary, bits/s (received) (kbits/s)", "Traffic, primary, bits/s (sent) (kbits/s)", "Traffic, primary, bytes (received) (kbytes)", "Traffic, primary, bytes (sent) (kbytes)", "Traffic, primary, packets (received) (pkts)", "Traffic, primary, packets (sent) (pkts)", "Traffic, primary, packets/s (received) (pkts/s)", and "Traffic, primary, packets/s (sent) (pkts/s)". The "Scale" section features a color gradient bar from red to green, with input fields for "0,0000" on both ends, a "Swap <>" button, and an "Auto Scale" button. Below this is a checkbox for "Filter values outside scale". The bottom section includes "Draw distance" (50 m), "Resolution" (5 m), "Opacity" (a slider), and "Value compositing mode" (Average).

Update Heatmap, as the name implies, updates the heatmap immediately. The time the update takes

depends on the amount of data and the visualization settings.

Auto-update can be used to update the heatmap in every n th second. Use the spin box to adjust the interval.

Source determines the QoS statistic that the heatmap visualizes. Use the *blue triangles* to expand/collapse each statistics group.

The **Scale** group controls how the sample values are scaled linearly into the displayed gradient. Give the scale limits manually, or use **Auto Scale** to automatically use the current minimum and maximum samples as scale limits. Use **Swap <>** to swap the given scale limits, effectively inverting the heatmap colors. When **Filter values outside scale** are checked, values outside scale limits are not included in the heatmap.

Draw distance indicates the radius of influence of each data point. There's no right or wrong value for draw distance; instead, choose a value that serves the best visual appearance. For an outdoor measurement, values starting from 10 m are usually sensible. For small indoor spaces, values between 1 and 10 meters make more sense.

Resolution determines the draw precision of the heatmap image. Low-resolution values yield more accurate images than higher values. Keep in mind that the heatmap's actual precision depends on the amount and distribution of the measurement samples.

Opacity controls the transparency of the heatmap. By default, the heatmap is fully opaque. Adjust the opacity to allow map visuals to pass through the heatmap partially.

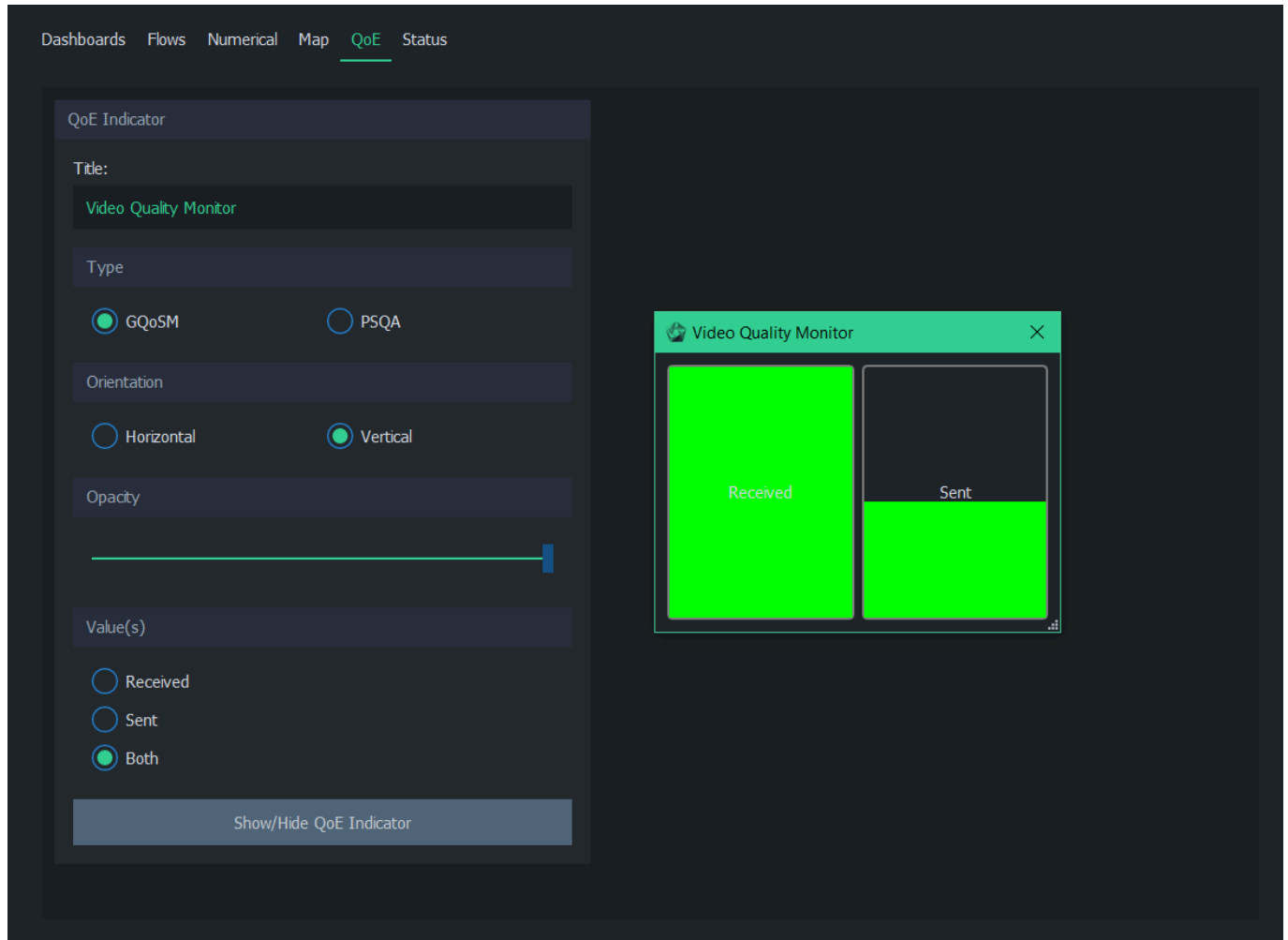
Value compositing mode determines the method of resolving the value of overlapping samples. Overlapping samples occur when two or more measurement samples are taken from the same location. The options are:

- **Average** - Calculate the average of the samples
- **Worst value** - Take the worst value and visualize it
- **Best value** - Take the best value and visualize it

5. QoE Tab

The QoE tab can be used to configure and show a Quality of Experience indicator window. This window visualizes QoE statistics from average results and can be placed, for example, next to an external application window for quality reference.

The *QoE* tab contains one group for configuring and displaying a QoE indicator window. This window can be placed anywhere on the screen visualizing QoE results.



The QoE indicator has the following options:

- **Title** - Type the title of the QoE Indicator Window
- **Type** - Use either *GQoSM* or *PSQA* as the source model
- **Orientation** - Display quality bars either with horizontal or vertical orientation
- **Opacity** - Change the opacity of the indicator window
- **Value(s)** - Show either the *received*, *sent*, or both directions
- **Show/Hide QoE Indicator** - Toggle visibility of the QoE indicator window

No Quality Results

If the quality bars remain colorless during measurement:

- Verify from [numerical average results](#) that quality results are received properly
- If quality results are not received (all values are -):
 - See [No QoS Results](#) in [Troubleshooting](#). If QoS results are missing, then the QoE indicator won't work either
- If quality results are received (values are - or 1):
 - If using GQoSM, try relaxing the model settings in [QoE Tab](#) by disabling QoS parameters used for calculating the results
- If quality results are received properly (values range from 5 to 1):
 - Check that the correct source model is selected in **Type** (GQoSM or PSQA)

Scopemon

Scope is intended for targeted manual measurements. For continuous QoE monitoring needs, see [Qosium Scopemon](#). Scopemon has, in fact, a QoE visualization similar to Scope's, but it has some advanced features, such as automated alerts.

6. Status Tab

The status tab displays information about the current measurement and the operation of Scope.

6.1. Overview

The status tab contains three groups:

- **Computed Parameters**
- **Results in Memory**
- **Log**

The screenshot shows the 'Status' page in Qosium. At the top, there are navigation tabs: Dashboards, Flows, Numerical, Map, QoE, and Status (which is selected). Below the tabs, there are two main sections: 'Computed Parameters' and 'Results in Memory'. The 'Computed Parameters' section shows 'Packet filter' set to 'ip and host 192.168.0.112', 'Control packet interval' at '500 ms', and 'Averaging interval' at '1000 ms'. The 'Results in Memory' section shows 'Averages' at '671 (6 %)', 'Packets' at '0', and 'Period' from '11.11.2024 17:29:05' to '12.11.2024 20:01:01'. Below these sections is a 'Log' area displaying a series of messages from the controller, including PSQA packetization interval, PSQA resolution, PSQA calculated movement quantity, Primary Probe hostname, Primary Probe custom port, Primary Probe senders mode (IPv4 and IPv6), and Primary Probe senders mode (Ethernet). The log also shows the use of a secondary probe, fetching the packet filter, and stopping the measurement. On the right side of the log, there are 'Logging settings' with a checkbox for 'Print detailed messages' (which is checked) and a 'Clear' button.

6.2. Computed Parameters

The computed parameters group displays the values, which are automatically calculated by Qosium when a measurement is started. Depending on the measurement settings, these may be the given manual values, but they may also differ if Qosium can determine values better suited for the measurement scenario.

This is a close-up screenshot of the 'Computed Parameters' section. It shows the 'Packet filter' field with a value: 'ip and (host 169.254.61.171 or host 169.254.155.140 or host 192.168.1.4 or host 192.168.1.243 or host 192.168.17.1 or host 192.168.157.1)'. Below this, the 'Control packet interval' is '500 ms' and the 'Averaging interval' is '1000 ms'. A document icon is visible to the right of the packet filter text.



Tip

Use the button next to the computed packet filter to copy it to the clipboard. You can then paste it as a template for [a manual packet filter](#).

6.3. Results in Memory

This group shows how many results there are currently in Qosium Scope's memory.

▪ Averages

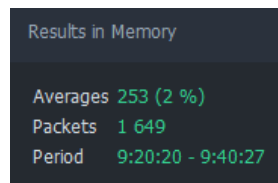
- The number of average results in memory
- The percentage in parenthesis tells the fraction of the reserved average results sample memory.
- The sample memory size can be set under [the Results tab](#).
- When the sample memory is about to get full, some of the earliest samples will be erased.

▪ Packets

- Indicates the number of packet-based results in memory
- When average samples are erased from memory, the corresponding packet results are also removed.

▪ Period

- Describes the period of time from the earlier result to the latest in memory.



6.4. Log

The log window contains information on the operation and events of Scope. Error and warning messages are also printed in the log for later review.

This group contains a few settings:

- **Print detailed messages** - When checked, low level measurement functional messages are also included in the log
- **Clear** - Clear the log window

Log

```
[19:48:50] [detailed] [ controller]: fe90:0000:0000:0000:0000:0000:9000
[19:48:50] [detailed] [ controller]: fe99:0000:0000:0000:0000:0000:9999
[19:48:50] [detailed] [ controller]: Primary Probe senders mode (Ethernet): 0
[19:48:50] [detailed] [ controller]: 00:d8:61:7a:ba:94
[19:48:50] [detailed] [ controller]: 02:00:4c:4f:4f:50
[19:48:50] [detailed] [ controller]: 0a:00:27:00:00:15
[19:48:50] [detailed] [ controller]: 5c:f3:70:8b:93:b8
[19:48:50] [detailed] [ controller]: 84:af:ec:38:07:3d
[19:48:50] [detailed] [ controller]: Use secondary Probe: 0
[19:48:50] [detailed] [ controller]: Fetching packet filter
[19:48:50] [detailed] [ controller]: Packet filter fetched: icmp
[19:48:52] [ info] [ controller]: Stopping measurement
[19:48:53] [ info] [ controller]: Measurement stopped
[19:48:53] [detailed] [ ui]: Measurement duration: 2000 ms
[19:48:56] [detailed] [ controller]: Sending measurement parameters to primary Probe
[19:48:56] [detailed] [ controller]: Parameters sent successfully
[19:48:56] [detailed] [ controller]: Setting interface for primary Probe: Realtek PCIe
GbE Family Controller
[19:48:56] [detailed] [ controller]: Primary Probe interface set successfully
[19:48:56] [detailed] [ controller]: Setting capture filter mode: 220
[19:48:56] [detailed] [ controller]: Setting capture filter:
[19:48:56] [detailed] [ controller]: Requesting average results
[19:48:56] [detailed] [ controller]: Requesting average results from primary Probe only
[19:48:56] [detailed] [ controller]: Requesting flow results
[19:48:56] [detailed] [ controller]: Polling results every 100 milliseconds
[19:48:56] [ info] [ controller]: Measurement started
[19:48:56] [detailed] [ controller]: Fetching Probe parameters
[19:48:56] [detailed] [ controller]: Parameters fetched successfully
[19:48:56] [detailed] [ controller]: Printing out Probe parameters:
```

Logging settings

Print detailed messages

Clear

Accessing the log file

Scope also saves the log to a file. The location of the log file depends on the operating system.

In Windows, the filename is `c:\users\[username]\AppData\Local\kaitotek\QosiumScope\debug.log`.

In Linux, the filename is `~/config/QosiumScope/debug.log` or `/etc/xdg/QosiumScope/debug.log`.

7. Glossary

Uplink / Sent Direction

Refers to a network path direction where traffic is flowing away from the observer towards a remote point.

Downlink / Received Direction

Refers to a network path direction where traffic is flowing from a remote point towards the observer.

Quality of Experience

Indicates the overall performance of a network application, and how user's experience is affected by the network conditions.

For more information, see our article on [Quality of Experience](#).

Generic QoS Measure Algorithm

A parameter based QoS mapping algorithm allowing to map a single quality indicator from several parameters. When tuned with real user tests, GQoSM allows also QoE estimations.

GQoSM, however, is meant for evaluating the influence of the network to the quality – not for estimating the absolute quality (e.g., including the defects of codecs, etc.). For more information, see our article on [Quality of Experience](#).

Pseudo-Subjective Quality Assessment

A neural network based model for estimating QoE.

For more information, see our article on [Quality of Experience](#).