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Full NetFlow analytics

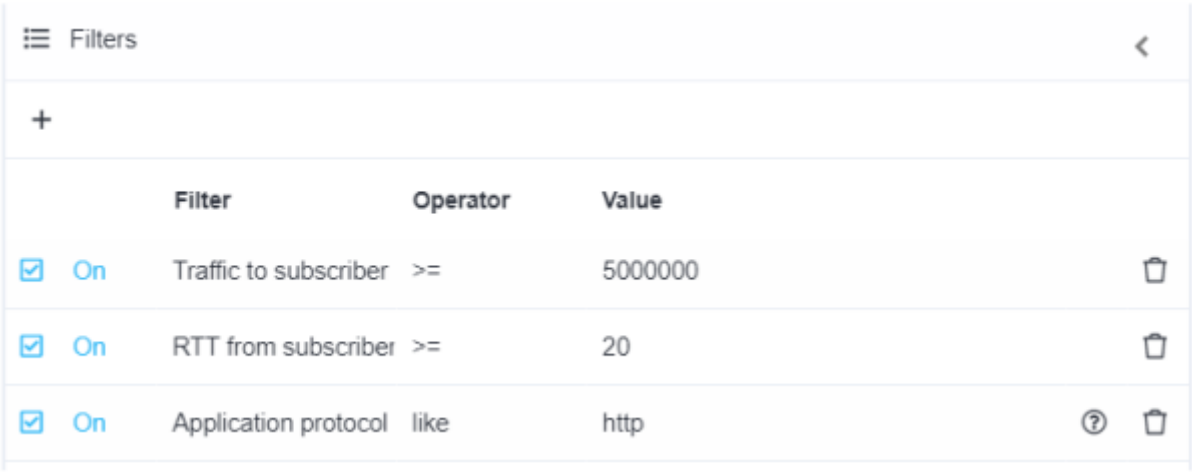
DPI exports information about all client sessions using IPFIX format (NetFlow v10)..

1 Troubleshooting of Internet access degradation

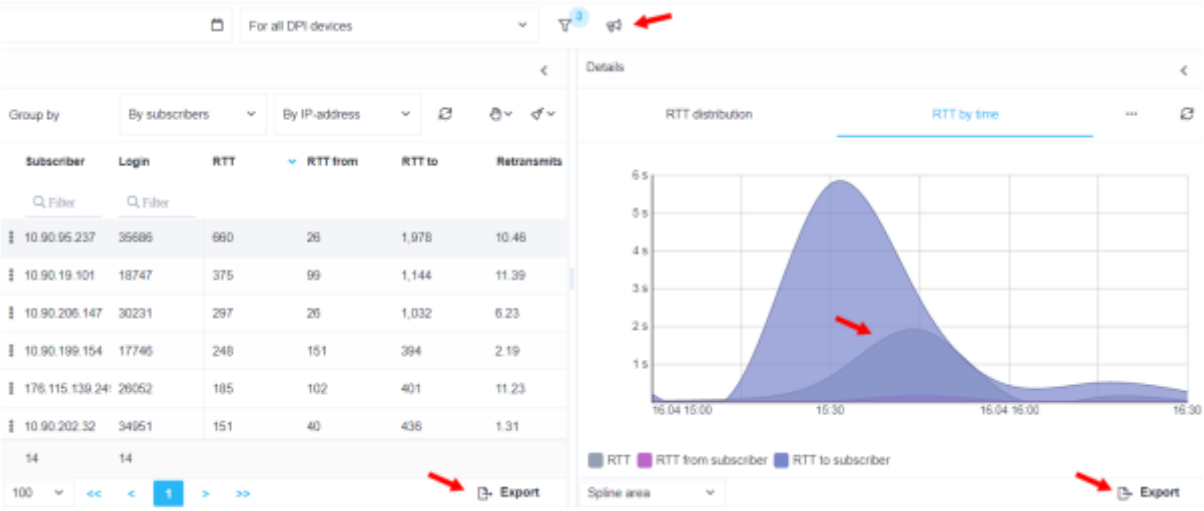
DPI exports information about delays between the client and the DPI and between the DPI and the host during TCP connection establishment - RTT. The statistics reflect a delay within each protocol with a reference to UserAgent (taken from ClickStream), which makes it possible to track the operation of a particular device.
Steps to follow:

1. switch to the QoE section Analytics → Subscribers → Netflow
2. create a filter designed to

- filter information on http/https protocol to exclude from consideration all the parameters of other protocols when establishing a TCP connection
- set the mean speed to identify subscribers actively using the Internet and exceeding the the mean speed
- specify lower threshold for RTT from client



Interpretation of gathered statistics:



- The applied filter made it possible to display 25 potential subscribers who may have Internet access problems.
- More details about the time delays they were faced can be found in the **"Details"** window.
- Using a voice-tube pictogram, you can drag-and-drop them to marketing campaign and conduct a notification or survey on satisfaction with services using browser .
- You can export a report in a convenient format.

2 Uplink monitoring service

Terms & Definitions

Uplink is the link from the operator to the higher-level and/or backbone carrier, from where the operator accesses the Internet channels.
RTT (Round-Trip Time) is the time it takes to send the signal plus the time it takes to confirm that the signal has been received. This delay time, therefore, consists of the signal transmission time between the two points.

Purpose

The "Uplink monitoring" service allows you to detect problems with the service availability for users, which can occur in the channel between the provider and the Internet resource:

- Issues or congestion of the uplink operator.
- Slow operation or unavailability of the service itself.

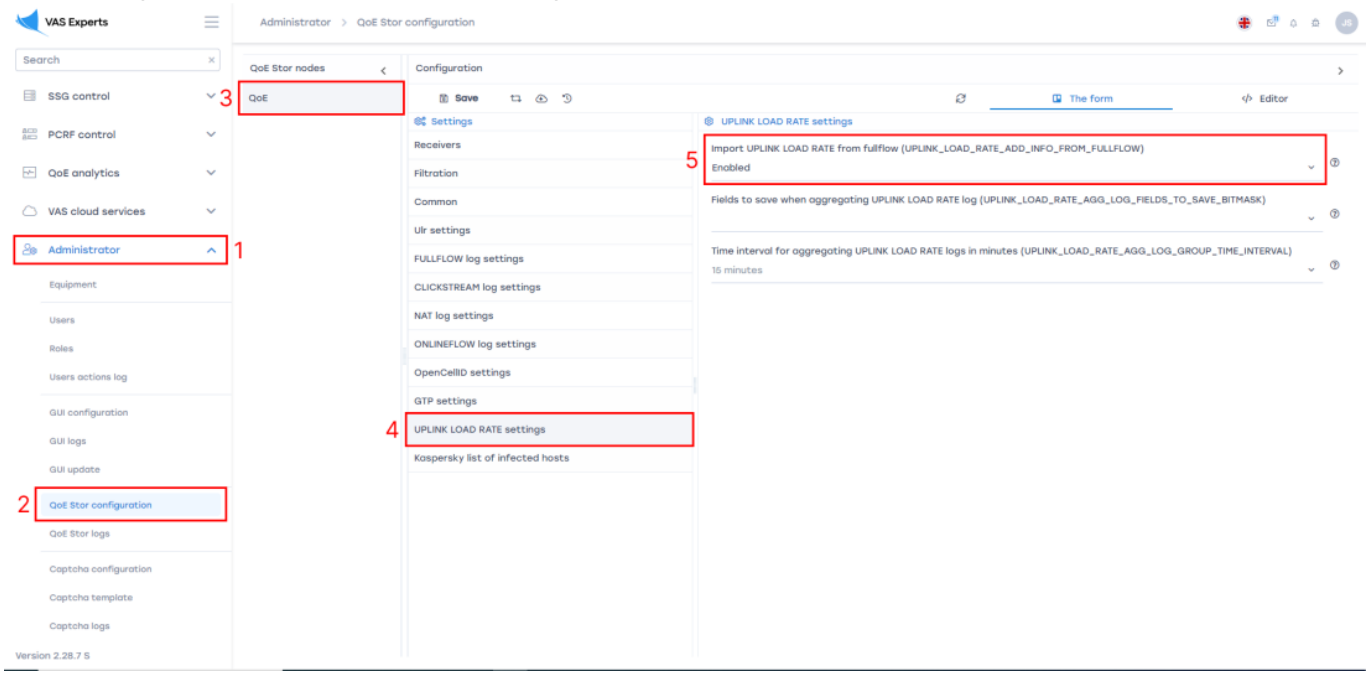
Getting started

Before you start, you need to enable the collection of statistics. To do so, click the icon ☰ in the top left and

1. Select the item *Administrator* in the menu
2. Select the item *QoE Stor configuration*
3. *QoE Stor*

4. *Settings of UPLINK LOAD RATE statistics gathering service*
5. At *UPLINK LOAD RATE* item select *ON*

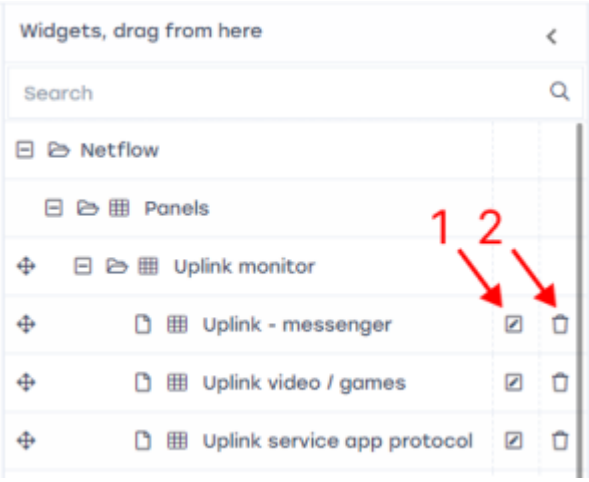
After that press the *Save* button at the top of the screen.



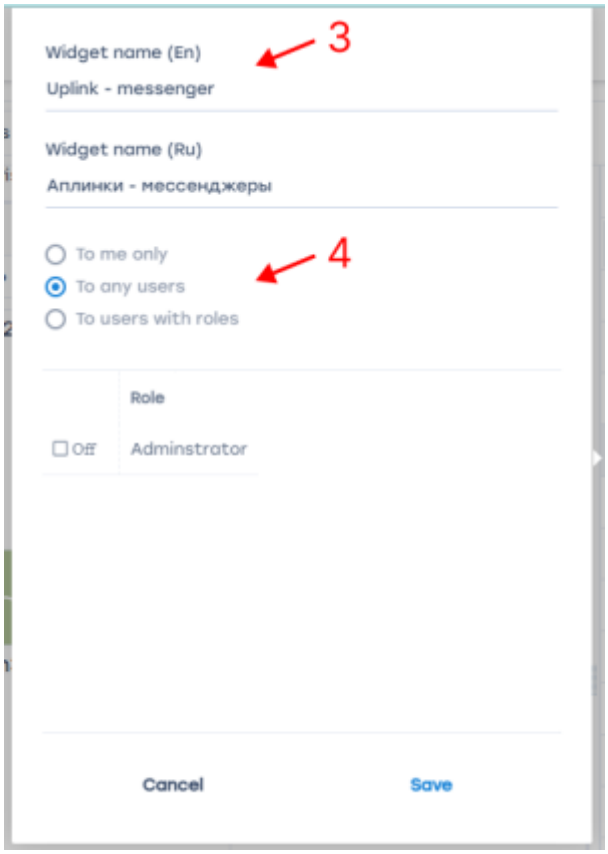
Appearance

The service is located in *QoE analytics → QoE dashboard.* To work with the widget for monitoring uplinks, in the sidebar with widgets select *Netflow → Panels → uplink monitoring* and drag and drop the widget to the dashboard.

In the sidebar, you can adjust (1) and delete (2) each widget.



In the widget setup window (1) you can change the widget name in English and Russian (3) and its visibility (4).



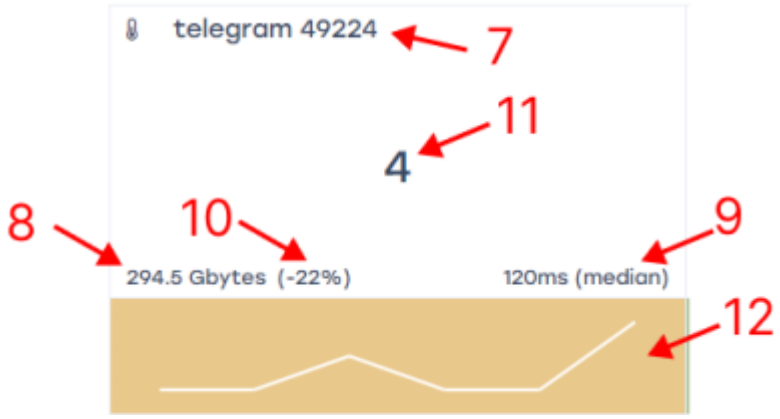
At the top of the screen, you can select the period for which the traffic will be displayed (5), select the data source (6).

For each protocol, its tile displays:

- **Protocol name** (7)
- **Volume** of traffic for the selected period (8)
- **Median** RTT to subscriber, ms (9)
- **Traffic delta,** % (10). This is the difference between the traffic for the selected time period and the traffic from the statistics, which usually happens for the same period on the same day of the week
- Overall service health **score** (11):

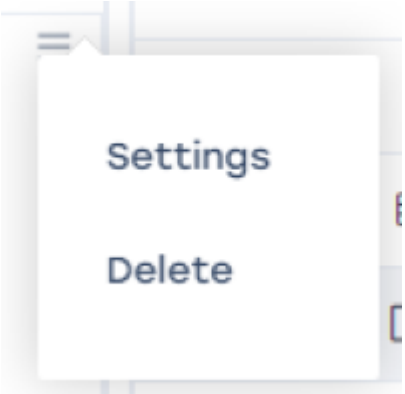
1. 0-3 points — good, graph is green
2. 4-7 points — satisfying, graph if yellow color
3. 8-10 points — bad, graph of red color

- The protocol health score **change curve** (12). The curve shows how many times the protocol score changed for the selected time period and whether there were no bad scores.



Setting up protocols in the widget

When you hover over the widget, a ☰ icon appears in the upper right corner of the widget. By clicking on it, you can go to the settings, or delete the widget.



Clicking on *Settings* will open the setup form. Here is a list of protocols (1), their number – from 1 to 10. To display more than 10 protocols, you can add several widgets to the dashboard. For example, you can make several thematic widgets – on messengers and social networks, streams, etc., with up to 10 protocols in each.

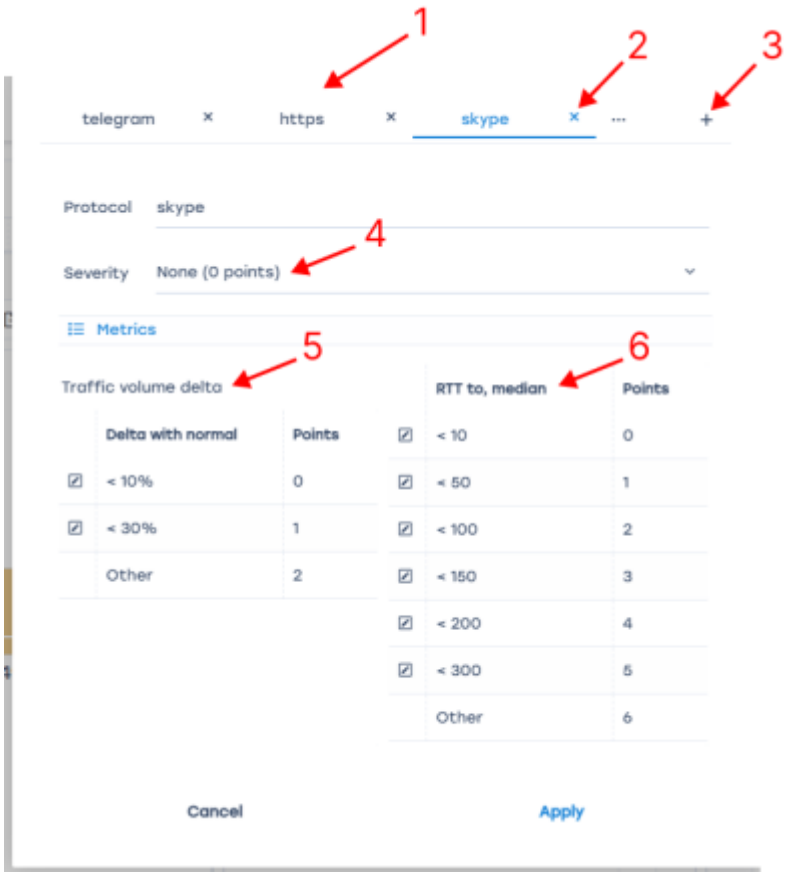
You can add (2) or remove (3) all the protocols that are in the standard dictionary. For each protocol, you can adjust traffic delta score (4) (from 0 to 2 points will be added depending on how much the traffic changes) and RTT score (5). This indicator is more important, so its setting is more flexible for services that can be very sensitive to changes in this indicator.

You can also set an importance category (6) for each of the protocols, which will add from 0 to 2 points to the final score if the sum of the traffic and median scores is greater than zero. Resources have different "sensitivities". It is important to avoid even small problems with sensitive resources. Each resource is assigned an importance category by the user:

- Category 1 — a very popular service, extremely sensitive to quality and connection interruptions.
- Category 2 — a niche, but well-known service, demanding quality.
- Category 3 — the service is just gaining popularity, and cannot guarantee the quality of the content itself, or the content is not critical.

The recommended values of the impact of traffic volume delta on the evaluation of the protocol (in %) and RTT indicators are determined by the developer and transmitted to the operator, which then

adjusts them based on the characteristics of its network.



What to do in case of a problem

In case of timely detection and localization of problems, the provider can solve them:

- By switching to another uplink.
- By prioritizing the traffic (application of “emergency” policies).
- By triggering an uplink to report problems.

If the solution is not possible (the service has problems or the uplink cannot be changed), the technical support of the provider can save time in identifying problems and inform users in a timely manner.

3 Threats Monitor Service

Starting from version **2.30.4**, the SSG GUI is able to detect subscribers with cyber threats. VAS Experts does this in cooperation with Kaspersky Lab, which has a database of dangerous resources and vast experience in this area.

In the QoE Analytics → QoE Dashboard section, the "Threat Monitor" widget is now available, which shows how many subscribers visited phishing sites during the selected period of time; viruses on the computers of which subscribers showed some activity in the network; which subscribers are botnet

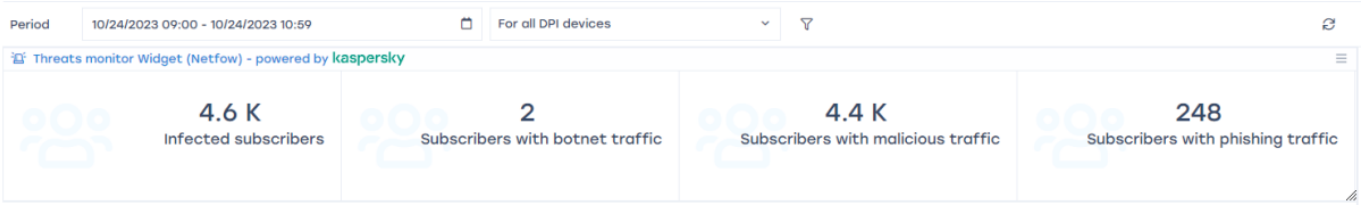
members.

The widget consists of four cells with numbers:

1. "Infected subscribers" - total number of subscribers with potential threats of different types. **One subscriber may have several threats, so this number may be less than the sum of the next three.**
2. "Subscribers with botnet traffic" - subscribers participating in a botnet. Such subscribers **exactly** have malware that visits botnet command centers.
3. "Subscribers with malicious traffic" - subscribers who visited sites with security threats. The subscriber could have visited such a site on his/her own or a virus could have gotten in. Such subscribers are not necessarily infected with malware, but there is a threat.
4. "Subscribers with phishing traffic" - subscribers who visited phishing websites. The subscriber could have left his/her bank card details on such sites.

It is important to keep in mind that the numbers reflect the problematic requests that SSG saw in the subscribers' traffic for a given time. If you expand the filter by time, more subscribers will get there. In a week, they can be up to 40-50% of the base.

The widget can be added to the screen from the Widgets tab → Netflow → Panels → Threat Monitor. Once added, you can click on any of the cells in the widget and get to the corresponding list of subscribers. You can warn these subscribers about the threat, offer them to buy antivirus or help them in some other way, or track their behavior - see if they will contact technical support with problems.



To enable this functionality, you need to submit a request to our technical support. Kaspersky Lab database will be installed in your QoE, after that you can use the widget.