LiveAction®

LiveSP

User Guide

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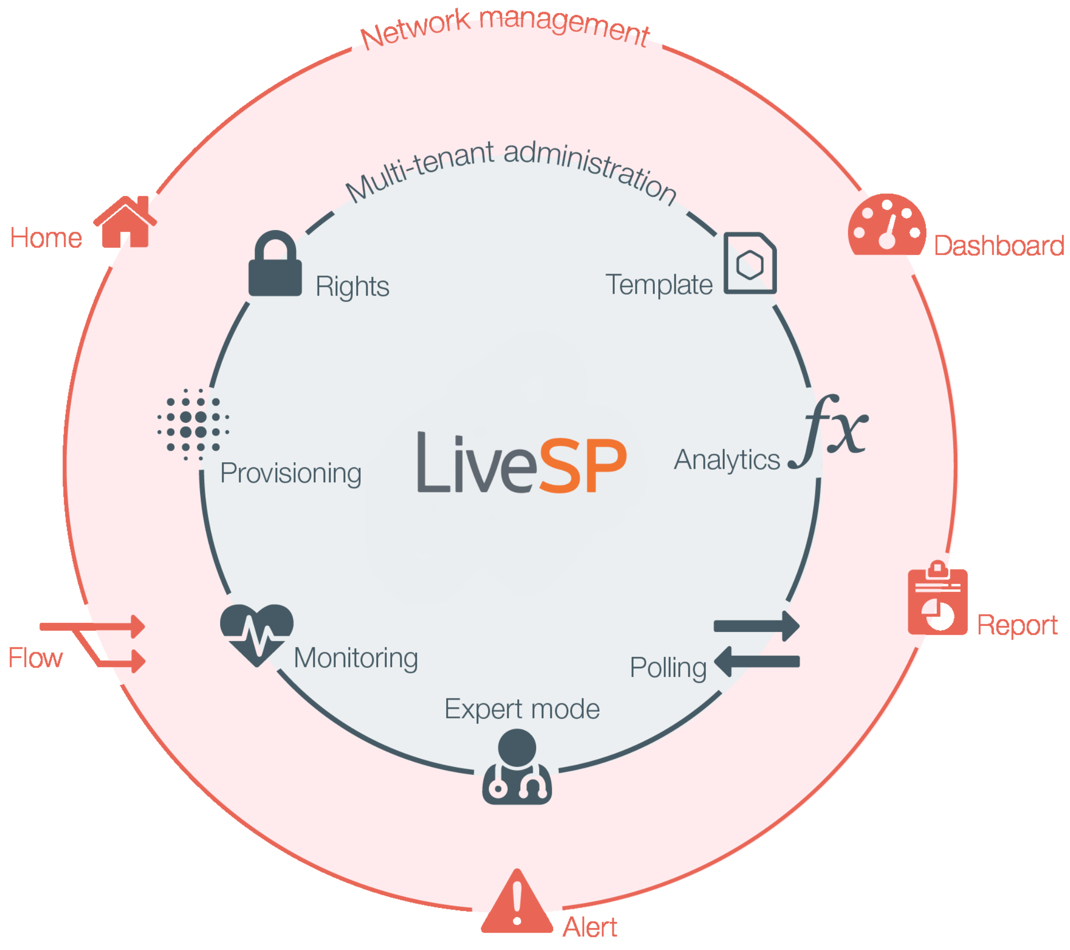
Contents

Introduction

LiveSP™ is a multi-tenant platform that delivers service providers with a powerful application-aware management system, helping them and their business customers monitor application performance on the WAN.

For all the traffic and applications going through the WAN, and for thousands of business customers, LiveSP leverages several vendors' features sto provide, in a single scalable instance:

- a client mode to visualize, browse, troubleshoot and report customers' networks and end-user experience issues;
- a multi-tenant mode to build templates, grant rights, create KPI (Key Performance Indicators) to meet marketing and operational requirements.



CHAPTER 2

Network Management

The **network management environment** or **client mode** is dedicated to a specific end-customer. Home pages, dashboards, and reports use the same dashlets component with different purposes:

- the home module is a single page, synthetic updated network visualization for both specialist and non-specialist
- the dashboard module troubleshoots the network using various perspectives from network to interface, application and CoS
- the report module is a static view of network and application SLA for executive meetings or daily status

End-users are given authorization to the home, dashboard, report and cockpit modules according to their customer profile (see ***Share resources*** on page 37 for more details). Resources may be customized for a single customer if necessary.

Service providers can easily switch from one customer to another.

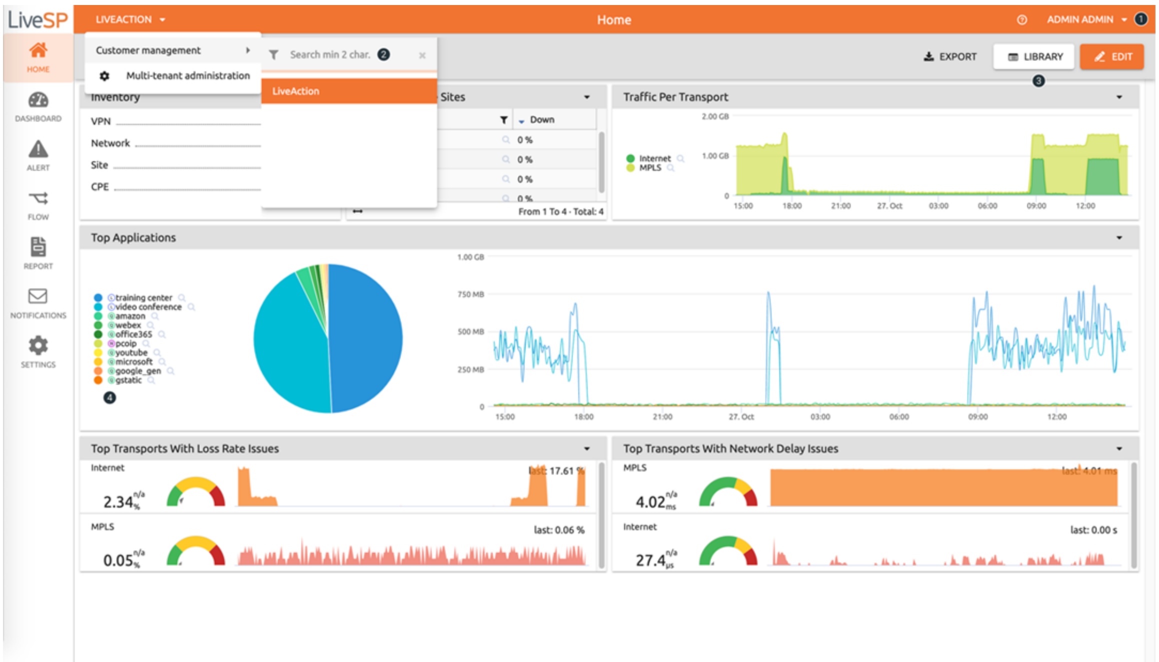
Home

Client mode / Home

The home page provides a summary view of the network for non-expert and IT managers. It displays the main network metrics to visualize the status of connectivity services and application performance. According to their profile, end-customers can display one or several home pages which are available in their home library.

From the home page, end-users access the dashboard module for more details.

Switch to other customers or multi-tenant mode by clicking in the header.



1. Edit your **user information** and update your password.
2. **Switch** to other customers or multi-tenant mode.
3. Access the **library** to choose another home page.
4. **Drill down** to dashboards modules for more details.

Dashboard

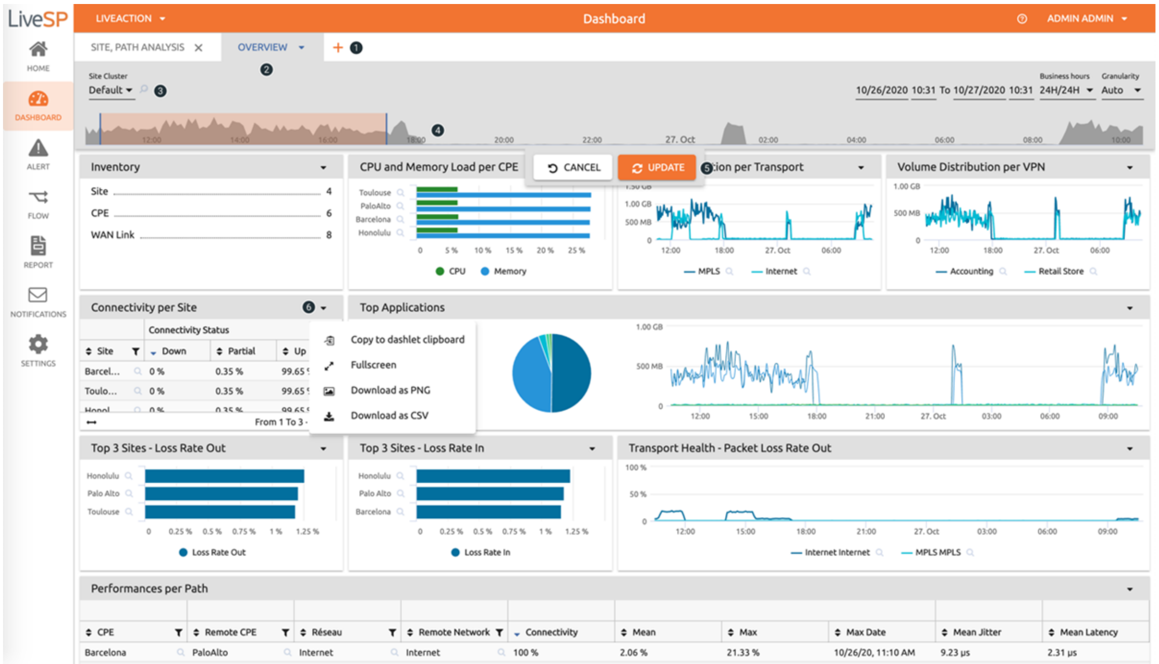
Browse

Client mode / Dashboard

The dashboard module lets you visualize the network from several perspectives: network load, application health-check, DSCP consistency, etc. across the network or for a specific site. The management bar, at the top of the dashboard, helps you choose the site, application or device, filter on a period and update all dashlets according to the selected scope.

You can add new dashboards in your multi-tab environment by browsing the library or by drilling down a network element for more details (see ***Drill down*** on page 5 for more details).

Access the dashboard module by clicking in the client main menu.



1. Open the **library** to display dashboards.
2. Include several dashboard **tabs** in your personal workspace; a lock indicates you cannot edit the dashboard (because you are not the author).
3. Filter and select **network elements** you want to visualize.
4. Select observation period and zoom in on **timeline** for more details; dashlets will be updated according to the network selectors and time period.
5. **Update** dashboard.
6. Use the arrow to expands more options on dashlets, such as **export** your table in CSV file format or your dashlet to a PNG file format.

Library

Client mode / Dashboard / Library

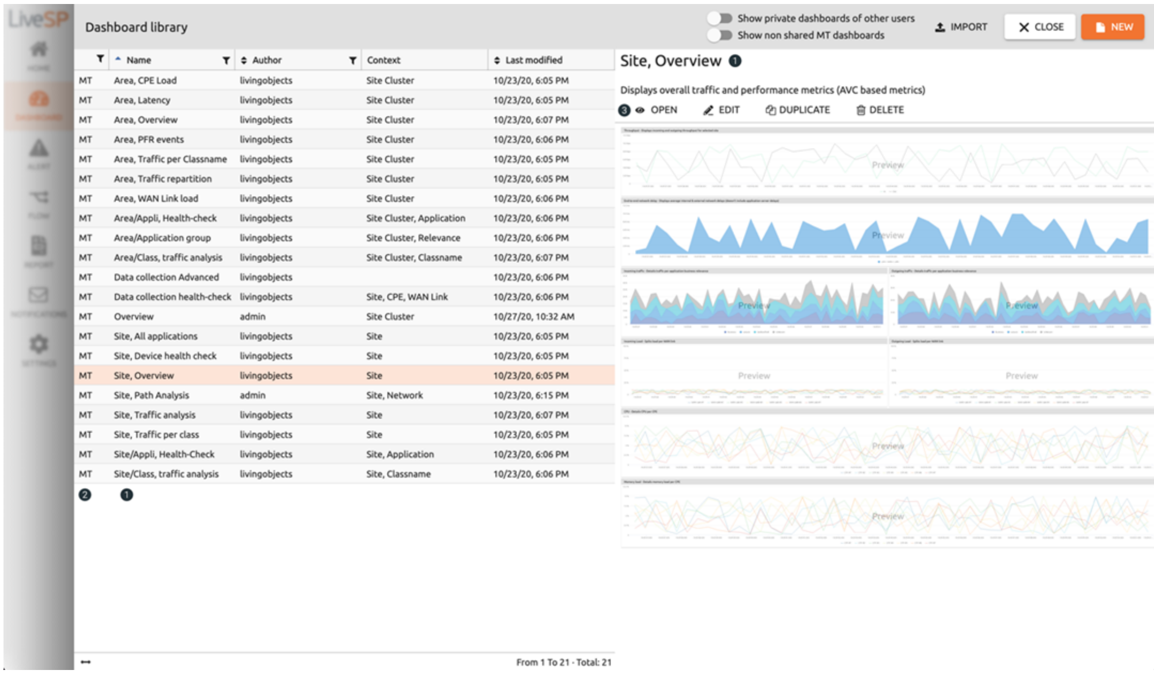
The dashboard library stores public and private dashboards:

- private dashboards are available for the author only;
- public dashboards are created either in the multi-tenant mode as a "dashboard template" or in the client mode.

When created in client mode, the dashboard will be public across the end-customer but will not be available for other customers (see ***Rights*** on page 34 for more details).

Dashboards are displayed in a multi-tab personal workspace. As dashboards can be different from one customer to another, the personal workspace is also linked to the displayed customer and changes when you switch from one customer to another.

Open a dashboard from the library by clicking + in the tab bar.



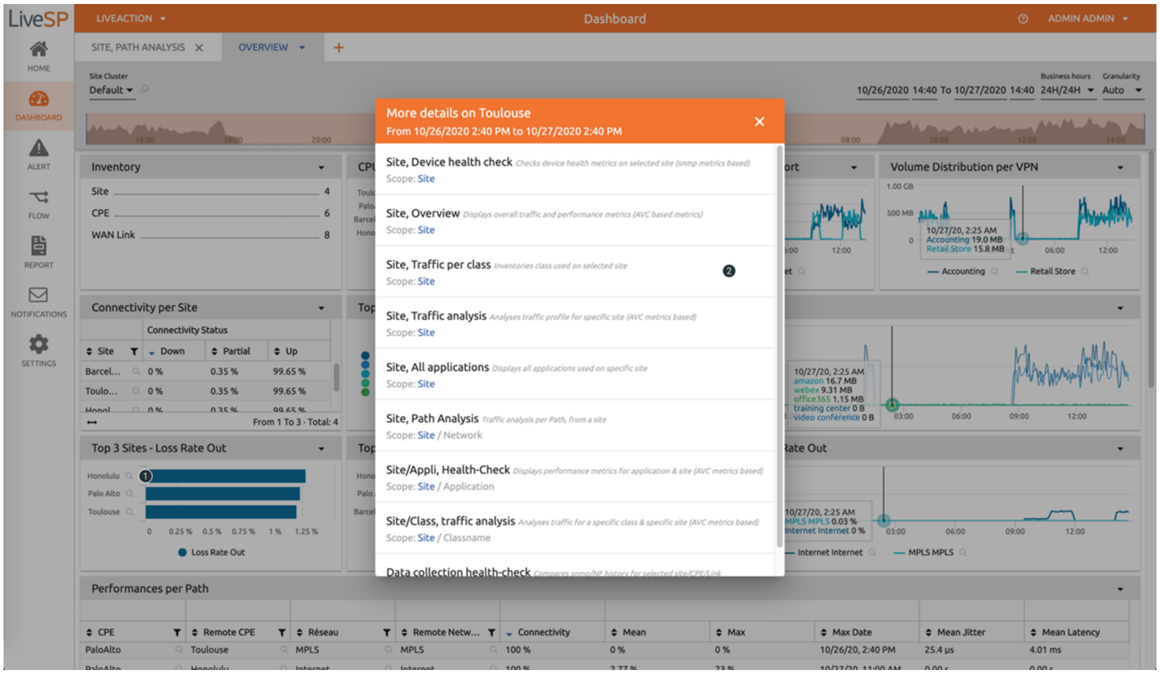
1. **Name**, **description**, and **preview** that helps you choose dashboards according to your needs.
2. **Type** of dashboard (for public, **MT** for multi-tenant, **empty** for private).
3. **Open** dashboards into your personal workspace.

Drill down

Client mode / Dashboard

When you detect unusual spikes of traffic or high end-to-end latency for a specific application, you might need more details to understand the issue. The drill down feature will help you deep-dive, step-by-step by displaying the relevant dashboards. When you need more details on a site, DSCP, device or application, click on the magnifying glass beside the legend. LiveSP will automatically propose the relevant dashboards.

Access more details by clicking on a dashlet legend.



1. Click on the **loop** next to selected element you want to **drill down** on (site, device, application, etc.).
2. Choose the new **dashboard** to open to display more details.

Alert

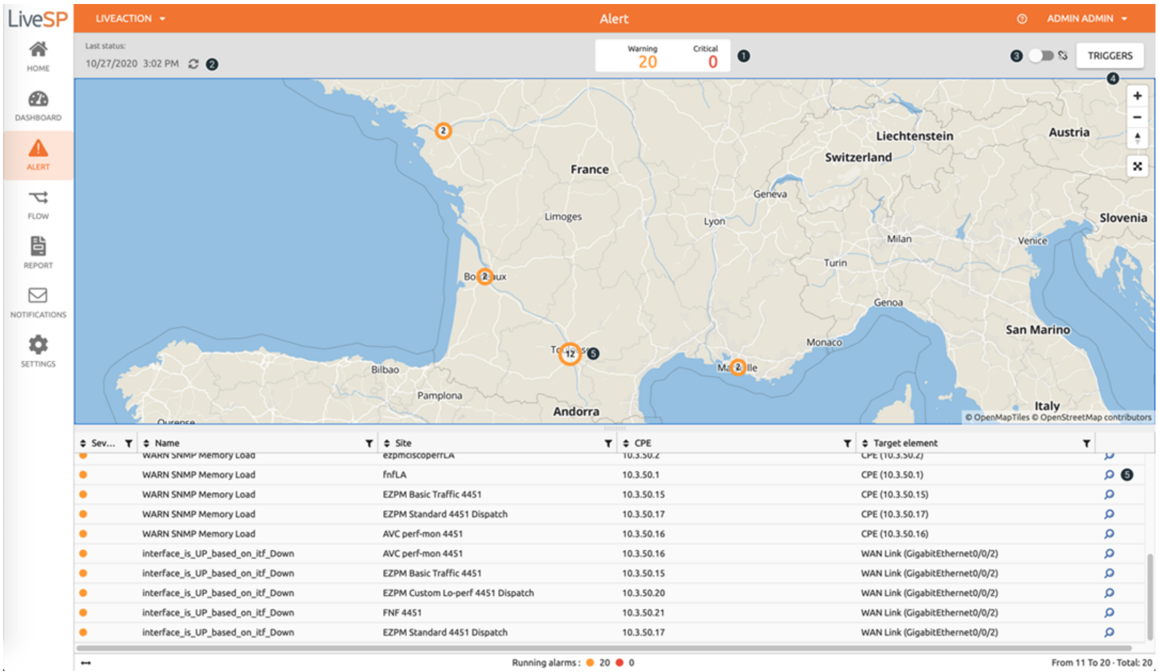
Active alerts

Client mode / Alert

Cockpit displays events which have occurred in the network. You define the triggers in the cockpit's settings. The table view displays root-cause and elements. When a specific KPI exceeds a threshold, the timeframe is stored for consultation.

If you create two alerts with the same KPI, operation and breakdown but different severities (one critical and one warning), and if the critical alarm is triggered, then the warning alarm will not show up in the list of current alerts (only the highest severity is kept).

Consult active alerts by clicking ⚠ in the client main menu.



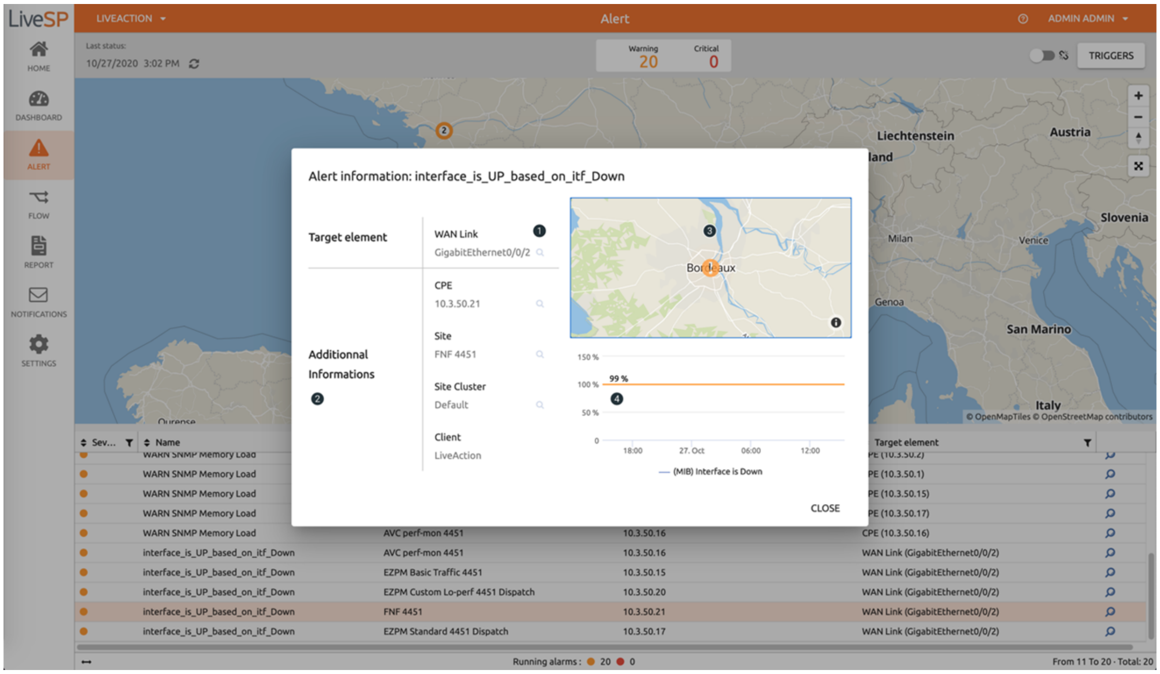
1. **Summary** of alerts per severity.
2. **Refresh** alerts.
3. **Limit** the list displayed in the table to the sites visible on the map.
4. Switch to the cockpit **trigger list**.
5. Display alert **history** and **information**.

Alert details

Client mode / Alert / Detail

From the map or the table, it is possible to zoom in on a ongoing alarm to get more information on the alert that is causing it..

Consult active alerts by clicking loop next to the relevant alert.



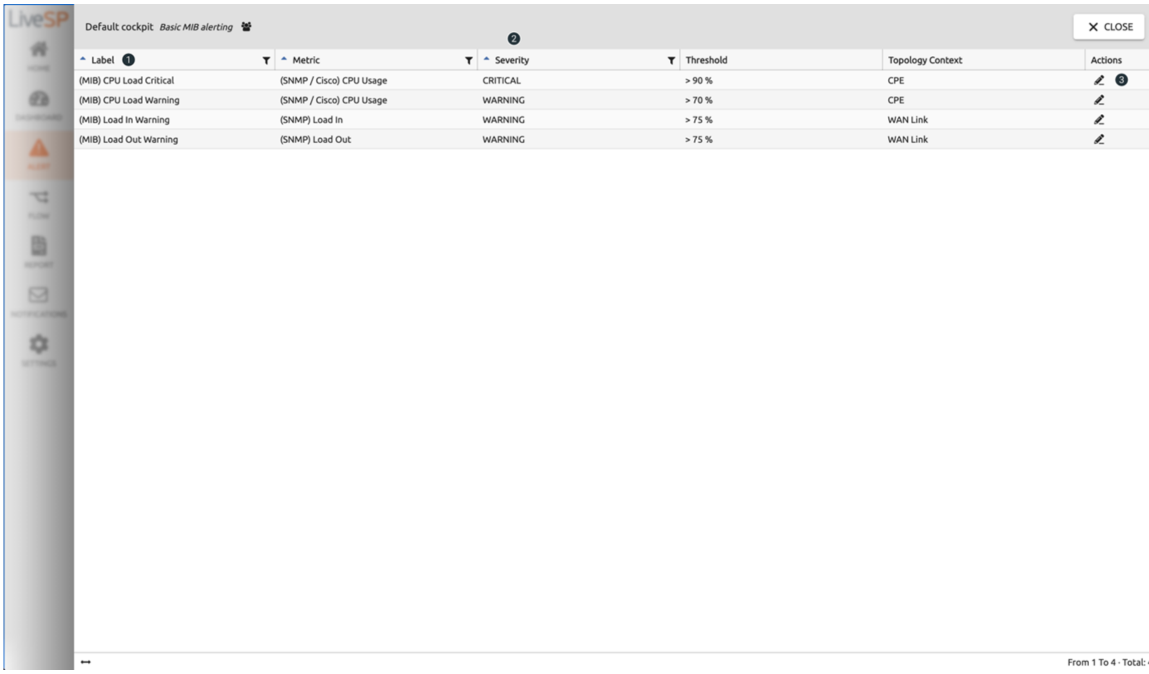
1. **Drill-down** to a dashboard with the alert context.
2. Alert **topology** context.
3. **Zoom** on the map.
4. KPI **history**.

Trigger list

Client mode / Alert / Triggers

The trigger list displays all the events which may occur on the network. End-users with specific permissions, can customize default templates or create a new one (see ***Alerts*** on page 31 for more details). Any customization effected in client mode will remain specific to the selected customer.

Visualize the cockpit trigger list by clicking “Triggers” in the list of alerts.



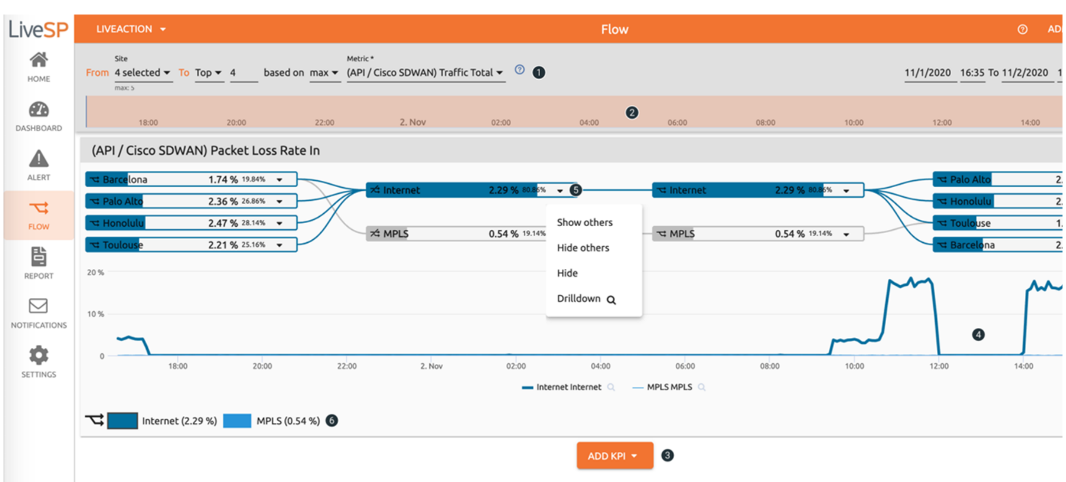
1. Label and KPI **describe** the alert.
2. Severity and threshold **define** the trigger.
3. **Override** trigger threshold.

Flow

Client mode / Flow

With its WAN path module, LiveSP offers a simple and innovative visualization of end-to-end flows. Designed for VPNs set across just a few or thousands of sites, it combines traffic metrics and distribution aggregated visualization, with performance metrics timeline visualization. By selecting source site, LiveSP discovers destination sites and displays DSCP and networks used to transport the data. You are now able to understand the core functionalities of Cisco Performance Routing features.

Display end-to-end flows by clicking ⇄ in the client main menu.



1. Select source and destination **sites**.
2. Select **processing period**.

3. Add (and remove) performance **KPIs**.
4. Visualize **aggregated traffic** per network on the selected period.
5. Use the arrow to **show** or **hide** paths and **drill down** to dashboards.

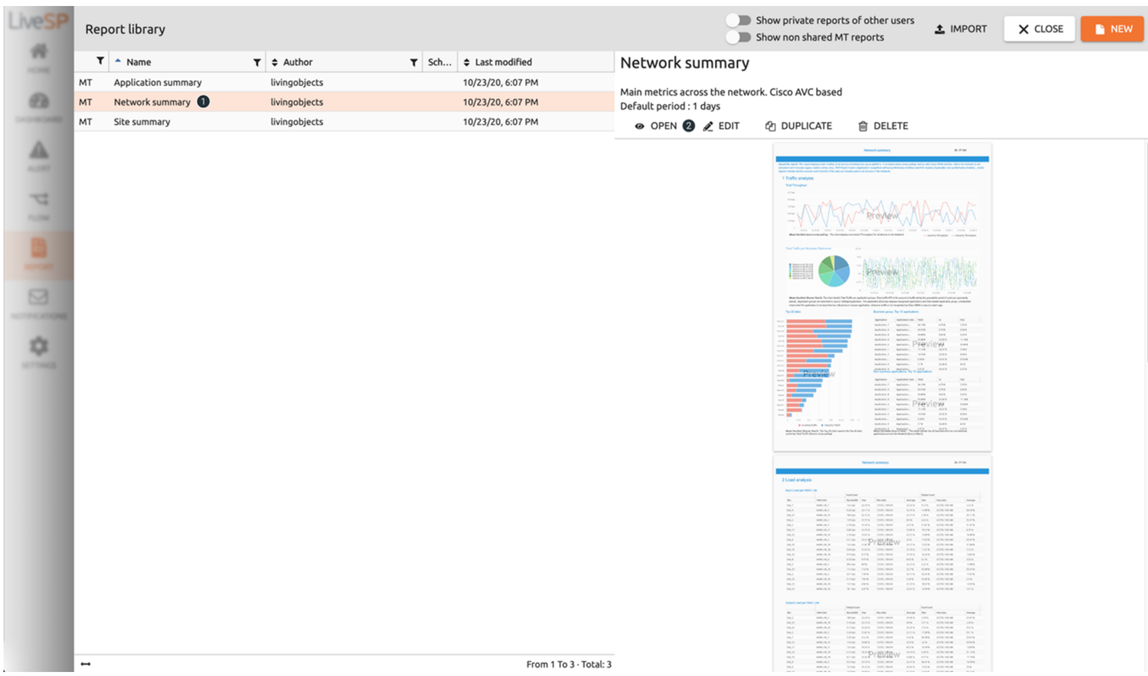
Report

Library

Client mode / Report / Library

Do you need to schedule a report summary of your application SLA, every day, week or month? Just choose a template from the report library.

Open the library by clicking in the client main menu and opening the library.



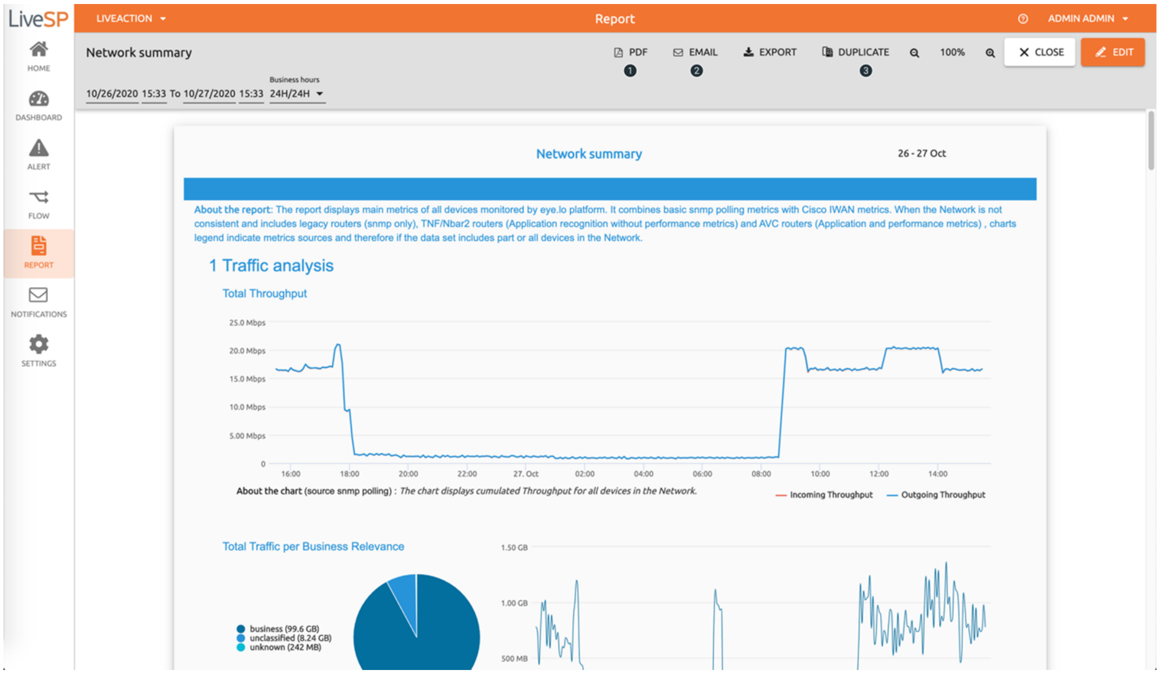
1. Quick **preview** the report before opening it.
2. **Open** the report to visualize it.

Preview

Client mode / Report

Once opened, you can check your report and test its configuration by sending a mockup e-mail.

Preview a report by clicking "Open" in the library.



1. **Print** your report.
2. **Send** a test e-mail.
3. **Duplicate** the report to create your own.

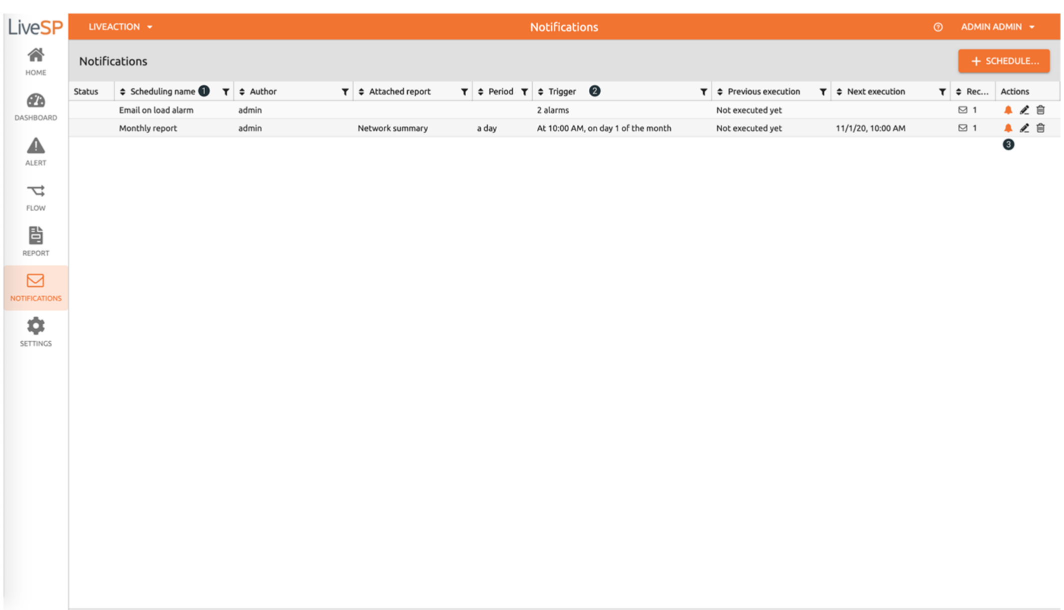
Notification

Library

Client mode / Notification

Reports can be used in e-mail notification. If a report is attached to an e-mail, it will be sent automatically with fresh data.

Subscribe to a notification by clicking ✉ in the client.



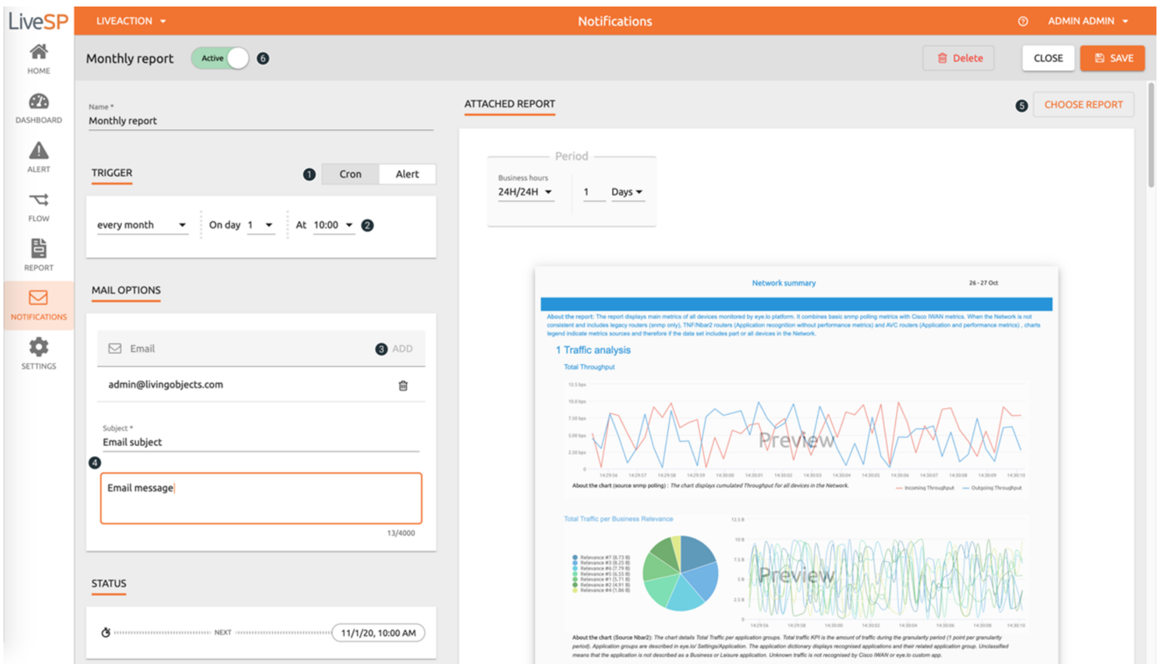
1. Notification **name**.
2. Notification **trigger** and detail.
3. **Subscribe** to the notification.

Schedule

Client mode / Notification / Schedule

Once created, you can schedule your report to be sent regularly or when an alarm is raised.

Schedule a report by clicking **Schedule** in the client main menu.



1. Select the **type** of notification.
2. Configure the **trigger** with a time of dispatch or alert.
3. Fill in one or several **e-mail addresses**.
4. Detail **subject** and **message** of the e-mail.
5. Select the **attachment** the e-mail.
6. **Activate** or deactivate your notification at will.

Application

Dictionary

Client mode / Settings / Application

LiveSP embeds several application dictionaries. Applications are described by name and can be group by category (browsing, net-admin, etc.) and group (business, leisure, unclassified, etc.).

The category and the group of an application can be overridden in multi-tenant mode and again in client mode. For example:

- in multi-tenant mode you may assign the business group to the “IPSec” application: it impacts the whole client application dictionary;

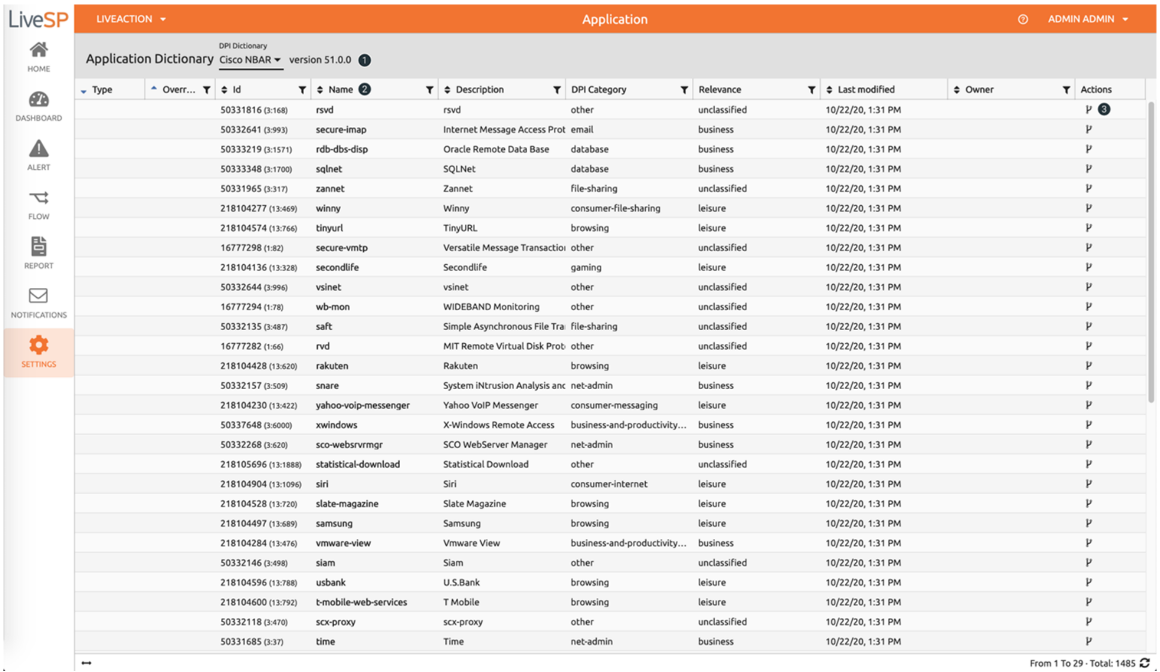
- an individual client may override that definition again and specify “IPSec” as part of the leisure application group.

When an application is created or customized:

- in the multi-tenant mode, changes will be available for all customers.
- in the client mode, it will be available for the specific customer only.

When SD-WAN is activated, LiveSP also provisions dictionaries relevant to that technology from the SD-WAN manager directly.

Open the application dictionary by clicking and in the client main menu.



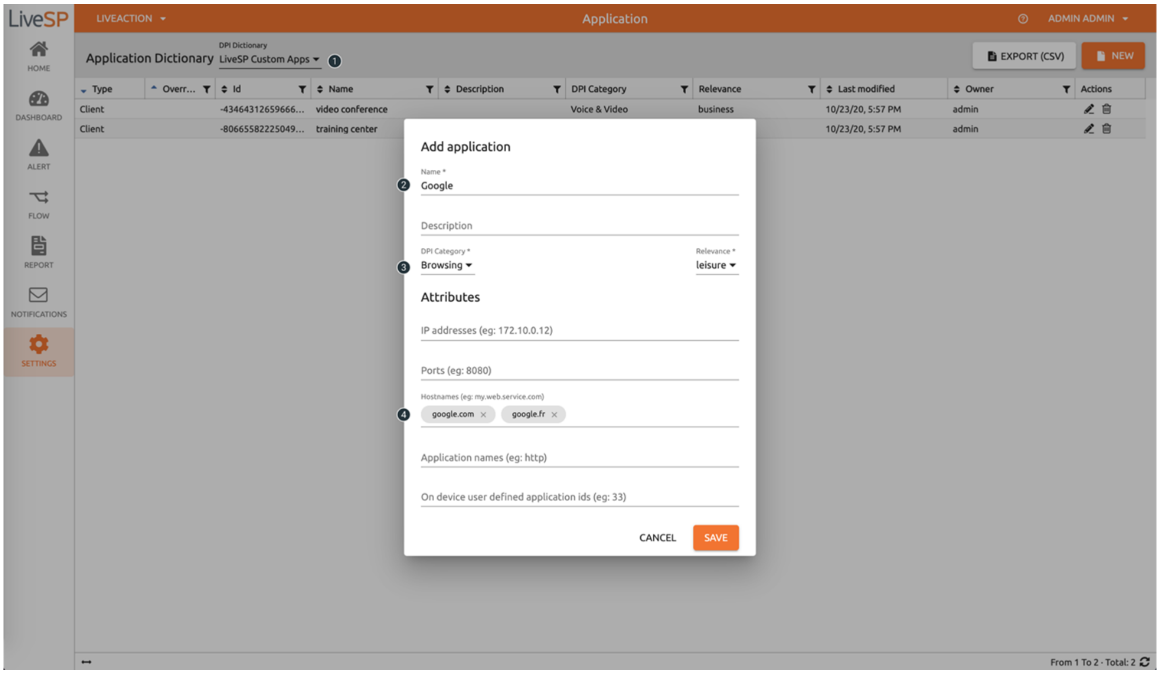
1. Application **source** (NBAR2, Qosmos, Sandvine or custom LiveSP applications)
2. Application **name** and protocol pack ID (for NBAR2).
3. **Override** default relevance.

Creation

Client mode / Settings / Application

End-users can define custom applications based on the IP address, port, URL, etc. using several criteria for a unique custom application. Custom applications always prevail over Cisco applications (for example, if a flow reports a NBAR2 protocol pack ID “HTTP”, but also matches criteria for the custom application “Cisco Website”, LiveSP will keep the latter). If the criteria overlap with the NBAR2 application ID, the custom application flows will be retrieved from the NBAR2 traffic in order to keep a consistent overall traffic metric.

Create a new application by selecting the LiveSP dictionary and clicking “New” in the application dictionary title bar.



1. Select the LiveSP custom app dictionary.
2. **Name** and **describe** your application.
3. **Classify** your new application among existing categories and groups.
4. Specify at least one application **criteria** among: IP address, transport port, server name and custom application ID embedded in the routers. You can use a combination of criteria, such as a union of criteria of the same type (OR) and an intersection between criteria of different types (AND). For example: `IP address = 1.2.3.4 OR 12.3.4.5 AND port = 443`.

Cluster

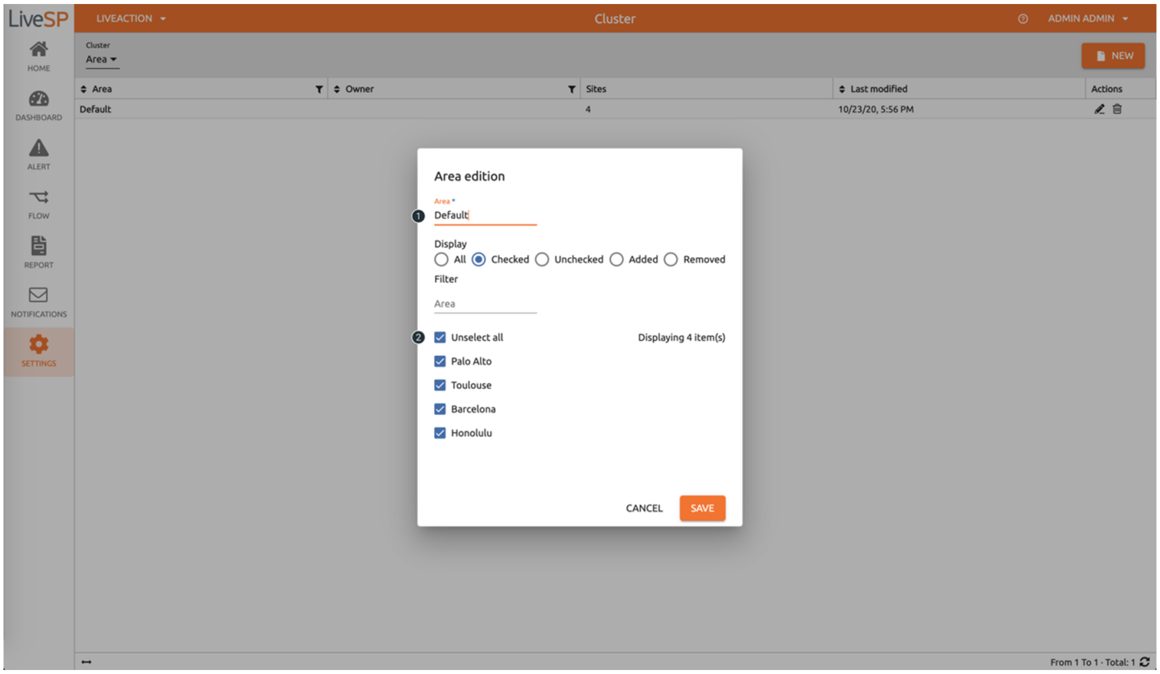
Client mode / Settings / Cluster

When an end-customer network includes hundreds or thousands of CPEs, it may be useful to group the CPEs into clusters. These clusters are used as filters to easily find specific sites when displaying a dashboard. They can also be used to build reports based on area or business units.

It is also possible to group applications in the same way.

Open the site cluster library by clicking and in the client main menu.

Group sites into clusters by clicking "New" in the cluster menu.



1. **Name** your cluster.
2. **Add** or **remove** new sites or applications.

Best Practices

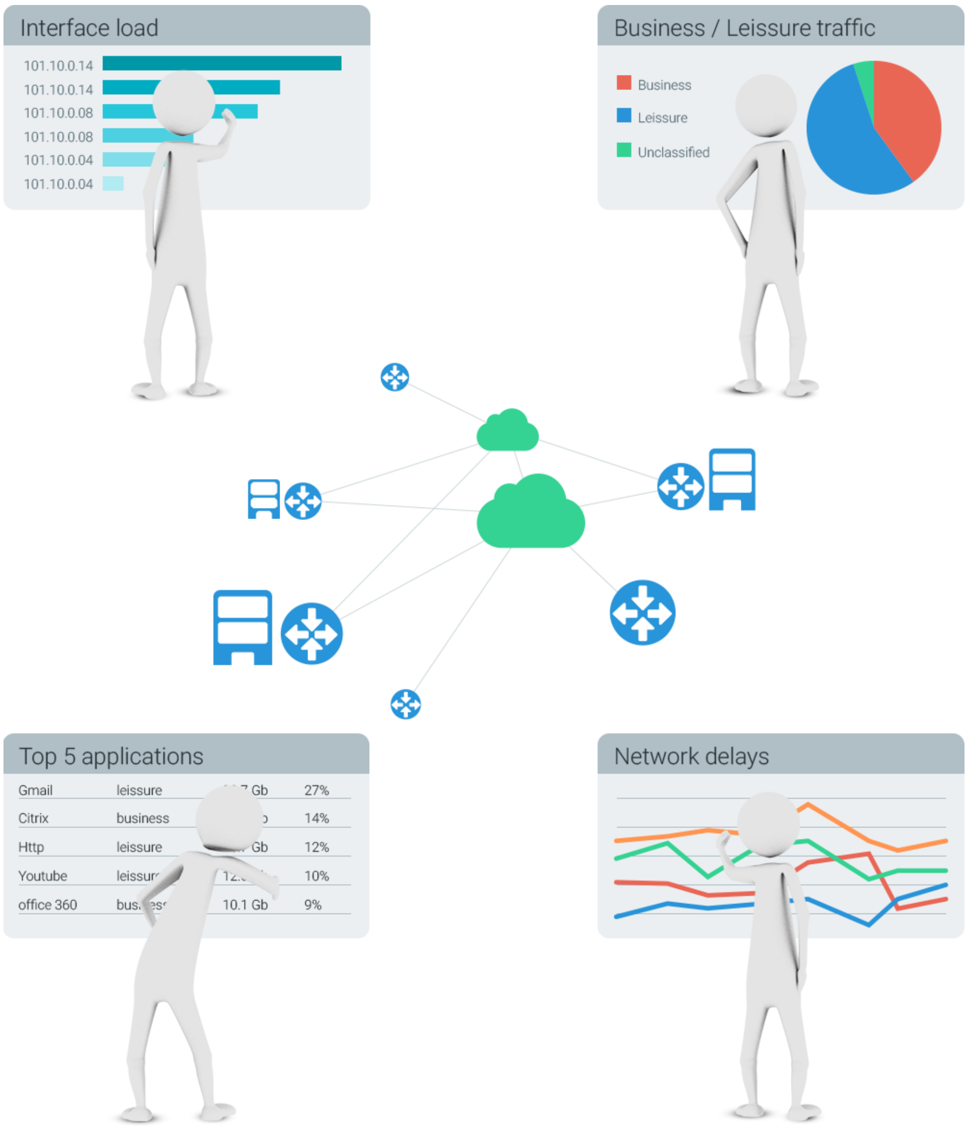
The LiveSP custom applications are primarily designed to identify "Unknown" or "Unclassified" traffic. Adding custom applications can have a performance impact on LiveSP; therefore, the following recommendations are suggested:

- Up to 30 custom apps per tenant
- Up to 50 global custom apps (at the SP level)
- No more than 5 values in the 'HTTP(S) Hostname' field

It is the administrator's responsibility to avoid potential overlapping between definitions. If there are overlapping rules, then LiveSP will use the first rule that matches.

Resource Edition

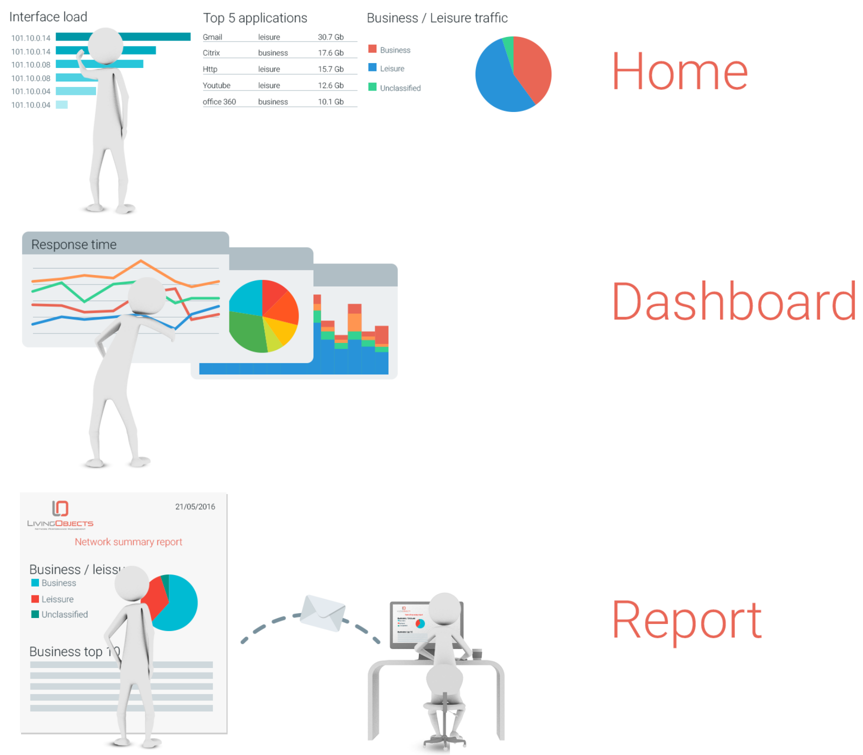
LiveSP embeds tools to customize homes, dashboards, cockpits and reports and meet operating and marketing needs. Admins and end-users granted with edition rights are able to create new dashlets mixing KPIs from several sources (AVC, SNMP, IPSLA, etc.), choose their layout and build resources.



Homes, dashboards, and reports

Home, dashboard, and report modules use the same dashlets component (see ***Dashlets*** on page 23 for more details). They can be built in client or multi-tenant mode.

- A resource built in multi-tenant mode can be shared within a customer profile. Each end-customer granted with this profile will be able to use the resource.
- A resource built in client mode will be available for the specific client where it was built.



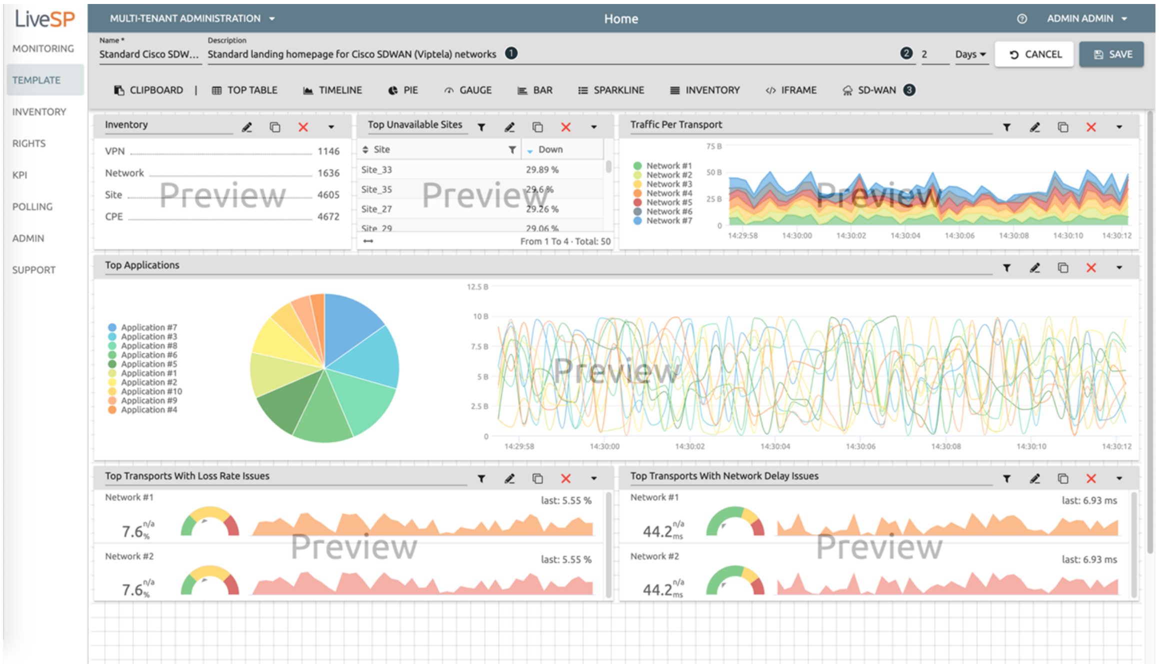
Home

Client mode / Home / Edition || Multi-tenant mode / Template / Home

The home page is a single page that quickly summarizes the state of the network. It is composed of various dashlets, mixing KPIs from several sources. When you build a home, a random data set is used for preview. This gives you an idea of what the final layout will look like, without waiting for network data processing.

Create a home page by clicking:

- “New” or “Duplicate” in the home page library in client mode,
- “New home page” in the template menu in multi-tenant mode.



1. **Name** and **describe** the home page, to help your end-users choose the correct home.
2. Customize the default **observation period**.
3. Insert a new **dashlet** or a dashlet from the clipboard.

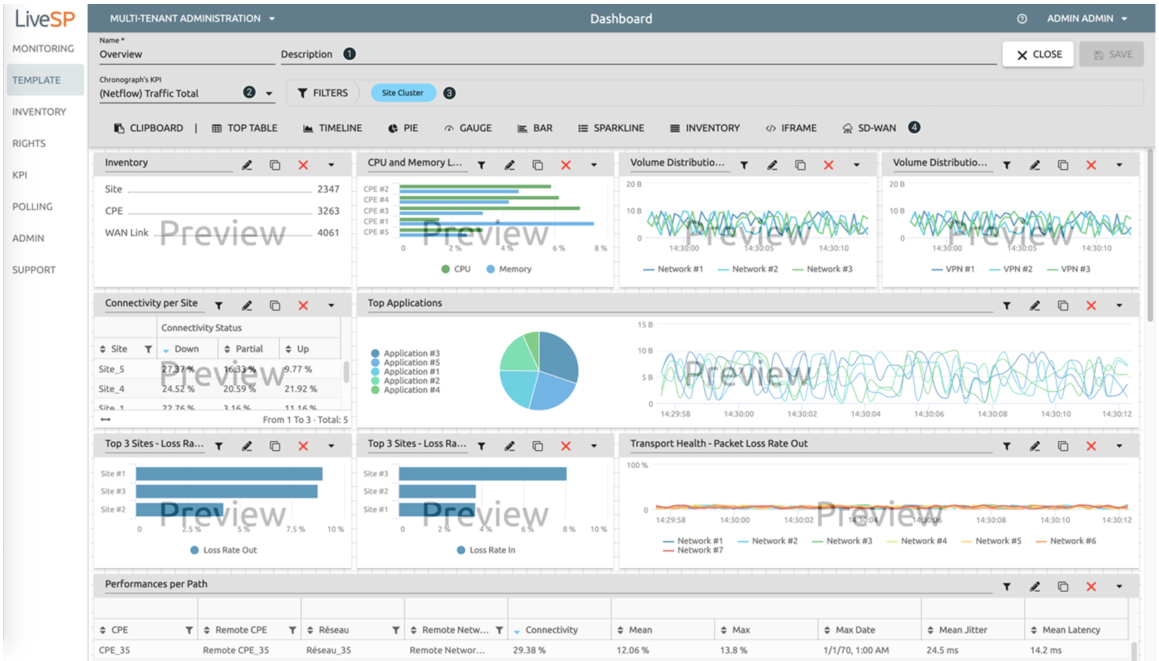
Dashboard

Client mode / Dashboard / Edition || Multi-tenant mode / Template / Dashboard

Building a dashboard is basically a question of configuring the "context bar" and inserting the dashlets. The "context bar" filters the dashboard scope on specific network nodes (area, site, application, etc.) and enables to zoom in on a period of time. Each dashlet will be updated according to this scope.

Create a dashboard by clicking:

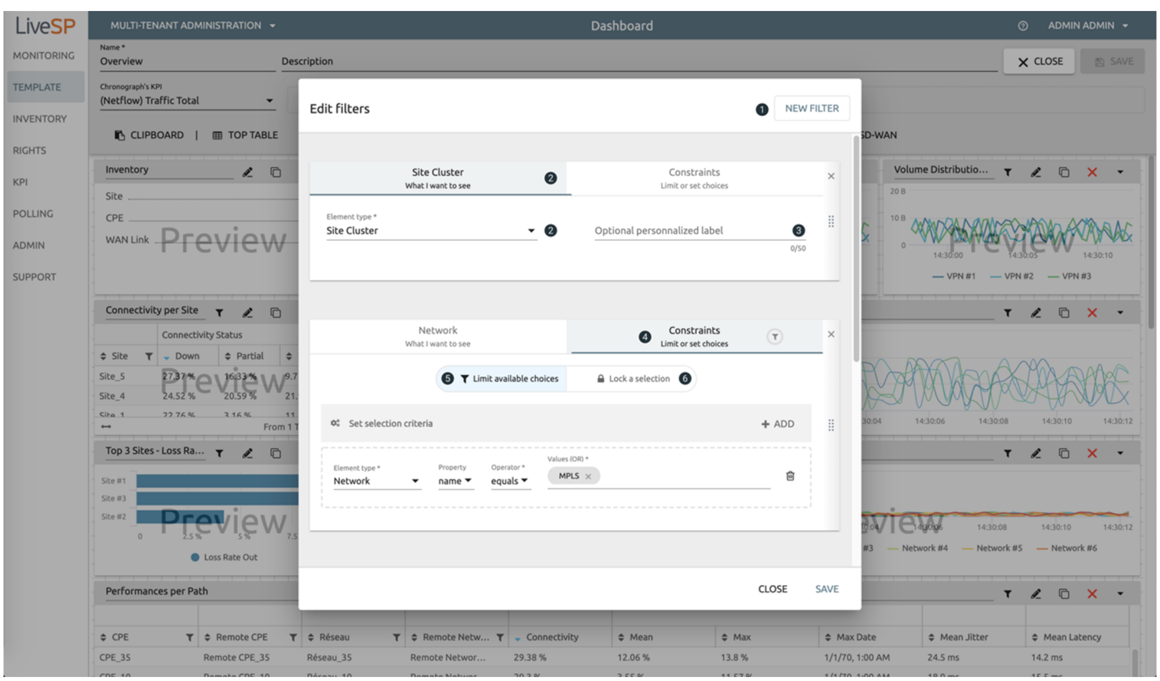
- "New" or in the dashboard library in client mode.
- "Create dashboard" in the template menu in multi-tenant mode.



1. **Name** and **describe** the dashboard, to help end-users understand the purpose of the dashboard.
2. Choose an optional **sparkline** KPI used to browse the time period.
3. Choose the network **filters** which will be used to control the dashboard (see below).
4. Insert a new **dashlet** or a dashlet from the clipboard.

It is possible to limit or fix the selection of elements that the user can select in the context bar. For example, you might want to be able to select only networks that are named "MPLS" or sites that have "Cisco" CPEs.

Contextualize a dashboard by clicking "Filters."



1. **Add** a new network element.

2. **Choose** the network element.
3. Override its **label**.
4. **Constraint** the selection of elements.
5. **Limit** to elements following some criteria.
6. **Force** the selection of pre-selected list of elements.

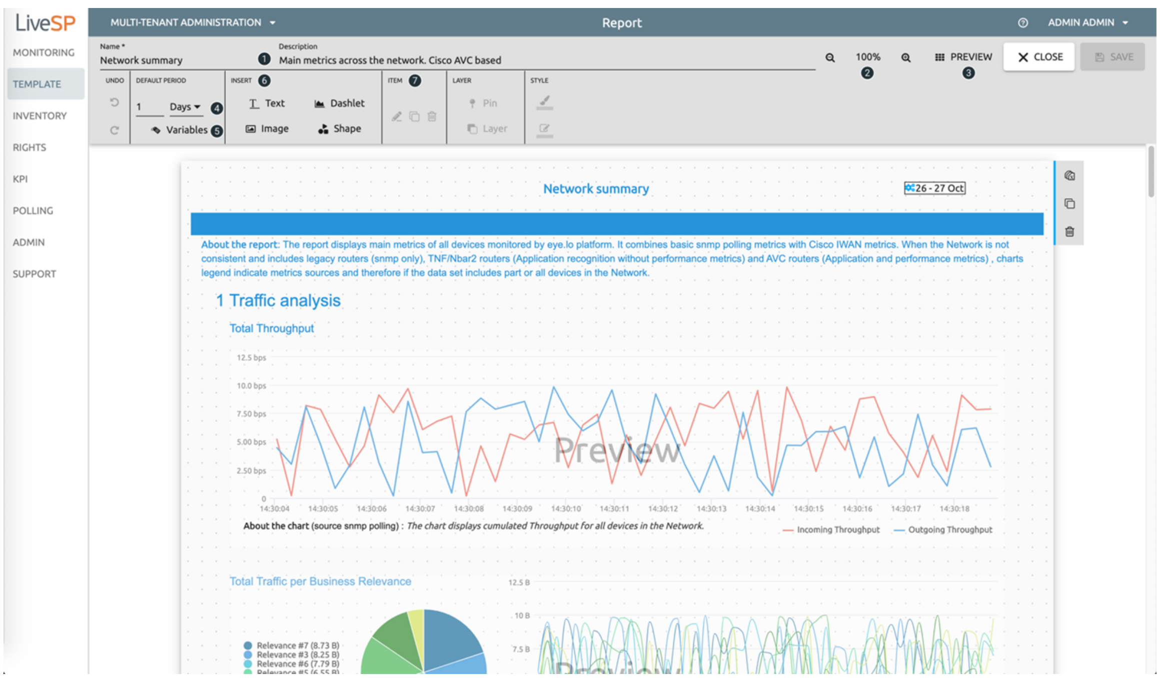
Report

Client mode / Report / Edition || Multi-tenant mode / Template / Report

Reports are created the same way you build a home or a dashboard, except there are more tools to design an executive view of you network management report.

The report template can be customizable when adding parameters used in dashlets to filter each dashlet context.

Create a report by clicking "Create template" in client or multi-tenant mode.



1. **Name** and **describe** your report.
2. **Zoom** to adjust the view to your screen.
3. **Preview** your report to duplicate and move pages.
4. Customize the default **observation period** which will be used for preview.
5. Add the **variables** (in multi-tenant mode) you will use to filter your dashlets.

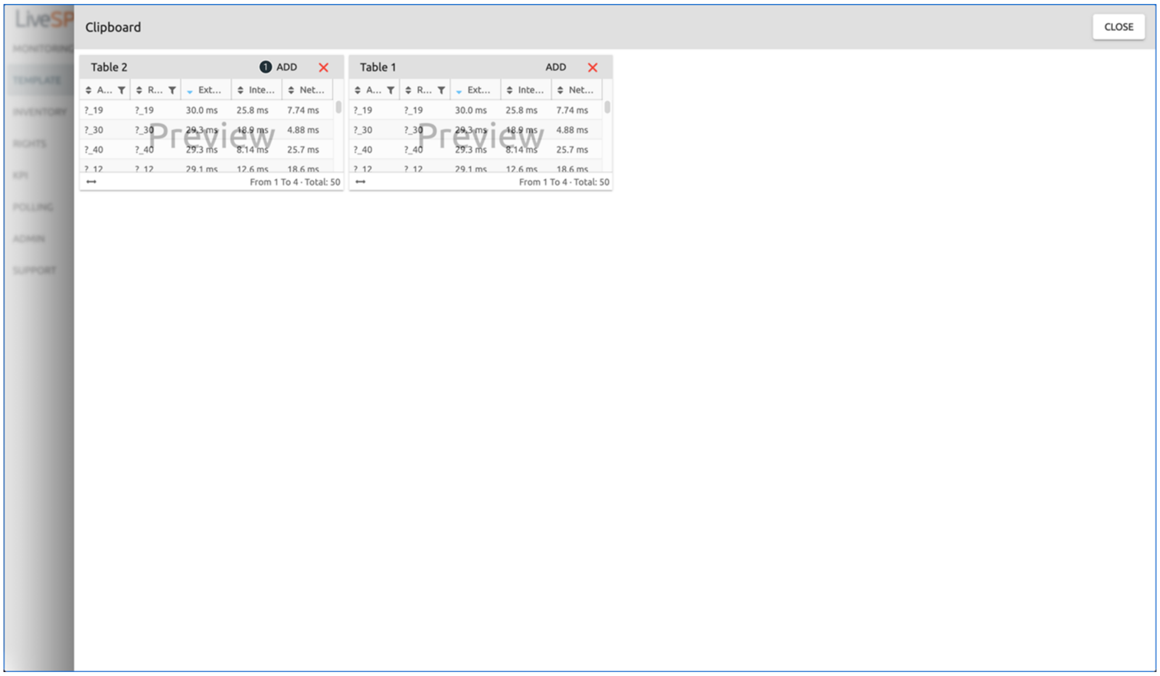
6. Insert a new **item** such as a text with a date or a dashlet.

7. **Edit** the selected item.

Clipboard

To reuse a dashlet coming from another module, simply copy it using the dashlet bar menu: and . In the edition mode, the copied resources can be accessesd from the home page, dashboard and report bar menu.

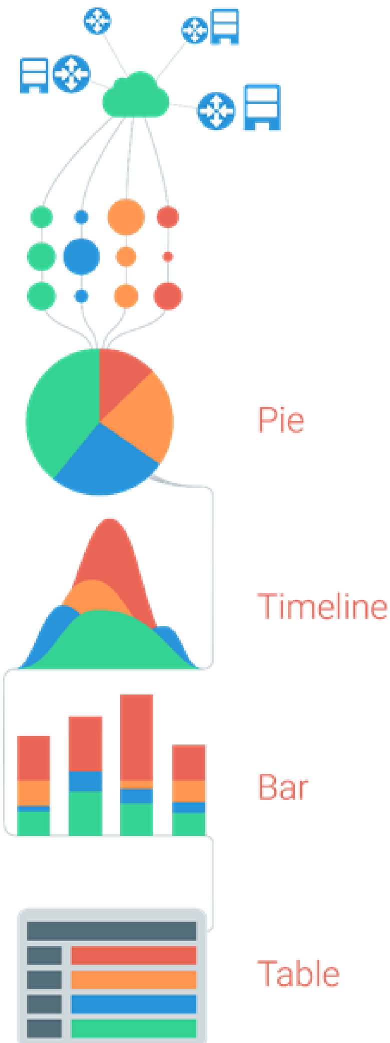
Add a dashlet from the clipboard by copying a dashlet and clicking in the dashboard edition toolbar.



1. **Add** selected dashlet.

Dashlets

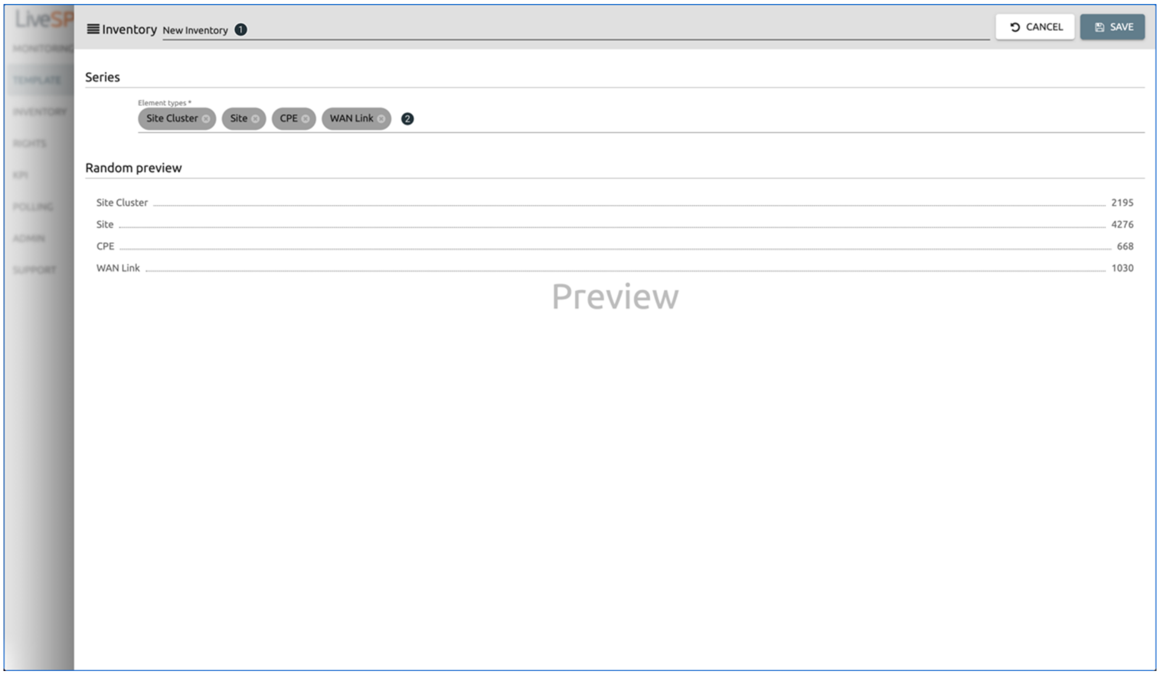
Admins choose the best visualization for their needs: pie or bar for aggregated view, timeline, table, etc. For each dashlet, the data set used to perform the visualization can be filtered within the dashlet (for example, “application group” equals “business”) and will be applied whatever the general scope is. Admins have to be careful that filters remain consistent between the dashboard management bar and filters included in the dashlets.



Inventory

An inventory allows you to visualize the number of a type of network elements that a customer has.

Create an inventory by clicking in the edition tool bar.

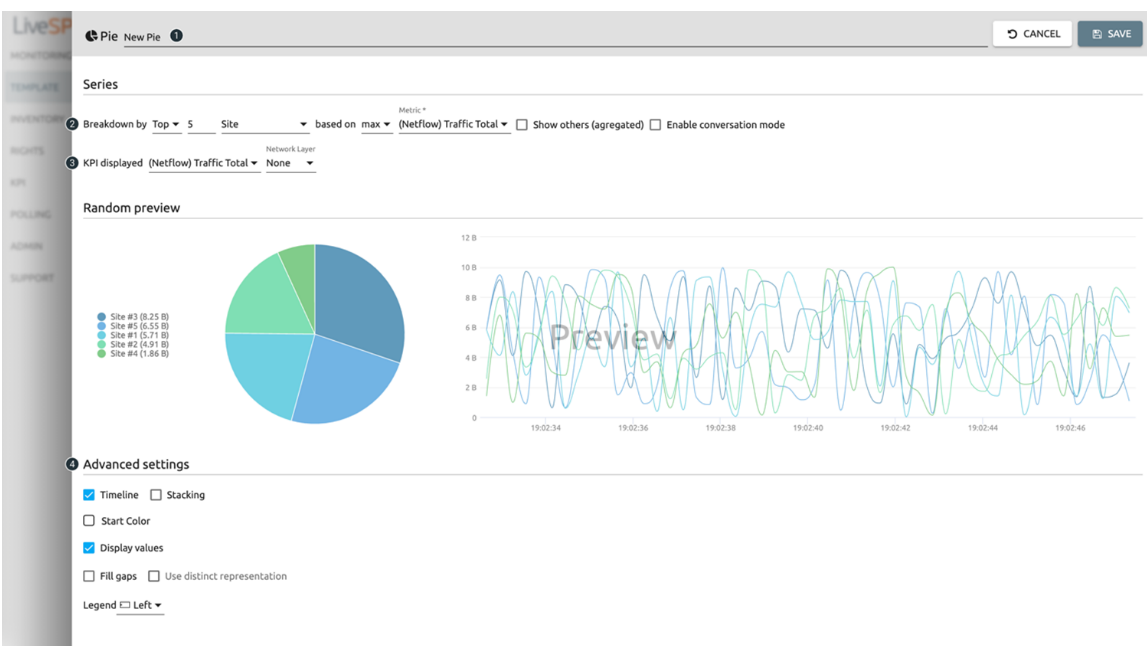


1. **Name** your dashlet.
2. Choose the **network elements** to display.

Pie chart

The pie chart allows network elements for a specific KPI to be ranked, such as top circuit loads, business / leisure traffic repartition or top 10 sites for a specific application response time. You can choose and display top elements based on a specific KPI, or sort top elements based on one KPI and display another KPI (for example: application response time for my top 10 traffic sites).

Create a pie chart dashlet by clicking in the edition tool bar.



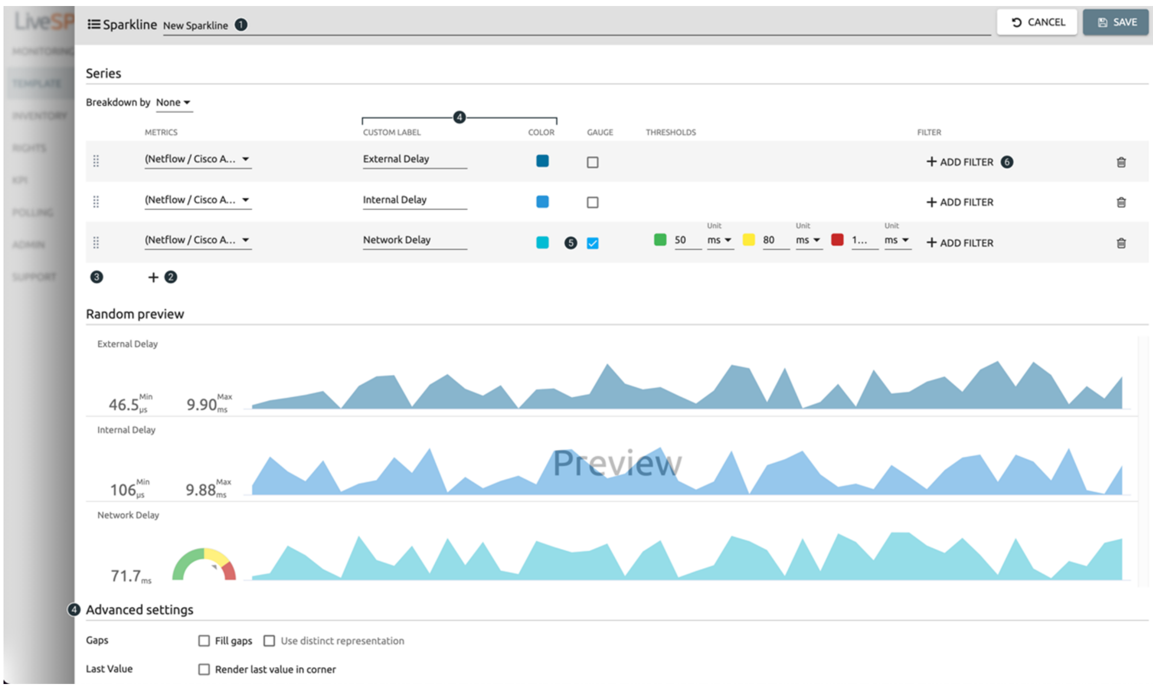
1. **Name** your dashlet.
2. Specify **breakdown** on displayed element:

   a. all = KPI will be grouped and split by network element selected,
   b. top = KPI will be grouped and split by network element selected for the top functionality,
   c. list = KPI will be grouped and split by selected network element.
3. Select the **KPI** to display from the KPI library.
4. Customize your layout by adding a **timeline** visualization to the pie and its **values** if wanted.

Sparkline

The sparkline dashlet displays multiples gauges and timelines to help end-users compare KPIs, visualize trends and spikes and highlight thresholds for performance metrics. It creates a synthetic executive visualization of the network and synthetic health-check of devices.

Create a sparkline dashlet by clicking in the edition tool bar.

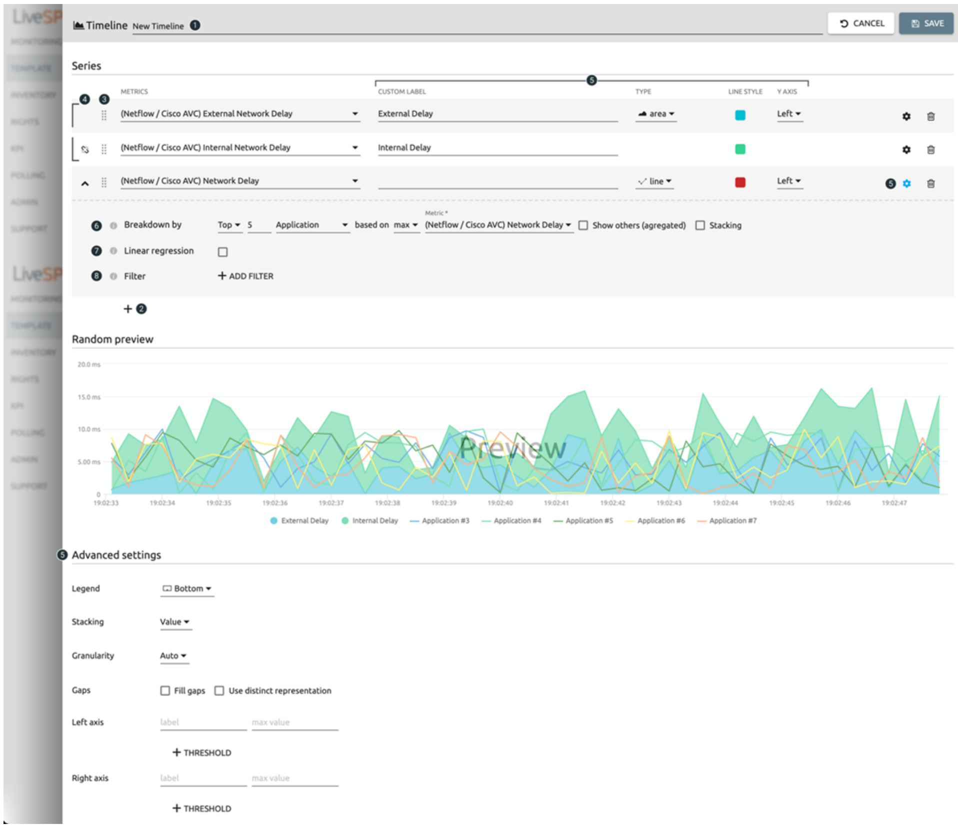


1. **Name** your dashlet.
2. Select **KPIs** from the KPI library.
3. **Move** the series.
4. **Sketch** the style of the different lines.
5. Add a **gauge** to the sparkline.
6. **Filter** the data set.

Timeline chart

Timeline helps visualize spikes of traffic and understand performance metrics such as latency over time. The timeline dashlet tools provide standard and advanced functionalities to mix KPIs, configure multi-axes, add thresholds and choose chart types. As many features are optional, it is possible to start with a quick, one-KPI visualization and then turn to multi-KPI / multi-sources visualization.

Create a timeline dashlet by clicking in the edition tool bar.

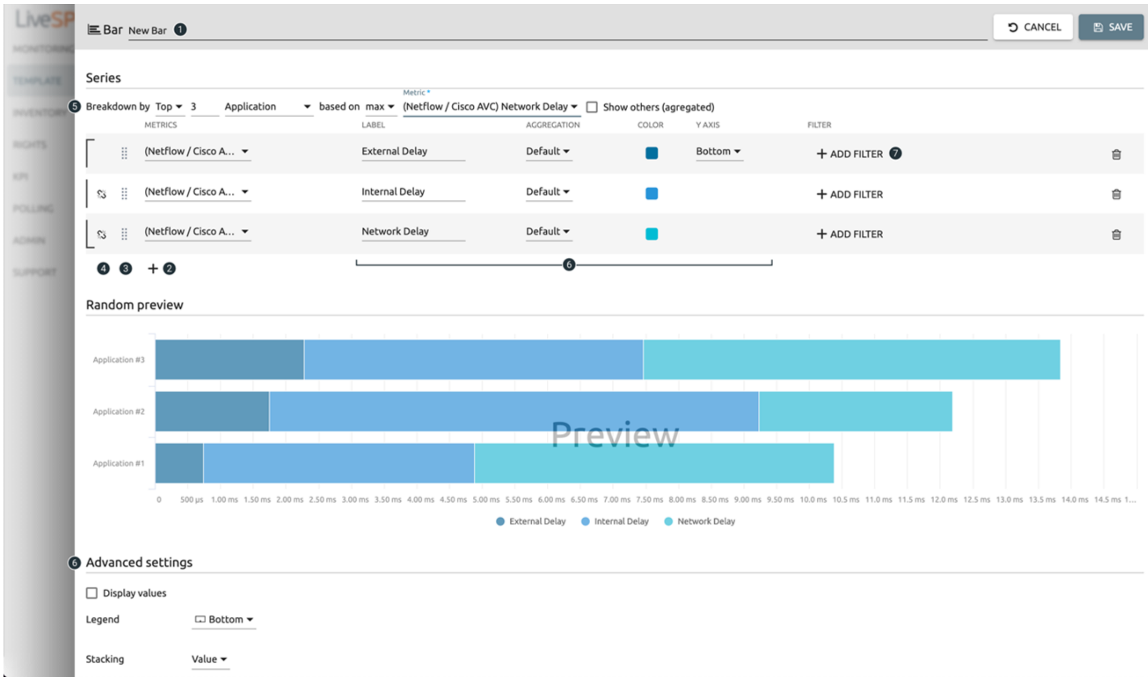


1. **Name** your dashlet.
2. Select **KPIs** from the KPI library.
3. **Move** the series.
4. **Stack** the series.
5. **Sketch** the style of the different lines and customize the layout (legend, double axis, threshold, etc.).
6. Specify **breakdown** on displayed element:
7. Add a **linear regression** of the KPI.
8. **Filter** the data set.

Bar chart

The bar chart dashlet allows several aggregated KPIs to be displayed in one dashlet. Select the KPIs and describe the preferred way to display the metrics.

Create a bar chart dashlet by clicking in the edition tool bar.

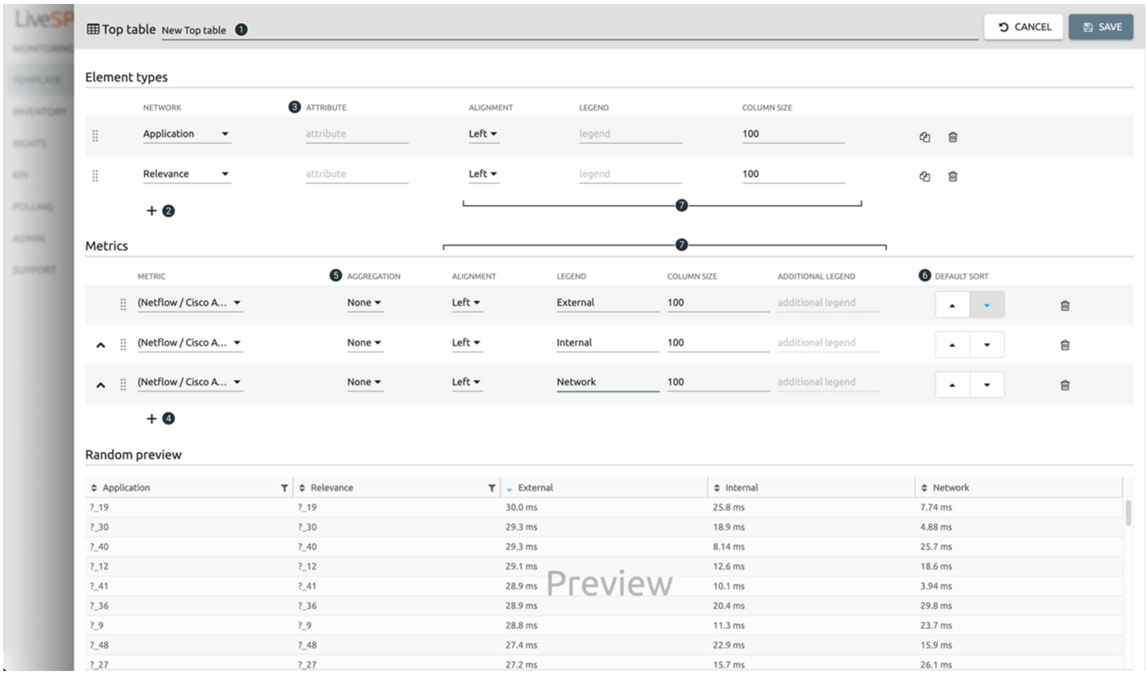


1. **Name** your dashlet.
2. Select **KPIs** from the KPI library.
3. **Move** the series.
4. **Stack** the series.
5. Specify **breakdown** on displayed element:
   - none = one bar per chosen KPI is displayed,
   - all = KPIs will be grouped and split by network element selected,
   - top = KPIs will be grouped and split by network element selected for the top functionality,
   - list = KPIs will be grouped and split by selected network element.
6. **Sketch** the style of the different bars and customize your **layout** (legend, axis, etc.).
7. **Filter** the data set.

Table

Table can be used to display more details and KPIs in a single view. Start by choosing the network elements. Select the KPIs that need to be displayed. And finally define the table layout: merge cells and customizable.

Create a table dashlet by clicking in the edition tool bar.



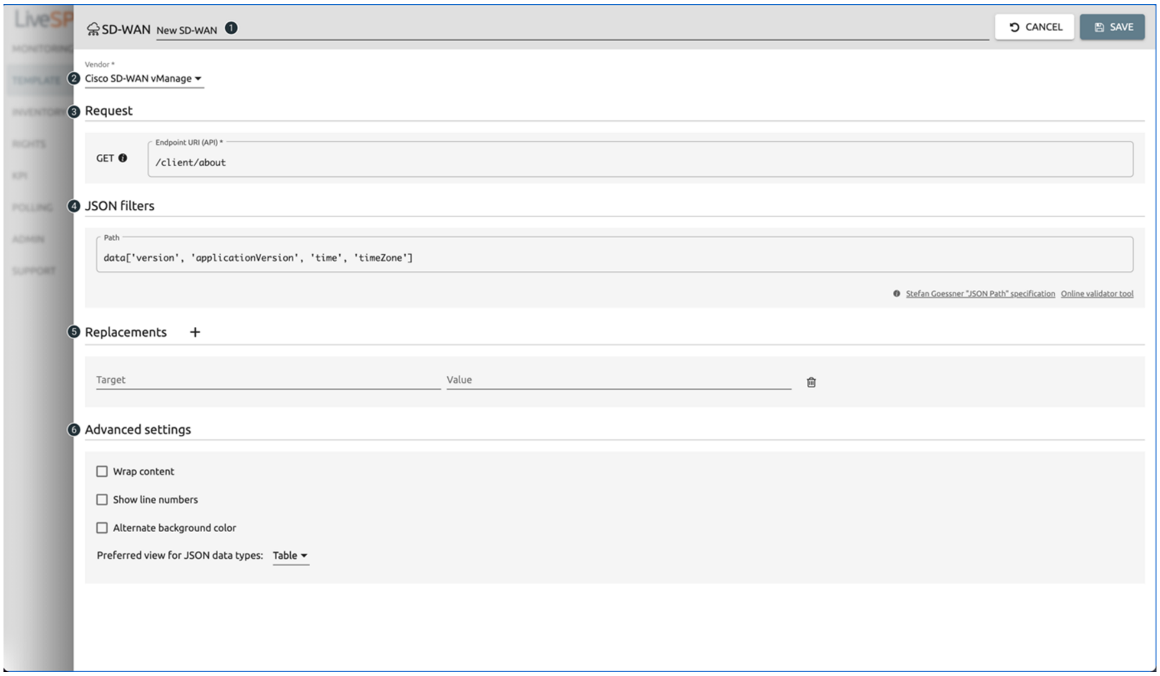
1. **Name** your dashlet.
2. Select **network elements**.
3. Display an **attribute** of the network element.
4. Select **KPIs** from the KPI library.
5. Override the **aggregation** of the KPI.
6. **Sort** the data set.
7. **Sketch** the style of the different lines and **name** columns.

SD-WAN

When the customer is linked to an SD-WAN manager (such as a vManage or FortiManager), LiveSP can launch simple GET queries to that manager in order to display information.

In dashboards, it is possible to add parameters to the query and to use attributes of the network element selected in the context filter to specify the request (for example: `/device/config?deviceId={cpe.deviceIP}`).

Create an SD-WAN dashlet by clicking  in the edition tool bar.



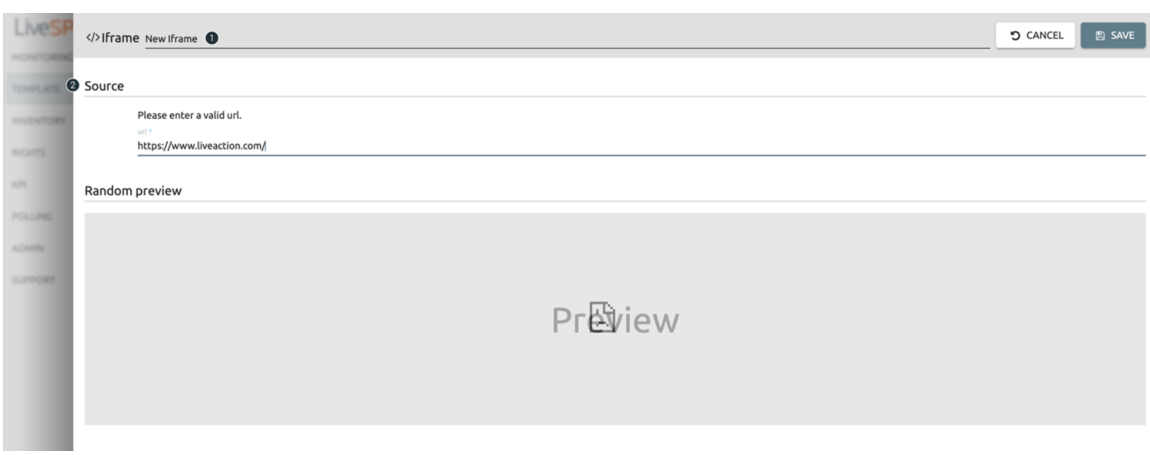
1. **Name** your dashlet.
2. Select the **vendor**.
3. Enter the API **endpoint** to request.
4. If the endpoint returns a JSON, filter the data to be **display**.
5. List text strings to be **replaced**.
6. **Sketch** the style of the text.

iFrame

In order to display a HTML page of documentation or presentation, you can include into a dashboard or homepage a dashlet that included and iFrame.

It is also possible to embed PDFs or images hosted online.

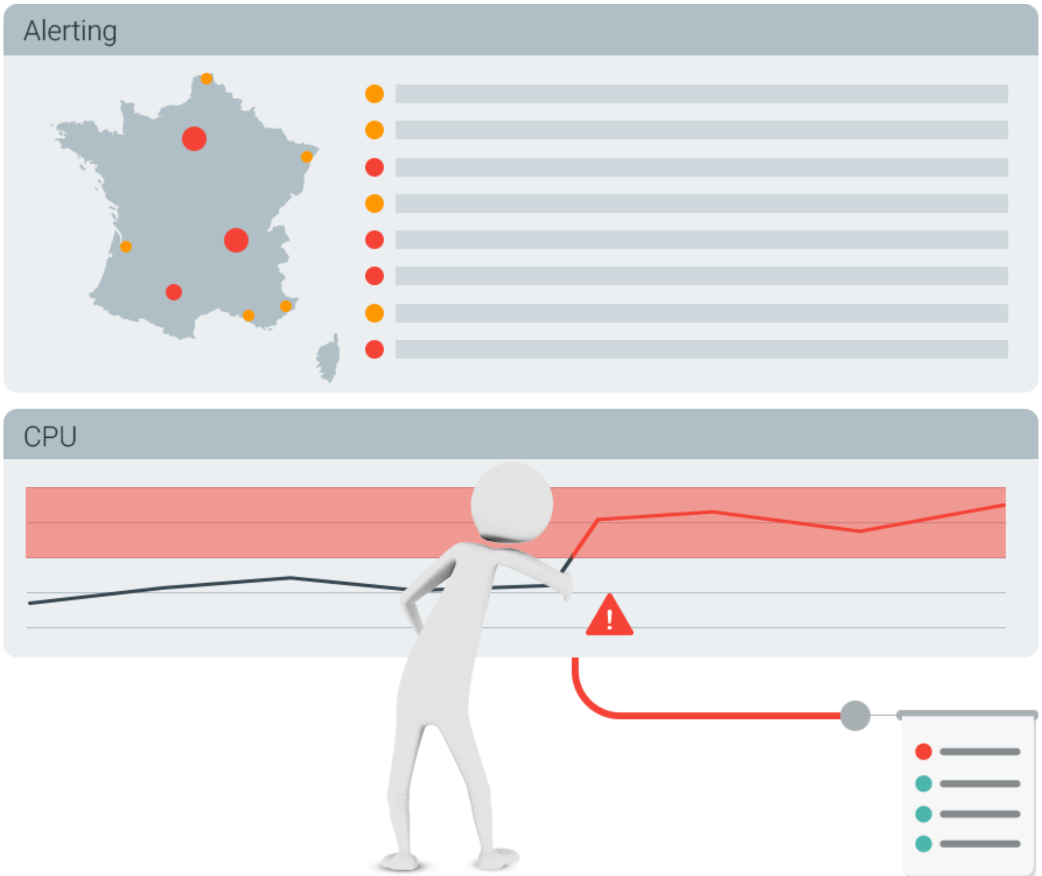
Insert an iFrame dashlet by clicking </> in the edition tool bar.



1. **Name** your dashlet.
2. Enter the **URL** of the HTML page.

Alerts

The alert module leverages KPIs built into LiveSP to trigger alerts. Alerts are grouped in cockpits. Each customer profile has one and only one cockpit. End-customers can customize their default cockpit by changing the threshold or adding new triggers.



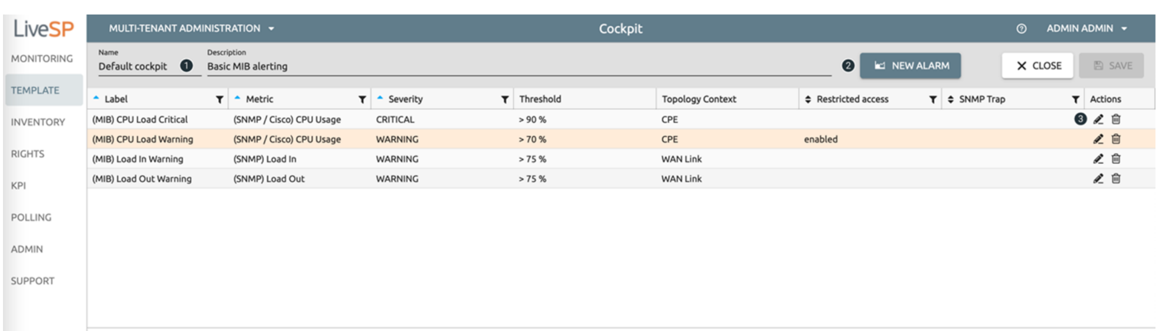
Cockpit

Multi-tenant mode / Template / Cockpit

LiveSP allows admins to configure alerts based on network or application metrics in order to increase the visibility of end-user experiences or network events.

An alert is an alarm that is triggered when a KPI goes under or over a threshold. A cockpit is a list of alerts. A profile can only have one cockpit assigned to him.

Create a cockpit by clicking "Create cockpit" in the template menu in multi-tenant mode.



1. **Name** and describe your cockpit.

2. **Create** and add a new trigger alert.
3. **Edit** or delete current triggers.

Threshold alert

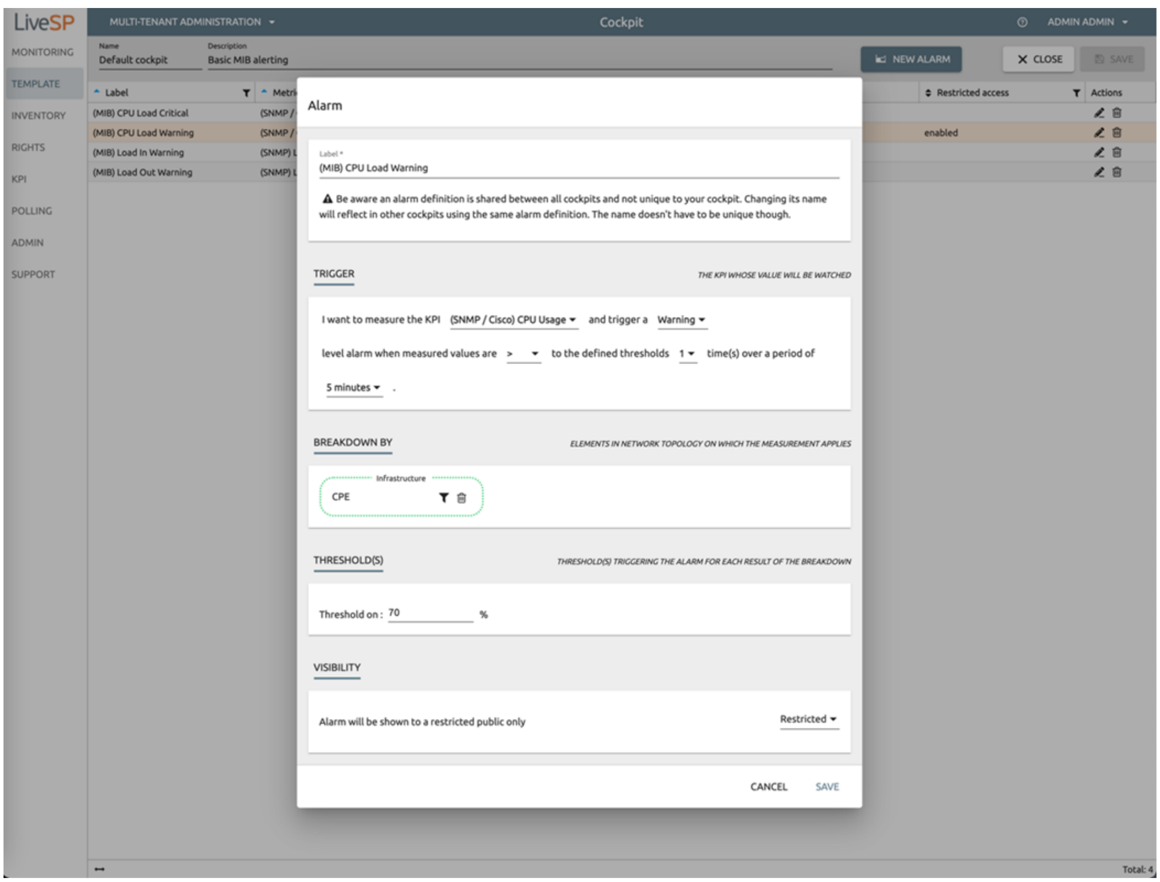
Multi-tenant mode / Template / Cockpit

An alert is an alarm that is triggered when a KPI goes under or over a threshold. Creating an alert also creates an outlier, a new KPI that takes 1 or 0 for value, depending on if the alert was trigger or not respectively. It allows you to count the number of times the alert was triggered. An alert can be complete, overloaded or partial when defined:

- a **complete** alert is an alert that can be used as such by the customer;
- an **overloaded** alert is an alert that has a redefined threshold by the customer;
- a **partial** alert is an alert that will need added information on the threshold by the customer to work.

An alert is defined by 4 key parameters: the **KPI** it is based on, the **severity** of the alarm, the **operation** of comparison, the **breakdown** that is applied on it. Once you created an alert with these key components, it will permanently be added to the library of alerts available to the application. The alert will be available for any cockpit but changing its label or default threshold will impact all the cockpits.

Create a threshold alert by clicking “New Alarm” in the cockpit edition menu.

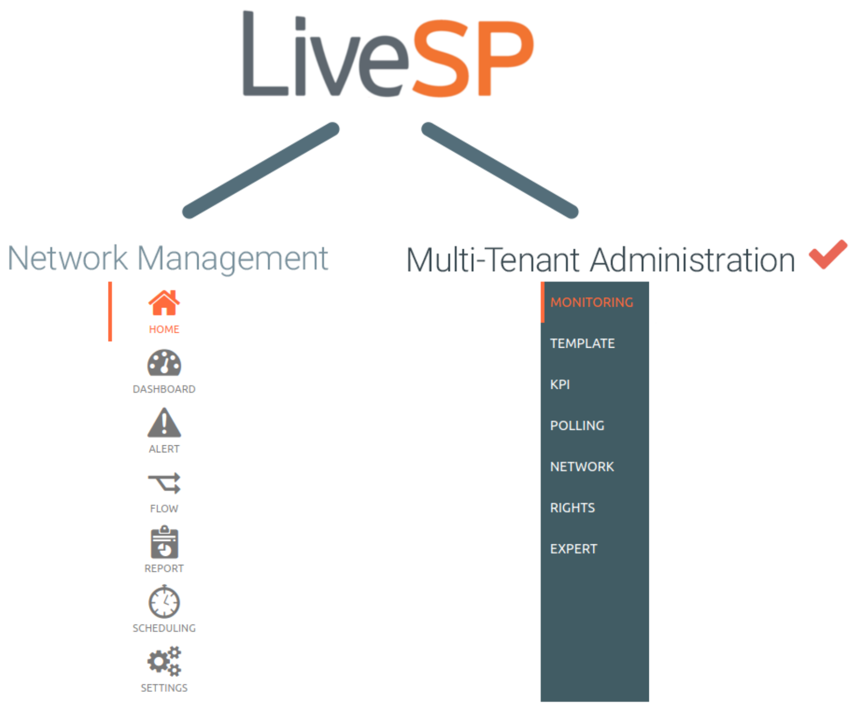


1. **Name** your alert.
2. Define the trigger: the **KPI** you want to survey, the **severity** (warning or critical), the **operation** of comparison, the number of times the threshold is broken over a selected period of time.
3. Refine or expand the **breakdown**.

4. If wanted, select a **filter** to apply on the breakdown and define the **threshold**.
5. **Limit** the visibility of the alarm in the customer alerting module to users in a role with the right to access restricted resources (see ***Role***).

Multi-tenant Administration

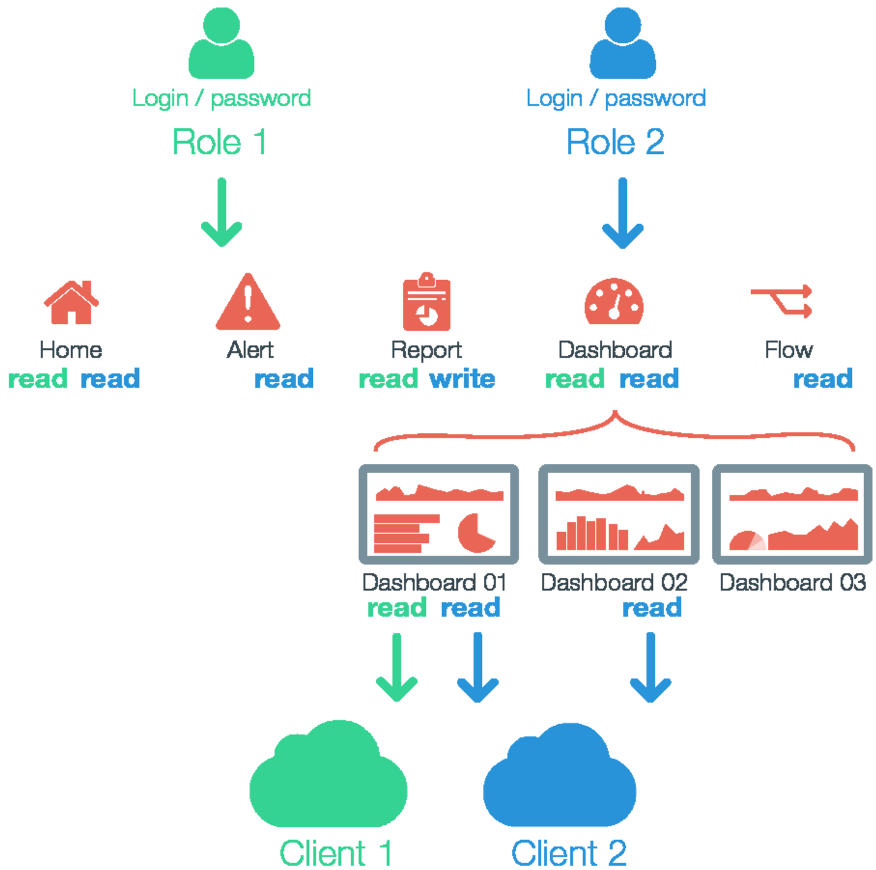
The multi-tenant mode provides the necessary tools for service provider to operate and manage service teams and to easily administrate a massive deployment of application aware features in a single instance. It improves productivity with easy and powerful reporting tools and helps standardize network consulting across manage service teams.



Rights

LiveSP users' rights policy is based on user roles and customer profiles. A specific role gives access to modules (such as home pages, dashboard, etc.). End-customers access resources (such as specific dashboards and reports) based on their customer profiles.

End-users can access the LiveSP portal using logins and passwords or can connect through an existing extranet through SSO authentication.



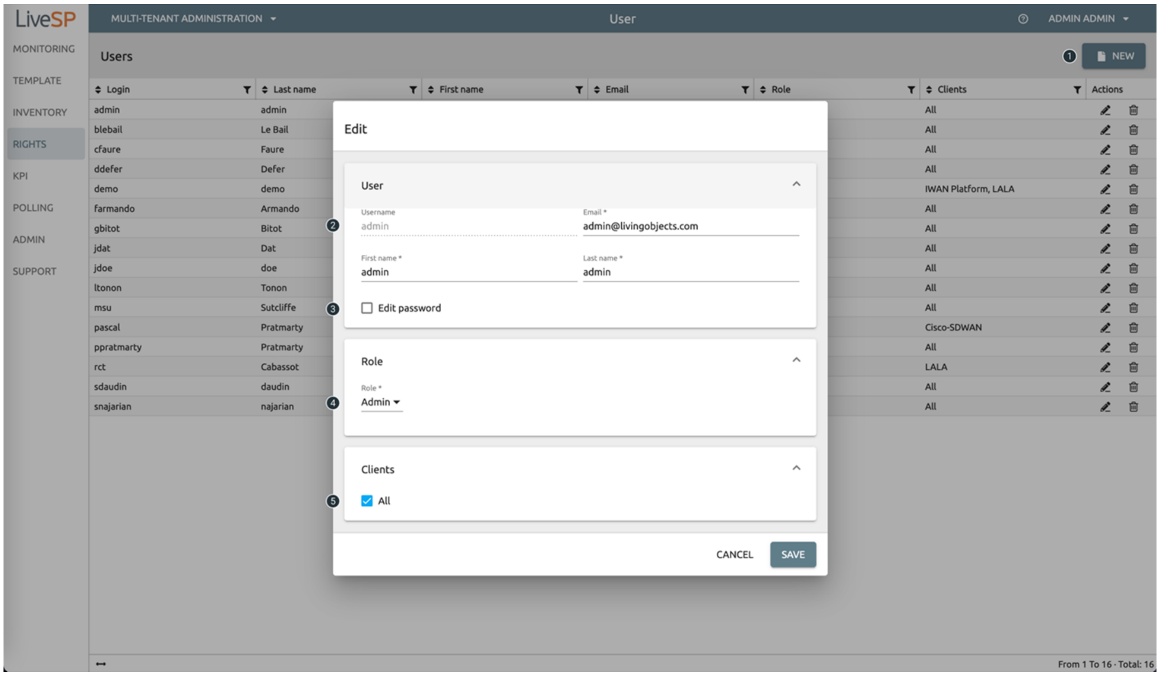
User

Multi-tenant mode / Rights / User

Named users access the application using logins and passwords managed in LiveSP. Mandatory attributes are: login ID, first name, last name, email address and password.

Only users with access to “All” customers can access menus of the multi-tenant mode.

Access the list of users by clicking on “Rights” and “User” in the multi-tenant main menu.



1. **Create** a new user by clicking “New” in the user library.
2. Fill in **credentials** for the user.
3. Fill in a **password** for the user.
4. Grant the appropriate **role**.
5. Choose if the user will be able to access **one or all of customers’ networks**.

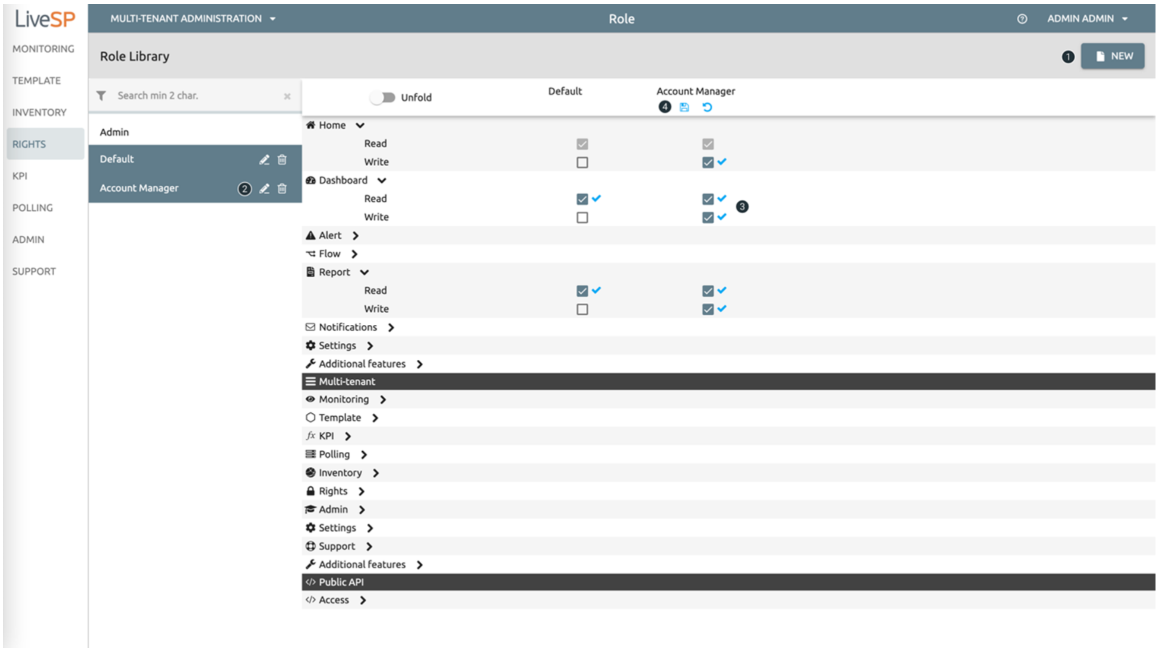
Role

Multi-tenant mode / Rights / Roles

A role is a group of users with identical rights. This module helps administrators create and manage roles, in order to grant customers with appropriate rights. The resulting roles can be compared to highlight differences.

New rights will be applied only once the end-user logs out and back in to LiveSP.

Access the list of roles by clicking on “Rights” and “Roles” in the multi-tenant main menu.



1. **Create** a new profile by clicking “New” in the role library.
2. **Select** one or more profile(s) and compare them.
3. Grant appropriate **rights** to the profiles.
4. **Save** the profile.

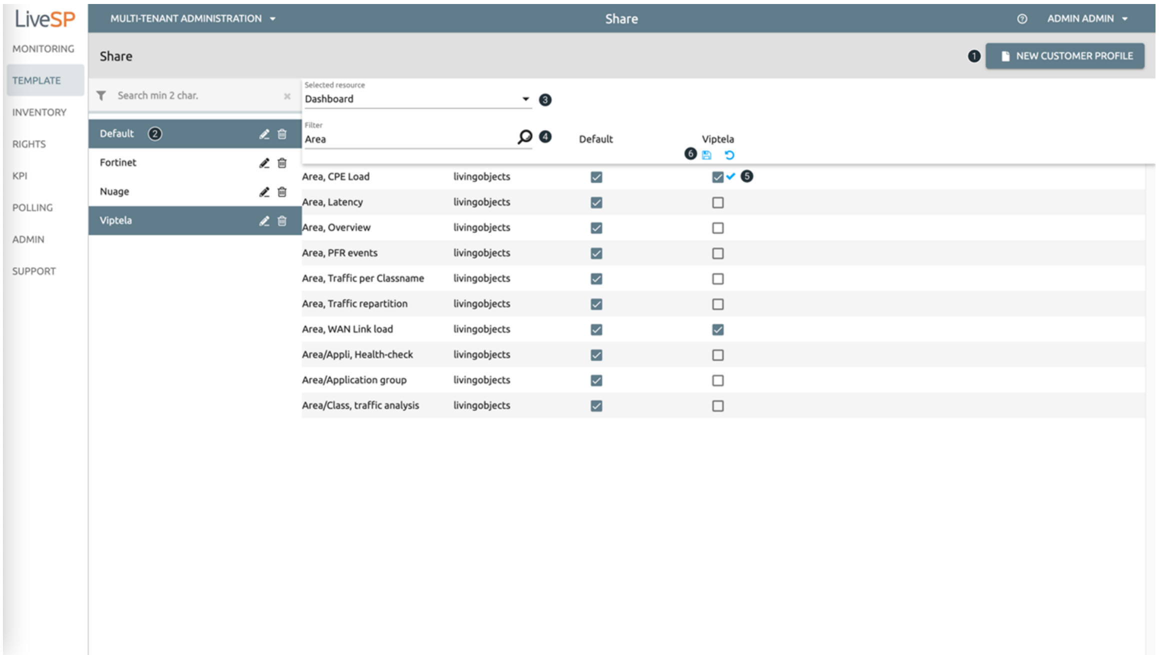
Share resources

Multi-tenant mode / Template / Share

A profile is attached to a customer and is used to limit each customer to a specific list of resources (dashboards, home pages, reports and cockpits). Once templates are created, administrators create profiles according to marketing needs and available metrics in customers’ networks: SNMP based monitoring, application visibility metrics, optimization features such as PFR and WAAS, SD-WAN metrics, etc.

The share module helps administrators to grant resources and compare profiles.

Share a resource by clicking “Template” and “Share” in the multi-tenant main menu.



1. **Create** a new customer profile by clicking “New” in the share menu.
2. **Select** the customer profiles you want to manage.
3. Choose the **resource** type (home pages, dashboards, cockpits, and reports) you want to share.
4. **Filter** the list of resource.
5. **Share** specific resources.
6. **Save** your changes.

Inventory

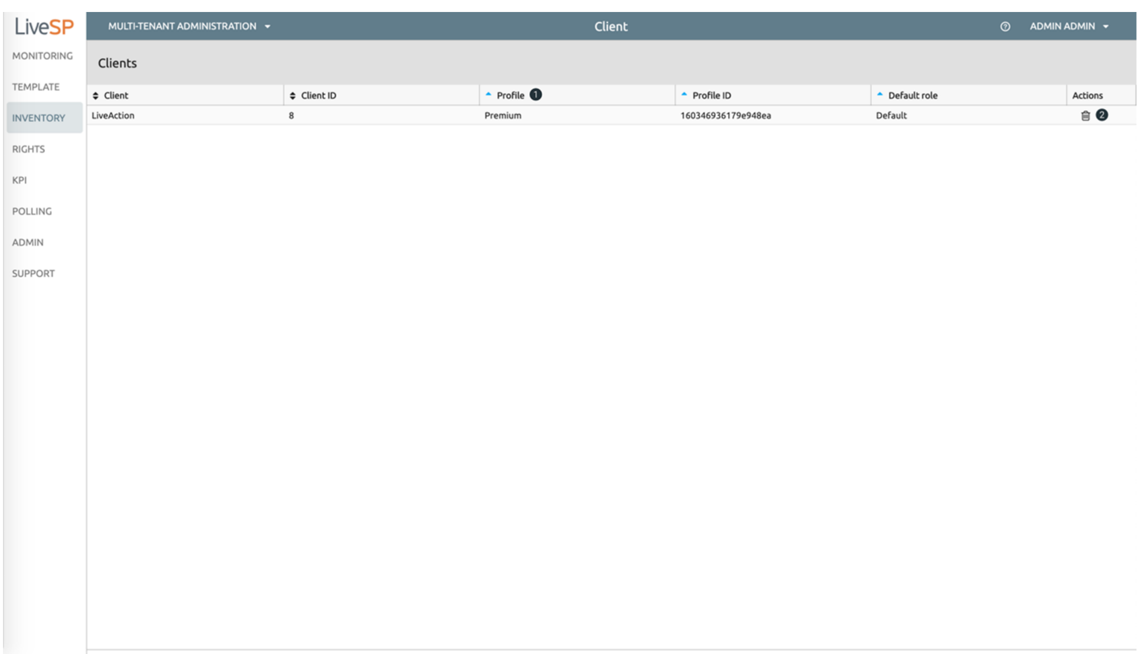
LiveSP discovers most of the information it needs to run. A seed file provides additional information, such as the name of the customer, contracted bandwidth, when it’s not available in the MIB, or site addresses for the status map. The network module helps administrators to enable LiveSP with its tens of thousands of routers, analyze provisioning workflow and troubleshoot router template issues.

Client

Multi-tenant mode / Inventory / Client

Admins can access the full list of customers and check their attached profile for a quick view of their park. From this menu they can also completely delete a client, removing all its inventory, users and resources.

Visualize all your clients by clicking “Inventory” and “Client” in the multi-tenant main menu.



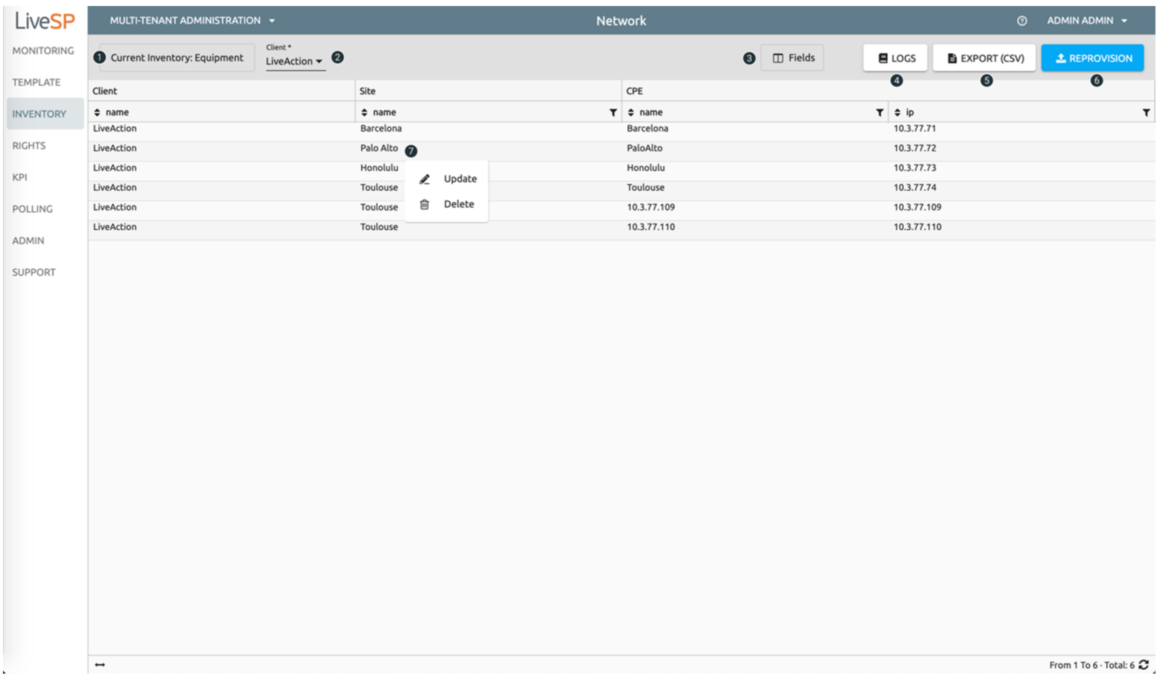
1. **Check** your client profile.
2. **Delete** your client.

Network

Multi-tenant mode / Inventory / Network

Admins can check and download the inventory of customers' networks embedded in the platform. LiveSP checks orphan nodes (CPEs without interface, clients without CPE, etc.) in order to help admins manage consistent provisioning. If needed, administrators can manually change attributes and network element names and delete obsolete nodes.

Visualize all your network elements by clicking "Inventory" and "Network" in the multi-tenant main menu.



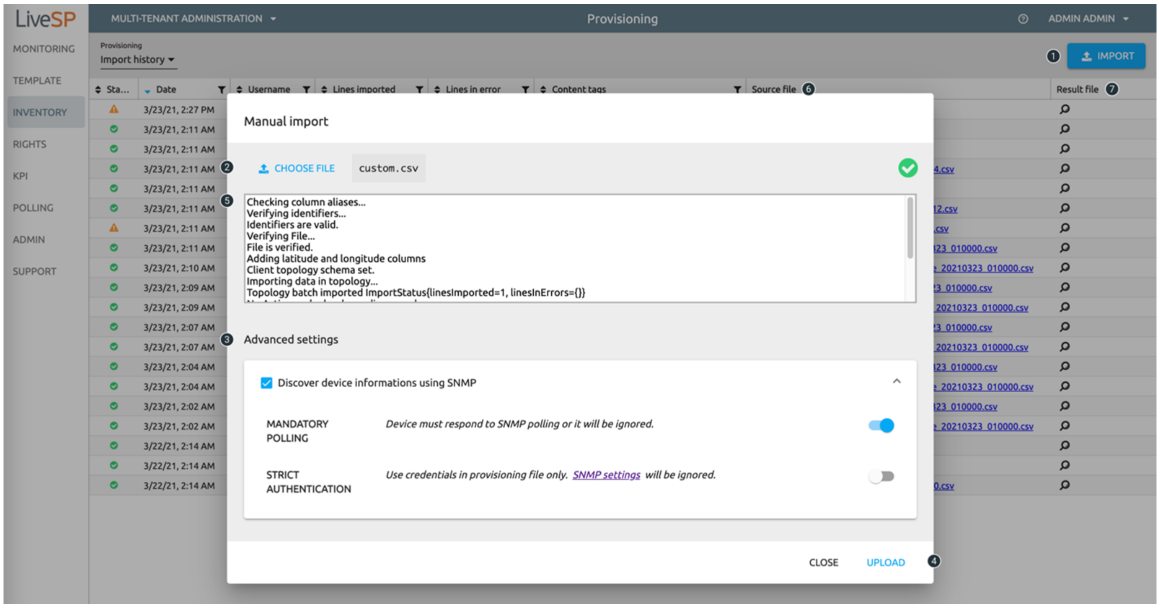
1. **Choose** the inventory you want to display.
2. **Select** the customer to display.
3. **Select** the network elements and attributes to display.
4. Consult the latest action **logs**.
5. **Export** the inventory.
6. **Reprovision** the current inventory.
7. **Edit** or delete the attribute of a network element.

Provisioning

Multi-tenant mode / Inventory / Provisioning

Provisioning is the process of providing LiveSP with all information about the routers to be monitored. It can be done using a seed file, of which a template is available in the Provisioning Guide or through SD-WAN servers. Administrators import the provisioning file or the URL to the SD-WAN server and check status and error logs. They can also download the source file previously imported.

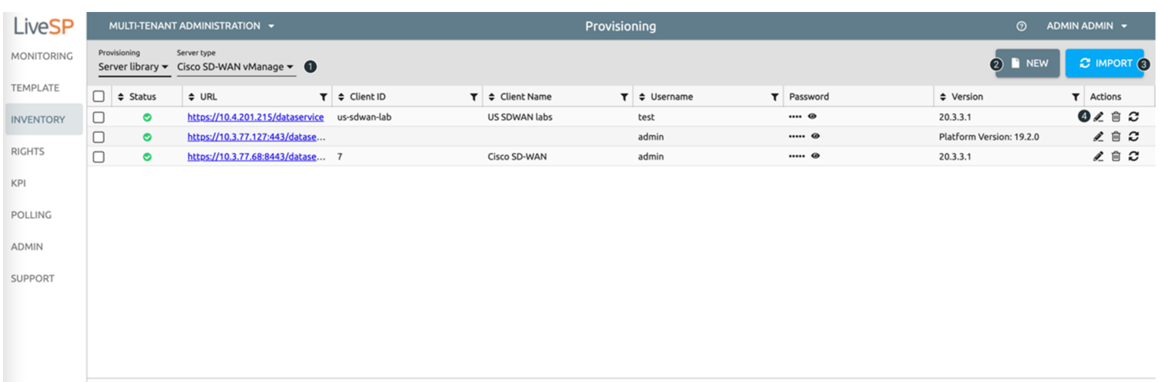
Provision manually your network by clicking "Inventory" and "Provisioning" in the multi-tenant main menu.



1. **Import** a new seed file.
2. **Select** the seed file from your computer.
3. **Configure** the settings of the provisioning.
4. **Launch** the provisioning.
5. Check operation **status** and information.
6. **Download** previous source file for analysis.
7. View import **logs**.

LiveSP is able to connect to SD-WAN managers in order to provision and collect from them. Before the automatic provisioning can start, you must first give LiveSP at least the URL of the manager (vManage, VSD, FortiManager, etc.) and the credentials of an account that LiveSP will use to connect itself to it that has at least read-only rights.

Add an SD-WAN manager by clicking “Inventory,” “Provisioning,” selecting “Sever library” and clicking on “New” in the multi-tenant main menu.



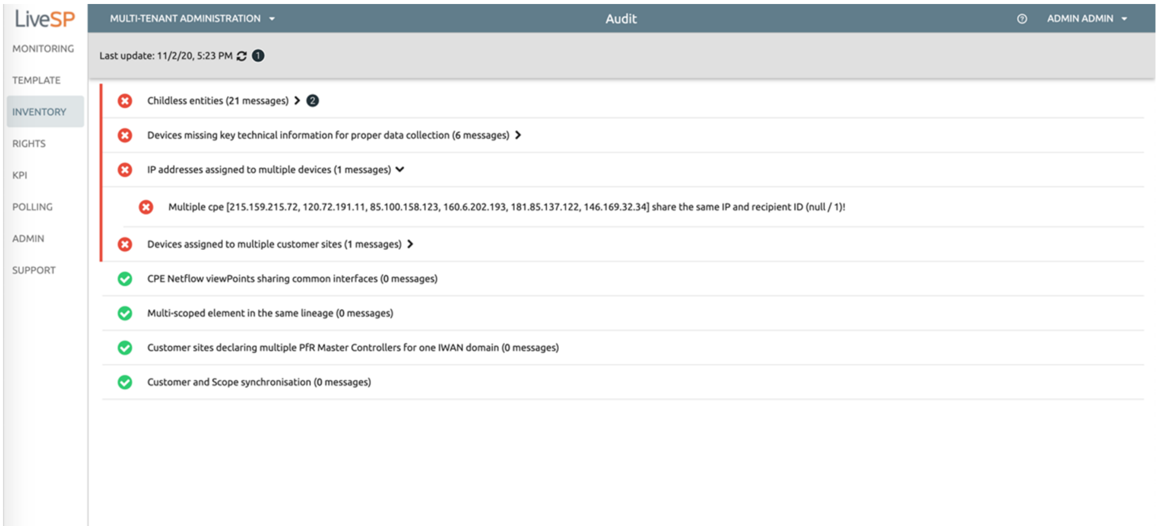
1. Select the **technology**.
2. **Add** a new SD-WAN server.
3. **Provisioning** all the SD-WAN servers.
4. **Edit**, **delete** or **re-provision** the SD-WAN server.

Audit

Multi-tenant mode / Inventory / Audit

This module allows administrators to detect inconsistencies in the provisioning information that was used through several key features (such as different CPEs associated to the same IP address). It allows administrators to check that there are no incoherent data between customers' networks.

Check all your network elements by clicking "Inventory" and "Audit" in the multi-tenant main menu.



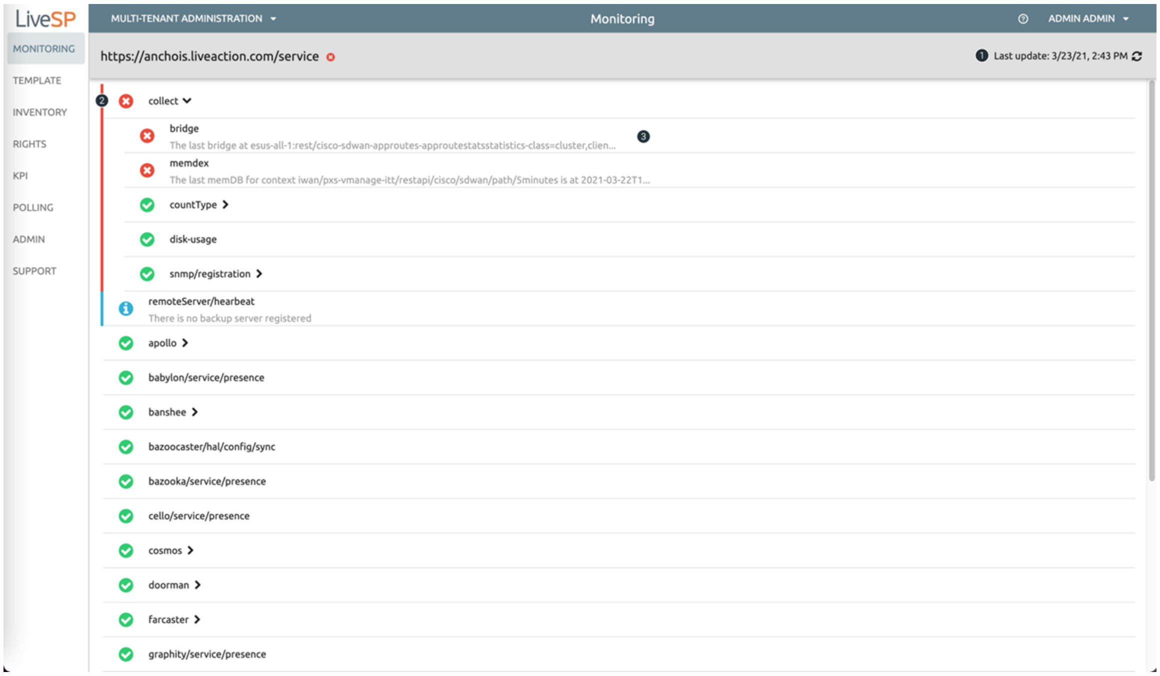
1. **Refresh** menu.
2. Consult **detailed** information of issues a by clicking the arrow.

Monitoring

Multi-tenant mode / Monitoring

Administrators can check the health status of LiveSP through the monitoring menu. It gives a quick display of the state LiveSP's functional elements. The menu automatically refreshes every minute.

Check LiveSP's health status elements by clicking "Monitoring" in the multi-tenant main menu.



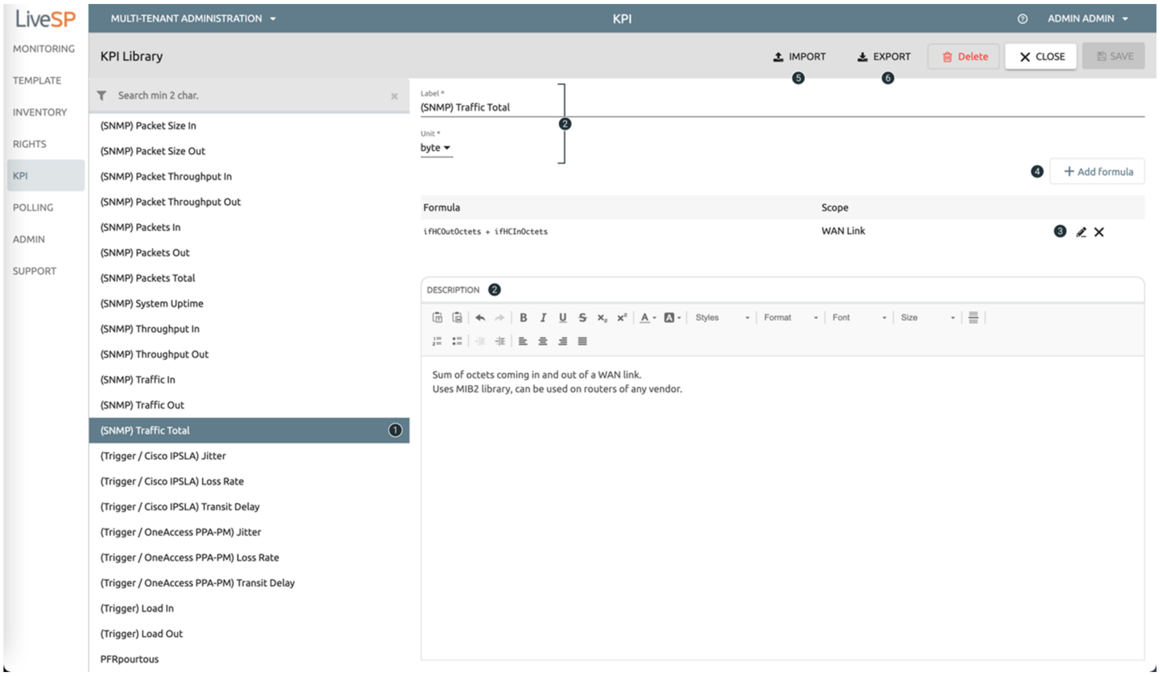
1. **Refresh** menu.
2. **Check** status of elements.
3. Consult **detailed** information by clicking the arrow.

KPI

Multi-tenant mode / KPI

Besides default KPI included in the library, administrators can define custom KPIs they need to assess the network and end-user experience. They can use the KPI menu in multi-tenant mode to build formulas mixing raw counters and operand. New KPIs are immediately available for building new graphs or tables.

Visualize the available KPIs by clicking “KPI” in the multi-tenant main menu.



1. **Create** by clicking “New” or **edit** a KPI from the library by selecting the KPI and clicking “Edit”.
2. **Name**, **describe** and choose the **unit** of your KPI.
3. Edit the **formula** of the KPI.
4. Add a second alterative **formula** to your KPI.
5. **Import** a list of KPIs.
6. **Export** a selection of KPIs.

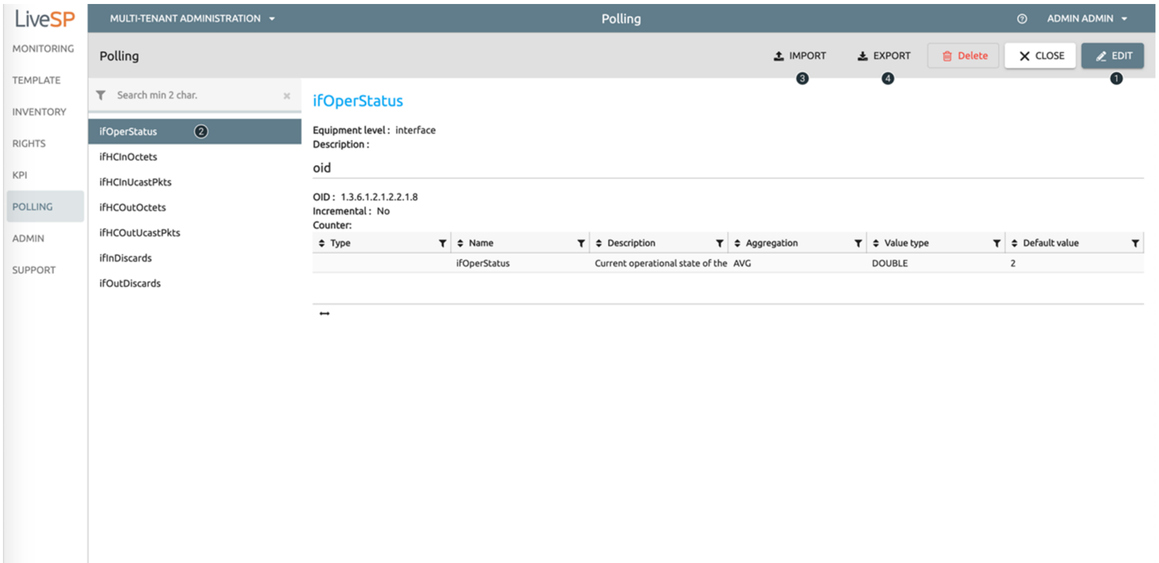
Polling

Library

Multi-tenant mode / Polling

“Polling” is the act of regularly sending a request to get a particular value. Each poller is used to feed LiveSP with counters, the basic building block for KPI formulas. By default, pollers use the SNMP protocol (version 2 and 3).

List the available pollers by clicking “Polling” in the multi-tenant main menu.



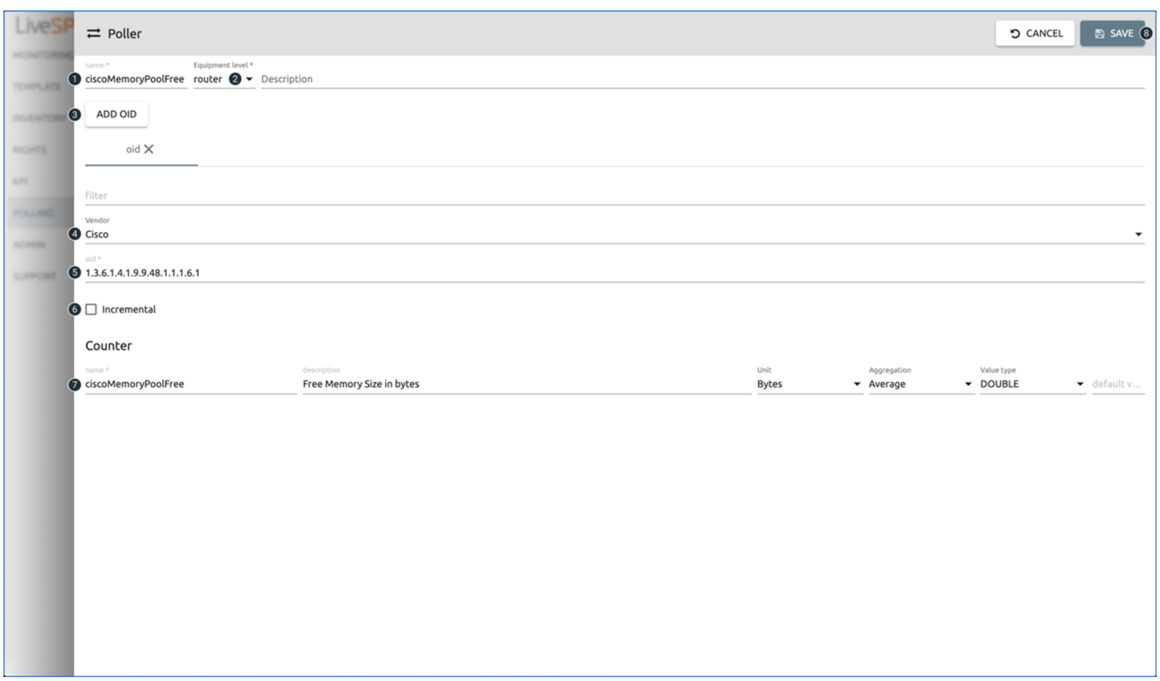
1. **Add** a new poller or **edit** an existing one.
2. **Select** an existing poller.
3. **Import** a list of pollers.
4. **Export** a list of pollers.

Create

Multi-tenant mode / Polling / Edition

Administrators can create pollers to check their own requests. We recommend using the same name for pollers and counters.

Create a poller by clicking "New" in the polling library.



1. **Name** and describe the poller.
2. Choose the **equipment level** (interface or router).

3. Add a **counter**.
4. Select the **vendor** (or leave “None” to poll every CPE with that OID).
5. Check if the poller is incremental (for example traffic) or not.
6. **Name** and describe the counter. Also select its unit, type, default aggregation and default value.
7. **Save** the poller.

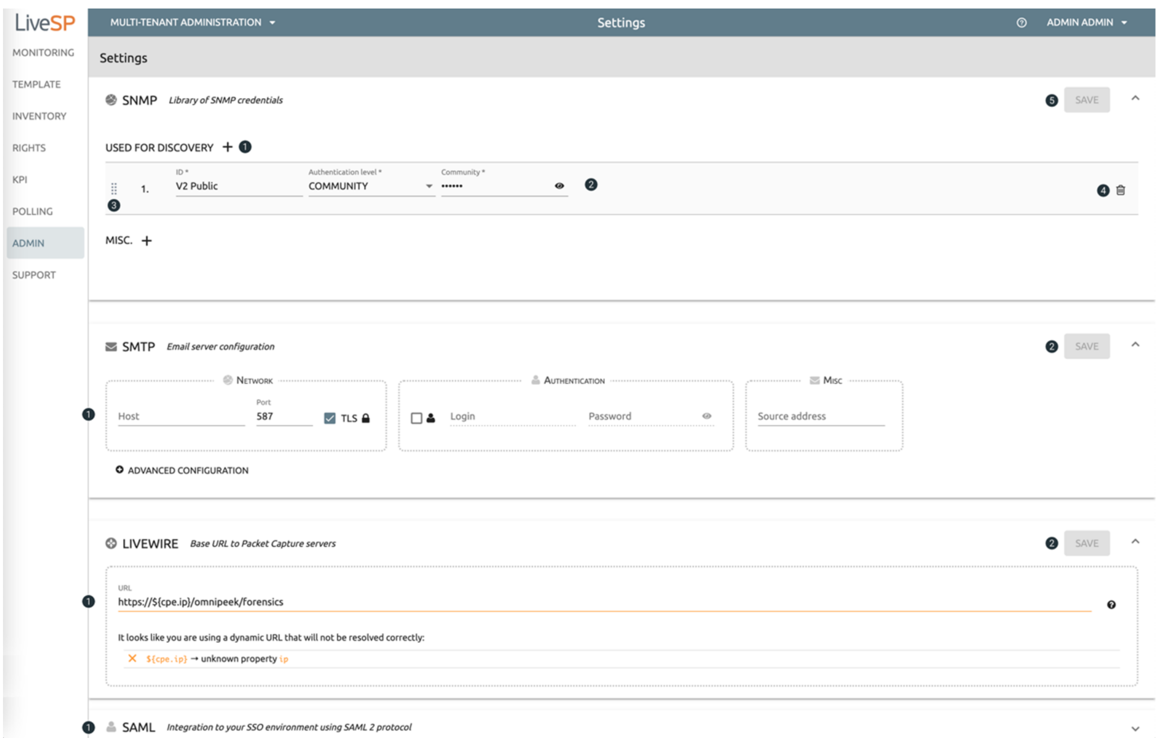
Settings

Multi-tenant mode / Admin / Settings

LiveSP is highly customizable. Administrators can easily manager SNMP authentication, SMTP configuration, LiveWire drilldown, and SAML2 parameters through the web UI.

More information on SNMP authentication can be found in the Provisioning Guide. More information on SAML settings can be found in the HOWTO SSO Authentication Guide.

Change your settings by clicking “Admin” and “Settings” in the multi-tenant main menu.



1. **Add** a new SNMP authentication.
2. **Fill** information on the SNMP authentication. The “ID” will be the one stored in the LiveSP topology database for each CPE.
3. **Order** authentications from more to less favored.
4. **Remove** an obsolete authentication.
5. **Save** and apply your changes.

1. **Edit** your SMTP settings. The LiveSP back server must be able to join your SMTP server for e-mails to work.
2. **Save** and apply your changes.

1. **Edit** your LiveWire base URL. This setting will be used to create the link to the packet capture UI for LiveWire devices.
2. **Save** and apply your changes.

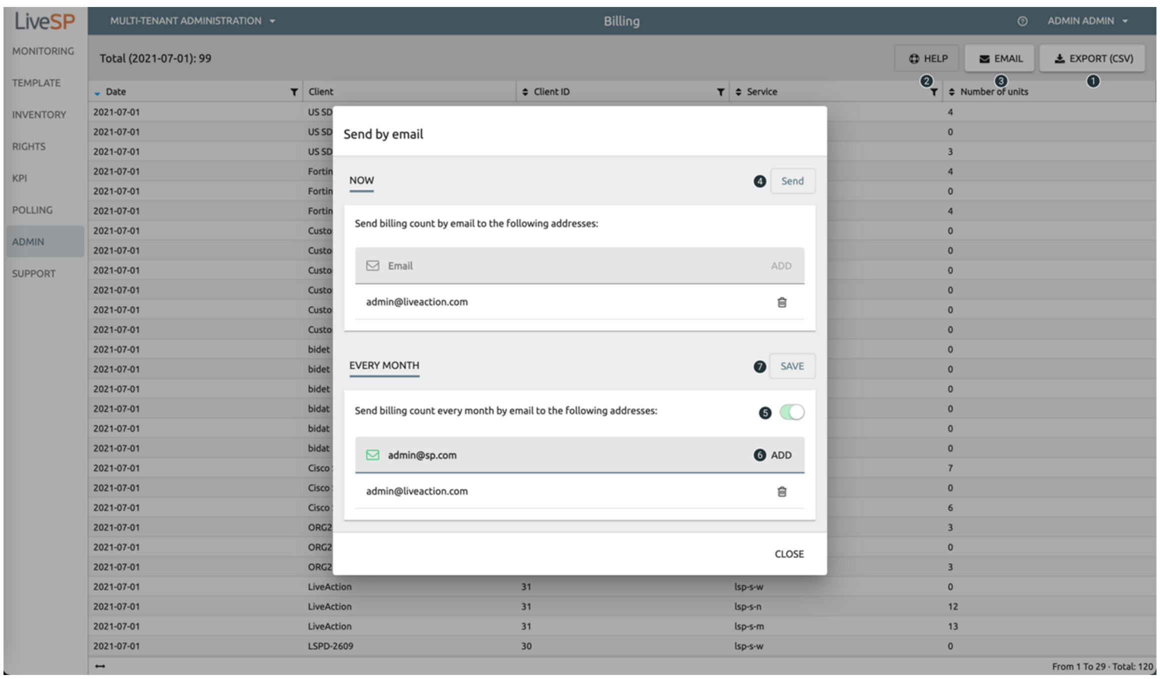
1. **Edit** your SMTP settings.

Billing

Multi-tenant mode / Admin / Billing

LiveSP billing system is a monthly subscription based on your consumption. To evaluate your consumption a count of the number of monitored routers is done every month. You will need to share an export of this count with your LiveAction's account manager every month.

Consult your billing count by clicking "Admin" and "Billing" in the multi-tenant main menu.



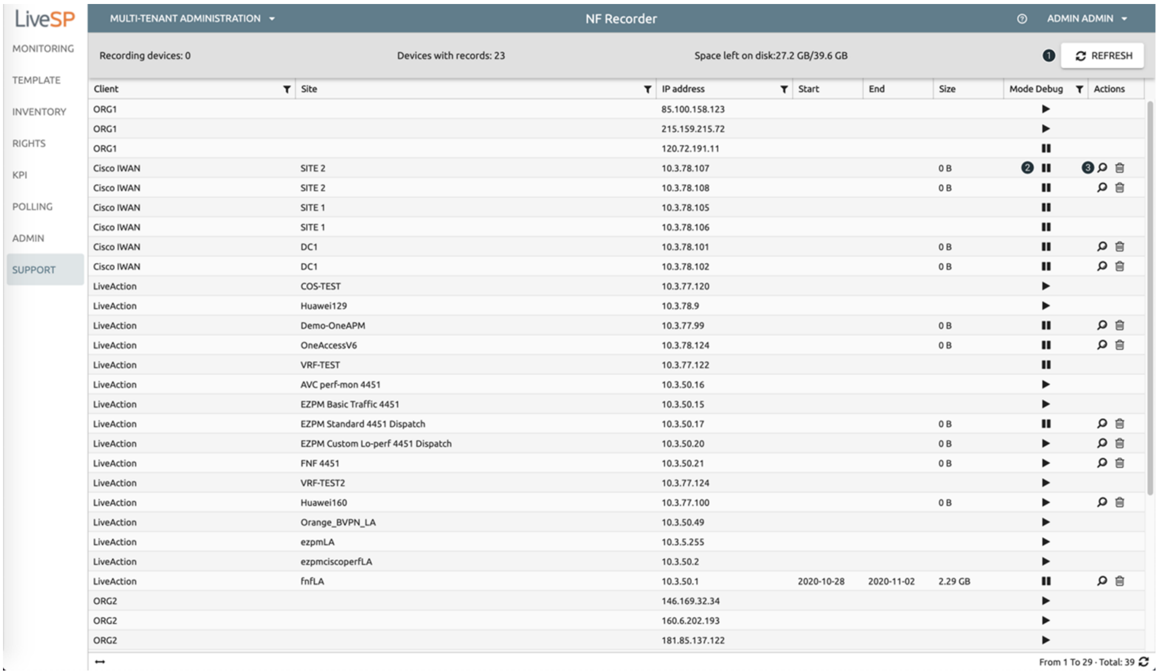
1. **Export** your billing count to a CSV format.
2. **Display** the help of how your billing count is performed by LiveSP.
3. Open the **e-mail** pop-up.
4. **Send** the CSV export of your current billing by e-mail.
5. **Enable** the application to send the billing by e-mail at the beginning of each month.
6. **Add** an e-mail recipient of the monthly e-mail.
7. **Save** your configuration.

Netflow recorder

Multi-tenant mode / Support / NF Recorder

LiveSP can store raw flow coming from CPEs. The files are stored in CSV file format and are available for further analysis. Administrators can explore Netflow templates, CPE application dictionary and raw counters coming from the CPEs. It helps them to validate CPE configuration or troubleshoot issues when data is not consistent when displayed in the LiveSP user interface.

Record network elements' activity by clicking "Support" and "NF Recorder" in the multi-tenant main menu.



1. **Refresh** menu.
2. **Start** or **pause** recording.
3. **Open** a CPE records' repository to download record files.