



ZABBIX DASHBOARDS: A SINGLE PANE OF GLASS FOR MSP ENVIRONMENTS



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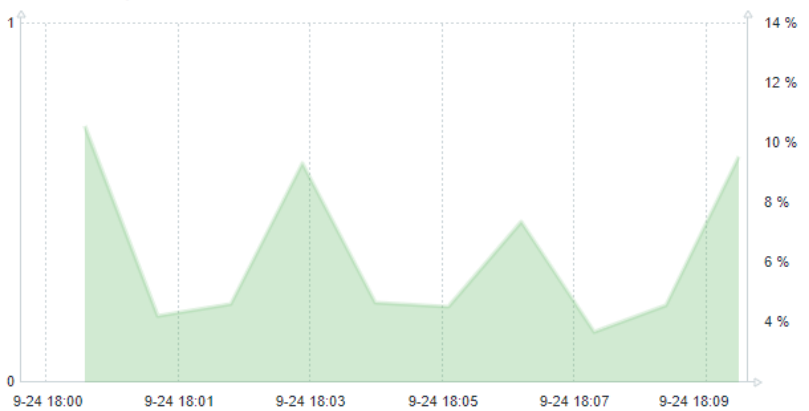
Technical Support Engineer

01

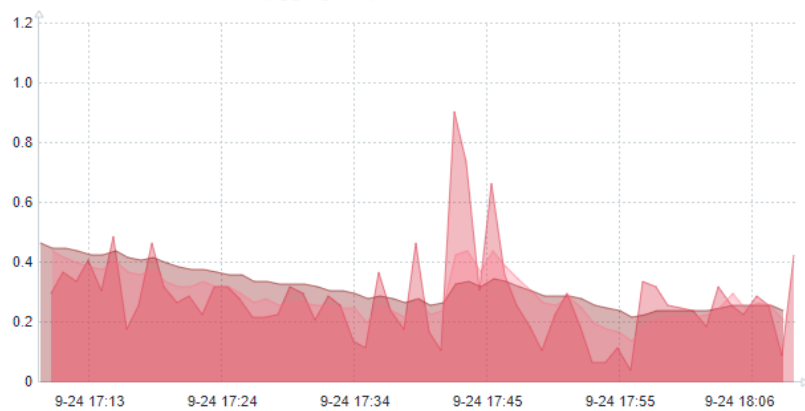
DASHBOARD FUNCTIONALITY IN ZABBIX



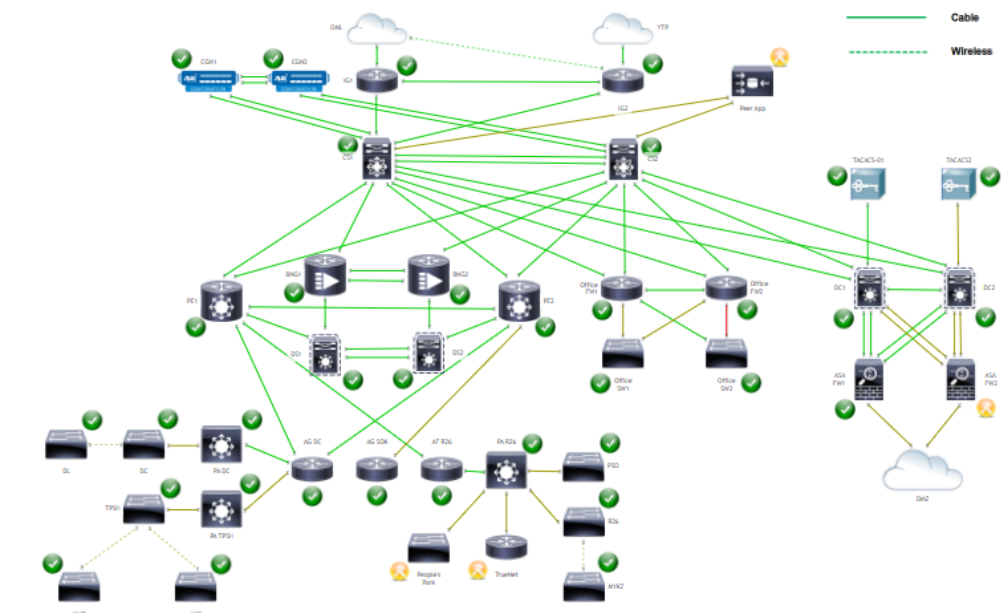
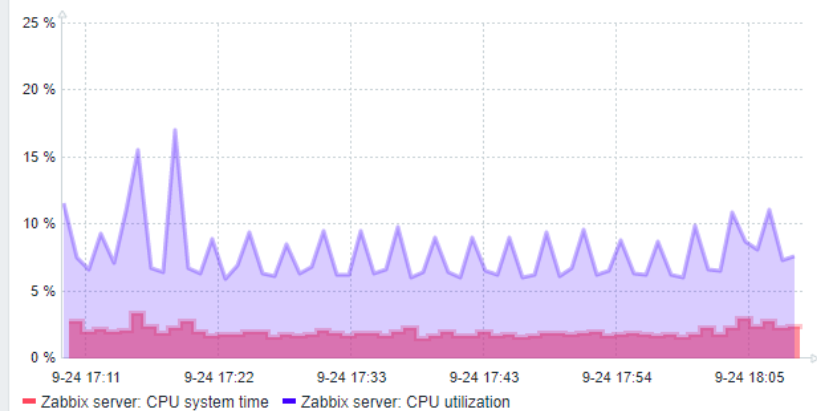
Utilization of processes



CPU Load on Zabbix Server (aggregated)

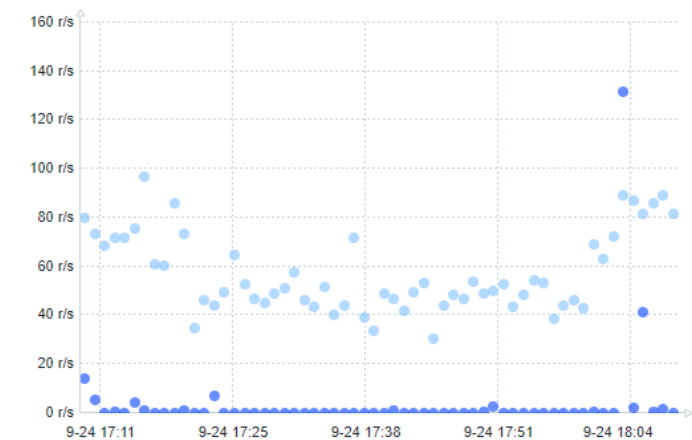
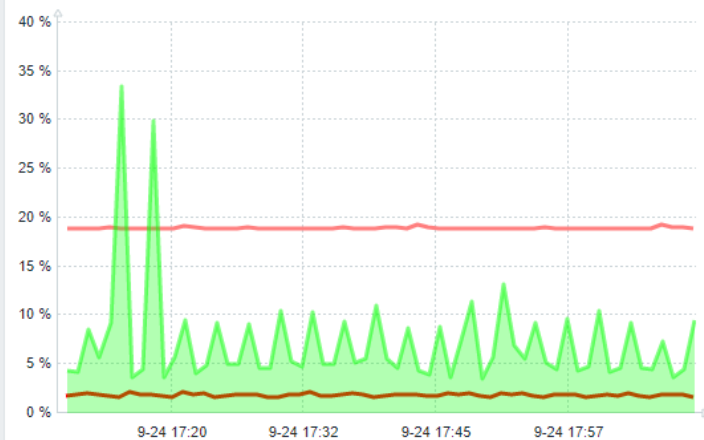


CPU load

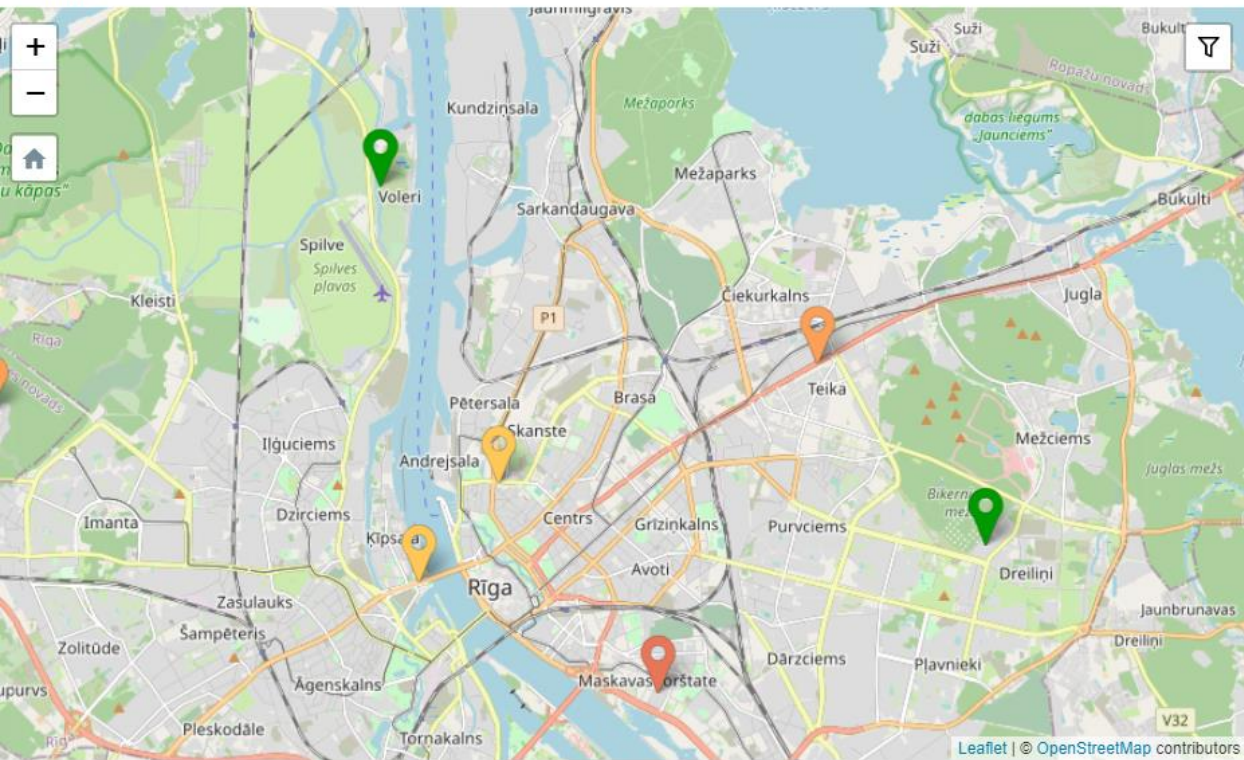


Problems by severity

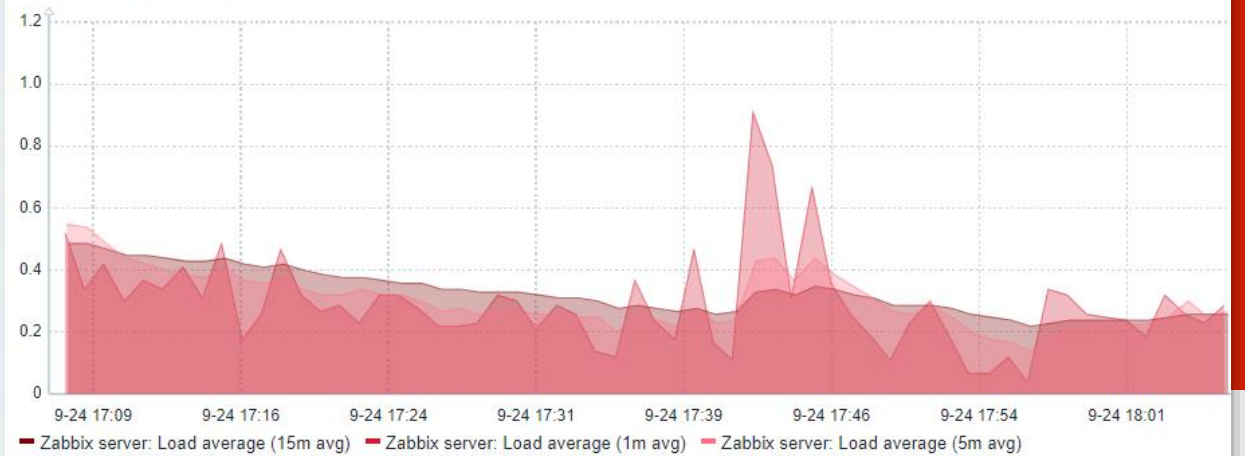
Host group ▲	Disaster	High	Average	Warning	Information	Not classified
New York Data center			19	1		
Oracle servers		1		4		
SNMP devices			17			



Geomap



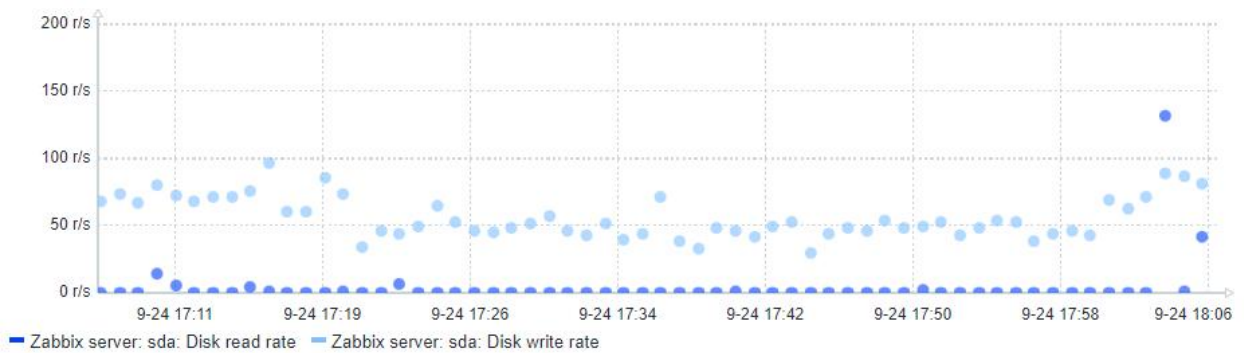
CPU Load on Zabbix Server



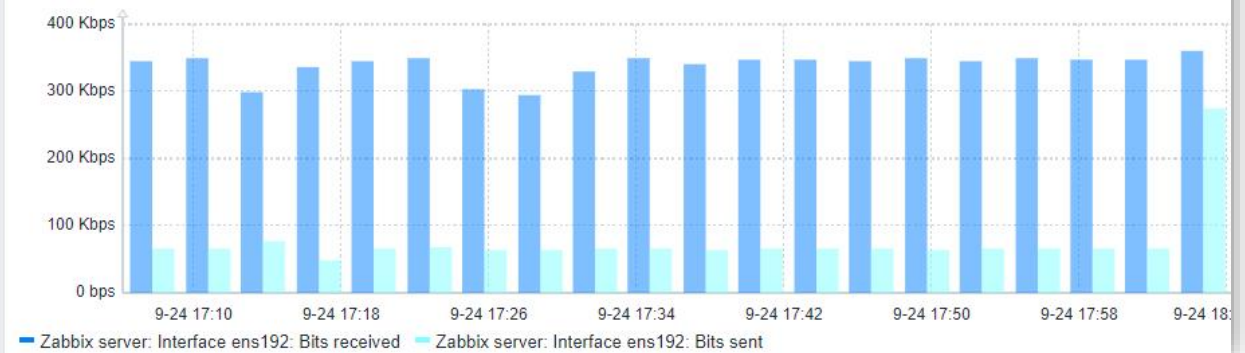
Problems by severity

Host group	Disaster	High	Average	Warning	Information	Not classified
New York Data center			19	1		
Oracle servers		1		4		
SNMP devices			17			

Disk reads / writes



Zabbix Server Network interfaces



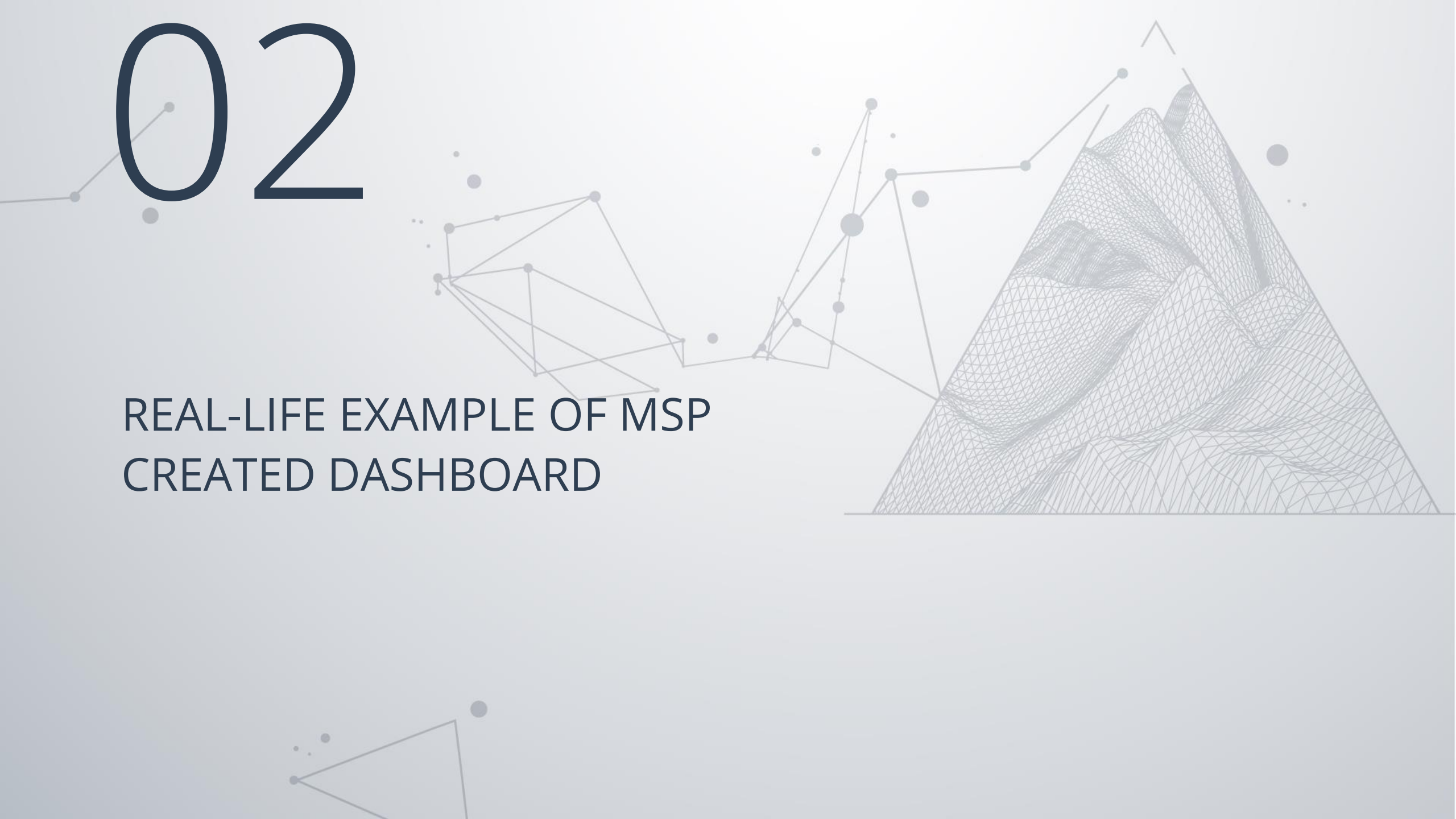
NEW ADDITIONS IN ZABBIX 6.0 AND 6.2

- ✓ Top Hosts widget
- ✓ Item Value widget
- ✓ Geomaps widget
- ✓ Digital clock widget
- ✓ New features for graph widget
- ✓ Creating dashboards using API



02

REAL-LIFE EXAMPLE OF MSP
CREATED DASHBOARD



WHAT IS MSP?

- ✓ MSP – Managed Service Provider
- ✓ Handle monitoring of customer devices
- ✓ Manages IT infrastructure
- ✓ Provides various other services

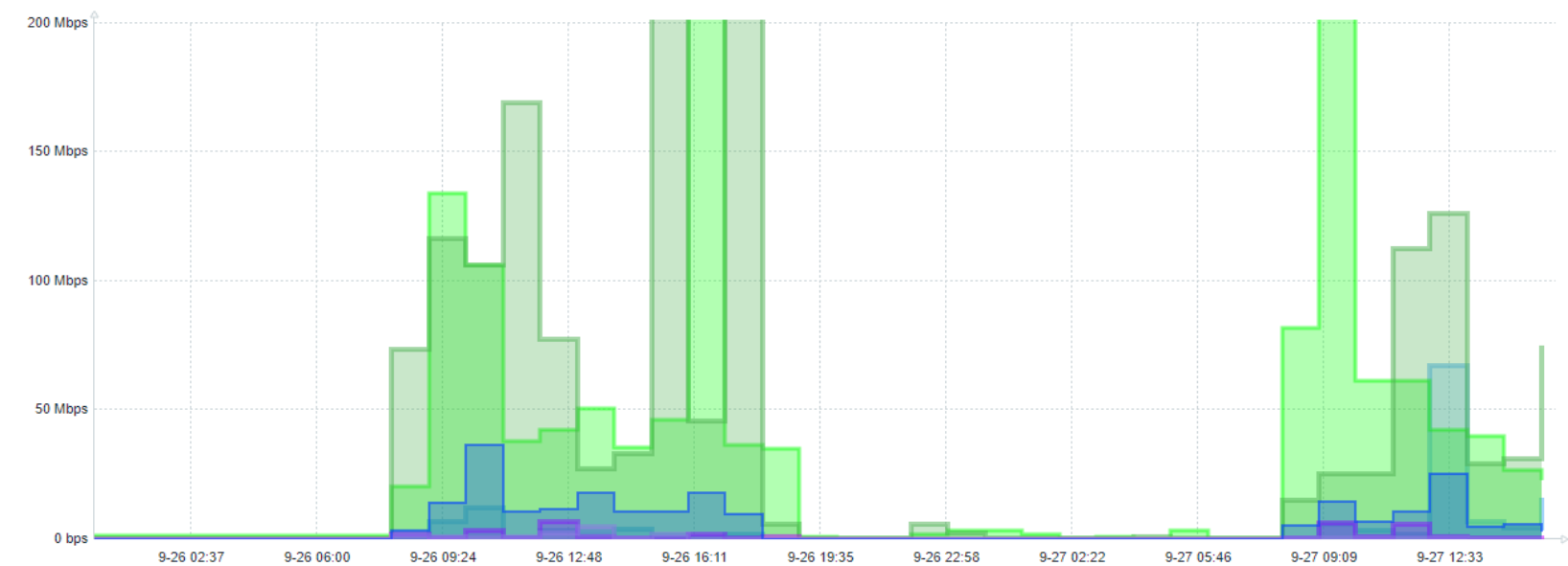


SETUP AND REQUIREMENTS

- ✓ Internet service provider (ISP)
- ✓ 10+ customers
- ✓ Monthly bandwidth utilization and individual top N consumers for each customer
- ✓ SLA compliance
- ✓ Overview of all customers



Bandwidth used: Customer A vs Customer B vs Customer C



Customer A current band...

2022-09-27 15:22:46
24.78 ↓ Kbps

Customer A avaiability

2022-09-27 15:22:46
Up (1) ↑

Customer A speed

2022-09-27 15:15:46
1 Gbps

Customer B current band...

2022-09-27 15:22:46
499.01 ↑ Kbps

Customer B avaiability

2022-09-27 15:22:46
Up (1) ↑

Customer B speed

2022-09-27 15:15:46
1 Gbps

Customer C current band...

2022-09-27 15:22:46
499.01 ↑ Kbps

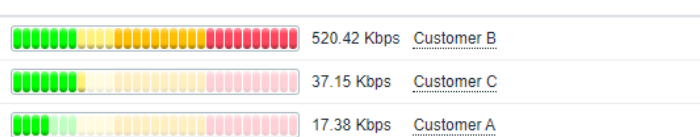
Customer C availability

2022-09-27 15:22:46
Up (1) ↑

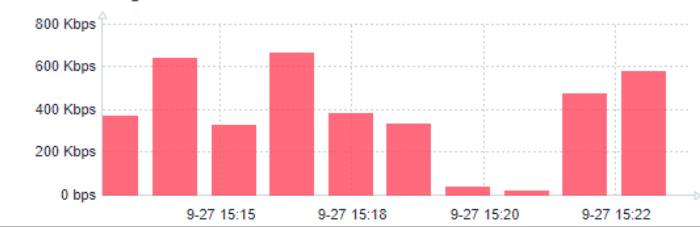
Customer C speed

2022-09-27 15:15:46
1 Gbps

Top bandwidth consumers



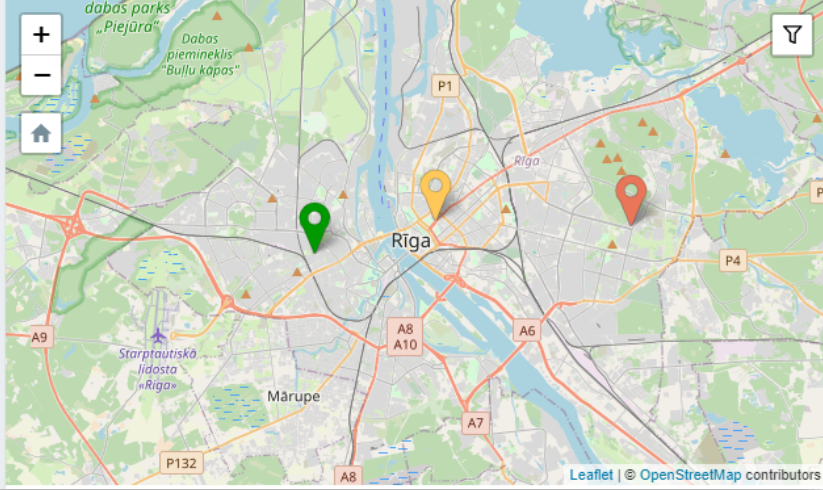
Bandwidth usage for all customers



Local

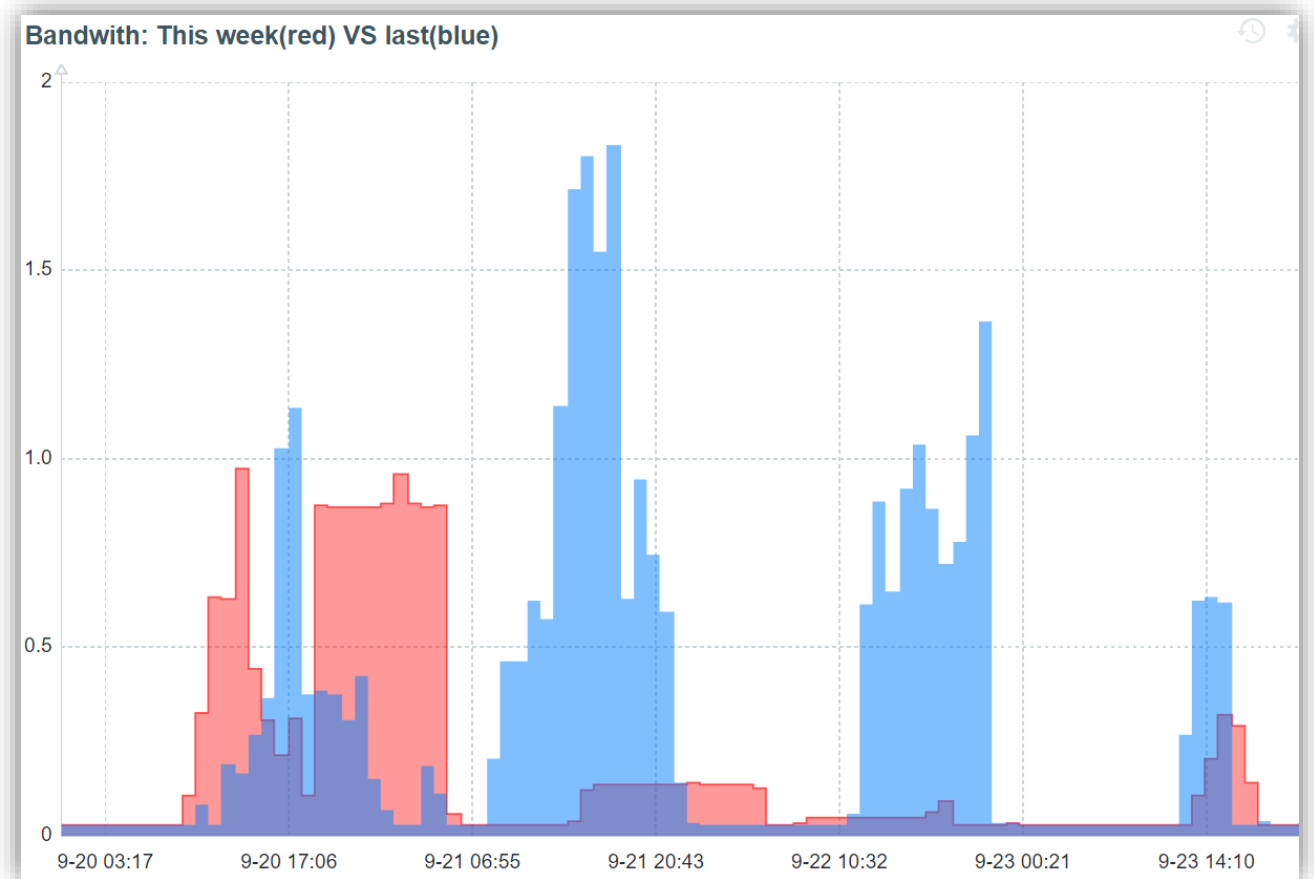
2022-09-27
15:24:20
Riga

ISP status



GRAPH WIDGET

- ✓ Aggregation
- ✓ Comparison
- ✓ Custom time period
- ✓ Multiple data sets



CREATING GRAPH WIDGET USING WILDCARDS (*)

Edit widget

Data set 1 Displaying options Time period Axes Legend Problems Overrides 3

Data set

Customer* ×

host pattern

Select

Interface* ×

item pattern

Select

×

Draw

Line

Points

Staircase

Bar

Missing data

None

Connected

Treat as 0

Last known

Stacked

Y-axis

Left

Right

Width

2

Time shift

none

Point size

3

Aggregation function

sum

▼

Transparency

4

Aggregation interval

1h

Fill

3

Aggregate

Each item

Data set

Approximation

avg

▼

+ Add new data set

▼

Apply

Cancel

DIFFERENT DATA REPRESENTATION - OVERRIDES

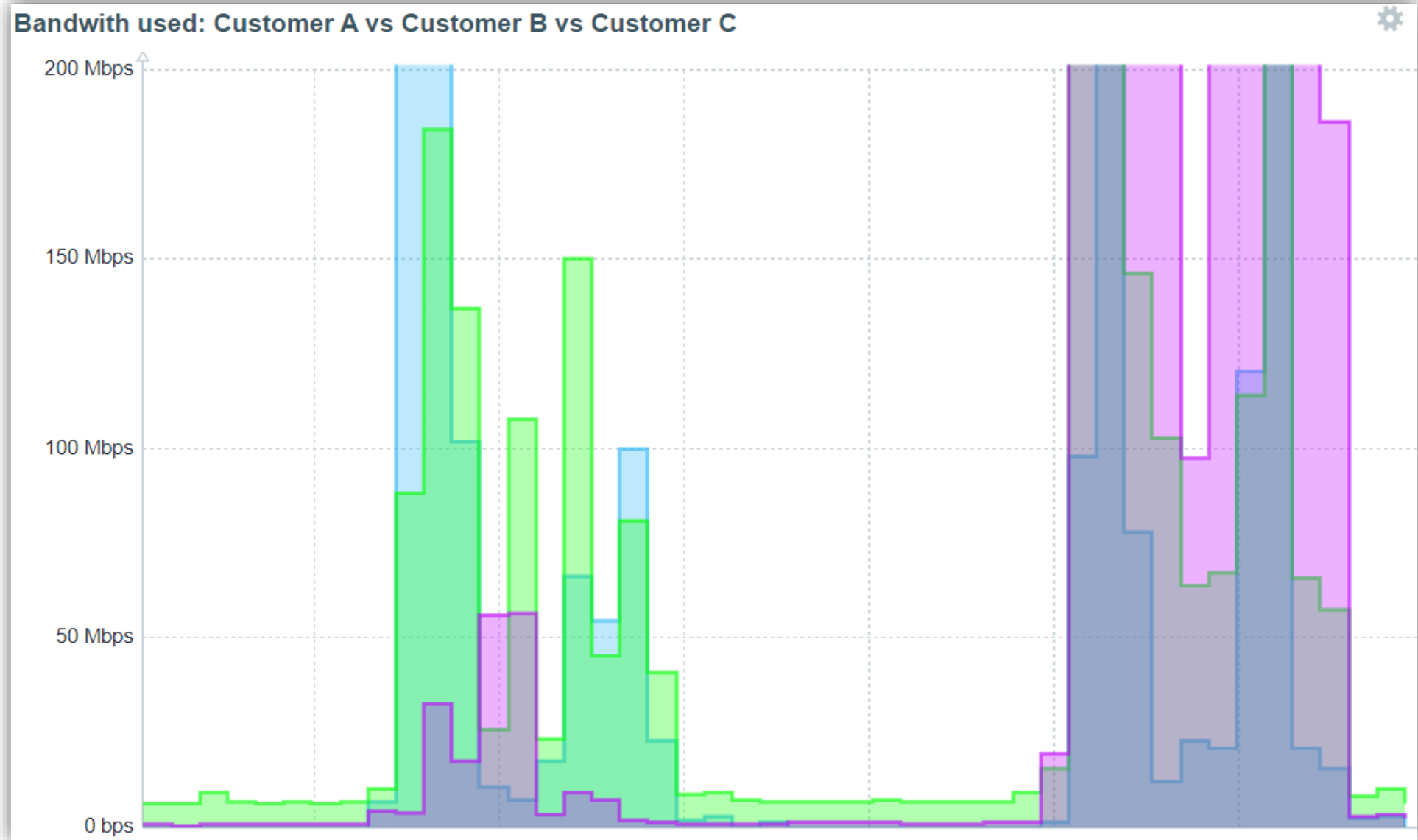
Data set 1 Displaying options Time period ● Axes Legend Problems Overrides 3

Overrides

Customer B × host pattern ■ × +	Select	interface* × item pattern Select
Customer C × host pattern ■ × +	Select	interface* × item pattern Select
Customer A × host pattern ■ × +	Select	Interface* × item pattern Select

+ Add new override

RESULT – AUTOMATICALLY CREATED GRAPH



SETTING UP GRAPH WIDGET AGGREGATIONS

CURRENT DATA

Y-axis	☒ Left	☐ Right
Time shift	none	
Aggregation function	sum ▼	
Aggregation interval	1h	
Aggregate	☒ Each item ☐ Data set	
Approximation	avg ▼	

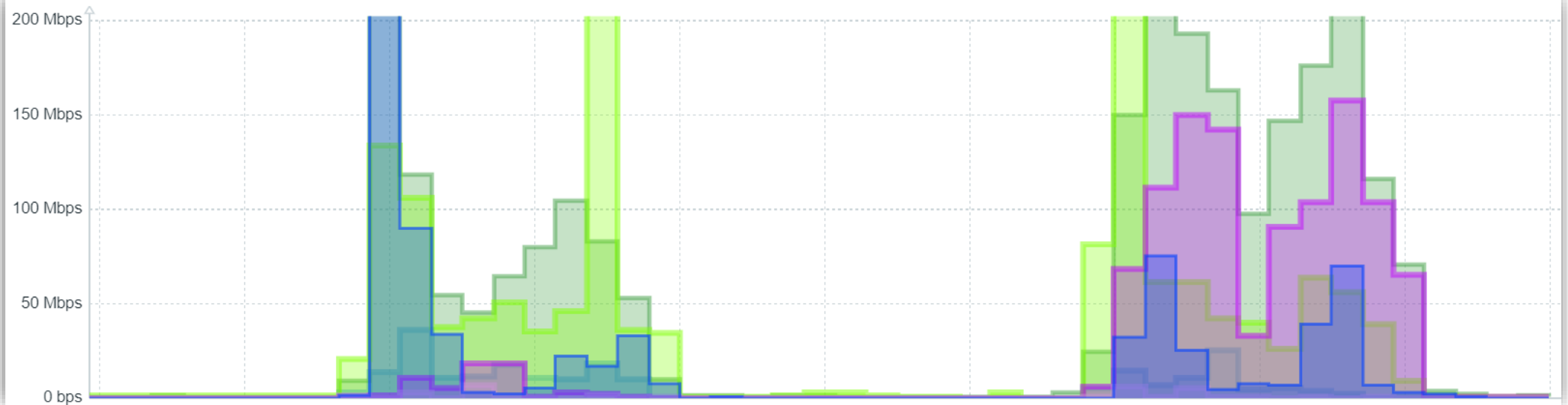
HISTORICAL DATA

Y-axis	☒ Left	☐ Right
Time shift	-1w	
Aggregation function	sum ▼	
Aggregation interval	1h	
Aggregate	☒ Each item ☐ Data set	
Approximation	avg ▼	

MULTIPLE DATA SET REPRESENTATION

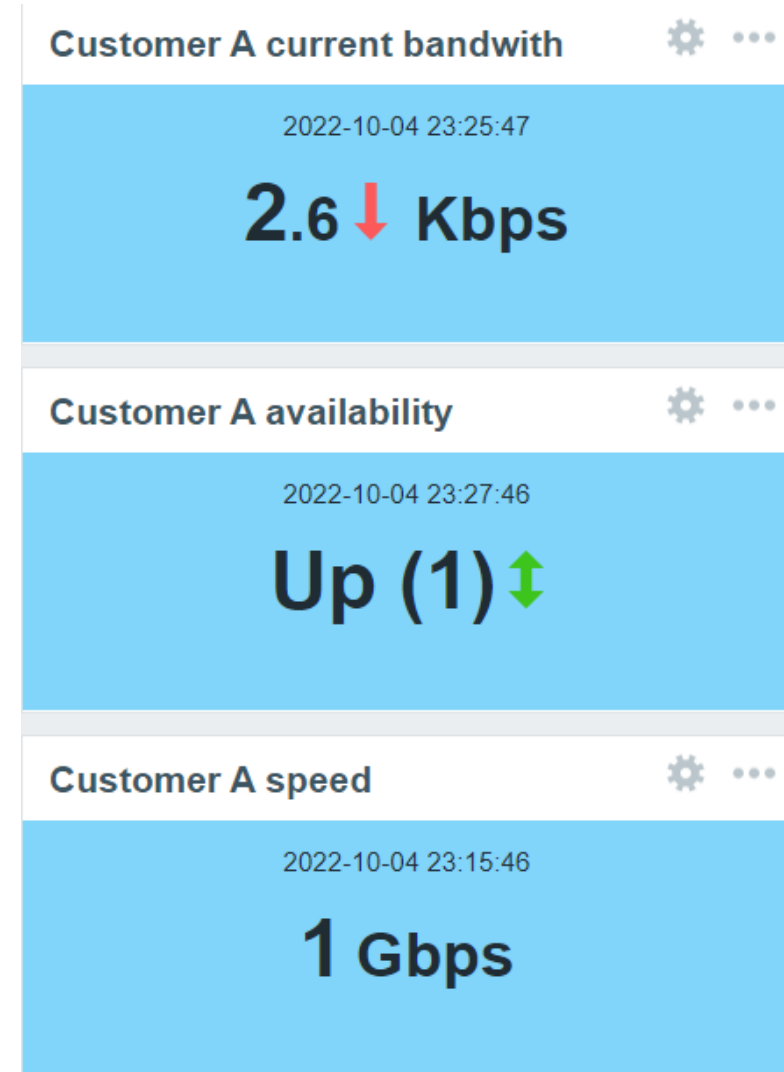
Data set 6 Displaying options Time period ● Axes Legend Problems Overrides

Data set	▼	■	Customer A x	Select	Interface* x	Select
	▼	■	Customer A x	Select	Interface* x	Select
	▼	■	Customer B x	Select	Interface* x	Select
	▼	■	Customer B x	Select	Interface* x	Select
	▼	■	Customer C x	Select	Interface* x	Select
	▼	■	Customer C x	Select	Interface* x	Select



ITEM VALUE WIDGET POSSIBILITIES

- ✓ See real-time information
- ✓ Acknowledge status
- ✓ Display important information



CONFIGURING ITEM VALUE WIDGET

?

×

Edit widget

Type

Item value

Show header

☒

Name

Customer A. current bandwidth

Refresh interval

Default (1 minute)

* Item

Customer A: All customer bandwidth (total) ×

Select

* Show

☐ Description

☒ Value

☒ Time

☒ Change indicator

Advanced configuration

☒

Value

Decimal places

2

Size

35

%

Horizontal position

Left

Center

Right

Size

45

%

Vertical position

Top

Middle

Bottom

Bold

☒

Color

D

☒ Units

Position

After value

Size

35

%

Bold

☒

Color

D

Time

Horizontal position

Left

Center

Right

Size

15

%

Vertical position

Top

Middle

Bottom

Bold

☐

Color

D

Change indicator

↑ D

↓ D

↕ D

Background color

Dynamic item

☒

Apply

Cancel

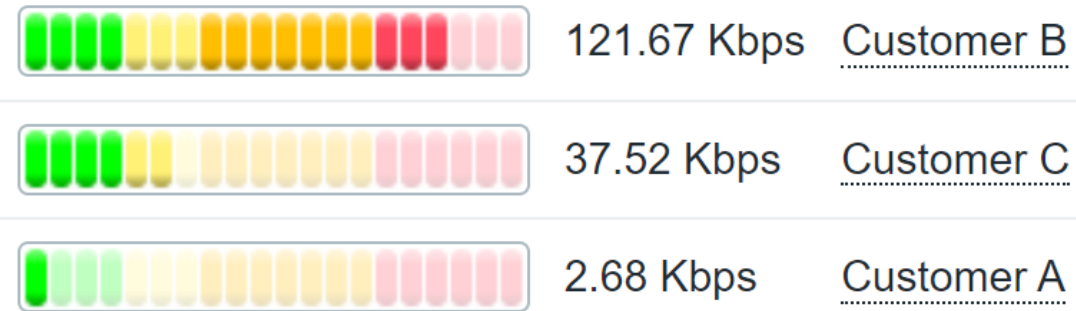
ITEM VALUE WIDGET

Customer A current bandwidth 2022-10-05 00:07:46 2.63 Kbps	Customer B current bandwidth 2022-10-05 00:07:46 136.75 ↑ Kbps	Customer C current bandwidth 2022-10-05 00:07:46 136.75 ↑ Kbps
Customer A availability 2022-10-05 00:08:46 Up (1) ↑↓	Customer B availability 2022-10-05 00:08:46 Up (1) ↑↓	Customer C availability 2022-10-05 00:08:46 Up (1) ↑↓
Customer A speed 2022-10-04 23:15:46 1 Gbps	Customer B speed 2022-10-04 23:15:46 1 Gbps	Customer C speed 2022-10-04 23:15:46 1 Gbps

TOP HOSTS WIDGET

- ✓ Show top consumers
- ✓ Display thresholds
- ✓ Visualize potential issues

Top bandwidth consumers



CONFIGURING TOP HOSTS WIDGET

WIDGET OPTIONS

Edit widget

Type: Top hosts Show header ☒

Name: Top bandwidth consumers

Refresh interval: Default (1 minute)

Host groups: MSP ISP customers Select
type here to search

Hosts: type here to search Select

Host tags: And/Or Or

gravity Contains important Remove

[Add](#)

* Columns

Name	Data	Action
Interface	Interface	Edit Remove
Host name	Host name	Edit Remove

[Add](#)

Order: Top N Bottom N

* Order column: Interface

* Host count: 10

COLUMN OPTIONS

Name:

Data: Item value

* Item: Interface Select

Time shift: none

Aggregation function: last

* Aggregation interval: 1h

Display: As is Bar Indicators

History data: Auto History Trends

Base color:

Min: 0

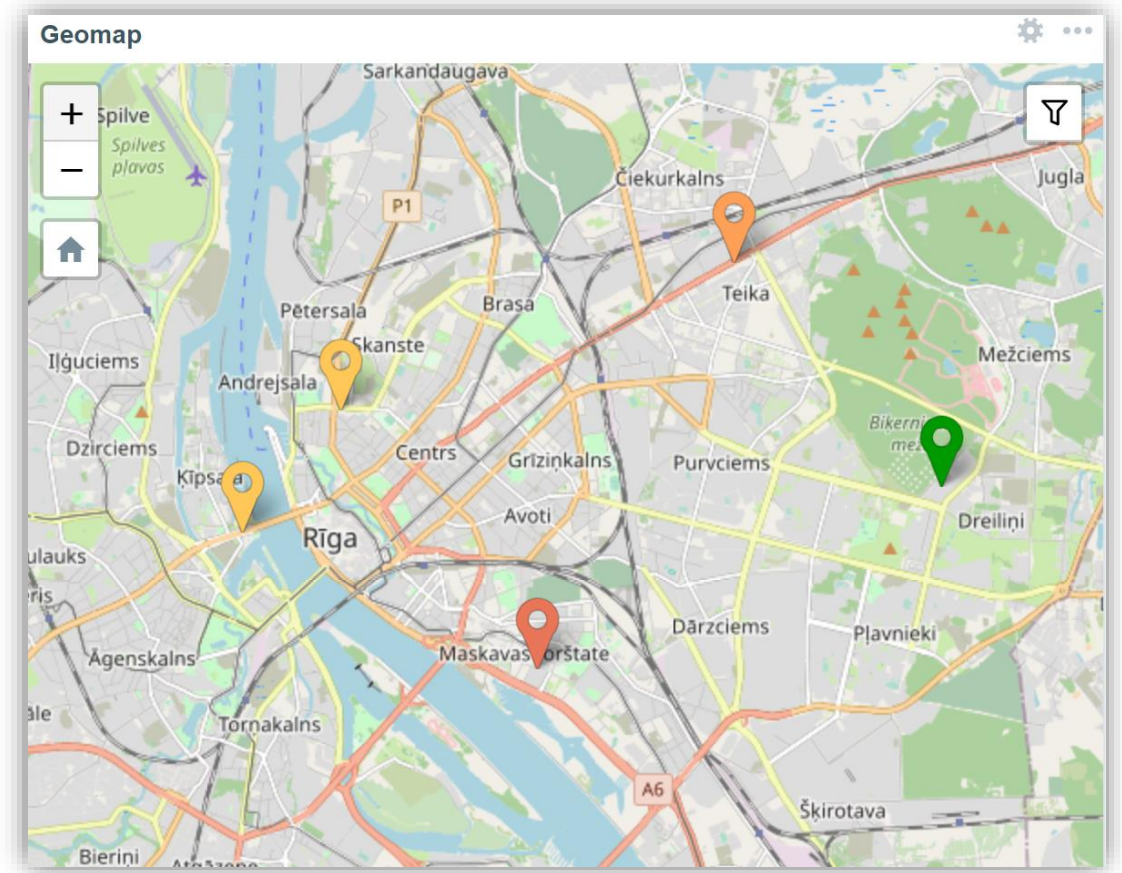
Max: 150000

Thresholds

Threshold	Action
0	Remove
30000	Remove
50000	Remove
100000	Remove

GEOMAP YOUR INFRASTRUCTURE

- ✓ See real location
- ✓ Observe the status of customers
- ✓ Easily view problems



CREATING A GEO MAP

- ✓ Inventory fields are used
- ✓ Can use hosts/host groups and/or tags
- ✓ Can set the initial view
- ✓ Can use different map vendors

Location latitude	56.953063
Location longitude	24.220248
Host groups	MSP ISP customers X type here to search
Hosts	type here to search
Tags	And/Or Or tag Contains Add
Initial view ?	56.948852,24.107907,11

DIGITAL CLOCK WIDGET

2022-09-26

09:26

Riga

CALCULATED ITEMS

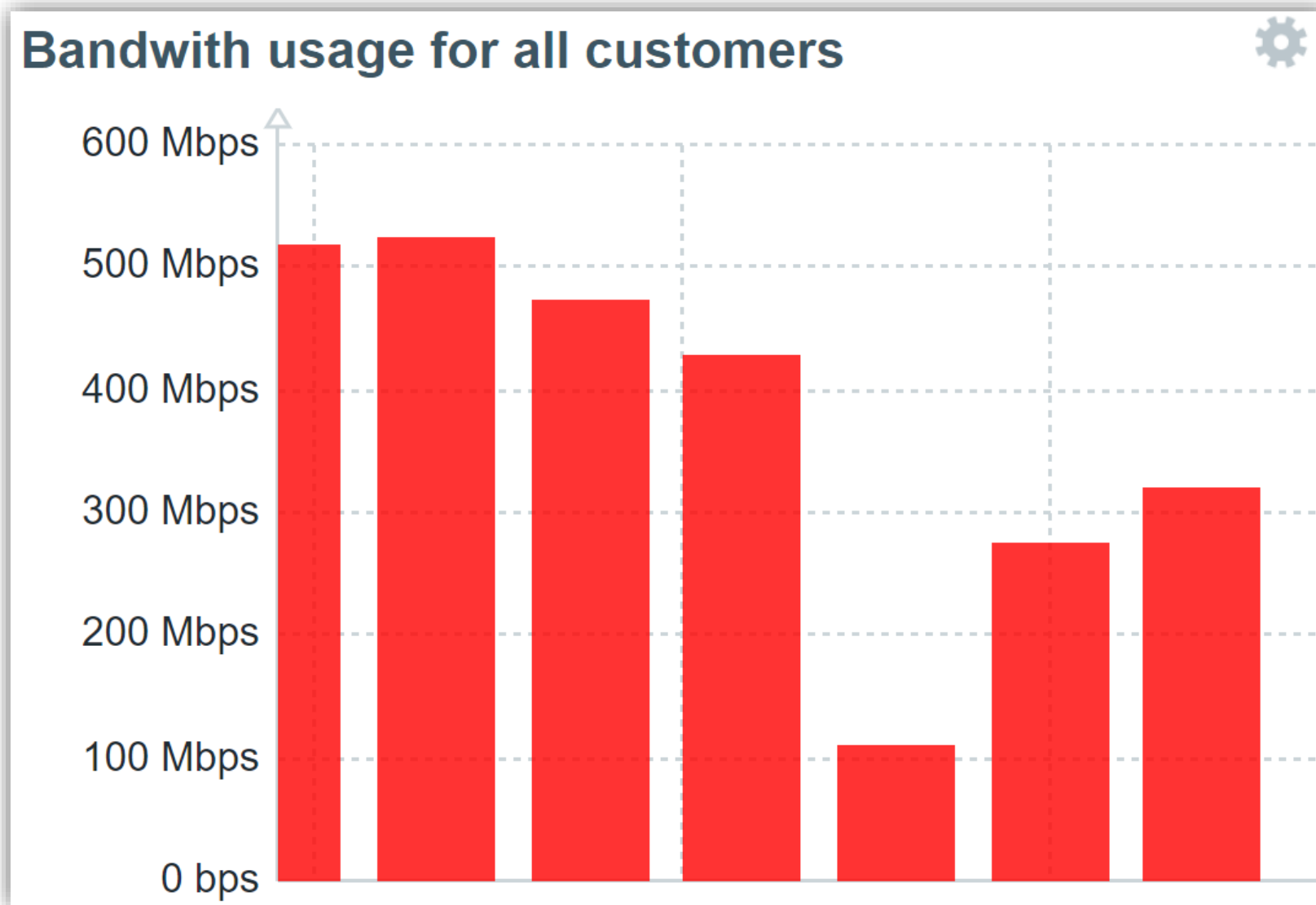
- ✓ New foreach() functions
- ✓ Wildcard usage
- ✓ Tag usage
- ✓ Hostgroup usage

Function	Description
<i>avg_foreach</i>	Returns the average value for each item.
<i>bucket_rate_foreach</i>	Returns pairs (bucket upper bound, rate value) suitable for use in the histogram_quantile() function, where "bucket upper bound" is the value of item key parameter defined by the <parameter number> parameter .
<i>count_foreach</i>	Returns the number of values for each item..
<i>exists_foreach</i>	Returns the number of currently enabled items.
<i>last_foreach</i>	Returns the last value for each item.
<i>max_foreach</i>	Returns the maximum value for each item.
<i>min_foreach</i>	Returns the minimum value for each item.
<i>sum_foreach</i>	Returns the sum of values for each item.

CREATING A CALCULATED ITEM

* Name	Important customer bandwidth (total)
Type	Calculated 
* Key	total.bandwidth.isp
Type of information	Numeric (unsigned) 
* Formula	<pre>sum(last_foreach(/*/net.if.in[*]?[(group="MSP ISP customers")and (tag="gravity:important")]))</pre>

CALCULATED ITEM USAGE ON GRAPHS

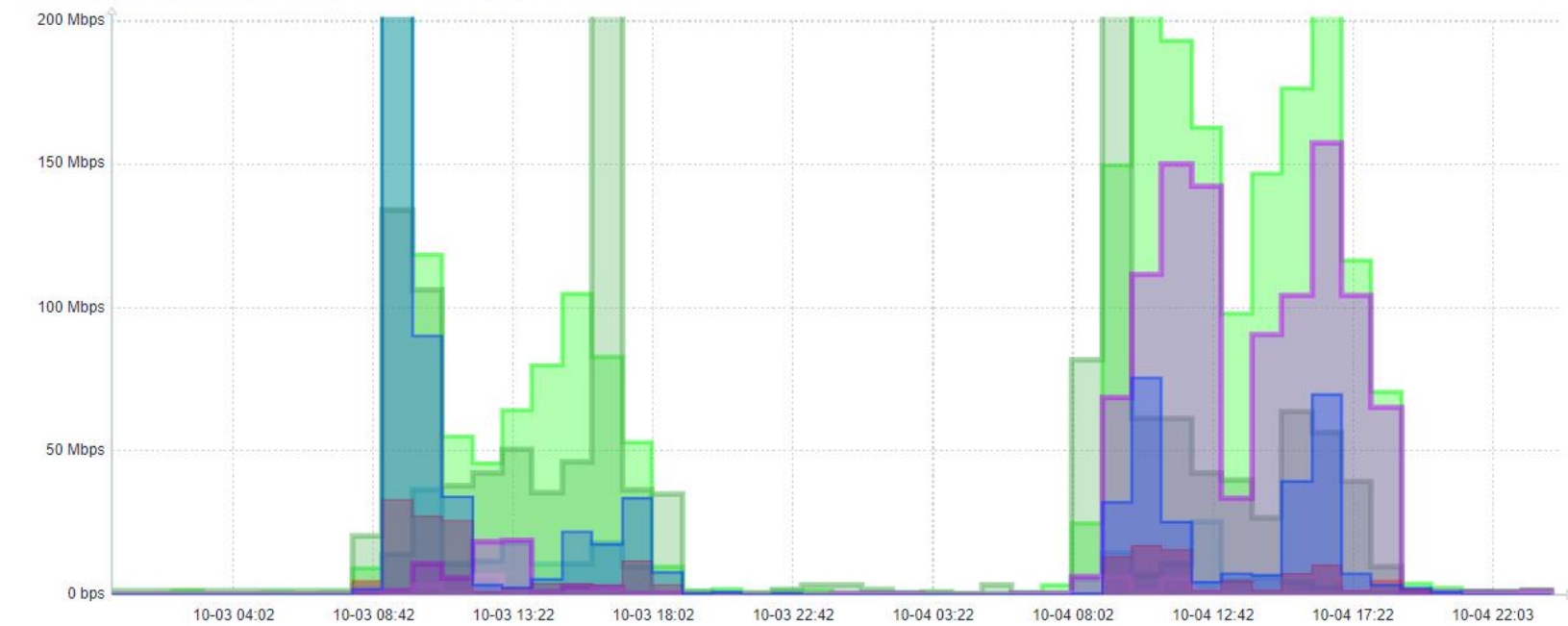


ADDING A NEW CUSTOMER

- ✓ Graphs – updates automatically (if using wildcards)
- ✓ Geomaps – updates automatically (if using the same host group)
- ✓ Top hosts widget – updates automatically (if using host group and/or tags)
- ✓ Calculated item graphs – updates automatically (if using host group and/or tags)
- ✓ Item value widget – need to add manually
- ✓ Dashboard name – need to change if needed



Bandwidth used: Customer A vs Customer B vs Customer C vs Customer D



Local

2022-10-05
08:46:33
Riga

Customer A curren...

2022-10-05 08:43:46

51.43 ↓ Kbps

Customer B curren...

2022-10-05 08:43:46

1 ↑ Mbps

Customer C curren...

2022-10-05 08:46:22

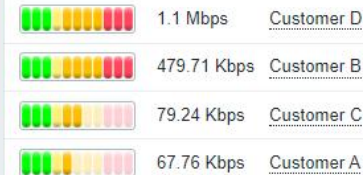
1.1 ↓ Mbps

Customer D curren...

2022-10-05 08:45:58

79.24 ↑ Kbps

Top bandwidth consumers



Customer A availab...

2022-10-05 08:45:46

Up (1) ↓

Customer B availab...

2022-10-05 08:45:46

Up (1) ↓

Customer C availab...

2022-10-05 08:45:46

Up (1) ↓

Customer D availab...

2022-10-05 08:45:46

Up (1) ↓

Customer A speed

2022-10-05 08:15:46

1 Gbps

Customer B speed

2022-10-05 08:15:46

1 Gbps

Customer C speed

2022-10-05 08:15:46

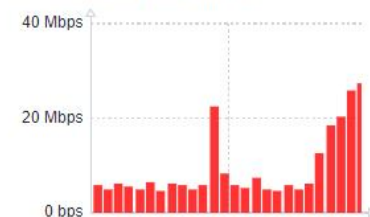
1 Gbps

Customer D speed

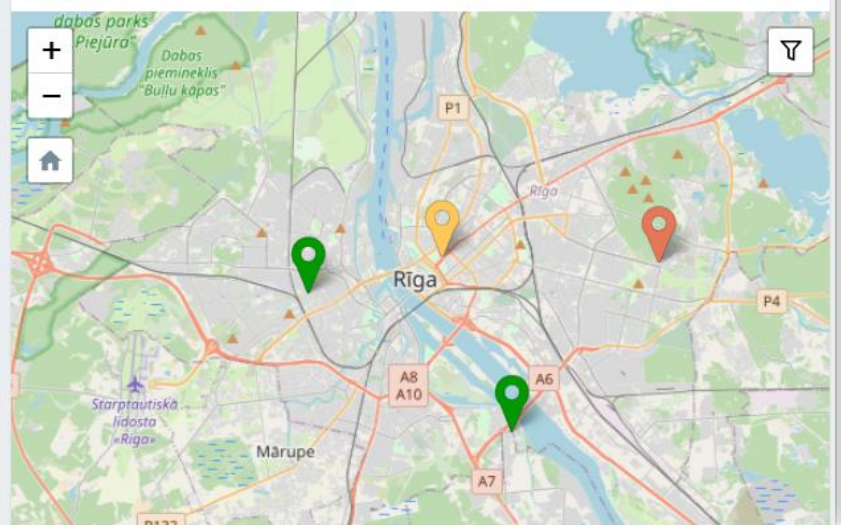
2022-10-05 08:15:46

1 Gbps

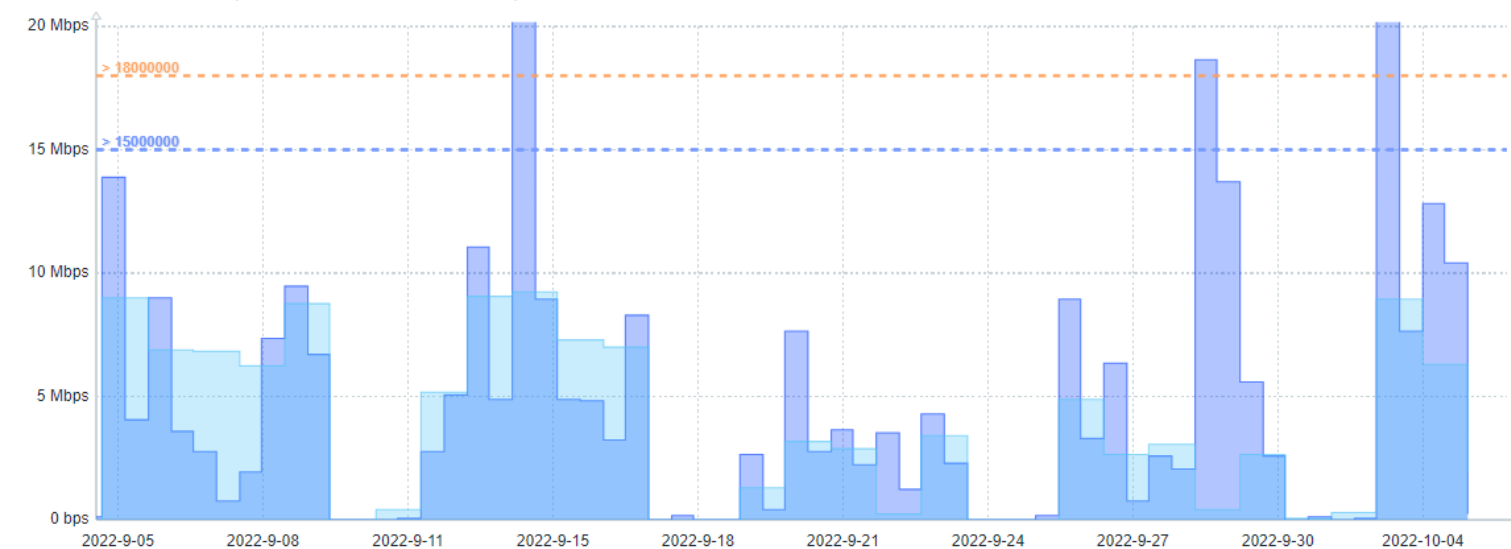
Bandwidth usage for all cu...



ISP status



Bandwidth: Customer A (current month vs last month)



SLA report

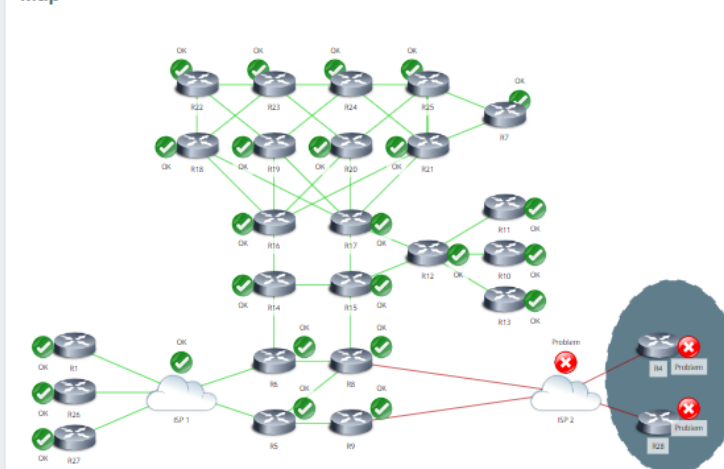
Service	SLO	2022-07-31 - 08-06	2022-08-07 - 08-13	2022-08-14 - 08-20	2022-08-21 - 08-27	2022-08-28 - 09-03	2022-09-04 - 09-10	2022-09-11 - 09-17	2022-09-18 - 09-24	2022-09-25 - 10-01	2022-10-02 - 10-08
Application	99.05%	100	100	100	100	100	100	100	100	100	100
Cluster node BE2	99.05%	100	100	100	100	100	100	100	100	100	100
HA Cluster	99.05%	100	100	100	100	100	100	100	100	100	100
Infrastructure	99.05%	100	100	100	100	100	100	100	100	100	100
Middleware	99.05%	100	100	100	100	100	100	100	100	100	100

Displaying 5 of 5 found

Problems

Time ▼	Recovery time	Status	Info	Host	Problem • Severity	Duration	Ack	Actions
04:30:57		PROBLEM		Customer A	Link to cloud two down!	4h 16m 10s	No	

Map



Customer A speed

2022-10-05 08:15:46

1 Gbps

Customer A current bandwidth

2022-10-05 08:46:46

63.9 ↑ Kbps

Customer A availability

2022-10-05 08:46:46

Up (1) ↑

ADDING A NEW CUSTOMER DASHBOARD

- ✓ Copy one of the already created dashboards
- ✓ Change widget options to represent a new customer
- ✓ Update SLA widget
- ✓ Add custom widgets if necessary
- ✓ User roles and permissions can be used to limit access



03

FUTURE ADDITIONS TO DASHBOARDS AND VISUALIZATIONS



FUTURE IMPROVEMENTS

- ✓ Dynamic change of colour for item value widget
- ✓ Clearer host and item selection for graph widget
- ✓ Framework for widget creation
- ✓ Gauge graphs
- ✓ Discovered entity visualization widget





THANK YOU!

