



# Monitoring Your FileMaker Server

---

Using Zabbix

By Wim Decorte, Senior Technical Solution Architect  
and Mislav Kos, Senior Technical Project Lead  
Soliant Consulting, Inc.

July 29, 2019

## Table of Contents

---

Monitoring Items and Problems .....	3
Overview .....	3
Latest Data .....	5
Problems.....	9
Dashboard .....	12
Graphs .....	14
Screens.....	16
Zabbix Reports.....	19
Availability Report .....	19
Triggers Top 100 .....	20
Audit.....	21
Action Log.....	22
Notifications .....	22

The Zabbix Configuration white paper covered how to use the Zabbix web frontend to configure and administer Zabbix. This white paper will cover how to use the Zabbix web frontend to view the item data that has been collected and the problems and actions that have been identified and taken. Not all of the sections will be covered. Our aim is to provide a reasonably thorough overview of the parts that will be most useful to you as a FileMaker developer or administrator. Please refer to the [Zabbix documentation](#) if you would like to learn additional details about a particular section.

Our full set of guides is available at <https://www.soliantconsulting/filemaker-zabbix>.

## Monitoring Items and Problems

### Overview

The **Monitoring > Overview** section shows either **item** or **trigger** data depending on the Type that is selected.

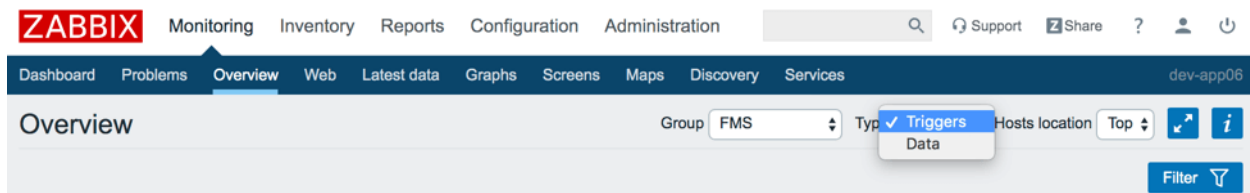
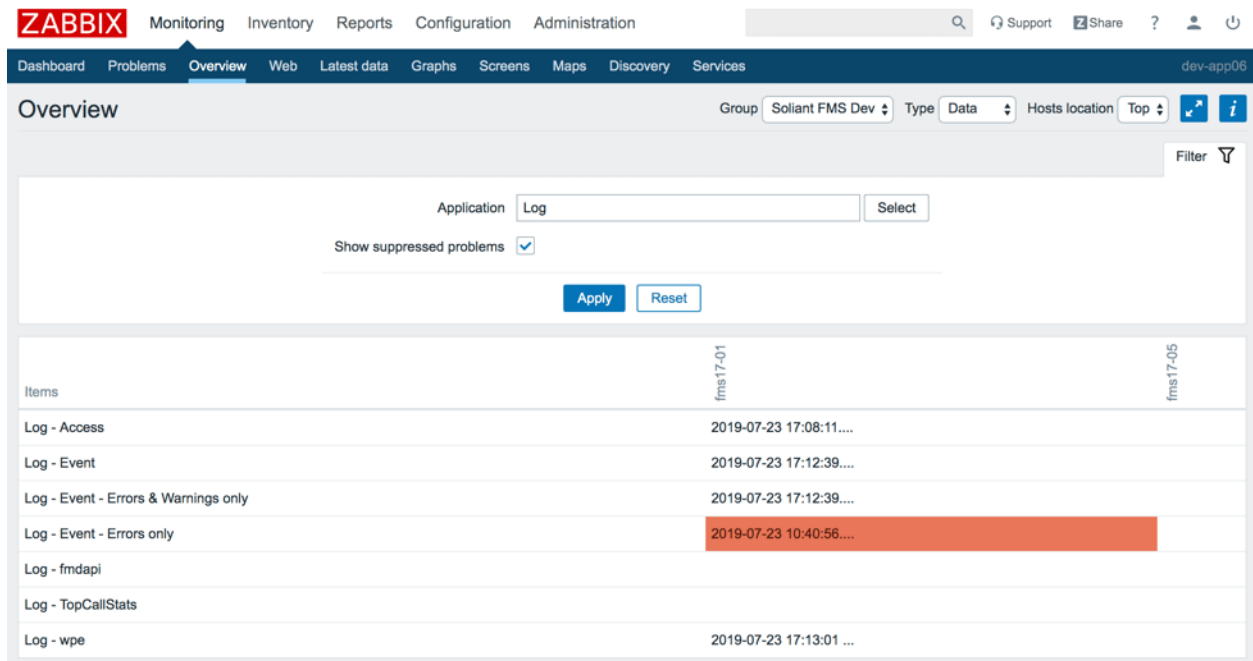


Figure 1. Use the 'Type' dropdown to change what is shown in the Overview

The **item data overview** shows a list of the most recently collected values – similar to the **Monitoring > Latest data** section, which we will cover next – for the hosts in the selected host group. The list can be filtered further by application. Clicking on the filter tab will toggle the display of the filter section.



The screenshot shows the Zabbix Overview page for the 'Soliant FMS Dev' group. The 'Application' filter is set to 'Log'. The table below shows a list of items with their last update times. One row is highlighted in orange, indicating a problem state.

Items	fms17-01	fms17-05
Log - Access	2019-07-23 17:08:11...	
Log - Event	2019-07-23 17:12:39...	
Log - Event - Errors & Warnings only	2019-07-23 17:12:39...	
Log - Event - Errors only	2019-07-23 10:40:56...	
Log - fmdapi		
Log - TopCallStats		
Log - wpe	2019-07-23 17:13:01 ...	

Figure 2. The data overview can be filtered by application

The **trigger overview** shows a list of triggers for the hosts in the selected host group along with their states and severity. Green is used when the **trigger status** is **OK**. The other colors are used to indicate severity for triggers in the **Problem** state. A checkmark indicates that the problem has been acknowledged. The filtering section provides several additional filtering options that are not available for the item data overview.

**ZABBIX** Monitoring Inventory Reports Configuration Administration

Dashboard Problems **Overview** Web Latest data Graphs Screens Maps Discovery Services dev-app06

Overview Group Soliant FMS Dev Type Triggers Hosts location Top

Filter

Show Recent problems Problems Any Application [ ] Select

Acknowledge status Any Host inventory Type [ ] Remove

Minimum severity Not classified Add

Age less than  14 days Show suppressed problems

Name [ ]

Apply Reset

Triggers	fms17-01	fms17-05
Cannot connect to FMS ports	Green	Green
DMP file detected	Red with checkmark	Green
Database Server process has terminated abnormally	Green	Green
Database was not closed properly	Green	Green
Elapsed time above (\$THRESHOLD_ELAPSED_TIME) for last 2 mins	Green	Green
Event log error	Red	Green
FMS config change	Yellow	Green
FMS process not running - Data API - Windows	Green	Green

Figure 3. The trigger overview shows trigger states and severity

## Latest Data

The **Monitoring > Latest** data section shows the most recently collected item data and the time at which it was collected. The values are grouped by host and application. Somewhat confusingly, if an item has been tagged with multiple applications, it will appear in the list multiple times. The filtering section allows for searching by host group, host, application, and name.

**ZABBIX** Monitoring Inventory Reports Configuration Administration

Dashboard Problems Overview Web **Latest data** Graphs Screens Maps Discovery Services dev-app06

### Latest data

Filter

Host groups:  Select Name:   
 type here to search

Hosts:  Select Show items without data:   
 type here to search

Application:  Select Show details:

Apply Reset

<input type="checkbox"/> Host	Name ▲	Last check	Last value	Change
▼ <u>fms17-01</u>	<b>Disk (2 Items)</b>			
<input type="checkbox"/>	Disk KB/sec Read - FMS Stats	07/23/2019 05:33:43 PM	0 KBps	<a href="#">Graph</a>
<input type="checkbox"/>	Disk KB/sec Write - FMS Stats	07/23/2019 05:33:43 PM	1 KBps	<a href="#">Graph</a>
▼ <u>fms17-01</u>	<b>Network (2 Items)</b>			
<input type="checkbox"/>	Network - KB/sec In - FMS Stats	07/23/2019 05:33:43 PM	0 KBps	<a href="#">Graph</a>
<input type="checkbox"/>	Network - KB/sec Out - FMS Stats	07/23/2019 05:33:43 PM	0 KBps	<a href="#">Graph</a>
▼ <u>fms17-01</u>	<b>Perfmon FMS Stats (4 Items)</b>			
<input type="checkbox"/>	Disk KB/sec Read - FMS Stats	07/23/2019 05:33:43 PM	0 KBps	<a href="#">Graph</a>
<input type="checkbox"/>	Disk KB/sec Write - FMS Stats	07/23/2019 05:33:43 PM	1 KBps	<a href="#">Graph</a>
<input type="checkbox"/>	Network - KB/sec In - FMS Stats	07/23/2019 05:33:43 PM	0 KBps	<a href="#">Graph</a>
<input type="checkbox"/>	Network - KB/sec Out - FMS Stats	07/23/2019 05:33:43 PM	0 KBps	<a href="#">Graph</a>

Figure 4. Latest data can be filtered by host group, host, application, and name

This section is useful for confirming that the item data is being collected as expected. A history of the values can be seen in an ad-hoc graph by clicking on the **Graph** link. Text-based item data will have a **History** link instead to view a list of all collected data for that item. Once you switch to the detail for an item – by clicking Graph or History – the time period can be adjusted using the filter section.

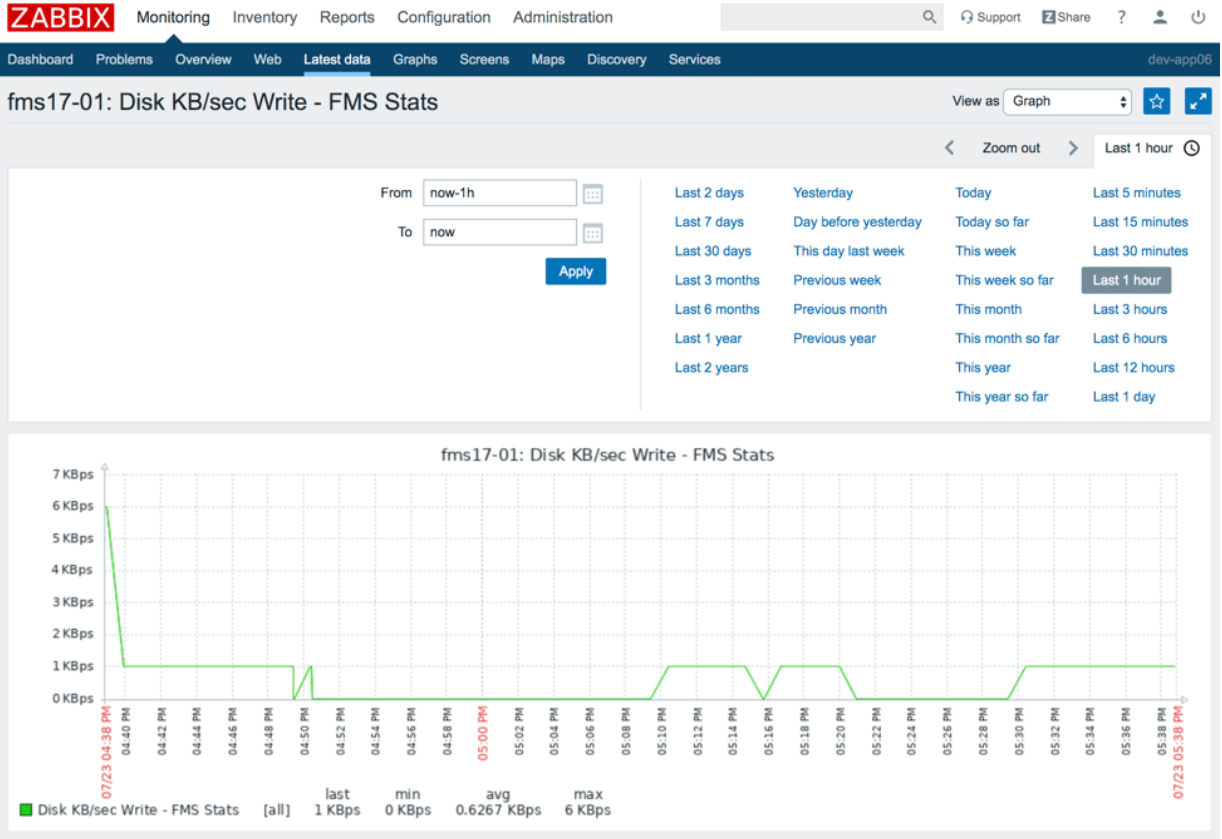


Figure 5. Clicking on the 'Graph' link opens an ad-hoc graph

Data shown in a graph can also be viewed as a list of values by changing the **View as** option.

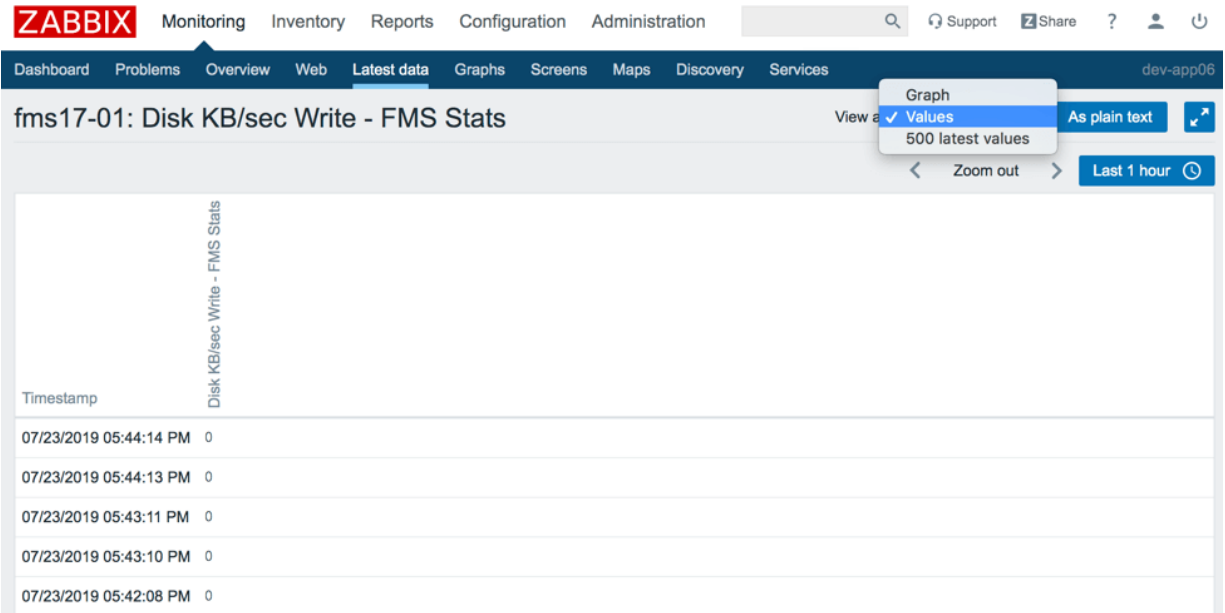


Figure 6. Select 'Values' in the 'View as' dropdown to change from a graph to a list

The data shown can be quickly transferred to Excel or some other software for further analysis by clicking the **As plain text** button and then copy-and-pasting the values.

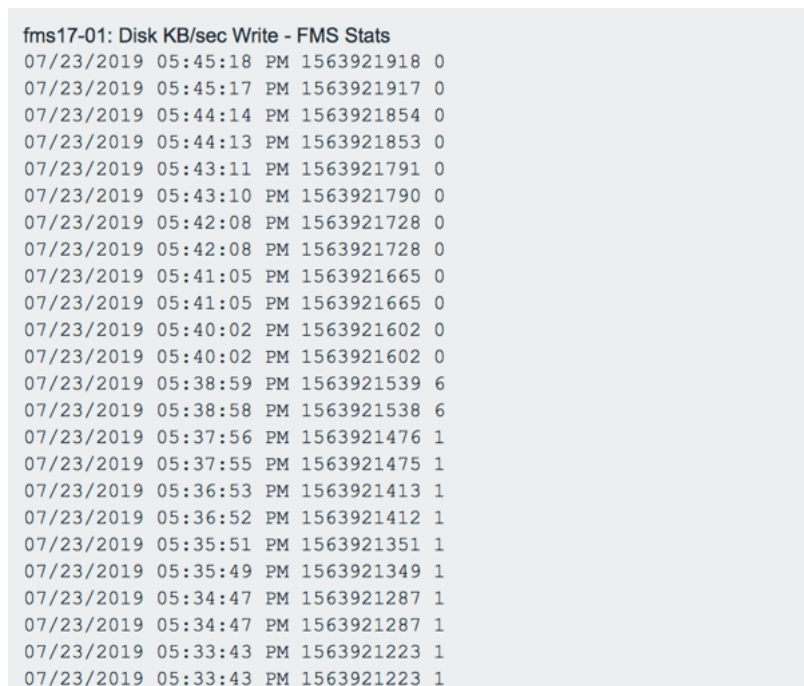
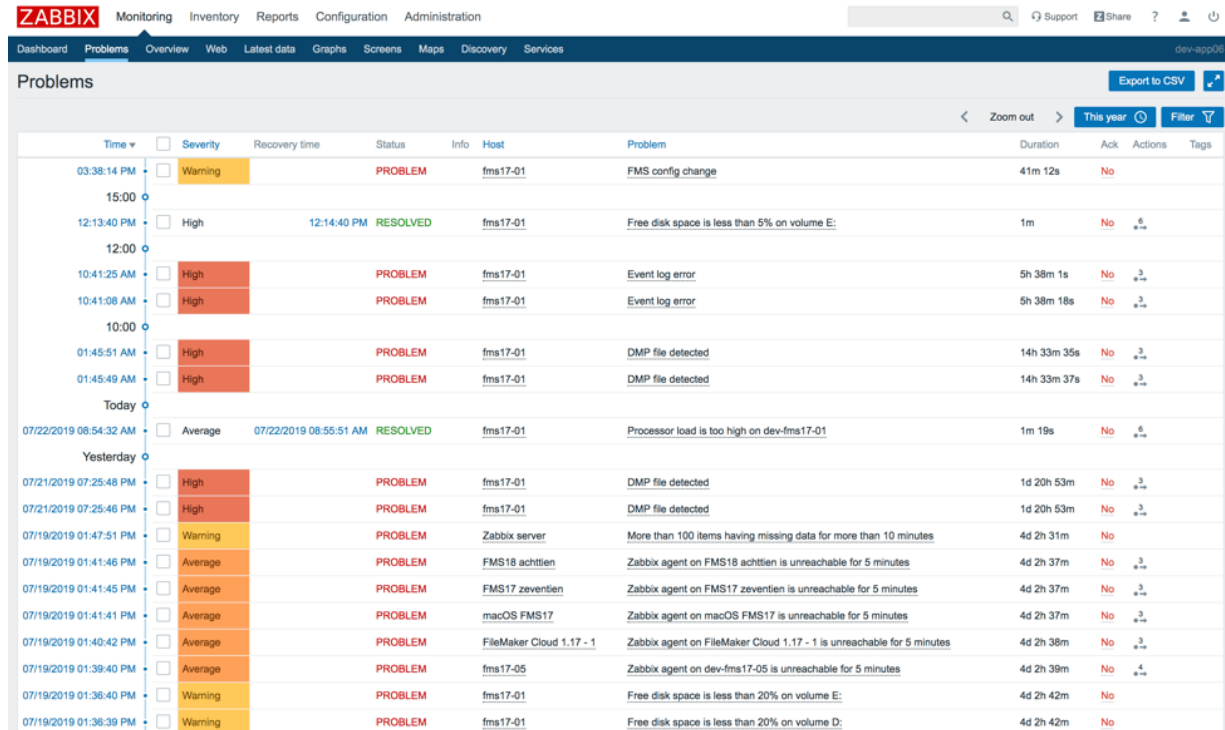


Figure 7. Use the 'As plain text' button to view the data as plain text



## Problems

The **Monitoring > Problems** section will display the problems that have been generated by triggers.



Time	Severity	Recovery time	Status	Info	Host	Problem	Duration	Ack	Actions	Tags
03:38:14 PM	Warning		PROBLEM		fms17-01	FMS config change	41m 12s	No		
15:00										
12:13:40 PM	High	12:14:40 PM	RESOLVED		fms17-01	Free disk space is less than 5% on volume E:	1m	No		
12:00										
10:41:25 AM	High		PROBLEM		fms17-01	Event log error	5h 38m 1s	No		
10:41:08 AM	High		PROBLEM		fms17-01	Event log error	5h 38m 18s	No		
10:00										
01:45:51 AM	High		PROBLEM		fms17-01	DMP file detected	14h 33m 35s	No		
01:45:49 AM	High		PROBLEM		fms17-01	DMP file detected	14h 33m 37s	No		
Today										
07/22/2019 08:54:32 AM	Average	07/22/2019 08:55:51 AM	RESOLVED		fms17-01	Processor load is too high on dev-fms17-01	1m 19s	No		
Yesterday										
07/21/2019 07:25:48 PM	High		PROBLEM		fms17-01	DMP file detected	1d 20h 53m	No		
07/21/2019 07:25:46 PM	High		PROBLEM		fms17-01	DMP file detected	1d 20h 53m	No		
07/19/2019 01:47:51 PM	Warning		PROBLEM		Zabbix server	More than 100 items having missing data for more than 10 minutes	4d 2h 31m	No		
07/19/2019 01:41:46 PM	Average		PROBLEM		FMS18 achttien	Zabbix agent on FMS18 achttien is unreachable for 5 minutes	4d 2h 37m	No		
07/19/2019 01:41:45 PM	Average		PROBLEM		FMS17 zeventien	Zabbix agent on FMS17 zeventien is unreachable for 5 minutes	4d 2h 37m	No		
07/19/2019 01:41:41 PM	Average		PROBLEM		macOS FMS17	Zabbix agent on macOS FMS17 is unreachable for 5 minutes	4d 2h 37m	No		
07/19/2019 01:40:42 PM	Average		PROBLEM		FileMaker Cloud 1.17 - 1	Zabbix agent on FileMaker Cloud 1.17 - 1 is unreachable for 5 minutes	4d 2h 38m	No		
07/19/2019 01:39:40 PM	Average		PROBLEM		fms17-05	Zabbix agent on dev-fms17-05 is unreachable for 5 minutes	4d 2h 39m	No		
07/19/2019 01:36:40 PM	Warning		PROBLEM		fms17-01	Free disk space is less than 20% on volume E:	4d 2h 42m	No		
07/19/2019 01:36:39 PM	Warning		PROBLEM		fms17-01	Free disk space is less than 20% on volume D:	4d 2h 42m	No		

Figure 8. Problems list

The filter section provides many criteria through which the data can be winnowed down. The default filtering option will show only **Recent problems**, so if you are not seeing problems that you expect to see, make sure to set the **Show** option to **Problems** or **History**. The data can be sorted in different ways by clicking on the column header. The timeline view can be very helpful in breaking up the data into meaningful chunks, so make sure the **Show timeline** option is enabled.

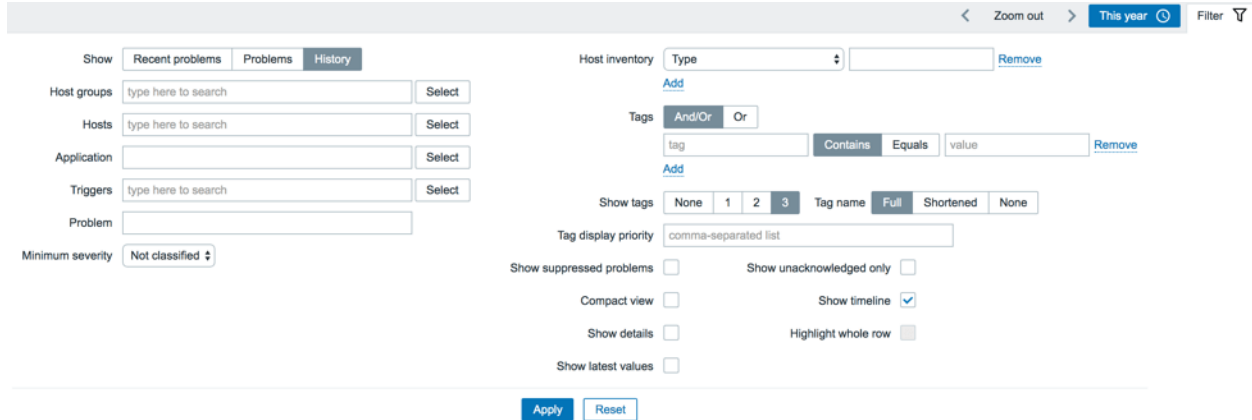


Figure 9. Use the filter to show more than the default 'Recent problems'

**Time column:** Click on the problem creation timestamp to view details about the problem event, including information about the trigger that generated the problem, a list of automated actions taken, and a list of times when this problem occurred previously.

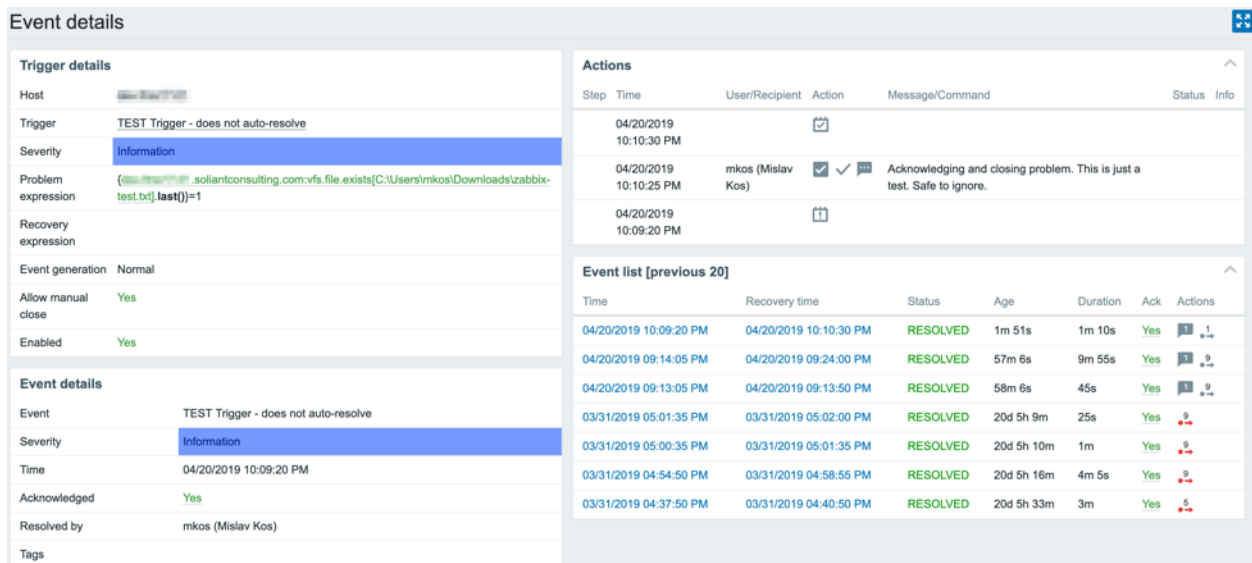


Figure 10. View problem event details by clicking on the problem creation timestamp

**Host column:** Clicking on the host name brings up the host menu which makes it possible to jump to other Monitoring sections with the filter automatically adjusted for that host. This popup host menu is available in the same way – by clicking on the host name – in several other sections of the frontend as well where the host name is displayed with a dotted underline.

Status	Info	Host	Problem
PROBLEM		fms17-01	FMS config change
RESOLVED		fms17-01	is less
PROBLEM		fms17-01	
PROBLEM		fms17-01	
PROBLEM		fms17-01	ed
PROBLEM		fms17-01	ed

SCRIPTS

Detect operating system

Ping

Traceroute

GO TO

Host inventory

Latest data

Problems

Graphs

Host screens

Figure 11. Clicking on the host name opens the host menu

**Ack column:** You can click on the Yes/No value in the **Ack** (Acknowledge) column of the problem list to bring up a screen where you can update the problem. For example, you can add a message to keep notes about the problem, you can acknowledge the problem (to let your teammates know that you are working on it), or you can close the problem (if the trigger settings allow for manual resolution).

### Update problem

Message

History

Scope  Only selected problem  
 Selected and all other problems of related triggers 1 event

Change severity  Not classified Information Warning Average High Disaster

Acknowledge

Close problem

\* At least one update operation or message must exist.

Figure 12. Click on 'Yes' or 'No' in the Ack column to update the problem.

**Actions** column: This column shows a count of how many actions – notifications or remote commands – were taken in response to a problem. Hover or click on the count to see the list of actions.

DMP file detected		14h 47m 51s	No	3		
Event log error	Time	User/Recipient	Action	Message/Command	Status	Info
Event log error	07/23/2019 01:45:58 AM	wdecorte (Wim Decorte)	✉	Email	Sent	
Event log error	07/23/2019 01:45:58 AM	bengert (Brian Engert)	✉	Email	Sent	
Free disk space is less than	07/23/2019 01:45:58 AM	mkos (Mislav Kos)	✉	Email	Sent	
	07/23/2019 01:45:51 AM		📅			

Figure 13. Clicking on the count in the Action column opens the popup showing the list of actions taken

## Dashboard

Zabbix makes it possible to create multiple dashboards, each of which can display summaries of various types of data. Dashboards cannot be shared using templates – discussed in the Zabbix Configuration white paper – so you will need to create your own from scratch or modify the **Global view** dashboard that comes predefined when Zabbix is installed.

You can view a list of available dashboards by navigating to **Monitoring > Dashboard**. Click on any dashboard that is shown in the list to view its details. You can also create new or edit existing dashboards from here.

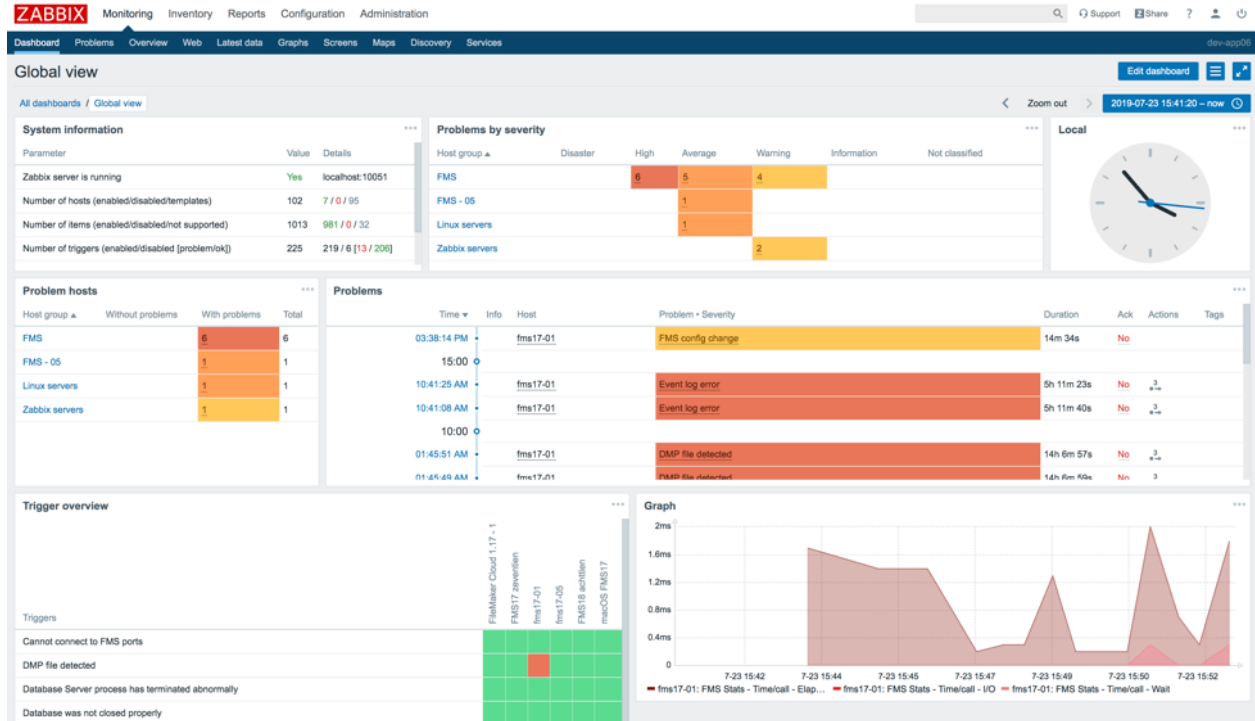


Figure 14. Click on any dashboard shown in the dashboard list to view its details

As is the case with many other Monitoring areas in the web frontend, when viewing a dashboard, the time filter can be adjusted using the time period selector. You can choose from quite a few pre-defined time filters, or you can specify a custom range.

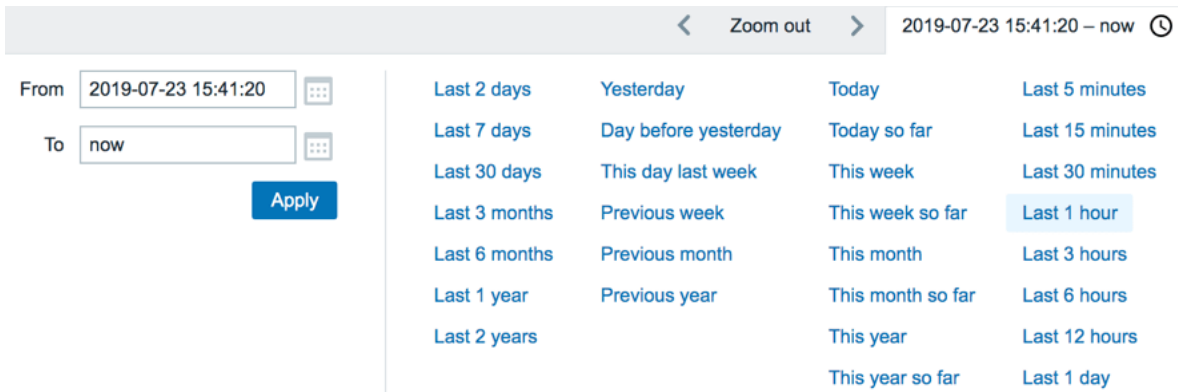


Figure 15. Use pre-defined filters or enter a custom range

Here's a partial list of widgets that can be shown in a dashboard:

- Data overview – Shows latest item data filtered by host group, application, and other criteria
- Shortcuts to graphs and screens you marked as favorites

- Graphs – Custom graphs created for the dashboard (these are different from the graphs defined for a host or template)
- Problems – filtered list or cross-tab summarized by severity
- Trigger overview – list of trigger states (OK or problem) for a group of hosts
- Action log – list of recent actions taken (notifications or remote commands)

## Graphs

In the **Monitoring > Latest data** section, we saw how ad-hoc **graphs** can be created to view item data. Graphs can also be pre-defined for a particular host or, more generally, for a template (which would then be inherited by the hosts using that template). These pre-defined graphs can be viewed in **screens** – which we will cover in the next section – where they will typically be grouped with other information, or they can be viewed individually in the **Monitoring > Graphs** section.

To view one of these pre-defined graphs, navigate to **Monitoring > Graphs**, select a host group and a host, and then select one of the available graphs. You can adjust the time period using the section at the top. You can also click-and-drag to quickly zoom in on the portion of the graph you're interested in.

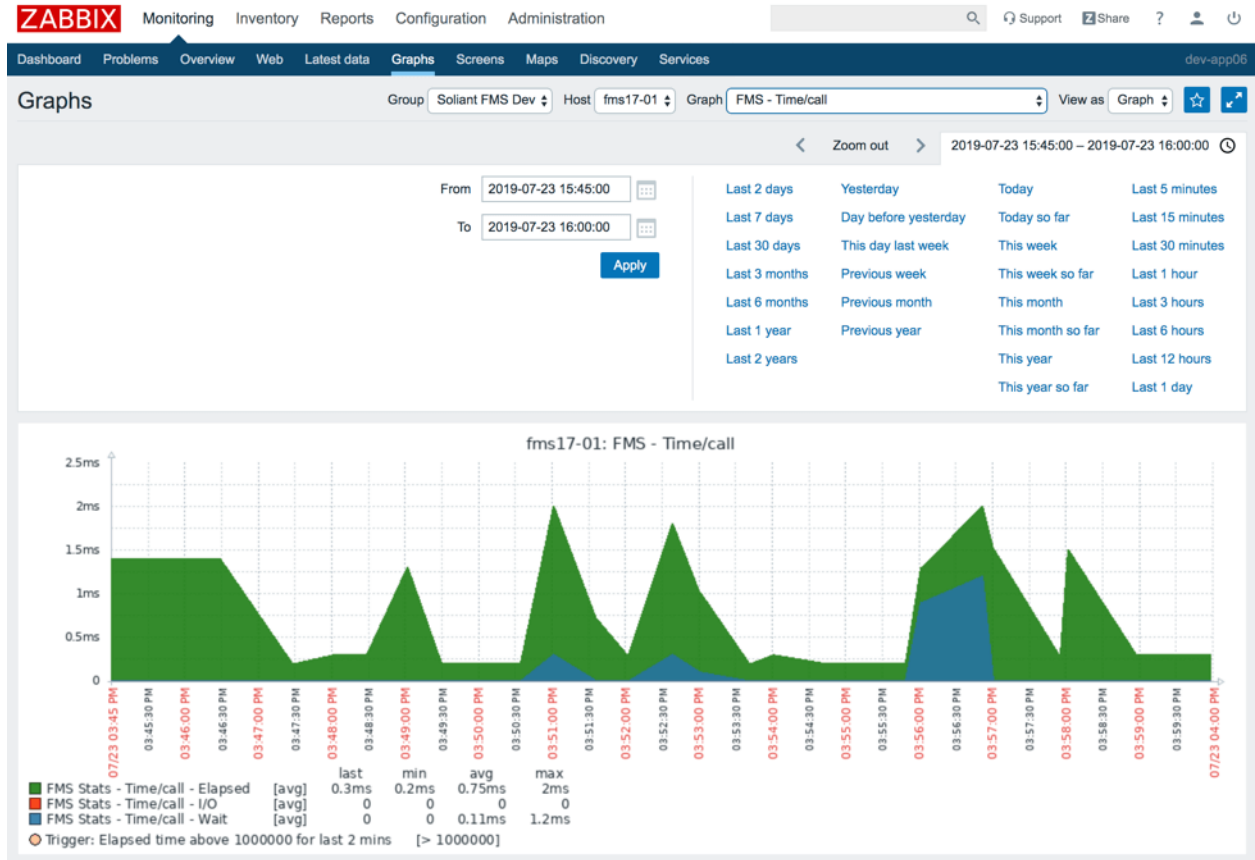


Figure 16. The graph time period can be changed using the time period selector or by clicking-and-dragging on the graph

The data values displayed in the graph can be viewed in a table by changing the **View** as option.

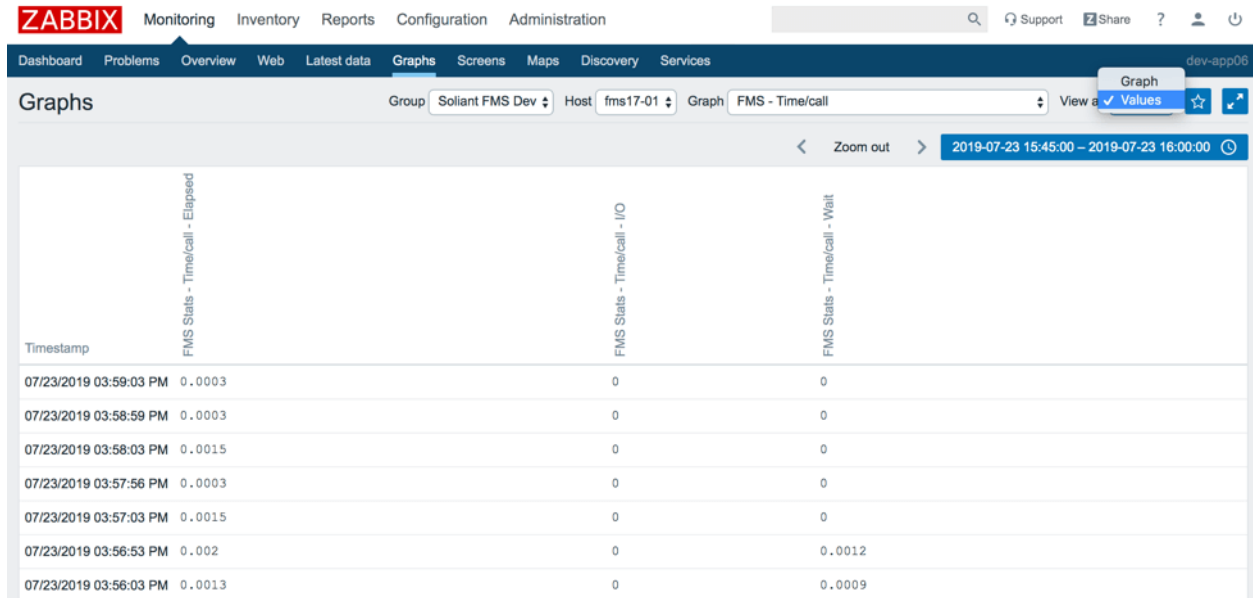


Figure 17. Select 'Values' on the View as dropdown to change the graph to a table

## Screens

Like dashboards, Zabbix screens display different pieces of information on a single page. In fact, screens can include much of the same components as dashboards:

- Data overview
- Graphs
- Problems – list or cross-tab summarized by severity
- Trigger overview
- Action log

There are two kinds of screens. **Global screens** can display information from multiple hosts, and **host screens** are meant to display information from just one host.

**Global screens** are managed and viewed from **Monitoring > Screens**. As was the case with the Dashboard section, this section can be viewed as a list of global screens or as the detail of an individual screen – somewhat similar to how FileMaker has form and list views for any given layout.



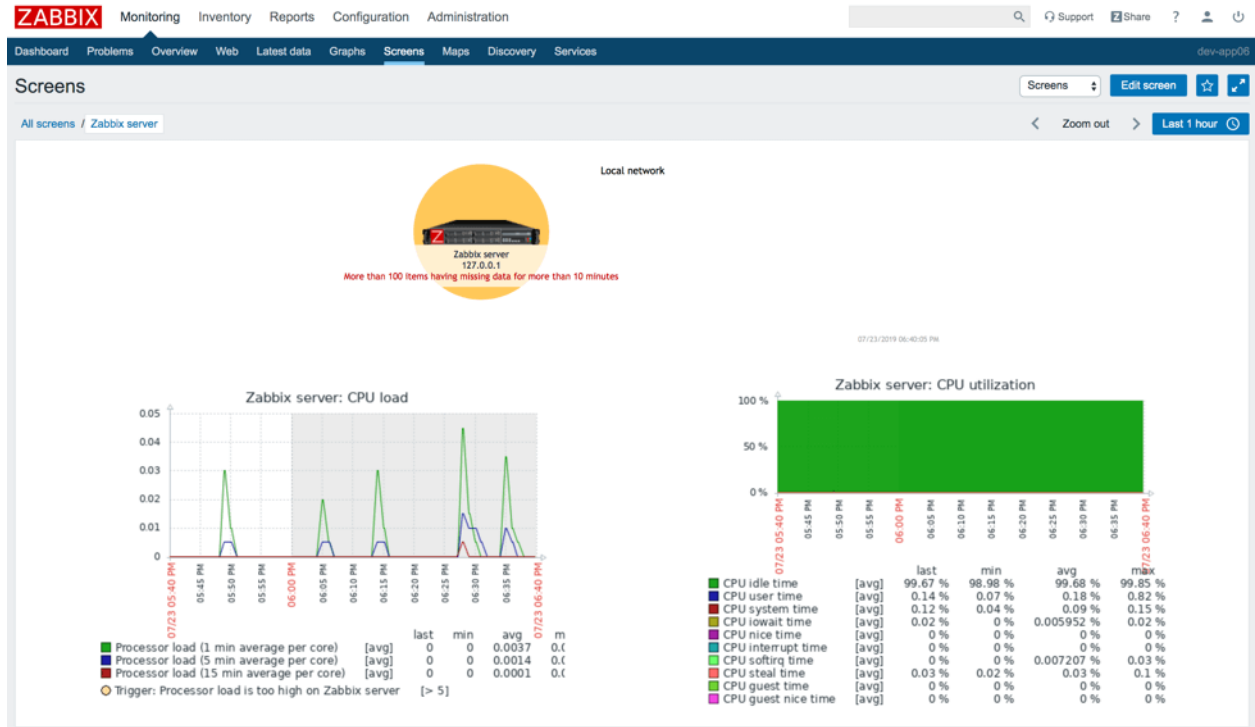


Figure 18. View Global screens as a list or detail of an individual screen

**Host screens** are managed within a template and viewed by selecting the **Host screens** option in a host menu which is a popup menu that can be accessed in various places by clicking on the host name. (We already touched upon host menus briefly in the Problems section of this white paper.) Some of these places include:

- Monitoring > Problems
- Monitoring > Overview
- Monitoring > Latest data

For example, in the **Monitoring > Problems** section, you can click on the name of a host and then on **Host screens** to access the screens available for that host.

Status	Info	Host	Problem
PROBLEM		fms17-01	FMS config change
RESOLVED		fms17-01	is le
PROBLEM		fms17-01	
PROBLEM		fms17-01	
PROBLEM		fms17-01	ed
PROBLEM		fms17-01	ed

SCRIPTS

- Detect operating system
- Ping
- Traceroute

GO TO

- Host inventory
- Latest data
- Problems
- Graphs
- Host screens

Figure 19. Click on 'Host screens' in the popup to view available screens for the host

Doing so will display one of the available host screens – whichever one was viewed most recently. You can switch to the other screens available for the host using the dropdown menu located in the upper-right section of the screen.

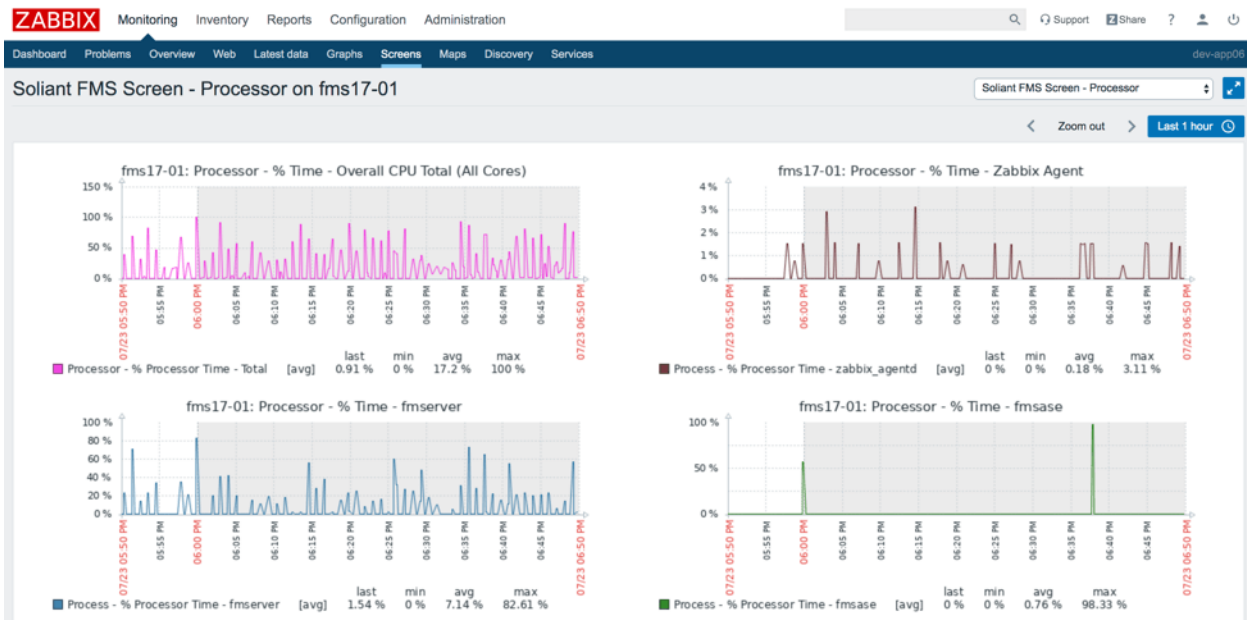


Figure 20. Available host screen

Host screens can be shared across Zabbix installations using templates. Sharing of global screens is less feasible. Global screen configurations can be saved by exporting them to an XML file, and they can be loaded by importing that XML file, but that file will

contain hardcoded references to specific hosts, so importing the file to another Zabbix server which doesn't have those same hosts defined will not work.

## Zabbix Reports

### Availability Report

The availability report shows what percentage of time each trigger spent in the OK and Problem states. The report data can be filtered by time period, host, and host group.

In the example below, we can see that the Zabbix agent on our FileMaker Cloud 1.17 development server has been unreachable 18.6% of the time.

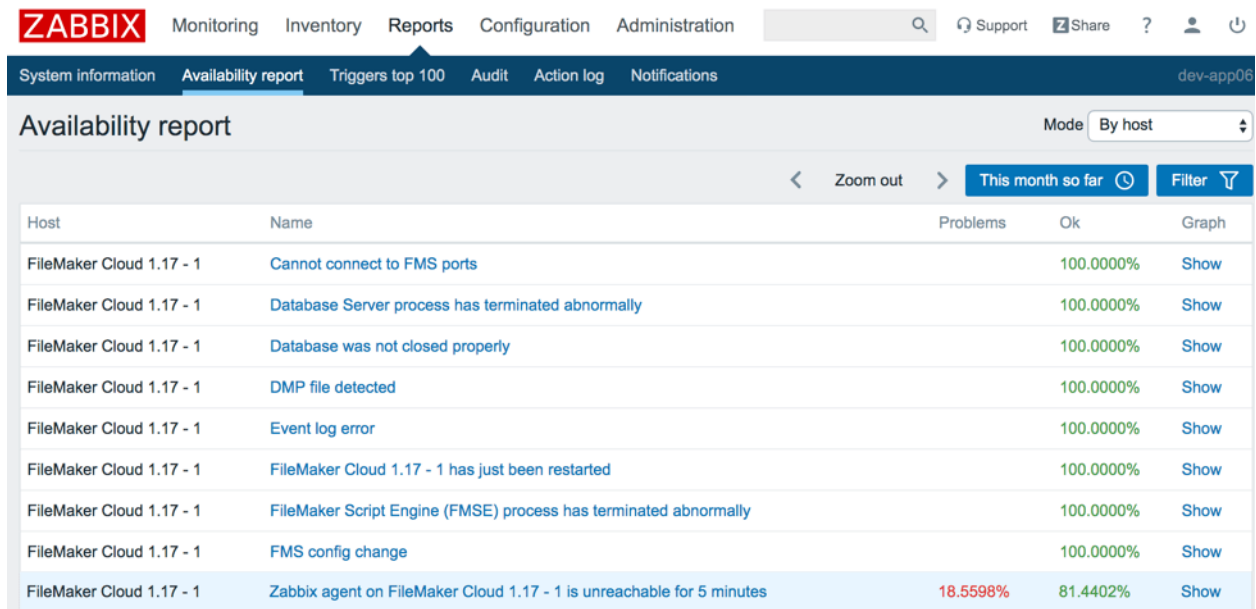


Figure 21. Availability report

You can click on the **Show** link to view the data in more detail and in a chart format.

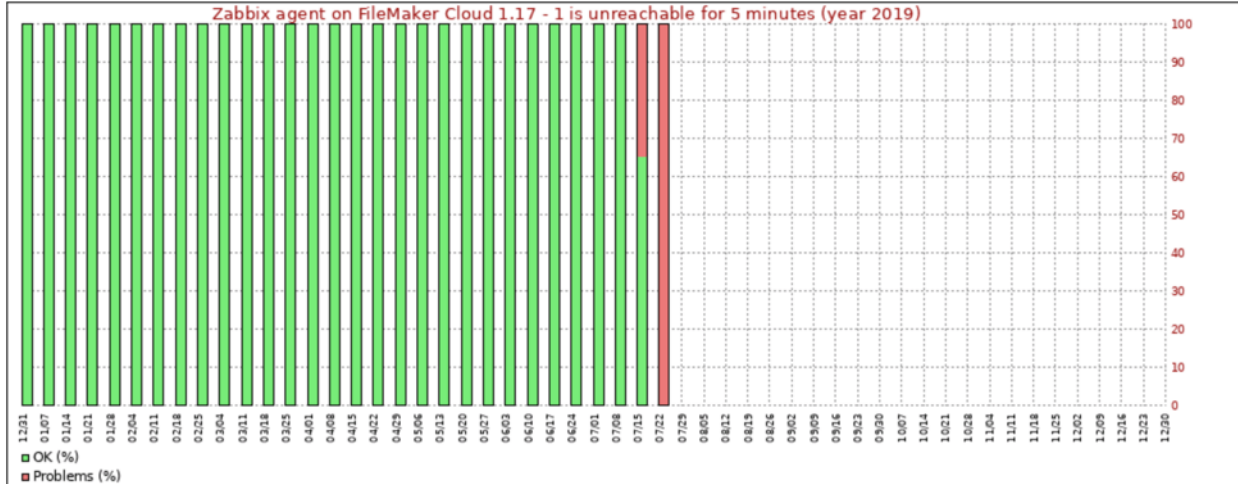


Figure 22. Clicking the 'Show' link shows a 100% stacked column chart for the trigger availability

## Triggers Top 100

This report shows up to 100 triggers that have changed their state the most frequently in the selected time period. The report data can be filtered by time period, host, host group, and trigger severity.

**ZABBIX** Monitoring Inventory Reports Configuration Administration

System information Availability report **Triggers top 100** Audit Action log Notifications dev-app06

100 busiest triggers

Zoom out This year so far Filter

Host groups: type here to search [Select]

Hosts: fms17-01 [X] type here to search [Select]

Severity:
  Not classified
  Warning
  High
  Information
  Average
  Disaster

[Apply] [Reset]

Host	Trigger	Severity	Number of status changes
fms17-01	DMP file detected	High	4
fms17-01	Event log error	High	2
fms17-01	Free disk space is less than 5% on volume E:	High	2
fms17-01	Processor load is too high on fms17-01	Average	2
fms17-01	FMS config change	Warning	1
fms17-01	Free disk space is less than 15% on volume D:	Warning	1
fms17-01	Free disk space is less than 20% on volume D:	Warning	1
fms17-01	Free disk space is less than 20% on volume E:	Warning	1

Figure 23. The top100 triggers can be filtered by time period, host, host group, and trigger severity

As is the case in other areas of the web frontend, clicking on the information shown with a dotted underline – in this case, host name and trigger name – will reveal contextual menus that can be used to jump to related views of the data.

Host	Trigger	Severity	Number of status changes
<u>fms17-01</u>	<u>DMP file detect</u>	High	4
<u>fms17-01</u>	<u>Event log error</u>	High	2
<u>fms17-01</u>	<u>Free disk space</u>	High	2
<u>fms17-01</u>	<u>Processor load</u>	Average	2
<u>fms17-01</u>	<u>FMS config che</u>	Warning	1

TRIGGER

- Problems
- Configuration

---

HISTORY

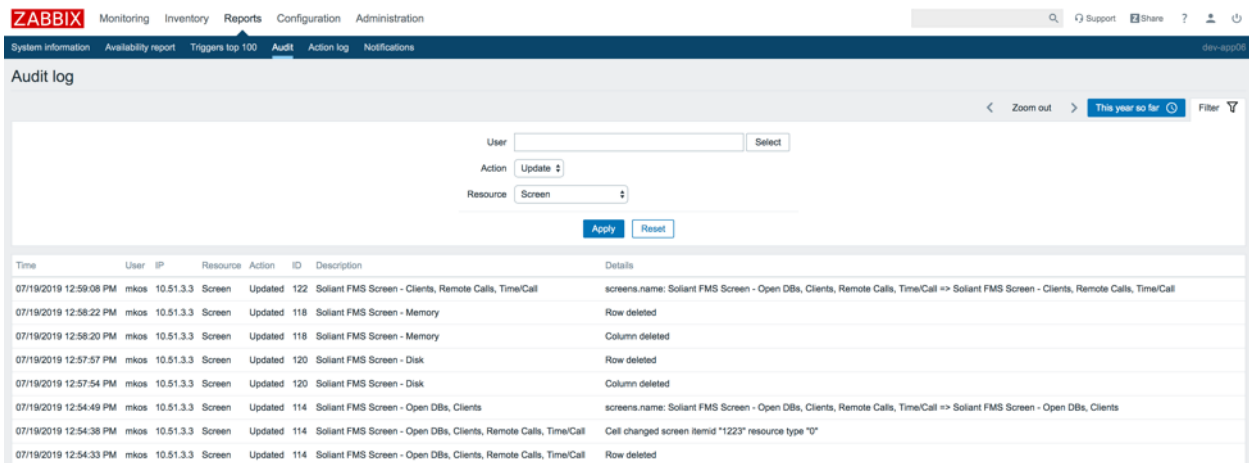
- FMS DMP Timestamp

Figure 24. Open contextual menus by clicking on the host or trigger name

## Audit

The Audit log is different from the other reports in that its purpose is not to inform about the monitored hosts. Instead, this report shows activity that has taken place within the web frontend. This includes information about user logins and changes made to templates, items, triggers, and other resources.

For example, we can see a list of updates made to screens.



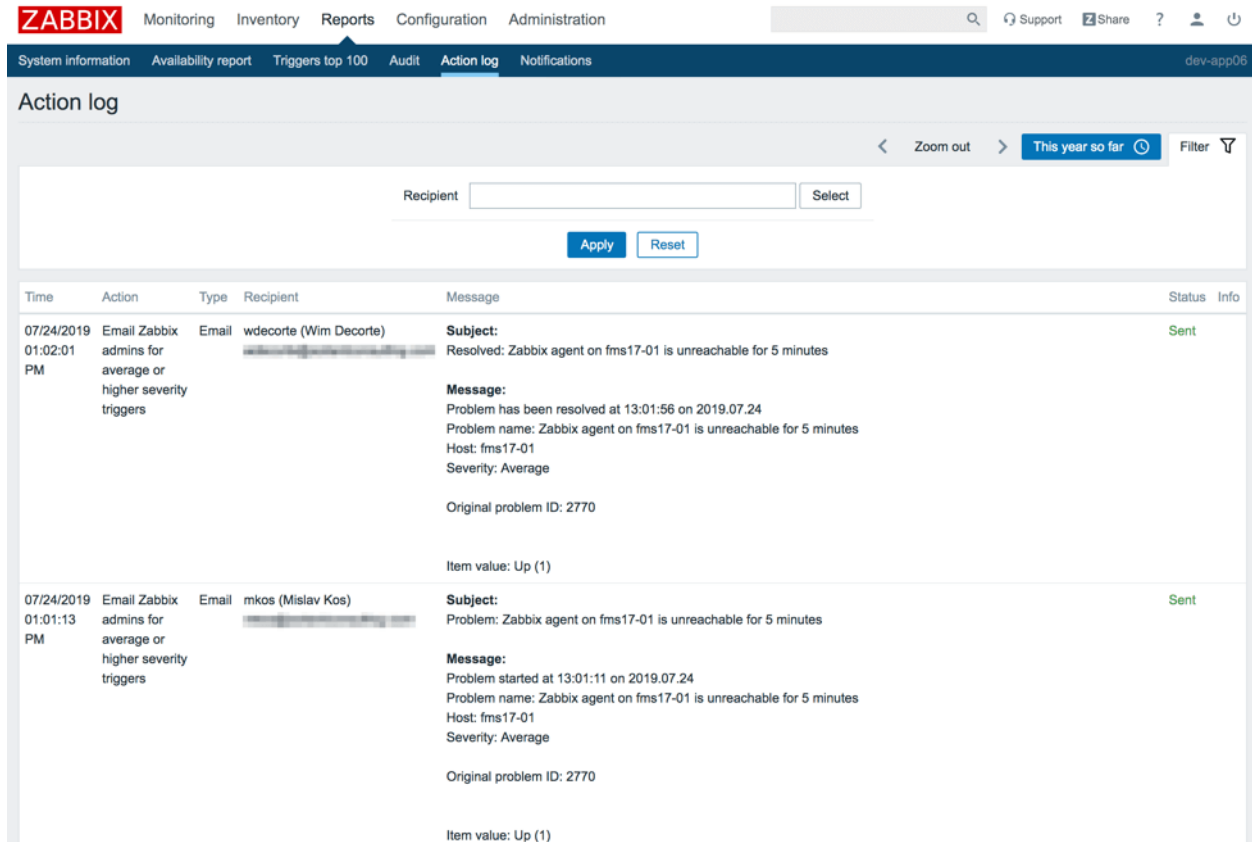
The screenshot shows the Zabbix web interface with the 'Audit log' report selected. The navigation bar includes 'Monitoring', 'Inventory', 'Reports', 'Configuration', and 'Administration'. The 'Audit log' page has a search bar and a 'Filter' button. Below the search bar, there are three filter fields: 'User' (with a 'Select' button), 'Action' (set to 'Update'), and 'Resource' (set to 'Screen'). There are 'Apply' and 'Reset' buttons below the filters. The main table displays a list of audit events with columns for Time, User, IP, Resource, Action, ID, Description, and Details. The table shows several 'Updated' actions on 'Screen' resources.

Figure 25. Filter the Audit log to view changes made to screens and other resources

In addition to the usual time period selector, the information can be filtered by the type of action and by the resource that was added, modified, or deleted.

## Action Log

The Action Log displays a list of actions – notification emails or remote commands – that were taken, for example in response to triggers. The actions can be filtered by notification recipient and time period.



The screenshot shows the Zabbix web interface. The top navigation bar includes 'ZABBIX', 'Monitoring', 'Inventory', 'Reports', 'Configuration', and 'Administration'. Below this is a secondary navigation bar with 'System information', 'Availability report', 'Triggers top 100', 'Audit', 'Action log', and 'Notifications'. The 'Action log' page is active, showing a search bar and a filter dropdown set to 'This year so far'. Below the search bar is a 'Recipient' input field with a 'Select' button and 'Apply' and 'Reset' buttons. The main content is a table with columns: Time, Action, Type, Recipient, Message, Status, and Info.

Time	Action	Type	Recipient	Message	Status	Info
07/24/2019 01:02:01 PM	Email Zabbix admins for average or higher severity triggers	Email	wdecorte (Wim Decorte)	<b>Subject:</b> Resolved: Zabbix agent on fms17-01 is unreachable for 5 minutes  <b>Message:</b> Problem has been resolved at 13:01:56 on 2019.07.24 Problem name: Zabbix agent on fms17-01 is unreachable for 5 minutes Host: fms17-01 Severity: Average  Original problem ID: 2770  Item value: Up (1)	Sent	
07/24/2019 01:01:13 PM	Email Zabbix admins for average or higher severity triggers	Email	mkos (Mislav Kos)	<b>Subject:</b> Problem: Zabbix agent on fms17-01 is unreachable for 5 minutes  <b>Message:</b> Problem started at 13:01:11 on 2019.07.24 Problem name: Zabbix agent on fms17-01 is unreachable for 5 minutes Host: fms17-01 Severity: Average  Original problem ID: 2770  Item value: Up (1)	Sent	

Figure 26. The Action log can be filtered by notification recipient and time period

## Notifications

The notifications report displays a summary of notifications that were sent out for the selected year, summarized daily, weekly, monthly, or yearly. Each recipient will have their notification totals displayed in a separate column.

**Notifications**

Media type

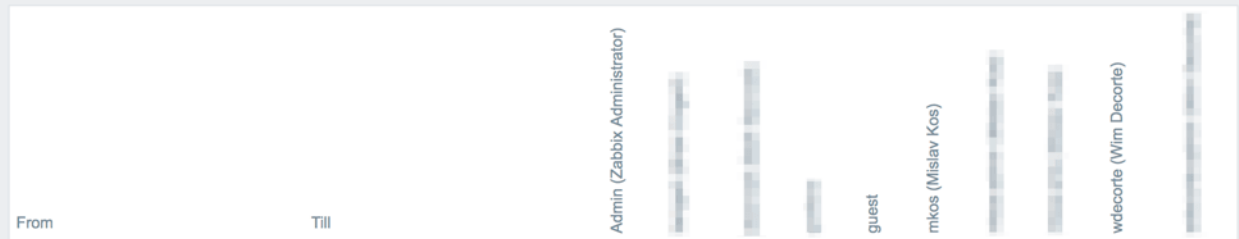
Email

Period

Weekly

Year

2019



From	Till	Admin (Zabbix Administrator)	guest	mikos (Mislav Kos)	wdecorfte (Wim Decortie)
04/01/2019 12:00 AM	04/08/2019 12:00 AM	6	5	6	13
04/08/2019 12:00 AM	04/15/2019 12:00 AM	9	2	9	9
04/15/2019 12:00 AM	04/22/2019 12:00 AM	19		16	12
04/22/2019 12:00 AM	04/29/2019 12:00 AM	18		14	18
04/29/2019 12:00 AM	05/06/2019 12:00 AM	14	4	14	14
05/06/2019 12:00 AM	05/13/2019 12:00 AM	42	2	42	42
05/13/2019 12:00 AM	05/20/2019 12:00 AM	58		58	58
05/20/2019 12:00 AM	05/27/2019 12:00 AM	10		10	10
05/27/2019 12:00 AM	06/03/2019 12:00 AM	6		6	6
06/03/2019 12:00 AM	06/10/2019 12:00 AM	13	1	13	13
06/10/2019 12:00 AM	06/17/2019 12:00 AM	46		46	46
06/17/2019 12:00 AM	06/24/2019 12:00 AM	24		24	24
06/24/2019 12:00 AM	07/01/2019 12:00 AM	8		8	8
07/01/2019 12:00 AM	07/08/2019 12:00 AM	6		6	6
07/08/2019 12:00 AM	07/15/2019 12:00 AM	1	1	1	1
07/15/2019 12:00 AM	07/22/2019 12:00 AM	124	1	70	124

Figure 27. Notifications report