

USER GUIDE DC SCOPE®



**Every resource counts!
Maximize the efficiency of your virtual infrastructure**



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1. INTRODUCTION

DC Scope is an application designed to increase data centers efficiency. It measures and analyzes the activity of the data center in order to provide a healthy state of the infrastructure and to limit waste of resources.

DC Scope gives you a global and accurate view of your virtualized servers.

DC Scope is for infrastructure and IT managers who want a quick overview of the current and future resources consumed by their data centers. This management and decision support solution allows you to fully control your virtualized infrastructure.

DC Scope allows you to:

- achieve investment and operating savings
- **optimize organization and performance**
- **buy smartly** (timing, server sizing but also peripheral infrastructure) ;
- **reduce your environmental footprint.**



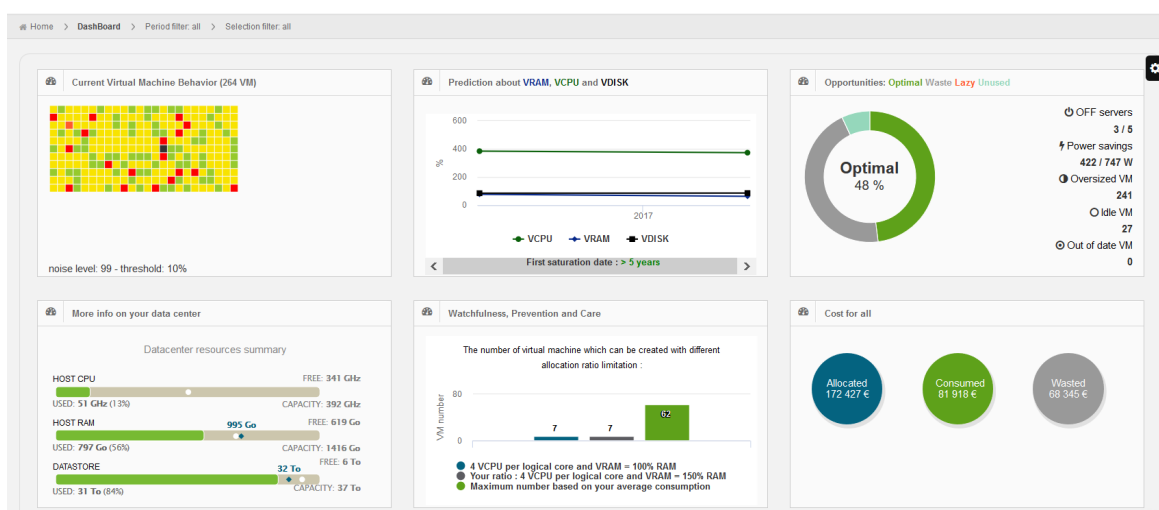
2. QUICK START

DC Scope stores and analyzes millions of data for you, it's not always easy to understand and interpret them, here are a few tips on how to handle the application easily.

1- create your filters

You want to analyze only a single part of your infrastructure and according to different axes (cluster, grouping of VM belonging to the same application, folders, localization,...), in a few clicks you create your organizational filters.

You can also target time periods (**week, night...**)



On the Dashboard, find the tabs to access the filters.

NOTE: - Your filters are taken into account throughout the application, if necessary they can be disabled/reactivated in 1 click --> On/Off button  ON
Default filters (temporal) are already predefined (current_month, last_month, current_year...)

2- Observe your infrastructure in a comprehensive and detailed way

It is possible to zoom in on the different dashboard graphics at any time by clicking on them, for example:



Dashboard

DC Views

Cluster Overview

Server Overview

VM Overview

Storage Overview

Reporting

Recommendation

Graph On Demand

Energy Analysis

Capacity Planning

Troubleshooting

KPI

Cloud Pricing

DASHBOARD : general overview of your infrastructure, various global indicators.

DC VIEWS : provides you visually, the organization of your infrastructure

CLUSTER OVERVIEW : synthetic view of the distribution of servers and resources on the cluster.

SERVER OVERVIEW : gathers the hardware characteristics of the servers

VM OVERVIEW : brings together the characteristics of virtual machines

STORAGE OVERVIEW : global viewpoint and an inventory of the datastores.

REPORTING : provides the user with the ability to generate analysis reports

RECOMMENDATION : identifies possible optimization levers

ENERGY ANALYSIS: watts consumption of servers

CAPACITY PLANNING : prediction and simulation tool

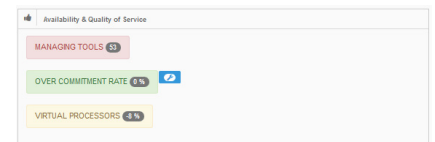
TROUBLESHOOTING : Diagnose the various problems / breakdowns on VMs

KPI : Provides various key performance indicators

CLOUD PRICING : analysis, comparison of internal costs with the public cloud.

3- Optimize your infrastructure

The «Recommendation» tab displays for you the best practices to apply based on the analysis of your IT infrastructure.

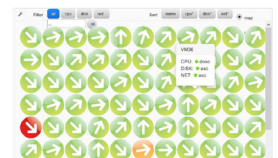


4- Easily anticipate different situations

- DC Scope's capacity planning allows you to easily know your saturation dates, integrate new projects (additions/deletions of machines) or even run business continuity plan tests.



- «troubleshooting» to quickly identify deteriorating VM, anticipate anomalies and provide explanations and to correct recurrent problems.



5 - Manage your infrastructure optimally

- KPI, allows you to obtain accurate reports on different points, infrastructure activity, cost savings, capacity of different resources and state of health of the infrastructure.

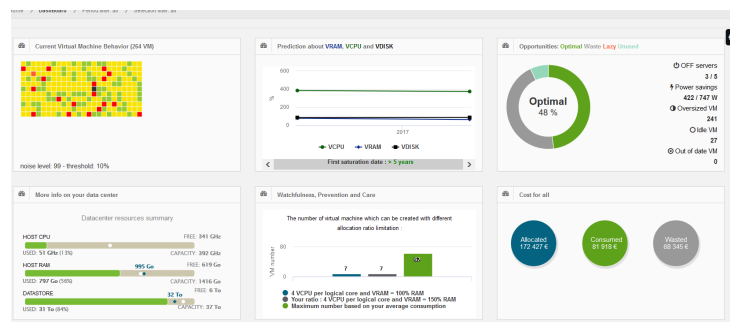


3. DC SCOPE[®] NAVIGATION

3.1 – DASHBOARD

Once the user is login, the **Dashboard**, home page of the graphical user interface, appears.

The dashboard provides a three-axis assessment of the state of the data center : **data center status, capacity management and possible optimizations**. These three axes are represented by three columns divided into two frames.



Data center status

The first column draws the user's attention to the current state of the data center.

The first frame provides a view of all running virtual machines in the data center. Each virtual machine is represented by a colored square. The color varies according to the status of the virtual machine.

■ : Normal ■ : Oversized ■ : Busy
■ : Idle ■ : Lazy

The consumption values (processor and memory) used are the average, over the period analysed, of the processor and memory consumption recovered by the virtual machine operating system.

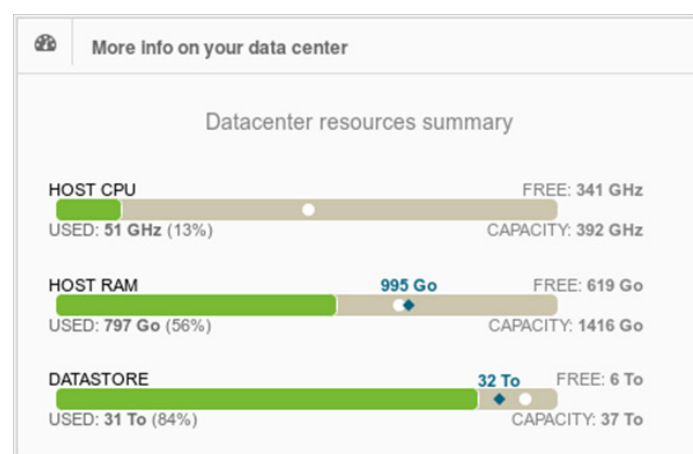
High CPU consumption can degrade the performance of a virtual machine. This behavior must therefore be analyzed by the user who will decide which operations to perform. A square scan provides the name, processor status, RAM and CPU.

The message «no available data» means that no consumption has been detected.

By clicking on the square representing a virtual machine, you are redirected to the consumption curves of the virtual machine. (possibility to refine the date)

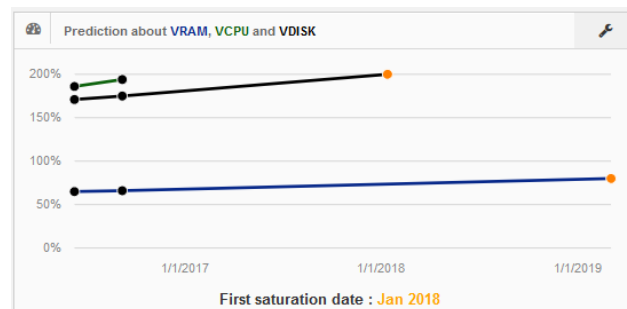


This frame shows the status of the servers in the datacentre. Three resources are analysed: CPU consumption, RAM consumption and storage consumption. For these resources, the averages consumed (USED) and the maximums observed (white point displayed during the rollover of the cursor) are carried over to the period concerned. The blue indicator shows what has been allocated / provisioned to virtual machines. This framework allows you to locate the current activity of the datacentre according to its capacity. If there is a period of high activity, the administrator could decide to postpone some administrative operations that require significant resources.



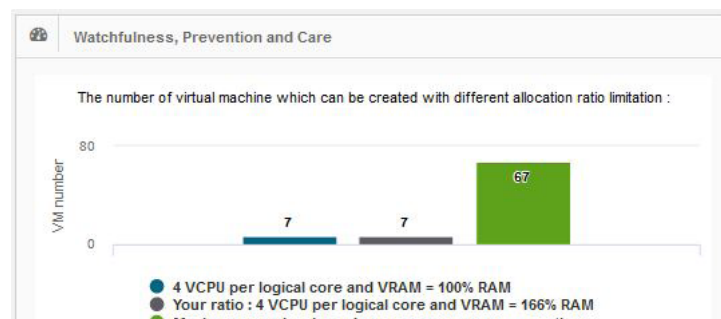
Data center evolution

the central column proposes two tools allowing the user to anticipate the evolution of the activity of the data center, the first tool is linked to the capacity planning (p: 23), it is a tool of prediction, thanks to the data allocated to each one it can predict the different capacities concerning the VRAM, VCPU and VDISK.



«First saturation date» indicates the nearest saturation date. (here for VRAM, January 2018.)

The second tool displays the number of virtual machines that can still be created. This tool analyzes the memory and processor consumption of virtual machines that consumed resources on the infrastructure over the period in question. From these consumptions, the profile of an average virtual machine is defined. The number of additional virtual machines that can be hosted on the infrastructure is then calculated, according to the 100% allocation or set (option overcommitment in the capacity planning) and according to consumption.



Optimization levers



The frame «opportunities» shows potential resource savings by reconfiguring virtual machines based on alerts sent by the solution.

The tool calculates the effect of optimizations to correct virtual machines labeled «Oversized» and «Idle» based on the analysis of processor and memory resources over the period analyzed. The following optimizations are simulated on the infrastructure:

- The extinguishing of virtual machines labeled «Idle». The number of detected virtual machines «Idle» is displayed to the right of the diagram;
- The resizing of virtual machines labeled «Oversized».

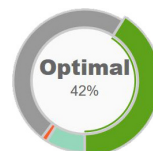
Once these optimizations simulated, all running virtual machines are consolidated on a minimum number of servers. The servers are then used to the maximum of their capacity. Based on this new organization of resources, four counters can be used to assess the attainable gains:

The resizing of a virtual machine consists in reducing its maximum capacity until it consumes its memory consumption; optimization without risk.

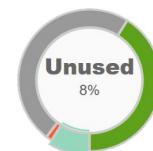
- The «**Lazy**» counter displays the resources consumed by virtual machines labeled «**Lazy**». These virtual machines consume little resources. Their behavior must be analyzed by the user to decide whether they should be extinguished;



- the «**Optimal**» counter displays the resources consumed on servers hosting virtual machines;



- the «**Unused**» counter displays unused resources on servers hosting virtual machines;



- The «**Waste**» counter displays the resources of servers that do not host any virtual machines. These servers are therefore unused and can be turned off. These resources are currently being wasted.



«**Power savings**» displays the ratio of optimized data center power consumption to current power consumption.

The sixth frame of the dashboard details the costs generated by the different machines.



Virtualisation management also involves piloting and posting of the costs; although often these costs are not reinvoiced internally, this helps raise awareness and mobilize to achieve optimizations.

In the dashboard you have the possibility to assign costs according to different units of work (we have allocated costs by default that can be replaced by your own costs; these costs come from customer examples):

- fixed costs associated with the VM: operating time, licenses, electric conso, amortization of the room ...
- variable costs depending on the Ram and Ghz allocated per VM

Settings

VM cost : 200 €

cpu cost : 30 €/Ghz

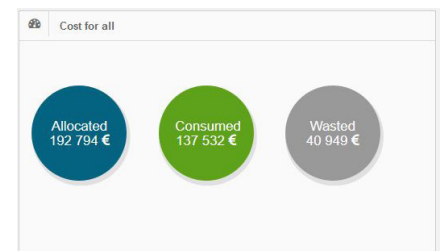
memory cost : 50 €/Go

storage cost : 1 €/Go

save

So automatically based on assigned costs DC Scope will calculate:

- * the overall cost for the analyzed scope - (displaying in function of the filters allows to automatically calculate the cost per «project / perimeter / cluster»).
- * the cost corresponding to what is actually consumed
- * the potential waste (this waste takes into account the difference between allocated and consumed for all VMs; except for those that are not considered oversized (VM identified as normal, and VM undersized and busy).



By clicking on each circle you get the cost details by VM.

To note : you can have different settings depending on whether the ON filter is applied or not.

.CSV export costs tables possible

Cost detail for the allocated resources

Search:

SERVER	SERVER COST	CPU COST	MEMORY COST	TOTAL COST
VM10	1000 €	30 €	100 €	1130 €
VM106	1000 €	30 €	150 €	1180 €
VM108	1000 €	90 €	200 €	1290 €
VM111	1000 €	30 €	200 €	1230 €
VM117	1000 €	90 €	100 €	1190 €

By clicking on different thumbnails «allocated», «consumed» or «wasted», costs details appears.

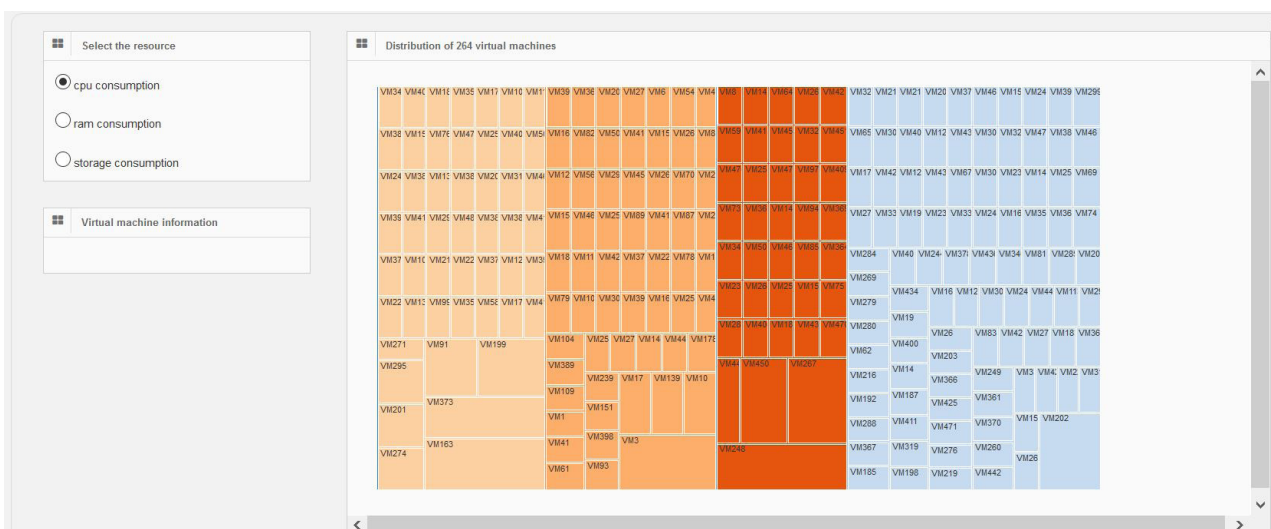
3.2 – DATA CENTER ORGANIZATION

The organization of resources in a data center hosting a large number of virtual machines can quickly become complex. Two tools are available to the user to visualize the virtual machines and their consumption of resources.

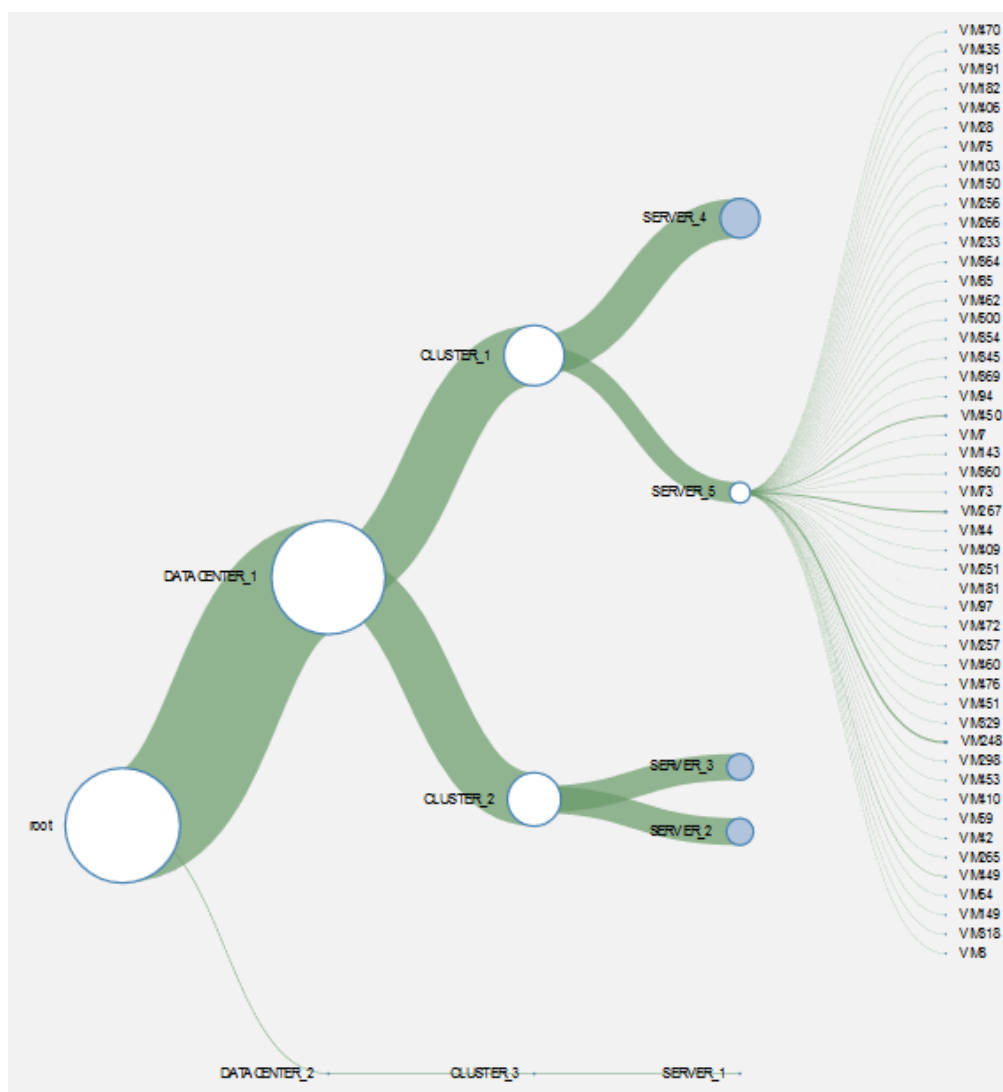
The tool named «Treemap» provides a view of CPU, memory and storage resource consumptions for the data center. Each virtual machine is represented by a rectangle whose size depends on its consumption. The smallest virtual machines are the ones that consume the least. Virtual machines of the same color are hosted by the same server. Only virtual machines with consumptions are displayed in the «Treemap». The virtual machines that are turned off are therefore not present. Radio buttons select the resource to consider when determining the size of virtual machines. By clicking on a virtual machine, the following information is displayed:

- the name of the virtual machine ;
- the name of the server hosting the virtual machine;
- type and name of the element containing this server ;
- CPU and memory consumption on the physical server.

Regarding the «storage» storage part, the virtual machines of the same color are hosted by the same Datastore. The principle remains the same for the size of the rectangles.



The second tool «Flow Diagram» displays the distribution of resources for each element of the data center. This diagram tracks the flow of processor and memory resources consumed by running virtual machines. The more resources an element consumes, the more its trace is wide. To know the consumption of an element, it is enough to fly over its trace of consumption with the mouse. For virtual machines, the consumption values correspond to the consumptions seen from the operating system of the physical server in percentage. The maximum value for a consumption is therefore 100%. For the other elements, their consumption corresponds to the sum of the consumptions of their threads.



3.3 – CLUSTER OVERVIEW

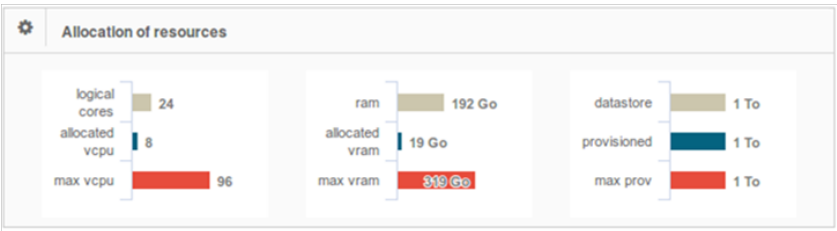
Synthesis

General Information

General Information for the cluster CLUSTER_3		
Number of host: 1	Logical cores capacity: 24	Ram capacity: 192 Go
Number of VM: 4	DRS feature: disabled	DPM feature: disabled
HA feature: disabled	VSAN feature: disabled	

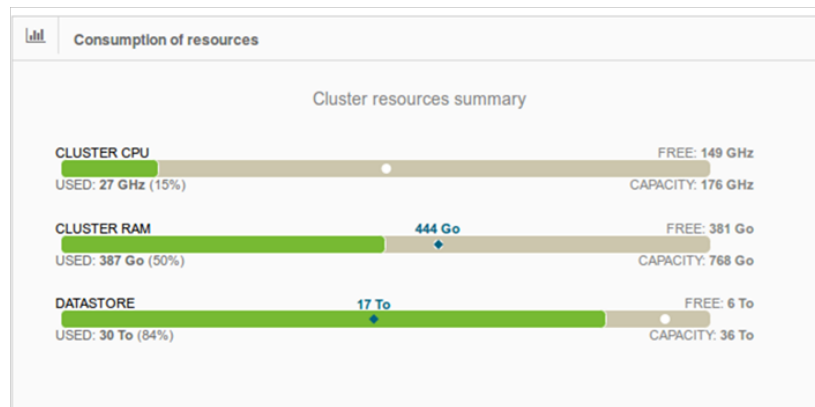
This frame displays information about the cluster capabilities in terms of resources and functionality. In the case of a VSAN activation, a + button appears to display the properties of the VSAN.

Allocation of resources



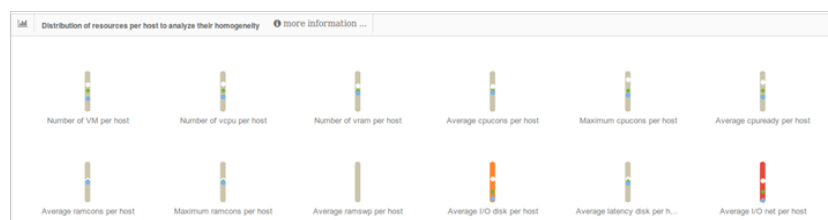
This section allows to analyse the resources assigned to the virtual machines based on the resources of the different physical servers that form the cluster. The red box identifies the value (to be allocated/provisioned to virtual machines) that should not be exceeded. The overflow threshold is calculated from the parameters of the Capacity Planning.

Resources consumed



This frame shows the status of the servers in the cluster. Three resources are analyzed: CPU consumption, RAM Consumption and storage consumption. For these resources, the averages consumed (USED) and the maximums observed (white point displayed during the rollover of the cursor) are carried over to the period concerned. The blue indicator shows what has been allocated / provisioned to virtual machines. This framework makes it possible to situate the current activity of the cluster according to its capacity.

Distribution of resources by server



This section aims to analyse the homogeneity of the cluster. Three situations could be represented by the gray, orange and red color.

By a given resource, for example the number of virtual machines that are running on a server, the white point is the server that hosts the largest number of virtual machines. The blue dot is the server that hosts the smallest number of virtual machines and the green dot is the average per server.

In the case where the difference between the average and the actual number is greater than twice the average, the color is orange. If this difference is four times the average, the color is red

3.4 – SERVER OVERVIEW

Many data are used to characterize servers and quantify available and consumed resources. The user needs tools organizing the data center servers according to their hardware characteristics or their consumptions.

The first tab, «Server Information», groups the hardware characteristics of the servers in a table. The name of the column describes the displayed property:

- Name : server name ;
- Identifier : unique identifier of the server ;
- OS : Operating System ;
- Model : server model ;
- THREAD# : Thread number ;
- CORE# : Core number ;
- CPU Model ;
- CPU# : server core number ;
- CPU Freq. : CPU frequency in MHz ;
- Ram Cap. : memory capacity of the server in Mo ;
- Power Min. : consumption, in Watt, server with a minimal processor consumption
- Power Max. : consumption, in Watt, server with maximum processor consumption

Some properties are not always available for all servers, so the value of the property is «NULL».

Name	Identifier	OS	Model	CPU Model	CPU#	CORE#	THREADS#	CPU Freq (Mhz)	Ram Cap (Mo)	Power Min (Watt)	Power Max (Watt)
SERVER_1	D4516235-70C2-4366-96FA-A3ACD0B372F2-00000000-0000-0000-000000000000	VMware ESXi 5.1.0 build-2191751	ProLiant BL460c G7	Intel(R) Xeon(R) CPU E5620 @ 2.40GHz	2	8	16	2400	118773	60	120
SERVER_2	D4516235-70C2-4366-96FA-A3ACD0B372F2-33313934-3631-5a43-4339-323533313757	VMware ESXi 5.1.0 build-2191751	ProLiant DL380 G6	Intel(R) Xeon(R) CPU X5550 @ 2.67GHz	2	8	16	2666	118773	100	180
SERVER_3	D4516235-70C2-4366-96FA-A3ACD0B372F2-33313934-3631-5a43-4339-323533314833	VMware ESXi 5.1.0 build-2191751	ProLiant DL380 G6	Intel(R) Xeon(R) CPU X5550 @ 2.67GHz	2	8	16	2666	118773	100	180
SERVER_4	D4516235-70C2-4366-96FA-A3ACD0B372F2-35333036-3838-5a43-4a30-343330465436	VMware ESXi 5.1.0 build-2191751	ProLiant BL460c G7	Intel(R) Xeon(R) CPU E5620 @ 2.40GHz	2	8	16	2400	114677	60	120
SERVER_5	D4516235-70C2-4366-96FA-A3ACD0B372F2-35333036-3838-5a43-4a30-343330465436	VMware ESXi 5.1.0 build-2191751	ProLiant BL460c G7	Intel(R) Xeon(R) CPU E5620 @ 2.40GHz	2	8	16	2400	147445	60	120
SERVER_6	D4516235-70C2-4366-96FA-A3ACD0B372F2-35333036-3838-5a43-4a30-343330465458	VMware ESXi 5.1.0 build-2191751	ProLiant BL460c G7	Intel(R) Xeon(R) CPU E5620 @ 2.40GHz	2	8	16	2400	118773	60	120
SERVER_7	D4516235-70C2-4366-96FA-A3ACD0B372F2-35333036-3838-5a43-4a30-343330465638	VMware ESXi 5.1.0 build-2191751	ProLiant BL460c G7	Intel(R) Xeon(R) CPU E5620 @ 2.40GHz	2	8	16	2400	118773	60	120

The second tab, «Server Consumption,» displays information about server consumptions in a table. Consumptions are recorded frequently and stored in a database. In order to facilitate the exploitation of these measurements, several counters are calculated over a period of analysis which can contain a large number of values. These different counters are displayed in a table, the name of the column describes the counter displayed :

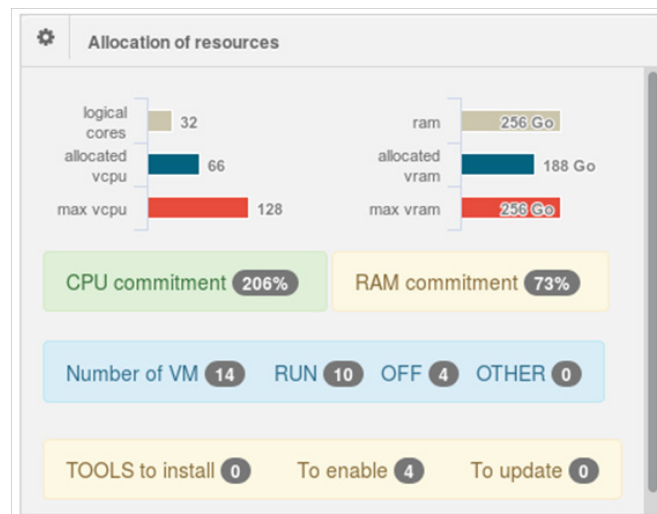
Period#
From
To
Name
Nb. of Values
CPU Consumption - Avg
CPU Consumption - Min
CPU Consumption - Max
CPU < 10
CPU > 70
RAM Consumption - Avg
RAM Consumption - Min
RAM Consumption - Max
IO-Disk Consumption - Avg
IO-Disk Consumption - Min
IO-Disk Consumption - Max
IO-Net Consumption - Avg
IO-Net Consumption - Min
IO-Net Consumption - Max

Some consumptions are not always available for all servers, the value of the consumption is then equal to «NULL». By clicking on the server name, a zoom is made to divide the analysis period into several smaller periods. Using this feature, the user accurately analyzes the consumption of a server. The minimum period of analysis is one hour.

Period#	From	To	Name	Nb. of Values	CPU Consumption (%)					RAM Consumption (%)			IO-Disk Consumption (Mo/s)			IO-Net Consumption (Mo/s)		
					Avg	Min	Max	CPU < 10	CPU > 70	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
0	Wed Jun 08 2016 at 10:00	Tue Sep 06 2016 at 12:00	SERVER_7	83547	18	2	71	21	0	63	51	83	7	0	134	4	0	128
1	Wed Jun 08 2016 at 10:00	Tue Sep 06 2016 at 12:00	SERVER_4	83017	10	1	67	61	0	70	14	91	5	0	100	3	0	121
2	Wed Jun 08 2016 at 10:00	Tue Sep 06 2016 at 12:00	SERVER_9	83547	13	2	64	41	0	69	54	84	7	0	159	4	0	140
3	Wed Jun 08 2016 at 10:00	Tue Sep 06 2016 at 12:00	SERVER_2	83547	5	0	62	86	0	18	18	19	0	0	54	1	0	124
4	Wed Jun 08 2016 at 10:00	Tue Sep 06 2016 at 12:00	SERVER_1	83547	16	1	73	29	0	67	39	93	7	0	135	3	0	155
5	Wed Jun 08 2016 at 10:00	Tue Sep 06 2016 at 12:00	SERVER_3	83547	8	0	29	42	0	8	8	8	0	0	33	0	0	62

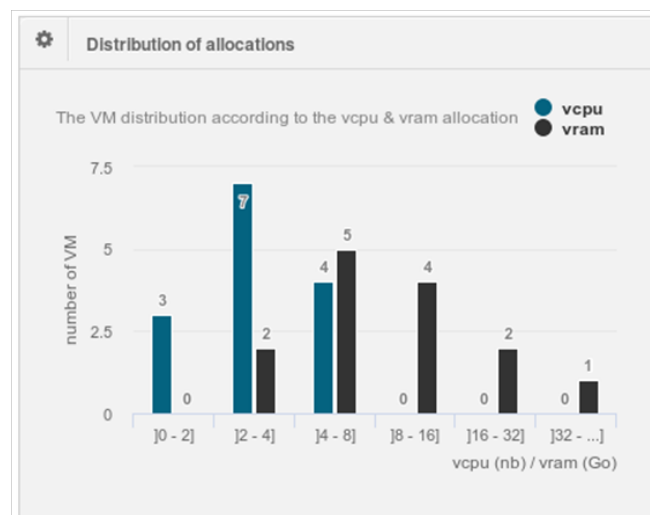
Synthesis

Allocation of resources



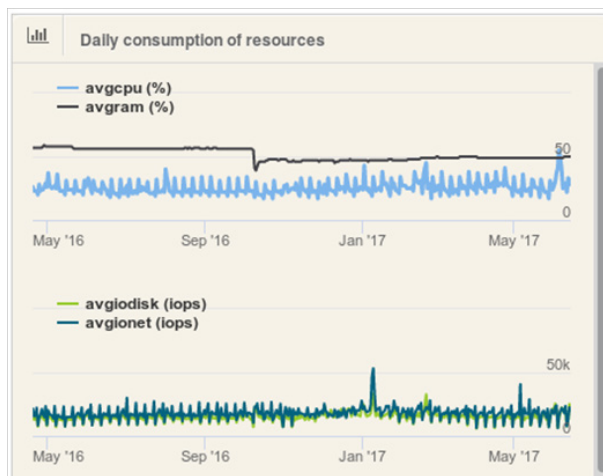
This section allows to analyse the resources assigned to virtual machines based on the resources of the physical server. The red box identifies the value to be allocated / provisioned to virtual machines that should not be exceeded. The overflow threshold is calculated from the parameters of the Capacity Planning.

Distribution of benefits



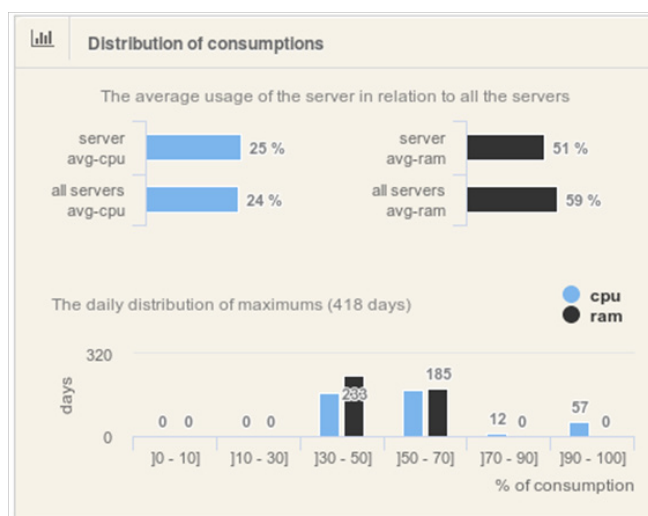
It shows the allocation of vcpu and vram among the number of virtual machines. In the example, only one virtual machine has a memory allocation greater than 32 GB.

Resource consumption



This frame represents the daily consumption of the physical server. This is average consumption for CPU, memory, and disk and network resources.

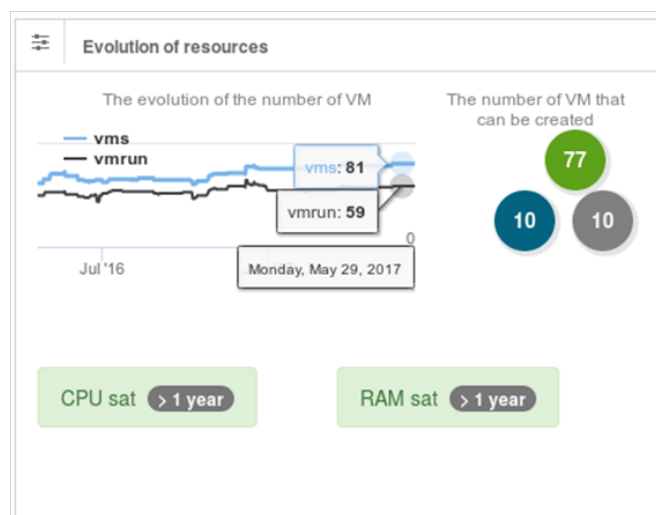
Distribution of consumption



In the upper part of the frame, it shows the average consumption in cpu and ram of the server under analysis (left column) with respect to all the other servers (right column). This makes it possible to position and compare the analysed server relative to the others.

In the bottom part of the frame, it presents the distribution of the maximum levels of CPU and RAM consumption observed by number of days. In the example above, there are 233 days where the maximums levels have been between 31% and 50% of the capacity of the server and 185 days where the maximums levels are between 51% and 70%.

Evolution of resources



This section tracks the number of virtual machines that are running on the analysed server. The green circle indicates the number of virtual machines that can still be created based on average consumption. The blue circle indicates the number of virtual machines that can still be created based on the following conditions:

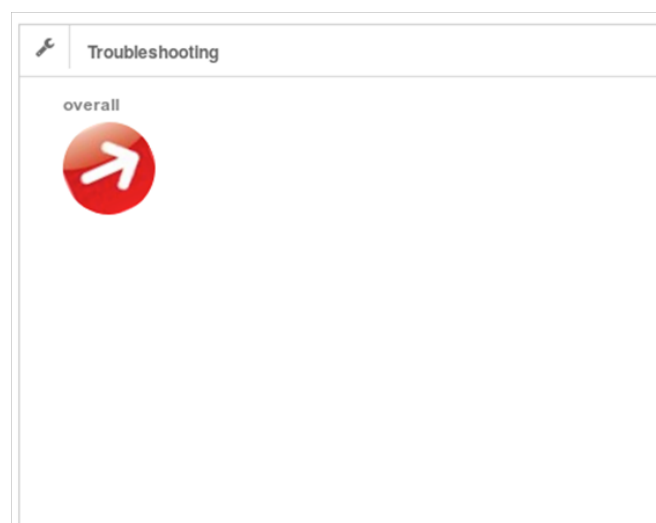
- 4 vcpu per logical heart
- 100% of the ram of the physical server

The gray circle indicates the number of virtual machines that can still be created based on the following conditions:

- 4 vcpu per logical heart
- 166% of the ram of the physical server

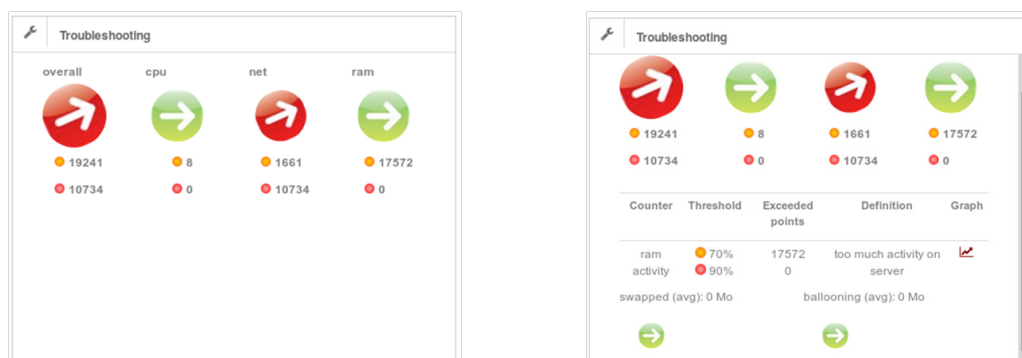
Depending on the average consumption, information on CPU and RAM saturation is given.

Troubleshooting



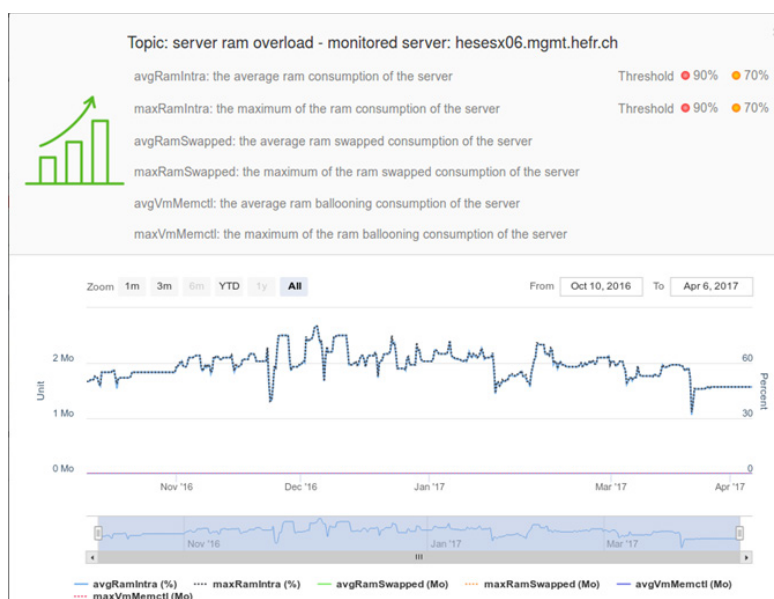
The box above is used to identify the degradation of the resources of the server under analysis. For information on the colour and arrow meaning please refer to the troubleshooting section of this document.

The first round displays the general behaviour of the server, by clicking on row a more detailed information by resource allows to identify the resources which exceed the thresholds of good practices.



In the same way, by clicking on one of the resources a more detailed information is provided, in order to visualize the number of times in which the server has exceed the thresholds.

A final level of information makes it possible to display the graphs of the analysed resource to visualize the chronology of the threshold overruns.



3.5 – VIRTUAL MACHINES INFORMATION : « VM OVERVIEW »

Many data are used to characterize virtual machines and quantify available and consumed resources. The user needs tools organizing virtual machines in the data center according to their static characteristics or their consumptions.

The first tab «VM Information», groups the static characteristics of virtual machines in a table. The name of the column describes the displayed property:

Name
Identifier
MAC
OS

VCPUs
RamCap.

RamRes.

CPURes
VmWare T.

Some properties are not always available for all virtual machines, so the value of the property is «NULL».

Name	Identifier	OS	VCPUs	Ram Cap (Mo)	CPU Res (Mhz)	RAM Res (Mo)	VmWare T.
VM1	D4516235-70C2-4366-96FA-A3ACD0B372F2-420b0481-7aa5-5101-df4d-ed8c66daa666	Autre_Linux_32_bits_	4	1600	0	0	TOOLS_OK
VM10	D4516235-70C2-4366-96FA-A3ACD0B372F2-420b3dde-5f1a-61d3-2650-6b82991f79d4	Microsoft_Windows_Server_2008_R2_64_bits_	1	4096	0	0	TOOLS_OLD
VM100	D4516235-70C2-4366-96FA-A3ACD0B372F2-421caacf-c343-9b70-3513-32115b0313bc	Debian_GNU_Linux_6_64_bits_	1	1024	0	0	TOOLS_OK
VM101	D4516235-70C2-4366-96FA-A3ACD0B372F2-421cbacf-3216-f35d-0a7e-e0a4b8b992a5	Ubuntu_Linux_64_bits_	2	4096	0	0	TOOLS_OK
VM102	D4516235-70C2-4366-96FA-A3ACD0B372F2-421cac3c-0e0a-64bc-d295-1afda3662e71	Microsoft_Windows_7_64_bits_	1	4096	0	0	TOOLS_OLD
VM103	D4516235-70C2-4366-96FA-A3ACD0B372F2-421cb461-f49-f296-d2be-b5e29dbd34e6	Microsoft_Windows_7_64_bits_	1	4096	0	0	TOOLS_OLD
VM104	D4516235-70C2-4366-96FA-A3ACD0B372F2-421cbe92-ba9b-41c9-4b17-a75d61b03705	Microsoft_Windows_Server_2008_R2_64_bits_	1	4096	0	0	TOOLS_OLD

The second tab, «VM Consumption,» displays information about virtual machine consumptions in a table. The consumptions of the virtual machines are recorded periodically and stored in a database. In order to facilitate the exploitation of these measurements, several counters are calculated over a period of analysis which can contain a large number of values. These different counters are displayed in a table, the name of the column describes the counter displayed:

Period#
From
To
Name
Nb. of Values
CPU Consumption - Avg
CPU Consumption - Min
CPU Consumption - Max
CPU < 10
CPU > 70
RAM Consumption - Avg
RAM Consumption - Min
RAM Consumption - Max
IO-Disk Consumption - Avg
IO-Disk Consumption - Min
IO-Disk Consumption - Max
IO-Net Consumption - Avg
IO-Net Consumption - Min
IO-Net Consumption - Max
CPU Ready - Avg
CPU Ready - Min
CPU Ready - Max
CPU Ready %
Disk latency (avg, min, max)

Some consumptions are not always available for all virtual machines, the value of the consumption is then equal to «NULL». By clicking on the name of a virtual machine, a zoom is made to divide the analysis period into several smaller periods. Using this feature, the user accurately analyzes the consumption of a virtual machine. The minimum period of analysis is one hour.

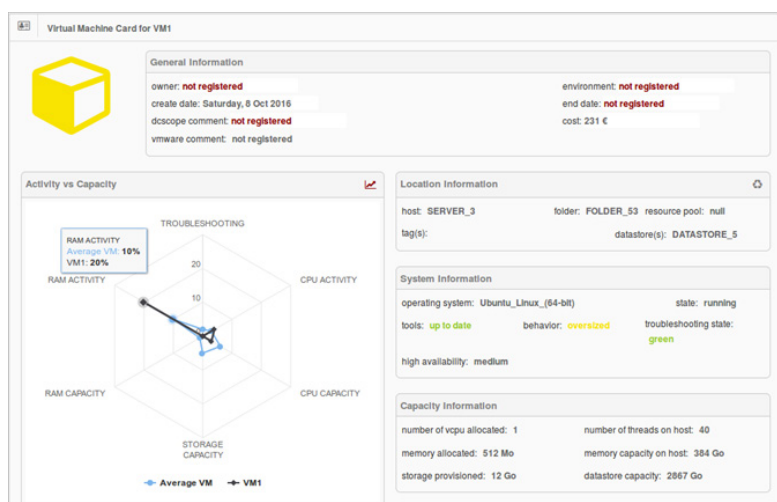
Period# 🔄	From 🕒	to 🕒	Name 📄	Nb. of Values 🔄	CPU Consumption (%)					RAM Consumption (%)			IO-Disk Consumption (Mio/s)			IO-Net Consumption (Mo/s)			CPU Ready (ms)				DISK Latency (ms)		
					Avg 🔄	Min 🔄	Max 🔄	CPU < 10 🔄	CPU > 70 🔄	Avg 🔄	Min 🔄	Max 🔄	Avg 🔄	Min 🔄	Max 🔄	Avg 🔄	Min 🔄	Max 🔄	Avg 🔄	Min 🔄	Max 🔄	% 🔄	Avg 🔄	Min 🔄	Max 🔄
73	Wed Jun 08 2016 at 10:00	Tue Sep 06 2016 at 12:00	VM1 🔗	83543	8	0	100	76	0	36	14	86	0	0	15	0	0	21	14	0	68	0.07	22	0	1334
126	Wed Jun 08 2016 at 10:00	Tue Sep 06 2016 at 12:00	VM10 🔗	83546	1	0	100	97	0	8	0	97	0	0	9	0	0	0	10	1	95	0.05	5	0	7728
37	Wed Jun 08 2016 at 10:00	Tue Sep 06 2016 at 12:00	VM100 🔗	83546	3	0	100	92	0	28	3	93	0	0	67	0	0	4	5	0	45	0.03	18	0	5226

Synthesis

The synthesis section of the VM Overview tab provides a detailed overview of a particular VM. It is possible to directly select the desired VM from the drop-down list or search it with its name in the search bar.

Once a VM is selected, a complete screen with different details appears.

The logo color of the VM represents the behavior of the VM (here green so «normal»)



By clicking on the symbol next to Location Information, it is then possible to visualize the migrations of the virtual machine to another physical server, the changes of configuration or the changes of the status of the virtual machine.

VM Life Cycle for VM1

Search:

Show 10 entries

DATE	SERVER	CPU	RAM	VCPU	VRAM	STATE
19 Apr 2016 (Tuesday) - 13:04	SERVER_3	40	393170	1	1024	RUNNING
08 Oct 2016 (Saturday) - 8:10	SERVER_3	40	393170	1	1024	OFF
08 Oct 2016 (Saturday) - 11:10	SERVER_3	40	393170	1	512	RUNNING

Showing 1 to 3 of 3 entries

First Previous 1 Next Last

In other frames are the technical information

It can be find:

- VM's OS
- Its state
- If VMware tools are installed, up to date...
- If the VM has a high availability property
- It's behavior (normal, idle, etc...)
- the state of health of the VM corresponding to the troubleshooting
- The number of VCPUs of the VM on the entire ESX
- RAM allocated for the VM relative to the server
- Storage provisioned in relation to the capacity of its datastore
- On which server, folder and datastore is the VM
- Tags and pool resource

Location Information		
host: SERVER_5	folder: FOLDER_38	resource pool: null
tag(s):	datastore(s): DATASTORE_6	

System Information		
operating system: Microsoft_Windows_Server_2003_(32-bit)	state: running	
tools: up to date	behavior: normal	troubleshooting state: green
high availability: none		

Capacity Information	
number of vcpu allocated: 2	number of threads on host: 24
memory allocated: 1 Go	memory capacity on host: 72 Go
storage provisioned: 270 Go	datastore capacity: 3379 Go

Last part of «synthesis» is a radar for VM.

It compares a selected VM against the data of an average VM.

Different points are compared:

- CPU activity
- CPU capacity
- RAM activity
- RAM capacity
- Troubleshooting
- Storage capacity



This radar makes it possible to quickly identify the points on which the VM must improve and / or behave well.

3.6 – STORAGE INFORMATIONS : « STORAGE OVERVIEW»

This tab allows you to have a global point of view and an inventory of datastores and virtual machines. By dividing them graphically it is easier to know directly the size of each and the place he occupies.

For datastores :

The graph, list the different existing datastores and detail different information specific to each one. It is possible to sort the datastores according to a precise criterion : a simple click on one of the criteria makes it possible to sort the datastores according to this one. (in function of their respective consumptions). (In the picture, the datastores are sorted according to the IOPS max)

Datastore information														
Search:														
DATASTORE NAME	CAPACITY (Go)	USAGE (%)	IOPS (avg)	IOPS (max)	IOPS READ (avg)	IOPS READ (max)	IOPS WRITE (avg)	IOPS WRITE (max)	LATENCY (avg)	LATENCY (max)	LATENCY READ (avg)	LATENCY READ (max)	LATENCY WRITE (avg)	LATENCY WRITE (max)
DATASTORE_18	3071	95	821	19076	681	18750	140	2494	15	898	8	414	8	567
DATASTORE_17	131	48	31	11571	18	6869	13	5788	1	276	0	240	0	232
DATASTORE_8	3071	93	110	9375	68	8750	43	1993	47	12247	21	1286	26	11128
DATASTORE_13	4403	99	178	7403	77	7084	101	3288	69	13818	22	2250	47	13374
DATASTORE_5	2867	84	128	5204	91	4830	37	1845	36	10243	24	4509	12	9986
DATASTORE_6	3379	84	103	4694	60	4200	43	2411	37	11060	21	3599	16	10135
DATASTORE_7	4095	96	157	4522	90	3884	67	2605	55	8702	29	3220	25	8346
DATASTORE_3	3071	79	195	4442	91	3159	104	2581	53	4948	38	3112	15	4167
DATASTORE_14	2559	76	172	3379	35	2777	137	1859	45	6712	28	2489	17	6422
DATASTORE_19	1149	56	8	2894	7	2275	2	619	3	553	2	189	0	533
Showing 1 to 10 of 19 entries											First	Previous	1	2
													Next	Last

For more information, just click on a datastore in particular, this will bring up the list of its VMs and various related information

Detailed information for the datastore DATASTORE_8 | capacity : 3071 Go (8%) | usage : 2873 Go (93%) | url : /vmfs/volumes/4e832307-b2aa3836-4e10-001d926bf78c/

Search:

Show

10

entries

VIRTUAL MACHINE NAME	USAGE (%)	USAGE (Go)	PROVISIONED (Go)	IOPS (avg)	IOPS (max)	LATENCY (avg)	LATENCY (max)	SNAPSHOT NB	CURRENT SNAPSHOT	SNAPSHOT SIZE	SNAPSHOT DATE	IS THE LAST?
VM83	9	264	344	15	8381	3	538	0	null	0	n/a	null
VM39	4	132	212	18	3843	2	343	0	null	0	n/a	null
VM401	0	15	15	6	2254	1	2083	0	null	0	n/a	null
VM62	3	102	382	18	2066	2	674	0	null	0	n/a	null
VM265	0	13	13	1	1779	1	1390	0	null	0	n/a	null
VM182	2	58	58	3	1621	5	2346	0	null	0	n/a	null
VM253	5	155	155	11	1551	3	1105	0	null	0	n/a	null
VM266	11	352	352	5	1394	1	479	0	null	0	n/a	null
VM378	11	332	332	6	1109	1	608	0	null	0	n/a	null
VM472	1	22	22	4	1061	5	2046	0	null	0	n/a	null

Showing 1 to 10 of 39 entries

First

Previous

1

2

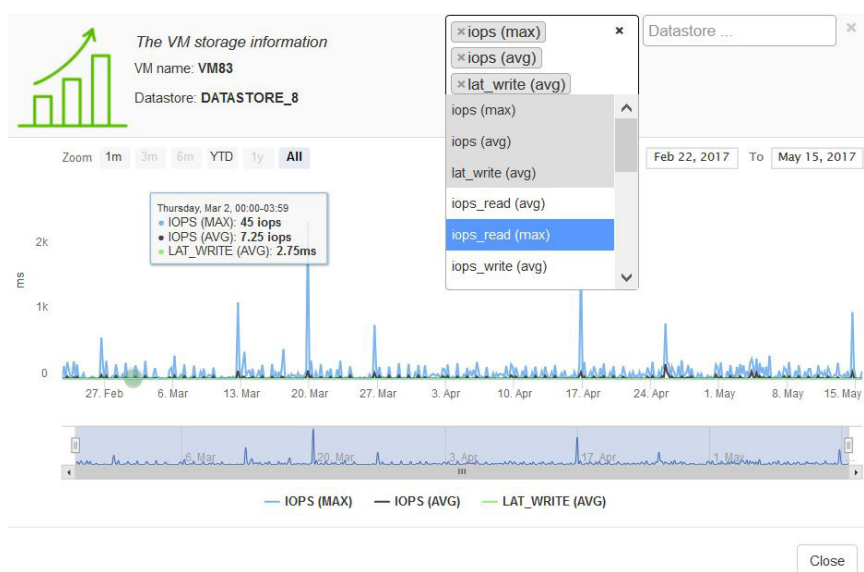
3

4

Next

Last

Concerning virtual machines :

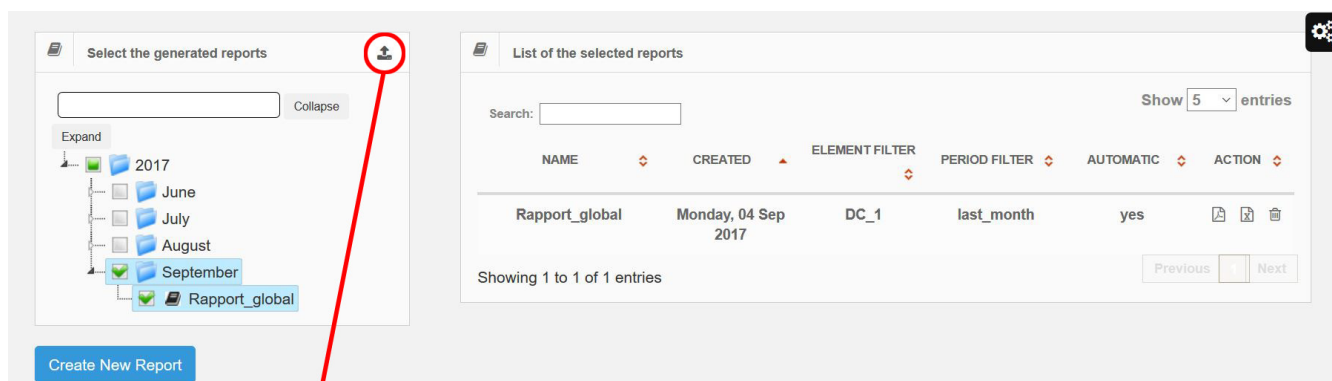


Once you have selected the desired VM, the information specific to it will appear.
In a few clicks it is possible to choose different periods of time or different criteria to be interested.

3.7 – REPORTING

This section provides the user with the ability to generate analysis reports on the state of the data center.

These reports provide an overview of data center activity based on virtual machine detection «Ghost», «Idle», «Lazy», «Busy», «Undersized» and «Oversized». The «Create new report» button starts generating the report.



Ability to integrate the logo of his choice to illustrate the report

Steps to create a new report:

1 Report Wizard

This wizard will help you to create reports.

Cancel Previous Next

3 Select the report type

Automatic ☒ no ☐ yes

The automatic option will generate a new report every month without any user intervention. This report will be created based on the selected filters.

Cancel Previous Next

5 Select a period filter

Select a filter from the following list

Cancel Previous Next

Please wait

processing ...

94%

TEST	Wednesday, 06 Sep 2017	CL_2	current_month	no			
------	------------------------	------	---------------	----	--	--	--

Showing 1 to 2 of 2 entries Previous Next

Once the report is created, it can be found on the right of the reporting screen. Downloadable report (PDF, .XLS)

2 Enter the report name and select language

☒ fr ☐ uk

Cancel Previous Next

4 Select an element filter

Select a filter from the following list

Cancel Previous Next

6 Select the report settings

Select the information to display

- ☒ VM behavior
- ☒ Recommendation
- ☒ KPI

Select the option to display

Cancel Previous Complete

3 Select the report type

Automatic ☐ no ☒ yes

admin@mycompany.com

easyvirt@easyvirt.com

Cancel Previous Next

Choice of name and language of the report.
(Available in French and English.)

Selection of the desired filter, (filter previously established in «selection filter»)

Choice of information to display (For example: KPI for managers, very visual data)

Report generation via the wizard now makes possible to send reports to a list of people by adding their email addresses, when the automatic report option is selected.

Report analysis description (reporting)

The edited reports are designed to be easily exploitable; they are organized as follows:

The first two pages of the report inform the user about the observed scope and its intrinsic capabilities.

Customer	CUSTOMER	Start date of analysis	Sat Jan 31 23:00:00 UTC 2015
Indicator	Scope Analyse	End date of analysis	Sat Feb 28 22:59:59 UTC 2015
Page Number	1/26	Report id number	1427810494

Scope for this analyze							
Name	type	#cluster	#host	#vm	cpu capa. Mhz	ram capa. Mo	power capa. Watt
DATACENTER_1	datacenter	1	3	245	239280	1294180	2066
CLUSTER_1	cluster	0	3	245	239280	1294180	2066
SERVER_3	server	0	0	73	79760	507878	744
SERVER_6	server	0	0	64	79760	262078	611
SERVER_1	server	0	0	108	79760	524224	711

Observed scope (report analysis)

Customer	CUSTOMER	Start date of analysis	Sat Jan 31 23:00:00 UTC 2015
Indicator	VM Behavior	End date of analysis	Sat Feb 28 22:59:59 UTC 2015
Page Number	2/26	Report id number	1427810494

VM behavior						
Name	#Idle	#Lazy	#Ghost	#Busy [CPU - RAM]	#Under [CPU - RAM]	#Over [CPU - RAM]
DATACENTER_1	14	12	38	0[0-0]	0[0-0]	147[98-117]
CLUSTER_1	14	12	38	0[0-0]	0[0-0]	147[98-117]
SERVER_3	4	4	9	0[0-0]	0[0-0]	39[28-34]
SERVER_6	3	3	20	0[0-0]	0[0-0]	30[23-21]
SERVER_1	7	5	9	0[0-0]	0[0-0]	78[47-62]

Behavior of virtual machines (analysis report)

The following pages relate to the behavior of virtual machines by integrating the notion of noise.

Idle Virtuals Machines												
			Noise filtering (%)									
			Inactivity threshold (%)									
			2	5	10	2	5	10	2	5	10	2
Virtuals Machines			RAM	VCPU								
1	1000000000	8192	4					*	*	*	*	*
2	1000000000	2048	1						*	*	*	*
3	1000000000	3072	2	*	*	*	*	*	*	*	*	*
4	1000000000	8192	4	*	*	*	*	*	*	*	*	*
5	1000000000	2048	2	*	*	*	*	*	*	*	*	*
6	1000000000	8192	2	*	*	*	*	*	*	*	*	*
7	1000000000	10240	4	*	*	*	*	*	*	*	*	*

Behavior of Virtual Machines in Detail (Analysis Report)

It involves identifying elements that meet the definitions «idle», «lazy», «undersized», «busy», «oversized». (Use of the concept of noise) (see glossary)

3.8 – RECOMMENDATION

This section allows you to observe quickly and in detail what are the possible optimization levers. These are described in the tables below.



Over commitment rate tab

This visual makes it possible to see the state of the servers;

- The number of vmware tools installed or not
- The number of VMs on the server
- The CPU count is the average number of VCPUs per VM
- VM rate single is the number of VMs that do not share memory with other VMs
- The consumed RAM is the ram consumed by the VMs on the server
- Overcommitment is the ram allocated on the server
- Actions are the actions to be performed on the server

It is possible thanks to the «wrench» icon to set the number of servers to be commissioned in order to see the impact that this will have on the other servers (last two lines).

HOST NAME (PHYSICAL SERVER)	TOOLS To INSTALL	TOOLS To UPDATE	TOOLS To ENABLE	VM NUMBER	CPU COUNT	SINGLE VM RATE (%)	RAM CONSUMED (%)	OVER COMMITMENT (%)	ACTION TO BE IMPLEMENTED
SERVER_1	0	7	0	11	2	0	52	53	no action
SERVER_2	1	8	0	14	3	0	61	64	no action
SERVER_3	1	12	1	24	3	12	82	102	check that the tools are up to date
SERVER_4	0	7	0	15	3	13	71	72	no action
SERVER_5	1	10	0	19	3	10	65	67	no action
SERVER_6	0	4	0	10	1	10	43	45	no action
x (degraded mode)	3	48	1	23	4	2	94	101	check that the tools are up to date
x with recommendation (degraded mode)	2	44	1	22	4	2	91	94	no action

This action tests the state of its infrastructure in degraded mode. Are my indicators satisfactory if there are 1 or x servers failing in my infrastructure.

Virtual processors tab

This table shows the use of VCPUs on each VM and offers optimization if necessary.

VIRTUAL MACHINE	VIRTUAL MACHINE IDENTIFIER (uuid)	HOST NAME	VCPU	AVG CONSUMPTION (%)	AVG READY (%)	MAX READY (ms)	AVG READY (ms)	MIN READY (ms)	ACTION TO BE IMPLEMENTED
VM105	4205fd9-461d-1333-9d71-b199e8959051	SERVER_4	4	2	2	649	460	227	remove 1 vcpu
VM106	4205e14c-dd3e-9e47-6f8b-b36dc2b24c2f	SERVER_2	4	0	0	293	51	32	remove 1 vcpu
VM11	42052a1d-ef1c-a038-dab4-35a5f7f1713a	SERVER_4	6	0	0	133	12	4	remove 1 vcpu
VM25	4205b30b-04a2-a3f4-67c9-97ba10630055	SERVER_5	2	0	0	159	18	7	remove 1 vcpu
VM3	4205aee7-f9e-d410-21b2-ac58eb02b8a1	SERVER_4	2	1	0	247	35	19	remove 1 vcpu
VM52	42055501-1dd1-13f2-1e9e-4651ced4eadc	SERVER_1	2	2	0	215	99	24	remove 1 vcpu
VM59	564d16d0-d730-05bf-52cf-0dd9269c467b	SERVER_3	4	1	0	504	66	17	remove 1 vcpu
VM62	4205c16a-d9e6-dd64-337d-704d9508cfad	SERVER_5	2	1	0	209	54	29	remove 1 vcpu
VM70	4205b072-c615-bb34-04a9-b01d982fae2	SERVER_2	4	2	2	582	424	259	remove 1 vcpu

Resizing memory tab

Resizing memory is the equivalent of the «Virtual processors» table previously defined.

VIRTUAL MACHINE	VIRTUAL MACHINE IDENTIFIER (uuid)	HOST NAME	RAM ALLOCATED (Mo)	RAM RESERVED (Mo)	RAM CONSUMED (Mo)	RAM ACTIVE (Mo)	RAM ACTIVE (MAX Mo)	ACTION TO BE IMPLEMENTED
VM115	4205b49e-9bf5-950c-5820-0b849b7abdad	SERVER_6	8192	0	6032	488	1786	set RAM allocation to 6144 Mo
VM121	4205006a-8142-421d-2919-c058096aeb0a	SERVER_3	4096	0	2059	1654	1654	set RAM allocation to 3072 Mo
VM24	4205217a-b5f0-4c38-ebc2-51fb8bcf5e20	SERVER_3	12288	0	9581	1256	6166	set RAM allocation to 10240 Mo
VM40	42059cc5-0d0b-e6ee-457a-5fd774682c1b	SERVER_3	4096	0	2158	166	396	set RAM allocation to 3072 Mo
VM43	4205cec5-78a9-c64f-f754-1e6cd51bd95c	SERVER_5	16384	0	14176	1544	7938	set RAM allocation to 14336 Mo
VM70	4205b072-c615-bb34-04a9-b01d982fae2	SERVER_2	8192	0	3773	78	163	set RAM allocation to 4096 Mo
VM89	42055d71-48f0-6add-488b-798b7081d870	SERVER_3	16384	0	5073	358	537	set RAM allocation to 5120 Mo

Life cycle & resources tab

This visual makes it possible to identify the behavior of the VMs (idle or lazy) according to the parameters saved (threshold and percentage of noise) using the adjustable wrench.

VIRTUAL MACHINE	VIRTUAL MACHINE IDENTIFIER	HOST NAME	BEHAVIOR	CPU SAVED (MHz)	RAM SAVED (Go)	DISK SAVED (Go)	ACTION TO BE IMPLEMENTED
VM70	4205b072-c615-bb34-04a9-b01d982fae2	SERVER_2	IDLE at 5-99	184	3	n/a	turn off the virtual machine

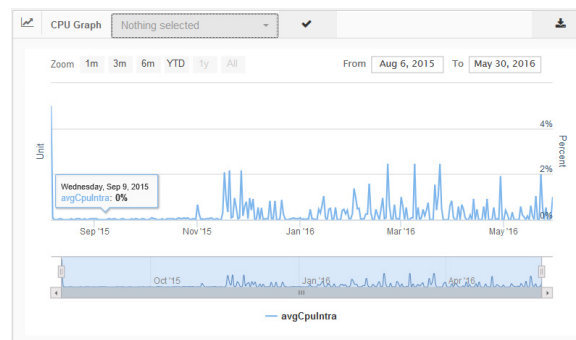
Life cycle & behaviour tab

This table allows to characterize each VM according to their consumption («lazy», «oversized», «undersized», «zombie», «idle», n / a, «normal», «busy») and indicates the actions that can be put in place to optimize its operation.

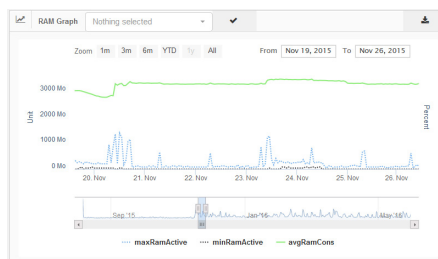
VIRTUAL MACHINE	VIRTUAL MACHINE IDENTIFIER	HOST NAME	CREATION or DELETION DATE	STATE	BEHAVIOR	ACTION TO BE IMPLEMENTED
VM1	4205d70d-045f-4333-fa5c-68b47ba334ac	n/a	no data available	off	n/a	destroy the virtual machine (if no need)
VM10	4205ed21-5490-e23c-bd47-7b4b185c4241	SERVER_6	no data available	running	☆ normal	no action
VM100	42054489-1280-548a-d689-2a6d1899a06a	SERVER_5	no data available	running	● oversized	remove resources (vcpu or ram allocated)
VM101	4205e7e2-2718-78ad-1232-810b6369e1b6	n/a	no data available	off	n/a	destroy the virtual machine (if no need)
VM102	4205a9e9-f37b-b500-d224-f0211f7dd6a	SERVER_3	no data available	running	● oversized	remove resources (vcpu or ram allocated)
VM103	4205123c-8245-6b13-d957-3b12e7eea3c7	SERVER_6	no data available	running	☆ normal	no action
VM104	42109526-0ca4-597a-990f-a911c6396e6d	n/a	no data available	off	n/a	destroy the virtual machine (if no need)
VM105	4205fd9-461d-1333-9d71-b199e8959051	SERVER_4	no data available	running	● oversized	remove resources (vcpu or ram allocated)
VM106	4205e14c-dd3e-9e47-f88b-b36dc2b24c2f	SERVER_2	no data available	running	● oversized	remove resources (vcpu or ram allocated)
VM107	4205118f-afe2-1132-e185-6e6426e97497	SERVER_4	no data available	running	☆ normal	no action
VM108	420591fc-a7ef-d7ab-d8de-c0c59ed3f06	SERVER_1	no data available	running	● oversized	remove resources (vcpu or ram allocated)

3.9 – GRAPH ON DEMAND

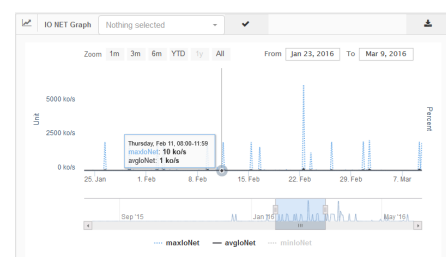
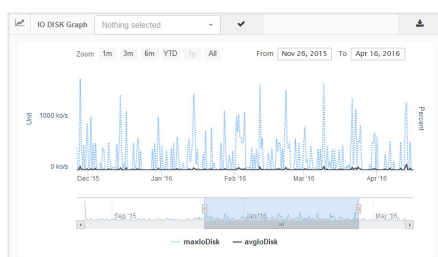
This section allows you to observe memory and processor resources as well as disk and network rates over the time period analyzed for a particular element. The latter being a virtual machine or a physical server.



The dotted curves represent the maximums observed to display the exact time. The latter is given in UTC («Universal Time Coordinated») format. The solid curves represent the average consumption over the past hour.

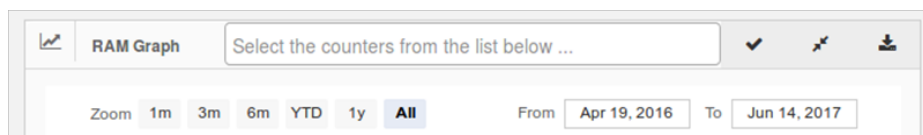


Possibility to select your own counters, to adapt to your profile. exhaustive list attached



Comparison of two virtual machines

In the Graph On Demand section it is now possible to compare the behaviour of two virtual machines..



By clicking on the comparison symbol, a new window appears allowing you to select the desired meter and the machine to compare.

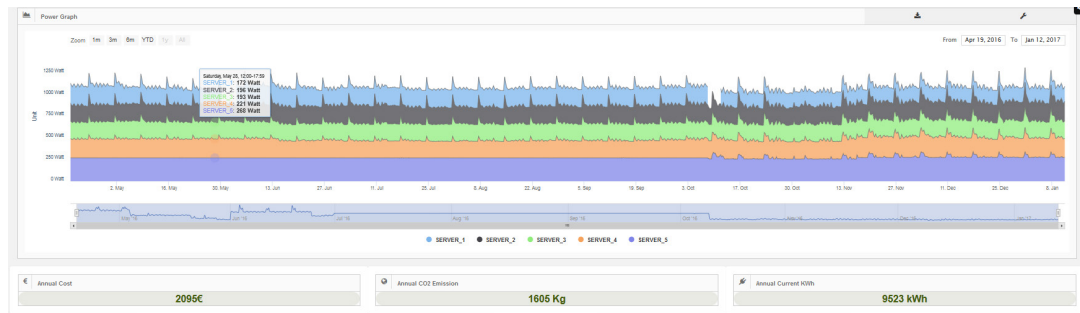
The screenshot shows a dialog box titled 'Select VM to compare'. On the left, there is a dropdown menu showing 'ram active (avg)' with a close button 'x'. On the right, there is a list box titled 'Select a VM ...' containing three items: 'VM1', 'VM10' (which is highlighted in blue), and 'VM101'.



3.10 – ENERGY ANALYSIS

This tab shows the Watt consumption of the servers according to the chosen period. The graph transcribes the energy used by each server over time. Below the graph three indicators are present:

- The average annual cost of server energy consumption
- Average annual CO2 emissions of server energy consumption
- Energy consumed over the period analyzed in KW / h



Top right, possibility to set with its own numbers, depending on its organization.

Settings

PUE coefficient

KWh cost (€)

CO2 emission factor

3.11 – FILTER MANAGEMENT

The filters are activated via the «ON / OFF» button on the menu bar located in the upper right corner of the interface. In the «OFF» position, the filters are deactivated, which means that the analysis is carried out on all the elements and on the whole duration of analysis. In the «ON» position, the analysis is performed on the selected filter, elements and periods.



3.12 – ELEMENTS FILTERS

A data center hosts a significant number of virtual machines. The analysis of all the virtual machines of a data center of a single block is therefore a difficult task and, in some cases, irrelevant (clustering of servers, «Folder», «Tag view», «Resource pool «or folder, location, etc.).

Using the selection filters, the user specifies the elements he wants to observe. The definition of the elements to be analyzed is accessible via the **«Selection filters»** button.

To create a filter, click on the «Create New Filter» button and follow the instructions of the wizard

Automatic filter

DC Scope allows you to create filters and automatically track an item. For example, if a server is selected when creating the filter then any VM created on that server will automatically be added to the filter. On the other hand, when creating the filter if some server VMs are selected but not all VMs, then any new VM running on this server will not be added to the filter.

This notion of automatic filter is also valid for servers, clusters and datacenters.

(feature available from version 4)

The image displays three sequential screenshots of the 'Filter Wizard' interface.

Step 1: Filter Wizard
This wizard will help you to create filters of your infrastructure.

Step 2: Enter the filter name
The input field contains 'Cluster_3'.

Step 3: Select items in your infrastructure
This step shows a tree view of the infrastructure and a list of available selection filters.

Infrastructure Tree View:

- DATACENTER_1
 - CLUSTER_2
 - SERVER_2
 - SERVER_3
 - CLUSTER_1
 - SERVER_5
 - SERVER_4
 - DATACENTER_2
 - CLUSTER_3
 - SERVER_1

View Selection: ☒ Server ☐ Folder

Available Selection Filters:

Filter Name	Select	Delete
1_2	☐	
Cluster_3	☒	
DC1	☐	

3.13 – PERIOD FILTERS

Click on the button «Create New Filter» and follow the wizard.

1 Filter Wizard

This wizard will help you to create filters based on the analyzed period.

Cancel Previous Next

2 Enter the filter name

Novembre_2016

Cancel Previous Next

3 Select periods

☒ Period Picker

November 2016

December 2016

Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5					1	2	3
6	7	8	9	10	11	12	4	5	6	7	8	9	10
13	14	15	16	17	18	19	11	12	13	14	15	16	17
20	21	22	23	24	25	26	18	19	20	21	22	23	24
27	28	29	30				25	26	27	28	29	30	31

Cancel Previous Complete

Available Period Filters

current_month

last_month

current_year

2016

Novembre_2016

☐

☐

☐

☐

☒

TO NOTE:

A user can define and use multiple filters at the same time.

3.14 – VIEWING PERIODS AND SELECTED ITEMS

From all tabs, the currently selected items and periods can be displayed by clicking on the three wheels on the right side of the screen. Two tables summarizing the periods and items in use are displayed. A new click on the wheels makes the tables disappear.

Selected Periods for Filter ON (2 periods)	
From	To
Fri May 01 2015 at 00:00	Tue Sep 08 2015 at 23:59
Tue Sep 01 2015 at 02:00	Tue Sep 08 2015 at 10:00

Selected Elements for Filter ON (674 elements)	
Type	Name
SERVER	SERVER_3
VM	VM498
VM	VM526
VM	VM157
VM	VM183
VM	VM686
VM	VM492

4. CAPACITY PLANNING

Capacity planning is a key element in driving its virtualization. It will enable you to make the right investment decisions and anticipate project risks.

We have designed our capacity planning so that it is very intuitive and you can use it with great ease as soon as you feel the need:

- anticipate saturation dates
- deploy new projects
- simulate server losses ...

TO NOTE:

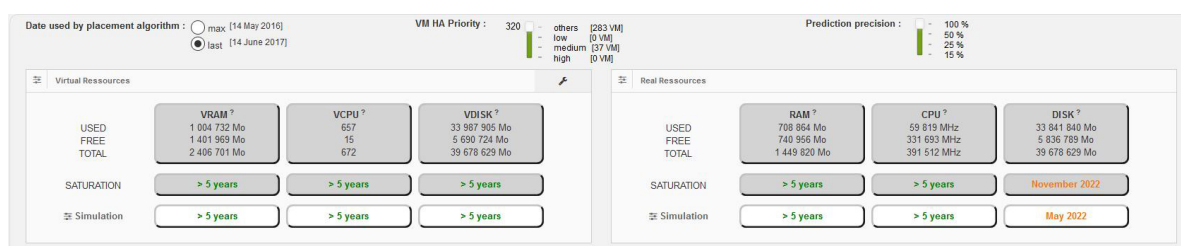
The displayed values (USED, FREE, TOTAL) correspond to the state of each resource on the selected date:

max: corresponds to the date on which the CPU or RAM resource was the most loaded

last: last day consolidated in base

used by placement algorithm : ☒ max [3 September 2015]
☐ last [7 September 2015]

4.1 – RESOURCE SATURATION DATES PREDICTION



Objective: To give the saturation dates according to parameterizable criteria.

Principle:

the left-hand side called «**Virtual Resources**» corresponds to the resources allocated. (1)
The right part named «**Real Resources**» corresponds to the resources consumed. (2)

In part (1), we distinguish three distinct resources «**VRAM VCPU and VDISK**»

VRAM: is the sum total of VM memory allocated

VCPU: is the sum of VCPUs allocated to VMs

VDISK: is the total sum of disk space provisioned to VMs

Virtualization allowing overcommitment of resources, the amount of memory, the number of logical cores as well as the disk space can be virtually increased.

Thus, these virtual capacities can be parameterized by clicking on the key.



*For example, an infrastructure with a real memory capacity of 100 GB applying overcommit of 166% in memory simulates a virtual memory capacity of 166 GB.
By default, we apply the overcommitment rates recommended by Vmware (4 VCPU / logical core, 166% memory).*

In part (2), we distinguish three distinct resources RAM CPU and DISK

RAM: is the sum of the consumed memories (consumed counter)
by the VMs

CPU: corresponds to the sum of the Mhz consumed (counter «cpuMHz»)

DISK: corresponds to the difference between the sum of the capacities of the datastores and the sum of the free spaces of these datastores.

The saturation dates are determined via a linear regression, applied for each resource. The granularity of the points is the day. A color code is used to present the dates:

- **GREEN** no risk in the short term, (saturation date > 5 years)
- **ORANGE** it o, but we arrive at saturation (saturation date < 5 years, we display the month and year)
- **RED, KO** : the resource is saturated,
if it is in the «Virtual resources» part, it is not necessarily necessary to add physical resources, it may be enough to:
increase overcommitment rate, resize oversized VMs or even delete idle VMs (to reduce allocations)

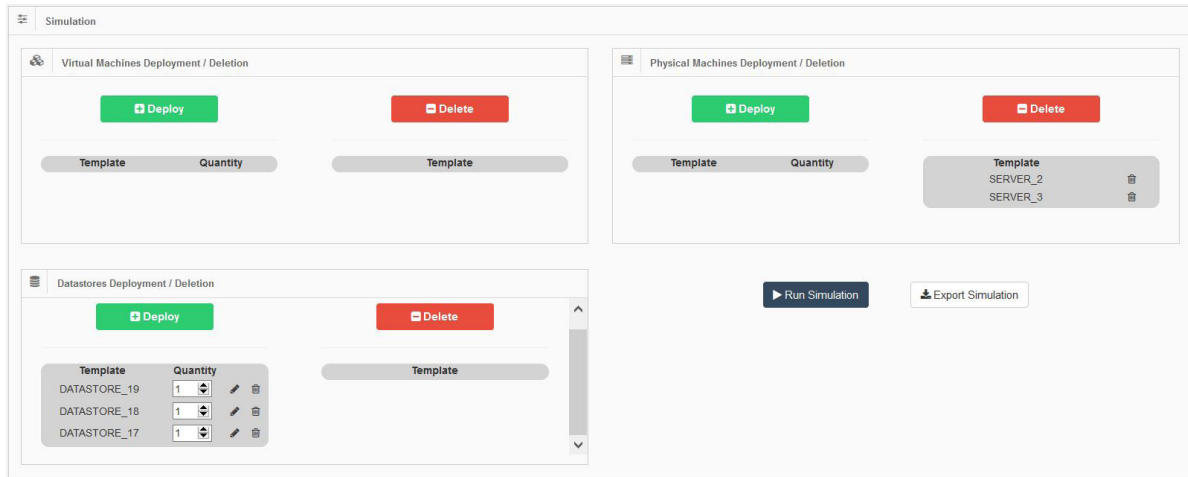
If this is in the Real Resources section:

Removing unnecessary VMs impacting resources and / or adding IT resource

- **RED, No Data** : not available information

It is possible to export the simulations carried out on the capacity planning. In these simulation reports, trend curves are present

4.2 – DEPLOYING / DELETING PROJECTS



The Virtual Machines Deployment / Deletion part simulates the addition and / or deletion of VMs from existing profiles. (Also available for physical machines and Datastores)

Clicking on the **«Deploy»** button a window displays the inventory of deployed VMs currently within the infrastructure. For each VM, we display its name, the amount of memory, the number of VCPUs and the allocated disk space as well as an average of its memory consumption (in MB) and processor (in MHz). The choice of VMs is made by checking the boxes to the right of their name. The checked VMs then appear in the part below the button.

By clicking on the **«Delete»** button, the same window is displayed. The checked VMs that will be deleted in the simulation appear under the **«Delete»** button.

Regarding the VMs to deploy, a pencil icon allows you to edit the metrics of the VM. It is also possible to change the amount of VM to deploy that will include this profile.

Once the VM profiles to deploy / delete made, the simulation is launched by pressing the simulation button.

The simulation happens in two stages:

1 / An investment algorithm will determine if the placement of new VMs is possible. To do this, the placement algorithm will use the infrastructure following the chosen date

MAX: corresponds to the date on which the CPU or RAM resource was the most loaded

LAST: last day consolidated in base

2 / If the placement is possible, we define new prediction dates in taking into account the allocations / consumption of new VMs. To allow comparison the dates of predictions, the new dates related to the simulation are displayed below. New saturation dates have the same color code.

The results of the simulation are available in PDF.

Virtual Resources				Real Resources			
USED	VRAM ?	VCPU ?	VDISK ?	USED	RAM ?	CPU ?	DISK ?
FREE	378 532 Mo	192	10 942 508 Mo	FREE	336 286 Mo	19 827 MHz	30 160 576 Mo
TOTAL	145 500 Mo	128	96 467 308 Mo	TOTAL	187 746 Mo	158 093 MHz	77 249 240 Mo
	524 032 Mo	320	107 409 816 Mo		524 032 Mo	175 920 MHz	107 409 816 Mo
SATURATION	KO	KO	> 5 years	SATURATION	December 2016	> 5 years	> 5 years
Simulation	No Data	No Data	No Data	Simulation	No Data	No Data	No Data

4.3 – HOST FAILURE MODELING

Date used by placement algorithm : ☐ max [27 May 2017]
☒ last [30 May 2017]

VM HA Priority : 152

others [115 VM]
low [0 VM]
medium [37 VM]
high [0 VM]

Prediction precision :

100 %
50 %
25 %
15 %

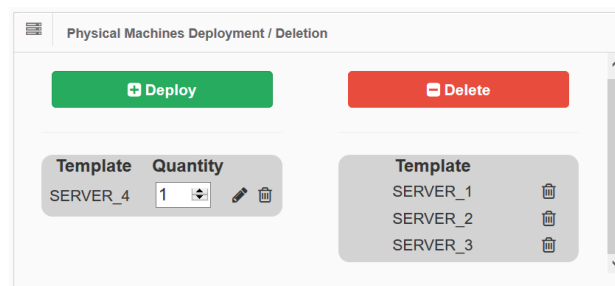
Objective: Simulate a hardware failure / failover of rooms, Identify / Calibrate hardware resources to add.

Principle: The «**Physical Machines Deployment / Deletion**» part simulates the addition and / or deletion of physical servers from existing profiles.

By clicking on the «**Delete**» button, the same window is displayed. Checked servers that will be deleted in the simulation appear under the «Delete» button.

It is possible to perform this simulation with one or more servers, choosing all the vm or only a part, by setting their priority using «**VM HA PRIORITY**»

For example, this allows in the case of the loss of an entire room, to test, if the other room is able to accueullir all the vm that was on the failed servers, manageable in global «all» or in VM HA PRIORITY



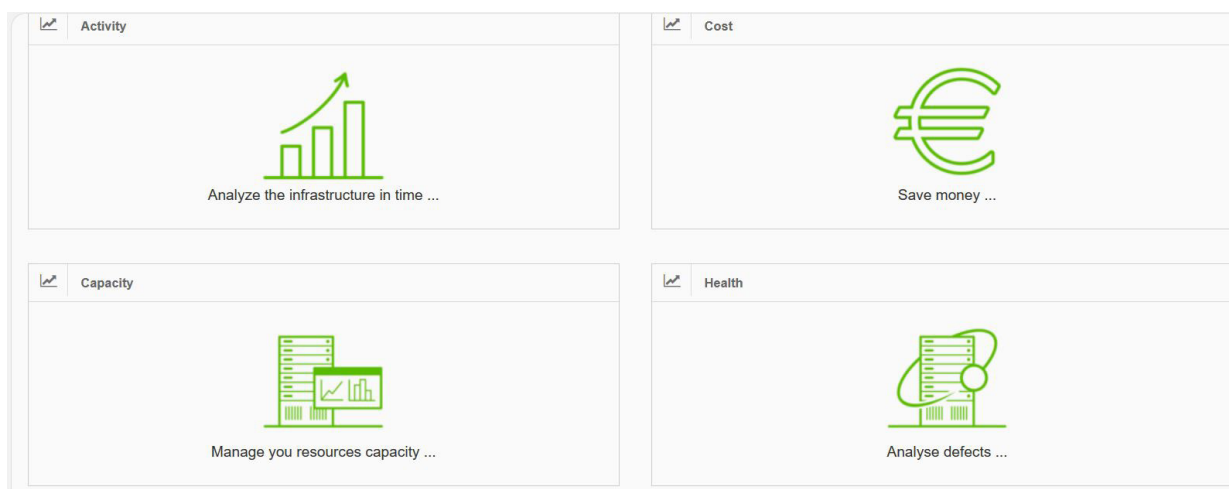
*TO NOTE: It is possible to combine several simulations
For example: «I have a new project of 'X' VM, the simulaton indicates that the capacity of my physical servers is insufficient ... I simulate the addition of a physical server»*

5. KPI

Often complex, DC Scope very simply outputs visual indicators.

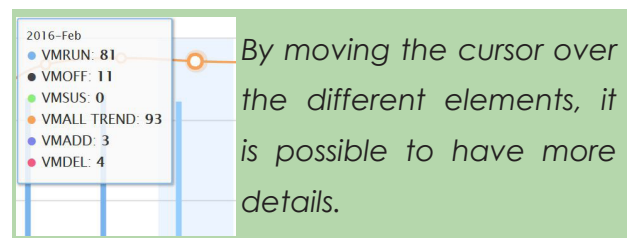
4 types of reports are provided:

- The activity of the infrastructure
- Savings realized
- The capacity of the different resources
- The state of health of the infrastructure



The first report on the activity of the infrastructure makes it possible to release all the VMs month by month.

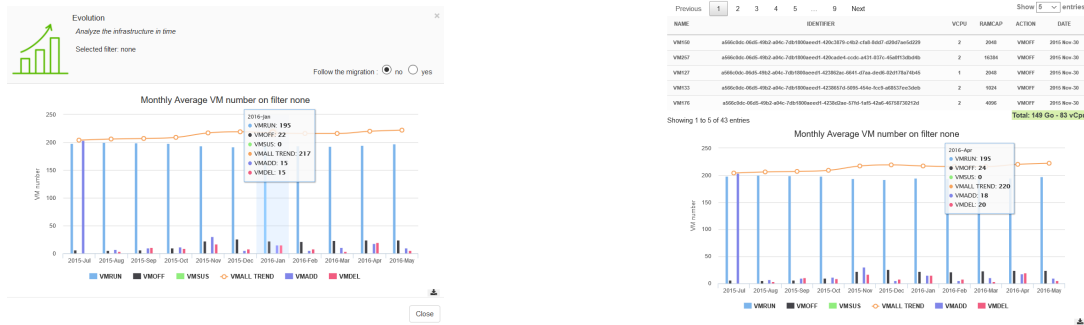
-  **VMRUN** = running VM
-  **VMOFF** = inactive VM
-  **VMSUS** = suspended VM
-  **VMALL TREND** = global trend
-  **VMADD** = added VM
-  **VMDEL** = deleted VM



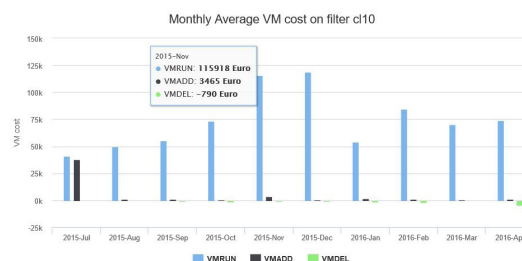
Follow the migration : ☒ no ☐ yes The yes mode provides a detailed view of VMs that have migrated.

For information: if a VM is RUNNING on the current month and OFF for the day of the 20th and RUNNING on the day of the 21st and until the end of the month, it will then be indicated as OFF for the day of the 20th. in KPI the analysis of the VMs is carried out day / day for every month.

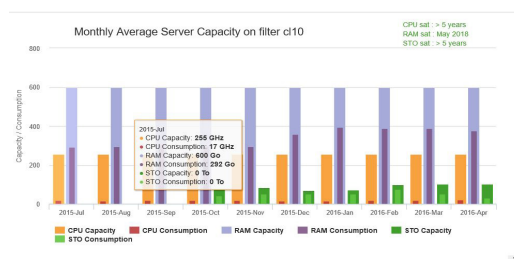
The first report allows you to release your budget by following the evolution of the different costs, month by month. The costs can be set via the «settings» icon represented by a «wrench».



The second report allows you to release your budget (the costs can be set in the dashboard) This report makes it possible to follow the evolution of the different costs, month by month.



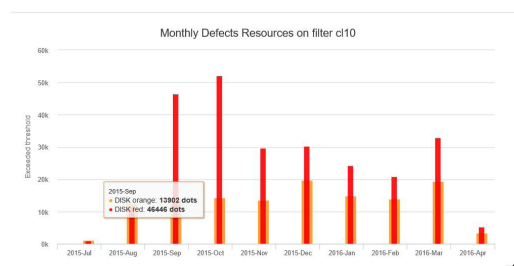
This third report displays, month by month, the evolution of capacity and consumption for processor, memory and storage resources.



The report also provides the dates of saturations

CPU sat : > 5 years
RAM sat : May 2018
STO sat : > 5 years

The fourth and final report represents the evolution of the number of times the different criteria have exceeded the thresholds of good practice.



6. TROUBLESHOOTING

6.2 – TROUBLESHOOTING FUNCTIONING

«Troubleshooting» has two purposes,

- 1: Quickly identify VMs that are degrading, anticipating anomalies.
- 2: Provide explanations and correct recurring problems.

DC Scope:

- analyzes all the VMs or only the VMs of a selected element filter
- examines these VMs after exceeding thresholds of good practices per resource
- poster ...

Displays according to 2 visual codes: a more or less oriented arrow and a color (red, orange or green).

Inclination of the arrow

The orientation / inclination of the arrow

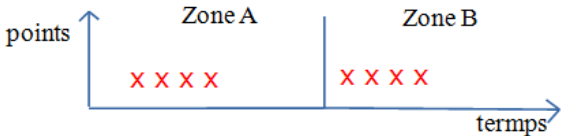
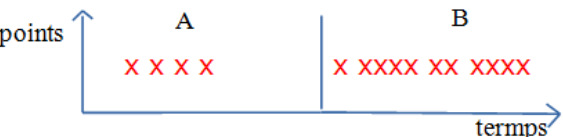
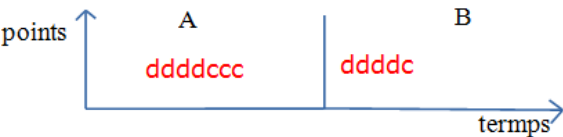
Indicates the evolution of the «health» of the VM:

- down: improvement
- upwards: degradation.

The operating principle is as follows:

The analysis period is divided into two (period A and B). For each resource (cpu, disk and network) we count the number of points which exceed the thresholds fixed on the red criterion on the period A then on the period B. If there is the same number of points between the 2 periods then the arrow is flat called «flat». If zone B contains at least 5% more points than zone A then the arrow is upward ascending. If zone A contains more points than zone B then the arrow descends «desc».



Zone A Cas	Schemes of points exceeding the threshold	Comments
		The analysis period is divided into 2 equal parts (zone A and B). As many points exceed the red threshold, on period A as on period B, this gives a horizontal arrow.
		No point exceeds the red threshold gives a horizontal arrow
		Fewer points exceed the red threshold on period B than on period A, this gives a downward arrow.
		At least 5% of the points, exceeding the red threshold, in addition to the period B gives an upward arrow. The greater the difference in the number of points between the two periods, the greater the angle of inclination of the arrow.
		At least 5% more points on period B for the disk resource and less points for the cpu resource. The upward arrow of the disk has priority over the downward arrow of the CPU.
		As many points in period A and B for the disk resource. Fewer points for the cpu in period B. The downward arrow of the CPU takes precedence over the horizontal arrow of the disk.

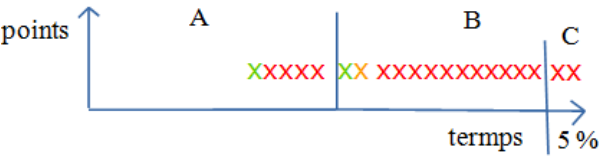
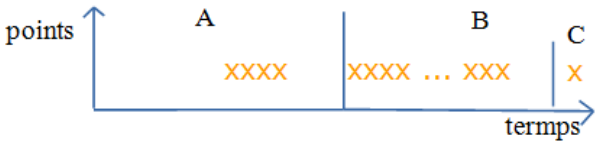
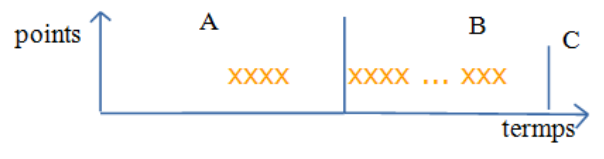
Color: state of the VM at the end of the scan.

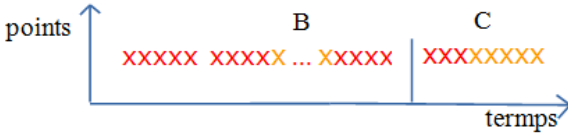
The color indicates whether the VM has more or less exceeded the thresholds of good practice (see thresholds of good practice) at the end of the analysis period.

- red & orange: exceeded thresholds
- green: below the thresholds

For each resource (cpu, disk and network) the number of points that exceed the thresholds set on the red and orange criteria for the last 5 percent of the analysis period (period C) is counted. If X% of the total points are red in the period C then the color is red otherwise if X% of the total points are orange on the period C then the color is orange otherwise the color is green.

The diagrams below illustrate the color:

Cas	Schemes of points exceeding the threshold	Comments
		Area C is the last 5% of the total period (A + B) of analysis. 20 points in total over the entire analysis period. 2 red dots in period C = 5% of total points. The color is red.
		10 points in total and exceeding the orange threshold but not the red threshold for the entire analysis period. 2 points in the period C is 20% of the total points. The color is orange and all the points are in zone B which gives a maximum inclination.
		30 points in total and exceeding the orange threshold for the entire analysis period. Only 1 point in period C is 3.3% of total points. The color is green.
		30 points in total and exceeding the orange threshold for the entire analysis period. No point in period C. The color is green.

Cas	Schemes of points exceeding the threshold	Comments
		50 points in total. 3 and 5 points respectively exceeding the red and orange thresholds of 6% and 10% in period C. The color is red (priority on orange).

Note the threshold for the C zone is configurable (default 5%), it allows to adjust the display of highly critical VMs at the end of the period.

Filters and sorting

The filter is used to display the «GENERAL STATUS» of the VMs that respond to an ascending resource (CPU, for example). It displays the color and the arrow of the general state (most degraded resource and most critical state).

The «critical» filter is used to display all the VMs whose inclination angle on one of the three resources (cpu, disk or net) is positive.

The «cpu» filter displays all the VMs whose color is orange or red on the cpu resource and whose slope of the arrow is positive in cpu.

The «disk» filter displays all VMs that are orange or red in color on the disk resource and have a positive disk arrow tilt.

The «net» filter displays all VMs that have an orange or red color on the network resource and have a positive network arrow tilt.

The sorting can be done by VM name or by degree of inclination of the arrow of each resource.

Troubleshooting use case

A click on «critical» brings out the VMs concerned by this state, so they are red and deteriorating.



It is possible to know more, by clicking on the desired VM and detecting where the problem comes from.

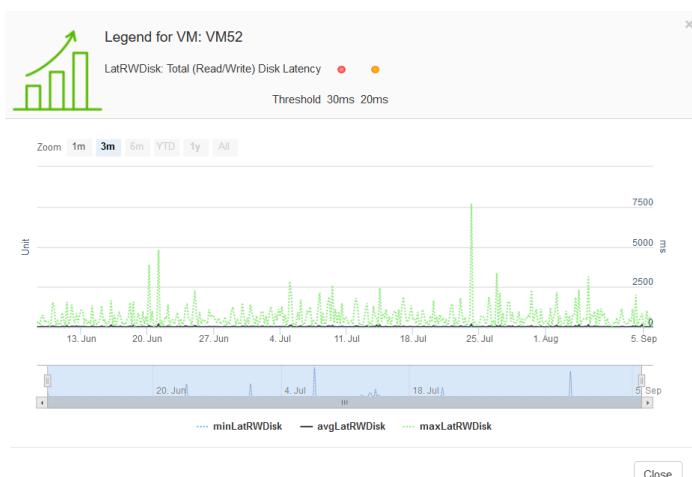
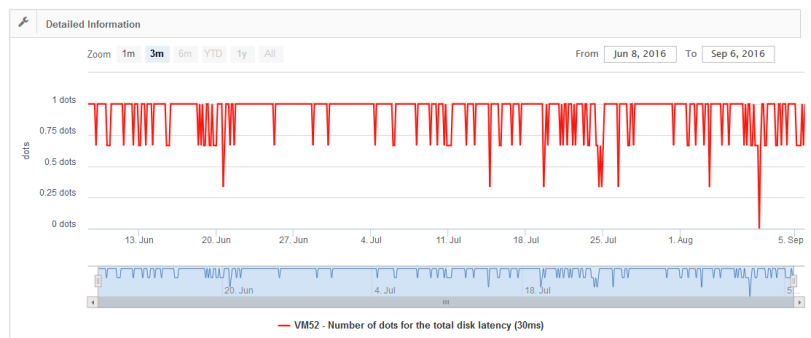
NAME	CPU	DISK	NET
VM52	●	●	●

In this case, the problem comes from the DISK, to identify it clearly, click on it.

We then notice that the problem comes from DISK latency, to have more details, it is possible to click on the figure in total latency and get the detailed curve, with the points exceeded.

Resource		
Virtual machine: VM52 - analyzed resource: disk		
DESCRIPTION	●	●
Controls failed	0	0
Total latency	5865	1690

Click on the curve to get more details and zoom in on the points, get the MIN, MAX, MOY ...



6.2 – THRESHOLDS OF GOOD PRACTICE

For each resource there are two thresholds not to be exceeded (orange and red) that correspond to two different levels of values.

For each resource, one or more metrics are analyzed.

CPU resource

«Too much CPU Activity on Host»

- definition: CPU overload at the hypervisor level (too much ready on VMs, waiting to give access)
- orange / red threshold: 5/10%

«Too much VCPU on VM»

- definition: CPU overload at VM level (high COSTOP counter, too much vcpu allocated)
- orange / red threshold: 1/3%

«Virtual machine overload»

- definition: overload to «inside the VM»
- orange / red threshold: 90/95%

DISK resource

«Controls failed»

- definition: number of SCSI disk drives lost
- orange / red threshold: 1/5 orders

«Total latency»

- definition: average time to read and write on the disk
- orange / red threshold: 20/30 ms

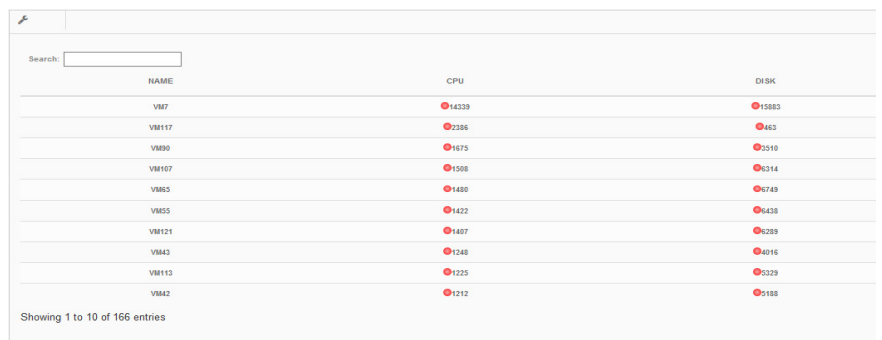
NET resource

Lost packets

- definition: number of lost network packets
- orange / red threshold: 1/5 packs

To note : «list view»

It is possible to view as a list, the sorting is different. This view gives all the red dots on the whole period and on all the metrics.



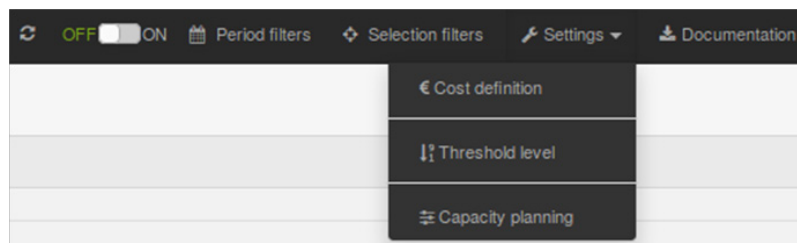
NAME	CPU	DISK
VM7	●14239	●15883
VM117	●2386	●863
VM90	●1675	●2510
VM107	●1508	●3314
VM85	●1480	●5749
VM55	●1422	●4438
VM121	●1467	●2289
VM43	●1248	●4016
VM115	●1225	●5329
VM42	●1212	●1188

Showing 1 to 10 of 166 entries

7. DC SCOPE[®] ADMINISTRATION

Settings section :

The «Settings» section allows you to modify the parameters related to Cost, Threshold level and the Capacity Planning section.



Cost definition :

The «Cost definition» section allows to enter the costs associated to the physical server and to define a fix cost for the VM's and the data store.

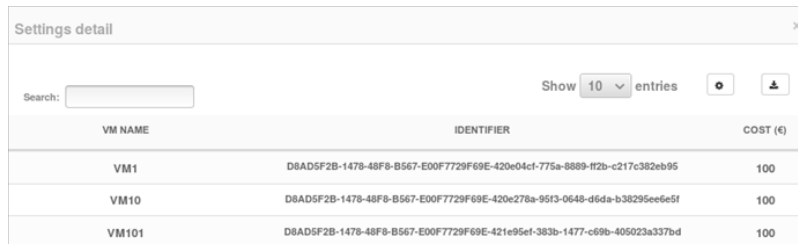
Only the «root» user can set these costs.

A screenshot of the 'The annual cost of VMs' configuration page. The page contains several input fields for costs: 'VM cost' (200 \$), 'STORAGE cost' (1 \$/Go), 'HOST cost' (10000 \$), 'VCPU cost' (80 \$), and 'VRAM cost' (27 \$/Go). Below these is a slider for 'The ratio between the cpu and the ram' with a value of 40.00, ranging from 0% cpu to 100% ram. A 'Reset cost' button is located at the bottom left.

VM cost

The «VM cost» corresponds to the fixed cost of one virtual machine. This one is generic, adjustable and corresponds to the cost of maintenance, license, etc.

Each virtual machine can be assigned a different fixed cost by clicking the + button.



The screenshot shows a 'Settings detail' window with a search bar and a table of VM costs. The table has three columns: VM NAME, IDENTIFIER, and COST (€). There are three rows: VM1, VM10, and VM101, all with a cost of 100.

VM NAME	IDENTIFIER	COST (€)
VM1	D8AD5F2B-1478-48F8-B567-E00F7729F69E-420e04cf-775a-8889-ff2b-c217c382eb95	100
VM10	D8AD5F2B-1478-48F8-B567-E00F7729F69E-420e278a-95f3-0648-d6da-b38295ee5e5f	100
VM101	D8AD5F2B-1478-48F8-B567-E00F7729F69E-421e95ef-383b-1477-c69b-405023a337bd	100

By clicking on the cost of a specific virtual machine, it is possible to modify it.



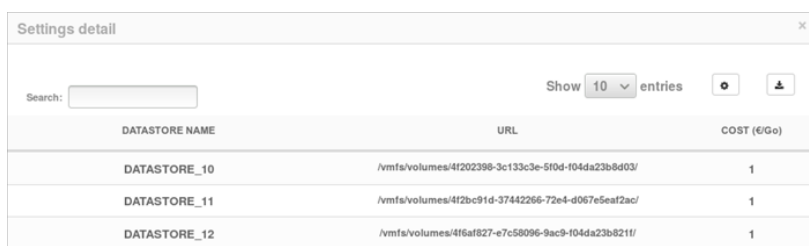
The screenshot shows a 'Change of value' dialog box over the VM cost table. The dialog has a text input field labeled 'Enter the new cost : 100 €' and a 'Save' button.

In this case, we talk about specific cost rather than generic cost.

STORAGE cost :

«STORAGE cost» is the cost per Gigabyte in the datastore. This is a generic and modifiable cost. By clicking on the + button, you can assign a cost for each datastore.

In this case, the cost per datastore is specific rather than generic.



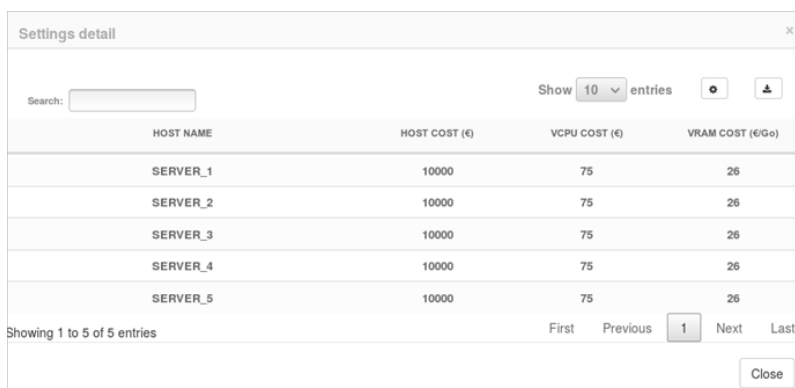
The screenshot shows a 'Settings detail' window with a search bar and a table of storage costs. The table has three columns: DATASTORE NAME, URL, and COST (€/Go). There are three rows: DATASTORE_10, DATASTORE_11, and DATASTORE_12, all with a cost of 1.

DATASTORE NAME	URL	COST (€/Go)
DATASTORE_10	/vmfs/volumes/4f202398-3c133c3e-5f0d-104da23b8d03/	1
DATASTORE_11	/vmfs/volumes/4f2bc91d-37442266-72e4-d067e5eaf2ac/	1
DATASTORE_12	/vmfs/volumes/4f6af827-e7c58096-9ac9-104da23b821f/	1

HOST cost :

«HOST cost» is the cost of the physical server (ESX). This cost takes into account the cost of purchasing, maintenance, electrical consume, etc. The ratio in the distribution of costs between vcpu and vram assigned to the virtual machines is by default 40% for the vcpu and 60% for the vram. By changing the ratio, the cost of vcpu and vram are automatically changed. In the same way if the vcpu or vram cost is changed then the ratio is automatically modified to guarantee the accuracy in the cost of the physical server.

This is a generic cost that can be modified by clicking the + button to specify the costs per server.



The screenshot shows a 'Settings detail' window with a search bar and a table of host costs. The table has four columns: HOST NAME, HOST COST (€), VCPU COST (€), and VRAM COST (€Go). There are five rows, each representing a server (SERVER_1 to SERVER_5). The table shows that each server has a host cost of 10000€, a vcpu cost of 75€, and a vram cost of 26€Go. The window also includes a 'Show 10 entries' dropdown, a 'Close' button, and pagination controls.

HOST NAME	HOST COST (€)	VCPU COST (€)	VRAM COST (€Go)
SERVER_1	10000	75	26
SERVER_2	10000	75	26
SERVER_3	10000	75	26
SERVER_4	10000	75	26
SERVER_5	10000	75	26

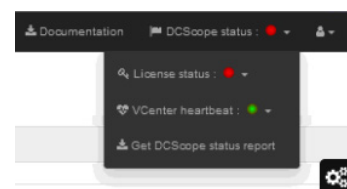
In the case where costs are specified for the physical server the value of the ratio is no longer modifiable.

The «RESET» button resets the physical server costs vcpu and vram to its default values. In this case, the previously defined costs of the physical servers are also reseted.

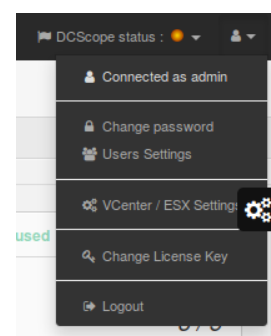
DC Scope status :

The drop-down menu of DC Scope status allows you to find:

- the DC Scope license validity period and for which number of VMs
- VCenter Heartbeat = connection to VCenter (**attention if red or orange contact EasyVirt**) (that means that there is a loss of connection to the vcenter, so no data recovery)
- «Get DC Scope» allows log events to be downloaded

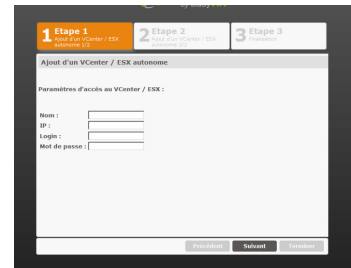
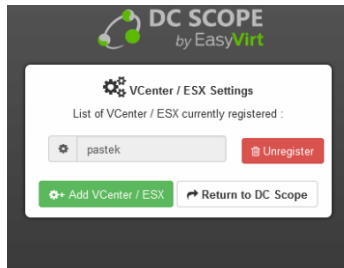


It is possible to connect to DC Scope by LDAP but only the user «Root» allows to add / delete users, it is the same for VCenter / ESX.



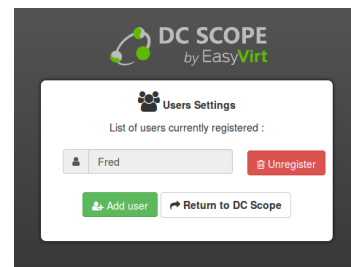
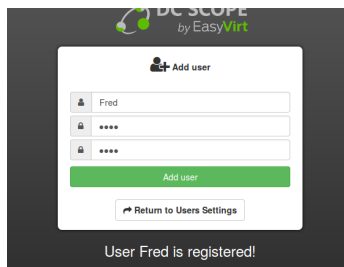
Add VCenter and / or standalone ESX:

You can add or remove VCenter or ESX from this interface, click on «add VCenter», a wizard appears.



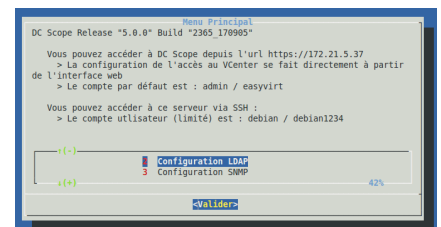
Management of local user accounts:

It is possible to display the list of users as well as the creation of a user



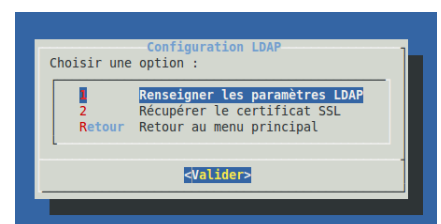
Via LDAP & SNMP :

LDAP and SNMP configurations are performed from the DC Scope VM Administration Console, accessible from the VMware Console.



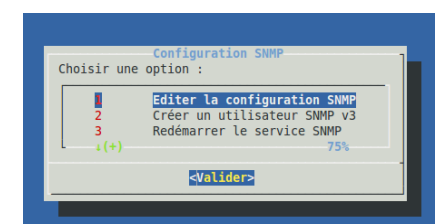
1 / LDAP configuration:

- enter the address of the LDAP server and enter the desired group.
- recover ssl certificate, necessary to connect to LDAP

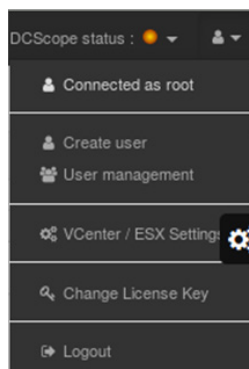


2 / SNMP configuration

- Manually edit the snmp configuration file
- Create an SNMP v3 user that can then be used to monitor the VM DC Scope
- Restart the SNMP service to take into account the changes made



Create User



This section allows you to create new users of DC Scope. An assistant will guide you to perform this operation.

A window titled '1 User Wizard'. It contains a large text box that says 'This wizard will help you to create users to manage your infrastructure.' At the bottom, there are three buttons: 'Cancel', 'Previous', and 'Next'.A window titled '2 Enter the account information'. It contains several input fields: 'LDAP auth : yes no' with radio buttons, 'Enter Username ...', 'Choose Password ...', 'Enter Email Address ...', 'Confirm Password ...', and 'Select Currency ...'. Each field has a red 'X' icon to its right. At the bottom, there are three buttons: 'Cancel', 'Previous', and 'Next'.

The box above allows you to create a new user by filling in the following fields:

- Name of user
- Email-address
- Login password and confirmation
- Currency
- Type of account (LDAP or local)

*NB: any LDAP user who connects to DC Scope must be created through this wizard.
To finalise the creation of a new user, it is necessary to create the perimeter on which the user can use DC Scope.*

A window titled '3 Select the user scope from your infrastructure'. It shows a tree view of the infrastructure. The root is 'DATACENTER_1', which contains 'CLUSTER_1' and 'CLUSTER_2'. 'CLUSTER_1' contains 'SERVER_4' and 'SERVER_5'. 'CLUSTER_2' contains 'SERVER_3' and 'SERVER_2'. Below this is 'DATACENTER_2', which contains 'CLUSTER_3'. 'CLUSTER_3' contains 'SERVER_1'.

User management

The screenshot displays the 'User management' window, which is divided into three main sections:

- Select user:** A table with two columns: 'User name' and 'Action'. It lists two users: 'easyvirt' and 'root'. The 'easyvirt' user has a small icon next to it, and the 'root' user has a small icon next to it.
- User Information for easyvirt:** A form for editing the 'easyvirt' user. It includes fields for:
 - Username: 'easyvirt' (with a user icon and a dropdown menu showing '€').
 - Password: 'password' (with a lock icon and a 'confirm ...' button).
 - Email: 'easyvirt@easyvirt.com' (with an '@' icon).
- User scope:** A tree view showing the user's permissions. It includes a tree structure with nodes for 'DATACENTER_1', 'CLUSTER_1', 'SERVER_4', 'SERVER_5', 'CLUSTER_2', 'SERVER_3', 'SERVER_2', and 'DATACENTER_2'. Each node has a green checkmark icon next to it, indicating that the user has access to these resources.

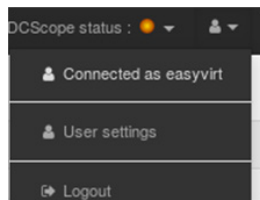
The «User Management» tool allows you to modify the characteristics of a user.

By logging in with the Root account, the changes that can be made to a user are:

- Deletion of the account
- Change of the login name
- Change of password
- Change of the currency
- Modification of the e-mail address
- Modification of the perimeter

User Setting

Within the account User, the User Management tool is not accessible.

A light gray window titled 'User settings' with a close button (X) in the top right corner. Inside the window, there is a section titled 'User information for for easyvirt' with a user icon. Below this title, there are three input fields: a username field containing 'easyvirt', a currency dropdown menu showing '€', a password field containing 'password', and a confirm password field containing 'confirm ...'. Below these fields is an email field containing 'easyvirt@easyvirt.com'. At the bottom right of the window is a 'Save' button.

However, the user can modify the following information:

- Change of password
- Change of the currency
- Modification of the e-mail address

8. GLOSSARY

The precise definitions of the different profiles identified by DC Scope:

«Idle»: machine whose resources used by it reveal an inactivity of the machine.

Definition of thresholds: It is a question of locating a machine whose resources do not exceed a certain threshold. A machine is called «Idle» for a given period, if during this period: 100% of the consumption values of the processor and RAM resources are less than 2% / 5% / 10%;

«Lazy»: machine having some peaks of activity, but remaining inactive most of the time.

Definition of the thresholds: A machine is called «Lazy» on the resource X (processor or RAM) for a given period, if on this period: 90% of the consumption values of the resource X are lower than 2% / 5% / 10% and that during the remaining 10% there is at least one consumption value of the resource X greater than 30%;

«Ghost»: extinct machine

Definition of the thresholds: a machine is called «Ghost» for a given period, if on this period, the machine is off on at least the last hour of the period;

«Undersized»: slightly undersized machine

Definition of the thresholds: a machine is called «Undersized» for a given period, if during this period, 100% of the consumption values of the processor or RAM resources are greater than or equal to 70%;

«Busy»: heavily undersized machine

Definition of thresholds: identical to «Undersized» with a threshold greater than or equal to 90%;

«Oversized»: machine on dimensioned

Definition of the thresholds: a machine is called «Oversized» for a given period, if on this period, 100% of the consumption values of the processor and RAM resources are less than or equal to 30%.

Noise management (in DC Scope):

A VM can have activity for many reasons, a real need or not;

Unused VMs, have almost always an activity, even very weak (antivirus, vmware, backup, etc ..)

Therefore it is very difficult to identify the VMs really useless. To solve this difficulty, DC Scope® uses the notion of noise, to be sure not to forget unnecessary VMs. This notion of noise is an analysis of the VM and the points it generates. The generated activity faces different thresholds (100, 99.99, 99.9 and 99). The resulting result allows us to precisely determine the activity of the VM. It is important to take into account this particular activity to acquire a robust analysis.

9. APPENDIX

List of available counters «graph on demand»:



Définition des différents compteurs

CPU (avg / max / min)

CPU usage as a percentage during the interval. Amount of actively used virtual CPU, as a percentage of total available CPU. This is the host's view of the CPU usage, not the guest operating system view. It is the average CPU utilization over all available virtual CPUs in the virtual machine.

CPU Intra (avg / max / min)

CPU usage as a percentage during the interval. Amount of actively used virtual CPU, as a percentage of total available CPU. This is the host's view of the CPU usage, not the guest operating system view. It is the average CPU utilization over all available virtual CPUs in the virtual machine.

CPU Ready (avg / avg % / max % / max / min)

Time that the virtual machine was ready, but could not get scheduled to run on the physical CPU during last measurement interval. CPU ready time is dependent on the number of virtual machines on the host and their CPU loads.

CPU Costop (avg / max / min)

Time the virtual machine is ready to run, but is unable to run due to co-scheduling constraints.

RAM (max / avg / min)

Percentage of host physical memory that has been consumed.

RAM Allocated

Percentage of RAM allocated compared to all RAM

RAM intra

Percentage of host physical memory that has been consumed

RAM Active (max / avg / min)

Amount of memory that is actively used, as estimated by VMkernel based on recently touched memory pages.

RAM consumed (max / avg / min)

Amount of guest physical memory consumed by the virtual machine for guest memory.

RAM shared (max / avg / min)

Amount of guest physical memory that is shared with other virtual machines, relative to a single virtual machine or to all powered-on virtual machines on a host.

RAM swapped (max / avg / min)

Current amount of guest physical memory swapped out to the virtual machine swap file by the VMkernel. Swapped memory stays on disk until the virtual machine needs it. This statistic refers to VMkernel swapping and not to guest OS swapping.

RAM ballon (max / avg / min)

Amount of memory allocated by the virtual machine memory control driver (vmmemctl), which is installed with VMware Tools. It is a VMware exclusive memory-management driver that controls ballooning.

ioDisk (max / avg / min)

Diskread + Diskwrite

Diskread = Rate of reading data from the virtual disk

Diskwrite = Rate of writing data to the virtual disk.

Read latency (max / avg / min)

Average amount of time for a read operation from the virtual disk. Total latency = kernel latency + device latency.

Write latency (max / avg / min)

The average time a write to the virtual disk takes.

Total latency (max / avg / min)

= read latency + write latency

ioNet (max / avg / min)

= received + transmitted

Received = Average rate at which data was received during the interval. This represents the bandwidth of the network.

Transmitted = Average rate at which data was transmitted during the interval. This represents the bandwidth of the network.

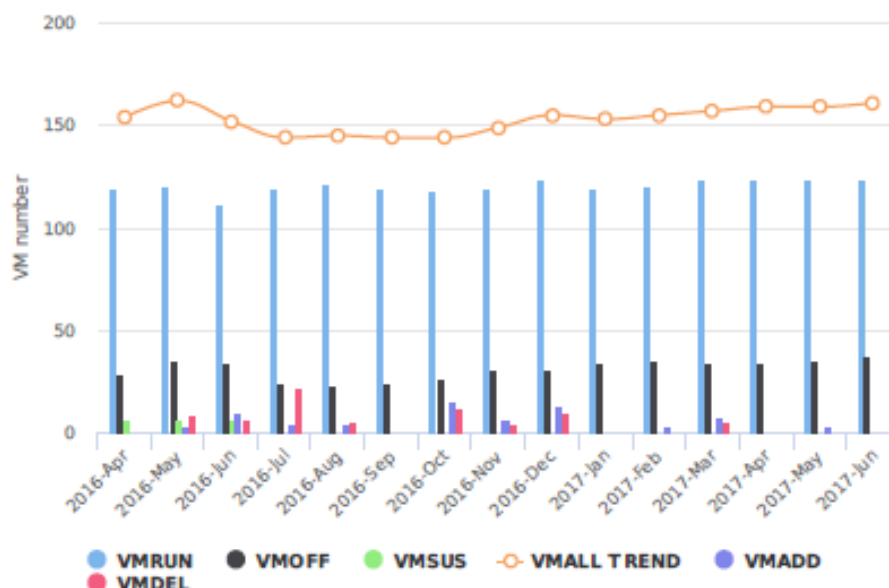
Example of a report for managers (Reporting):

Preview of an extract from the report obtained when creating a new report (this report presents the KPI part: select «KPI» when choosing the information to display):

3 KPI

Cette section détaille les informations analysées par la solution DC Scope selon plusieurs indicateurs clés de performance (KPI pour Key Performance Indicator).

3.1 Evolution mensuelle du parc de machines virtuelles

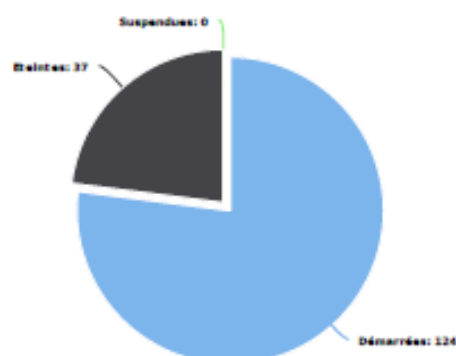


Depuis le début de l'année : le nombre de machines virtuelles a évolué de 7 VM, soit 4.5%

3.1.1 Détails sur le dernier mois analysé

Détails sur le dernier mois analysé :

Nombre de machines virtuelles :	161	
Démarrées :	124	
Eteintes :	37	(23.0 %)
Suspendues :	0	
Créées ce mois :	1	
Supprimées ce mois :	0	
Delta :	1	(0.6 %)





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