

ManageIQ KB: SNMP Trap Actions

Product: EVM Control™

Versions: 4.x

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This bulletin contains instructions on how to create SNMP Actions and Alerts. The Internet Assigned Numbers Authority (IANA) Private Enterprise Number (PEN) for ManageIQ is 1.3.6.1.4.1.33482. This document includes the following information:

- [Requirements for setting up SNMP](#)
- [How to create an SNMP Action in EVM](#)
- [How to create an SNMP Alert in EVM](#)
- [How to use your own community strings](#)
- [Object properties for use in the SNMP message](#)

Requirements:

- Configure your SNMP management station to accept traps from your EVM Appliance. Consult your management station's documentation.
- For each EVM Appliance that could process SNMP traps, enable the `snmpd` and `snmptrapd` daemons on the EVM Appliance. See [To enable the snmpd and snmptrapd daemons](#).
- Enable the Alert Processor Role in the EVM Server Region. See [To Enable the Alert Processor Role](#). The Alert Processor Role is a Regional Role and provides for failover support. To ensure that the SNMP traps are processed correctly, be sure to set the priority level of each EVM Appliance with the Alert Processor Role. See [To set the priority of a failover role](#).

To enable the `snmpd` and `snmptrapd` daemons


1. SSH into the appliance and run the following two commands:

```
chkconfig --level 2345 snmpd on
chkconfig --level 2345 snmptrapd on
```


2. These two services will need to be manually started the first time, but will automatically run the next time the EVM Appliance is restarted. Manually start these services by running:

```
service snmpd start  
service snmptrapd start
```


To enable the Alert Processor Role

1. Log in to the EVM Console.
2. Click  (**Settings and Operations**).
3. From **Configuration, Settings**, click **EVM Zones**.
4. Click the Zone where the EVM Server is located.
5. Click on the EVM Server.
6. From the **EVM Server Control** area, check **Alert Processor**.
7. Click **Save**.

To set the priority of a failover role


1. Click  (**Settings & Operations**).
2. From **Configuration, Diagnostics**, click the EVM Zone that you want to view.
3. Depending on how you want to view your EVM Servers, click either the Roles by Server tab or the Servers by Role tab.
4. Click on the failover role that you want to set the priority for.

■ Click  (**Promote EVM Server to primary for this role**) to make this the primary EVM Server for this role.

■ Click  (**Demote EVM Server to normal for this role**) to demote the priority of this EVM Server for this role.

The priority of the role is changed and will take effect immediately.

To create an SNMP Action

1. From **Control, Explorer, Actions** accordion, click  (**Add a new Action**).

Basic Information	
Description	Send SNMP Trap CRIT
Action Type	Send an SNMP Trap ▼

2. Type in a **Description** for the Action.
3. Select **Send an SNMP Trap** from **Action Type**.

SNMP Trap

Send an SNMP Trap	<input checked="" type="checkbox"/>
Host	<input type="text" value="192.168.253.57"/> <input type="text" value="192.168.253.54"/> <input type="text"/>
Version	v2 ▾
Trap Object ID	<input type="text" value="critical"/>

4. Type in the IP for the Host to send the trap to, select the version of SNMP that you are using, and type in the Trap Object ID. Type in multiple Hosts if you want the trap sent to multiple SNMP hosts.

- If using SNMP V1, you will be prompted for a Trap Number. Type 1, 2, or 3, based on the appropriate Suffix Number from table below.
- If using SNMP V2, you will be prompted for a Trap Object ID. Type info, warning, or critical, based on the table below.

Trap Object ID and Suffix Number

Object ID	Suffix Number Added to PEN	PEN with the Suffix Added
info	1	1.3.6.1.4.1.33482.1
warn, warning	2	1.3.6.1.4.1.33482.2
crit, critical, error	3	1.3.6.1.4.1.33482.3

Variables

Object ID	Type	Value
category	OctetString	Security Alert:
message	OctetString	Test for \${object.type} \${object.name}
location	OctetString	VM Datastore Path: \${object.path}
platform	OctetString	\${object.ems}
url	OctetString	VM URL: http://192.168.177.186/\${ob
source	OctetString	Alert initiated by \${cause.description}
	<None>	
	<None>	
	<None>	
	<None>	

- Type in the Variables that you want to use in your message.

Object ID and Suffix Number

Object ID	Second Suffix Number Added to PEN
description	1
category	2
message	3
object	4
location	5
platform	6
url	7
source	8
custom1	9
custom2	10

These Object IDs are added to the Trap Object ID and the IANA PEN for a complete number. For example, if looking at a trap at the category for a warning level, the full number would be 1.3.6.1.4.1.33842.2.2.


Within each of these Object IDs you can use symbolic substitution to customize the trap's message. To make a substitution, put a \$ sign in front of the variable, and {} around the name of the variable. A few examples are shown below. You can also draw from the properties list as shown in [Object Properties](#). Be sure to use the raw name in the substitution and not the friendly name of the property.

Message Substitution

Variable	Description
cause.description	The item, either Policy or Alert, which triggered the trap and its description from the VMDB.


Variable	Description
	Example: Alert initiated by \${cause.description} Result: Alert initiated by Alert.ThresholdLimitReached
object.type	The type of object being referenced. This could be a cluster, datastore, host, or virtual machine. Example: Invalid start request for \${object.type} \${object.name} Result: Invalid start request for VM Antispam 1 Example: EVM Critical Alert: \${object.type} \${object.name} - Datastore Analysis Completed Result: EVM Critical Alert: Storage Demo2San2 - Datastore Analysis Completed"
object.ems	The object's external Management System. Example: \${object.ems} Result: vCenter production.usa.acme.com/192.168.177.188
object.path	The path, including datastore, of the Virtual Machine. Example: VM Datastore Path: \${object.path} Result: VM Datastore Path: [Store1] Antispam 1/Antispam1.vmx
object.name	The name of the item as shown in the VMDB. Example: Invalid start request for \${object.type} \${object.name} Result: Invalid start request for VM Antispam 1
object.id	The id needed to reach the url of the object. Example: VM URL: http://192.168.177.185/\${object.type}/show/\${object.id} Result: VM URL: http://192.168.177.185/VM/show/43
object.powerstate	The power state of the item.
object.property	The property of the current object. See Object Properties Example: Datastore Free Space (percent): \${object.v_free_space_percent_of_total} Result: Datastore Free Space (percent): Datastore Free Space (percent): 40.0 Example: Datastore Total Space (bytes): \${object.total_space} Result: Datastore Total Space (bytes): 321854111744
object.state_changed_on	The date the power state was changed.

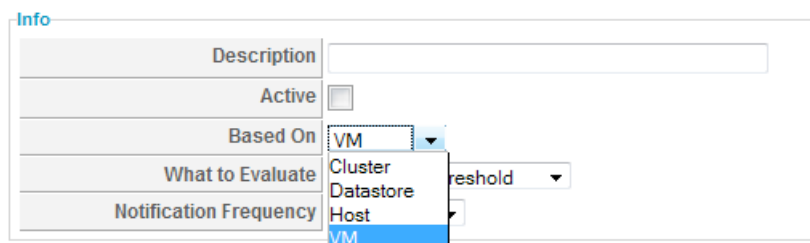
6. Click **Add** when you are finished.

The SNMP Action is created and can be added to a Policy or an Alert. When assigning the Action to an Alert or Policy, be sure to mark it asynchronous by clicking .

You can also send EVM Alerts through SNMP

To create an SNMP Alert

1. From **Control, Explorer, Alert** accordion, click  (**Add a new Alert**).



- Type in a **Description** for the Alert.
- Check **Active** when you feel that the alert is ready to be enabled.

- From **Based On**, select the type of infrastructure item to base the Alert on.
 - The options shown in **What to Evaluate** change based on what you selected in **Based On**.
 - In **Notification Frequency**, select how often you want to be notified if the event log threshold is reached.
2. The parameters available are based on the What to Evaluate selection. See the following sections for additional details on each alert type.
 3. To send an SNMP trap, check **Send an SNMP Parameters**. Parameters required for sending an SNMP trap are displayed. These are the same parameters as shown in [To create an SNMP Action](#).
 - Type in the IP for the Host to send the trap, select the version of SNMP that you are using, and type in the trap Object ID.
 - Type in the Variables that you want to use in your message.
 4. To show the Alert as an event on the EVM Timeline, check **Show on Timeline**. It shows as part of the Alarm/Status Change/Errors category.
 5. To invoke automation, check **Send a Management Event**. Type in the name of the Event. This item should exist in the Process/Event Class. You must have a license for EVM Automate to use this feature.
 6. Click **Add**.

The Alert is ready to be assigned to an Alert Profile.

Using specific community strings

You can use your own set of community strings instead of the public ones. In the instructions below you can either manually edit the snmp.conf or use

Option 1: Add the following lines to /etc/snmp/snmpd.conf

For SNMP v1 or V2,

```
rocommunity rocommunityname
```

```
rwcommunity rwcommunityname
```

where *rocommunityname* is the name of the read-only access community name and *rwcommunityname* is the name of the read-write access community name.

Option 2: Use the snmpconf application on the EVM Appliance which will prompt you for specific disks, processes, and load average data to monitor. To do this, run `snmpconf -g basic-setup` and follow the prompts.

Final step: After editing `snmpd.conf`, restart the EVM Appliance or run the following commands to restart the snmp daemon: `service snmpd restart`

Object Properties

These tables show the columns (fields or attributes) of objects that can be called from a method. The syntax is `object.rawcolumnname`. The tables below show both the raw name and the friendly name for each column.

Virtual Machine Properties

When using these items, prefix them with `object.`, such as `object.storage_id`.

Friendly Name or Description	Raw Column Name
Allocated Disk Storage	allocated_disk_storage
Autostart	autostart
Blackbox Exists	blackbox_exists
Blackbox Validated	blackbox_validated
Boot Time	boot_time
Busy	busy
Cluster	ems_cluster_name
Configuration XML	config_xml
Connection State	connection_state
CPU Affinity	cpu_affinity
CPU Limit	cpu_limit
CPU Reserve	cpu_reserve
CPU Reserve Expand	cpu_reserve_expand
CPU Shares	cpu_shares
CPU Shares Level	cpu_shares_level
Created on Time	ems_created_on
Currently Used Space	used_storage_by_state
Datastore Path	v_datastore_path
Date Created	created_on
Date Updated	updated_on
Description	description
Ems	ems_id
Evm Owner	evm_owner_id
Evm Owner Email	evm_owner_email
Evm Owner Name	evm_owner_name
EVM Unique ID (Guid)	guid
Format	format
Host	host_id
Host Name	host_name

Friendly Name or Description	Raw Column Name
Id	id
Is a Template	v_is_a_template
Last Analysis Attempt On	last_scan_attempt_on
Last Analysis Time	last_scan_on
Last Compliance Status	last_compliance_status
Last Compliance Timestamp	last_compliance_timestamp
Last Perf Capture On	last_perf_capture_on
Last Sync Time	last_sync_on
Location	location
Memory Limit	memory_limit
Memory Reserve	memory_reserve
Memory Reserve Expand	memory_reserve_expand
Memory Shares	memory_shares
Memory Shares Level	memory_shares_level
Name	name
OS Name	os_image_name
Owner	owner
Paravirtualization	paravirtualization
Parent Cluster	v_owning_cluster
Parent Datacenter	v_owning_datacenter
Parent Folder (Hosts & Clusters)	v_owning_folder
Parent Folder (VMs & Templates)	v_owning_blue_folder
Parent Folder Path (Hosts & Clusters)	v_owning_folder_path
Parent Folder Path (VMs & Templates)	v_owning_blue_folder_path
Parent Host Platform	v_host_vmm_product
Parent Resource Pool	v_owning_resource_pool
Pct Free Disk	v_pct_free_disk_space
Platform	platform
Power State	power_state
Previous State	previous_state
Registered	registered
Reserved	reserved
Retired	retired
Retirement	retirement
Retires On	retires_on
Service	service_id
Smart	smart
Standby Action	standby_action
State Changed On	state_changed_on
Storage	storage_id
Storage Name	storage_name
Template	template
Thin Provisioned	thin_provisioned
Tools Status	tools_status
Total Provisioned Space	provisioned_storage
Total Snapshots	v_total_snapshots

Friendly Name or Description	Raw Column Name
Total Used Disk Space	used_disk_storage
UId Ems	uid_ems
Uncommitted Space	uncommitted_storage
Used Storage	used_storage
V Pct Used Disk Space	v_pct_used_disk_space
Vdi Available	vdi_available
Vdi Connection Dns Name	vdi_connection_dns_name
Vdi Connection Logon Server	vdi_connection_logon_server
Vdi Connection Name	vdi_connection_name
Vdi Connection Remote Ip Address	vdi_connection_remote_ip_address
Vdi Connection Session Name	vdi_connection_session_name
Vdi Connection Session Type	vdi_connection_session_type
Vdi Connection Url	vdi_connection_url
Vdi Endpoint Ip Address	vdi_endpoint_ip_address
Vdi Endpoint Mac Address	vdi_endpoint_mac_address
Vdi Endpoint Name	vdi_endpoint_name
Vdi Endpoint Type	vdi_endpoint_type
Vdi User Appdata	vdi_user_appdata
Vdi User Dns Domain	vdi_user_dns_domain
Vdi User Domain	vdi_user_domain
Vdi User Home Drive	vdi_user_home_drive
Vdi User Home Path	vdi_user_home_path
Vdi User Home Share	vdi_user_home_share
Vdi User Logon Time	vdi_user_logon_time
Vdi User Name	vdi_user_name
Vendor	vendor
Version	version
VMsafe Agent Address	vmsafe_agent_address
VMsafe Agent Port	vmsafe_agent_port
VMsafe Enable	vmsafe_enable
VMsafe Fail Open	vmsafe_fail_open
VMsafe Immutable VM	vmsafe_immutable_vm
VMsafe Timeout (ms)	vmsafe_timeout_ms

Host Properties

When using these items, prefix them with `object.`, such as `object.ems_id`.

Friendly Name or Description	Raw Column Name
All Enabled Ports	all_enabled_ports
Authentication Status	authentication_status
Connection State	connection_state
CPU usage MHz rate average over time period	cpu_usagemhz_rate_average_avg_over_time_period
CPU usage MHz rate high over time period	cpu_usagemhz_rate_average_high_over_time_period
CPU usage MHz rate low over time period	cpu_usagemhz_rate_average_low_over_time_period

Friendly Name or Description	Raw Column Name
Custom Attribute 1	custom_1
Custom Attribute 2	custom_2
Custom Attribute 3	custom_3
Custom Attribute 4	custom_4
Custom Attribute 5	custom_5
Custom Attribute 6	custom_6
Custom Attribute 7	custom_7
Custom Attribute 8	custom_8
Custom Attribute 9	custom_9
Date Created	created_on
Ems	ems_id
Enabled Inbound Ports	enabled_inbound_ports
Enabled Outbound Ports	enabled_outbound_ports
Enabled Run Level 0 Services	enabled_run_level_0_services
Enabled Run Level 1 Services	enabled_run_level_1_services
Enabled Run Level 2 Services	enabled_run_level_2_services
Enabled Run Level 3 Services	enabled_run_level_3_services
Enabled Run Level 4 Services	enabled_run_level_4_services
Enabled Run Level 5 Services	enabled_run_level_5_services
Enabled Run Level 6 Services	enabled_run_level_6_services
Enabled Tcp Inbound Ports	enabled_tcp_inbound_ports
Enabled Tcp Outbound Ports	enabled_tcp_outbound_ports
Enabled Udp Inbound Ports	enabled_udp_inbound_ports
Enabled Udp Outbound Ports	enabled_udp_outbound_ports
EVM Unique ID (Guid)	guid
Hostname	hostname
Id	id
IP Address	ipaddress
Last Compliance Status	last_compliance_status
Last Compliance Timestamp	last_compliance_timestamp
Last Perf Capture On	last_perf_capture_on
Last Analysis Time	last_scan_on
Name	name
OS Name	os_image_name
Platform	platform
Power State	power_state
Reserved	reserved
Service Names	service_names
Settings	settings
Smart	smart
SSH Root Access	ssh_permit_root_login
Uid Ems	uid_ems
Date Updated	updated_on
User Assigned Os	user_assigned_os
Parent Cluster	v_owning_cluster
Parent Datacenter	v_owning_datacenter

Friendly Name or Description	Raw Column Name
Parent Folder (Hosts & Clusters)	v_owning_folder
Total Datastores	v_total_storages
Total VMs	v_total_vms
VMM Build Number	vmm_buildnumber
VMM Platform	vmm_product
VMM Vendor	vmm_vendor
VMM Version	vmm_version

Management System Properties

When using these items, prefix them with `object.`, such as `object.emstype`.

Friendly Name or Description	Raw Column Name
Aggregate VM CPUs	aggregate_vm_cpus
Aggregate VM Memory	aggregate_vm_memory
CPU Ratio	v_cpu_vr_ratio
CPU Usage MHZ Rate Average High Over Time Period	cpu_usagemhz_rate_average_high_over_time_period"
CPU Usage MHZ Rate Average Low Over Time Period	cpu_usagemhz_rate_average_low_over_time_period
CPU Usage MHZ Rate Average Over Time Period	cpu_usagemhz_rate_average_avg_over_time_period
Date Created	created_on
Date Updated	updated_on
Derived Memory Usage Rate Average High Over Time Period	derived_memory_used_high_over_time_period
Derived Memory Usage Rate Average Low Time Period	derived_memory_used_low_over_time_period
Derived Memory Usage Rate Average Over Time Period	derived_memory_used_avg_over_time_period
Distributed Resource Scheduler Automation Level	drs_automation_level
Distributed Resource Scheduler Enabled	drs_enabled
Distributed Resource Scheduler Migration Threshold	drs_migration_threshold
EMS ID	ems_id
EVM Zone	zone_name
High-Availability Admission Control	ha_admit_control
High-Availability Enabled	ha_enabled
High-Availability Max Failures	ha_max_failures
Id	id
Last Performance Data Captured	last_perf_capture_on
Last Smart State Analysis	last_scan_on
Memory Ratio	v_ram_vr_ratio
Name	name
Parent Datacenter	v_parent_datacenter
Qualified Description	v_qualified_desc
Region Description	region_description
Region Number	region_number

Friendly Name or Description	Raw Column Name
Reserved	reserved
Total CPU Speed	aggregate_cpu_speed
Total Hosts	total_hosts
Total Memory	aggregate_memory
Total Number of Logical CPUs	aggregate_logical_cpus
Total Number of Physical CPUs	aggregate_physical_cpus
Total Vms	total_vms
Unique Identifier	uid_ems

Storage Properties

When using these items, prefix them with `object.`, such as `object.name`.

Friendly Name or Description	Raw Column Name
Date Created	created_on
Date Updated	updated_on
Disk Files Percent of Used	v_disk_percent_of_used
Free Space	free_space
Free Space Percent of Total	v_free_space_percent_of_total
Id	id
Last Analysis Time	last_scan_on
Last Perf Capture On	last_perf_capture_on
Location	location
Multiple Host Access	multiplehostaccess
Name	name
Non-VM Files Percent of Used	v_debris_percent_of_used
Other VM Files Percent of Used	v_vm_misc_percent_of_used
Provisioned Space Percent of Total	v_provisioned_percent_of_total
Reserved	reserved
Size of Non-VM Files	v_total_debris_size
Size of Other VM Files	v_total_vm_misc_size
Size of VM Memory Files	v_total_vm_ram_size
Size of VM Snapshot Files	v_total_snapshot_size
Snapshot Files Percent of Used	v_snapshot_percent_of_used
Store Type	store_type
Total Hosts	v_total_hosts
Total Managed Registered Vms	total_managed_registered_vms
Total Managed Unregistered Vms	total_managed_unregistered_vms
Total Provisioned Space	v_total_provisioned
Total Space	total_space
Total Unmanaged Vms	total_unmanaged_vms
Total VMs	v_total_vms
Uncommitted	uncommitted
Used Space	v_used_space
Used Space Percent of Total	v_used_space_percent_of_total

Friendly Name or Description**Raw Column Name**

VM Memory Files Percent of Used

v_memory_percent_of_used

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