IP KNOWLEDGE
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ESX 4 and 5
Nagios monitoring

1 Monitor vmware ESX 4 or 5 in NAGIOS

How to monitor ESX hosts in Nagios using CIM. We assume you know how to install patches on vmware (required for disk monitoring of HP systems) and you're pretty familiar with Nagios and linux. The assumption is that nagios is running as user nagios. If it runs as another user you will need to change various parts in this document.

Change location of your files at will, but you will need to update the various scripts as well if you do.

We are not responsible for any damage on your system using these scripts or guidelines. Scripts and installation guidlines do not come with any warranty. Usage is at your own risk!

1.1 Nagios resource.cfg

Need to add the following (change username and location at will):

```
# VMWare monitoring user names
$USER3$=monitor
$USER4$=<PASSWORD>
# location of VMWare monitoring scripts
$USER5$=/etc/nagios/scripts
```

1.2 Adding monitor role to vmware ESXi

Add a monitoring only role in ESX:

```
vim-cmd /vimsvc/auth/role_add Monitor Host.Cim.CimInteraction
```

Check results with:

```
vim-cmd /vimsvc/auth/roles
```

You should see this:

```
   (vim.AuthorizationManager.Role) {
      dynamicType = <unset>,
      roleId = 10,
      system = false,
      name = "Monitor",
      info = (vim.Description) {
         dynamicType = <unset>,
         label = "Monitor",
         summary = "Monitor",
      },
      privilege = (string) [
         "Host.Cim.CimInteraction",
         "System.Anonymous",
         "System.Read",
         "System.View"
      ],
   }
```

In Vspere add user monitor in group users (ESX4) and group root (ESX5, dunnow yet why this has changed) and add user monitor with Role Monitor in permissions and give it a password (same as in nagios resource.cfg $USER4$). No shell access required.

Check it it works:

```
wbemcli -noverify ei https://monitor:<Password>@<IP address>:5989/root/cimv2:CIM_NumericSensor
MaxReadable,CurrentReading,Caption,SensorType
```

You should get something like:

```
<IP address>:5989/root/cimv2:OMC_NumericSensor.DeviceID="44.0.32.99"
SensorType=4,MaxReadable=51000,CurrentReading=0,Caption="System Board 10 Power Meter"
.
.
```

```
.
<IP address>:5989/root/cimv2:OMC_NumericSensor.DeviceID="3.0.32.1"
SensorType=1,MaxReadable=127500,CurrentReading=9000,Caption="Power Supply 1 Power Supply 1:
Failure detected"
```

1.3 For HP Hardware only: Install HP agents on vmware ESXi

Please install these on a newly deployed system before you put any guests on it! Installing these on a running system is at your own risks. Ensure you have a backup before installing.

Download HP agents for ESXi (ESX 4 use hp-esxi4.0uX-bundle-X.X.zip or for ESX 5 hp-esxi5.0uX-bundle-X.X.zip, get the latest versions from the HP website), unzip it, unzip metadata.zip and then issue the commands (put your vmware in maintenance mode) for ESX4:

```
esxupdate -b cross_oem-vmware-esx-drivers-char-hpcru_400.1.1.0-1.0.3.140815.vib update
esxupdate -b cross_oem-hp-smx-provider_400.02.02.26-164009.vib update
```

Note: You probably can use the following commands without unzipping the drivers:

```
vihostupdate --bundle=<zip> --install
```

For ESX5 the command is:

```
esxcli software vib install --depot=/vmfs/volumes/[datastore]/<zip>
```

Or use the HP ESX version.

NOTE: ESX HOST REBOOT REQUIRED!

1.4 Generate keys to login without password on ESX

Logging in to ESX requires a public key certificate to be installed on all vmware systems in the /.ssh directory for ESX4 and in the /etc/ssh/keys-root/ directory for ESX5. See deploy scripts in later section.

Create key pair:

```
ssh-keygen -b 1024 -t dsa -f vmware.key
```

Put the vmware.key in the /etc/nagios/certs directory, chmod 400 and chown nagios.users.

Add the content of vmware.key.pub to the file `authorized_keys`. Run "`chmod 400 authorized_keys`" to protect it. Make sure your nagios system is a known_host on your ESX server.

See deploy scripts in later section to automate this by creating the `authorized_keys` file on your nagios system.

Check home dir of nagios user in /etc/password (usually /var/tmp), create .ssh directory in the home directory. Ensure all ssh keys are added to the known_hosts in this directory otherwise the script will fail. You can force this with the following command:

```
sudo -u nagios ssh -i /etc/nagios/certs/vmware.key <ESX host IP> "ls -l /"
```

This should get a listing of the root directory on your ESX host.

There Is plenty of information on the net on how to logon to ESX using certificate keys. Remember to redeployt hem on ESX4 after a reboot or preferably use ESX5

1.5 Deploy vmware scripts

You will need the following software from PuTTY installed on your nagios system:

- plink
- pscp

For backup and monitoring .ssh keys must be installed on the vmware machine. Due to vmware restrictions these keys are removed everytime the vmware server is rebooted in ESX v4. **In my opinion: Use ESX5, this**

will spare you the trouble. Therefore scripts have been created to deploy the keys and backup scripts to the vmware machine quickly.

Fortunately vmware changed this in ESX5, keys have to be deployed only once. Please note that if you create another user you will need to change the location as well (/etc/ssh/keys-<username>). Please note, if you are already using ssh keys on your vmware the script will overwrite them!

The scripts assume you have the following files present in the /root/vmware/ssh/ folder:

- authorized_keys, contains the public key for login (see previous chapter)
- known_hosts, file that has all known hosts, should contain the key for the nagios server

1.5.1 *Deployesx4.sh*

```
#!/bin/sh
VERSION=1.2
if [ -z "$2" ]; then
  echo "Usage: $0 username@hostname password"
  exit 1
fi
plink -2 -pw "$2" $1 "if [ ! -d /.ssh ]; then mkdir /.ssh; fi"
echo Copy ssh files...
pscp -scp -2 -pw "$2" /root/vmware/ssh/* $1:/.ssh/
# Check if it works
ssh -i /etc/nagios/certs/vmware.key $1 "ls -l /.ssh/
```

1.5.2 *Deployesx5.sh*

```
#!/bin/sh
VERSION=1.2
if [ -z "$2" ]; then
  echo "Usage: $0 username@hostname password"
  exit 1
fi
echo Copy ssh files...
pscp -scp -2 -pw "$2" /root/vmware/ssh/* $1:/etc/ssh/keys-root/
ssh -i /etc/nagios/certs/vmware.key $1 "ls -l /etc/ssh/keys-root"
```

1.6 Nagios non-standard scripts

Scripts are located in /etc/nagios/scripts. Change it at will.
The following scripts require the HP agents:

- vmHPCheckSASdisk.sh
- vmHPCheckSASRAID.sh

The other scripts will work on any ESX host.

1.7 Nagios configuration files

Located in /etc/nagios

1.7.1 *Additional or changed in /etc/nagios/objects/commands.cfg*

New ESX monitoring commands

```
# 'vmHPCheckFan.sh' command definition
define command{
        command_name    vmHPCheckFan
        command_line    $USER5$/vmHPCheckFan.sh "$USER3$:$USER4$@$HOSTADDRESS$" $ARG1$ $ARG2$
        }

# 'vmHPCheckSASRAID.sh' command definition
define command{
        command_name    vmHPCheckSASRAID
        command_line    $USER5$/vmHPCheckSASRAID.sh "$USER3$:$USER4$@$HOSTADDRESS$"
        }

# 'vmHPCheckSASdisk.sh' command definition
define command{
```

```
        command_name    vmHPCheckSASdisk
        command_line    $USER5$/vmHPCheckSASdisk.sh "$USER3$:$USER4$@$HOSTADDRESS$"
        }

# 'vmHPCheckTemp.sh' command definition
define command{
        command_name    vmHPCheckTemp
        command_line    $USER5$/vmHPCheckTemp.sh "$USER3$:$USER4$@$HOSTADDRESS$" "$ARG1$" $ARG2$
$ARG3$
        }

# 'vmCheckDiskSpace.sh' command definition
define command{
        command_name    vmCheckDiskSpace
        command_line    $USER5$/vmCheckDiskSpace.sh "$HOSTADDRESS$" $ARG1$ $ARG2$
        }
```

2 Examples

```
# Create a service for monitoring the FANs
define service{
        use                     generic-service
        hostgroup_name          vmware-hpservers
        service_description     vmware FAN
        check_command           vmHPCheckFan!1000!500
        icon_image              status_work.png
        }

# Create a service for monitoring the SASRAID
define service{
        use                     generic-service
        hostgroup_name          vmware-hpservers
        service_description     vmware SAS RAID
        check_command           vmHPCheckSASRAID
        icon_image              harddrive.png
        }

# Create a service for monitoring the individual disks
define service{
        use                     generic-service
        hostgroup_name          vmware-hpservers
        service_description     vmware SAS Disks
        check_command           vmHPCheckSASdisk
        icon_image              harddrive.png
        }

# Create a service for monitoring the Processor temperature
define service{
        use                     generic-service
        hostgroup_name          vmware-hpservers
        service_description     vmware Processor Temperature
        check_command           vmHPCheckTemp!Processor!60!70
        icon_image              wizard.png
        }

# Create a service for monitoring the Environment temperature
define service{
        use                     generic-service
        hostgroup_name          vmware-hpservers
        service_description     vmware Environment Temperature
        check_command           vmHPCheckTemp!Environment!35!40
        icon_image              wizard.png
        }

# Create a service for monitoring the Powersupply temperature
define service{
        use                     generic-service
        hostgroup_name          vmware-hpservers
        service_description     vmware Power Domain Temperature
        check_command           vmHPCheckTemp!Power!58!70
        icon_image              wizard.png
```

```
# Create a service for monitoring the Memory temperature
# Not all servers have memory temp sensors
define service{
        use                     generic-service
        hostgroup_name          vmware-hpservers-memchk
        service_description     vmware Memory Temperature
        check_command           vmHPCheckTemp!Memory!55!60
        icon_image              memory.png
        }

# Create a service for monitoring the Expansion Board temperature
# Only for Expansion boards 1,2 and 3 and Peripheral Bays (new servers)
define service{
        use                     generic-service
        hostgroup_name          vmware-hpservers
        service_description     vmware Expansion Board or Pheripheral Bay Temperature
        check_command           vmHPCheckTemp!Peripheral|Expansion Board [123] !60!65
        icon_image              wizard.png
        }

define service{
        use                     generic-service
        hostgroup_name          vmware-hpservers
        service_description     vmware Disk Check
        check_command           vmCheckDiskSpace!80!90
        icon_image              harddrive.png
```