HOWTO install and configure Hyperic, vCOps, EMC Celerra VSA and EMC Unified NAS powershell scripts

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https://community.emc.com/community/connect/everything_vmware?view=overview

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09/26/11 Version 1.0 (Limited testing so far, provided as-is and suggested currently for non-production and lab use only, see MD5 checksums for the zip files at above URL)

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Powershell Scripts for EMC Performance Statistics block/NAS

https://community.emc.com/message/526152#526152

Overview
This document is meant to be a HOWTO/Jumpstart reference guide in order to walk through the installation and configuration with an end goal of having EMC Unified NAS statistics displayed within VMware vCOps and Hyperic. In order to accomplish this we will focus on the VMware software components and also include brief instructions for configuring an EMC virtual storage appliance which serves as the NFS target and is the device that we will be monitoring. These processes will work only for EMC Unified NAS devices virtual or physical.

Under the covers there are many different technologies in use to make this a reality. From a scripting perspective we are working with Groovy (in Hyperic plugins), Visual Basic (wraps Powershell commands from Groovy), and Powershell (talks to storage arrays or any device). Upon first glance it may seem a bit complex, however read on.

There are two high level goals for this effort.
- o Monitor EMC technology (but not limited to; can be VMware as well)
- o Dynamically add objects from a monitored device

What is being discussed in this document is actually a small byproduct of a larger effort to automate the creation of Hyperic plugins. This is complete, but will be covered in a separate document. This is possible since we leverage Powershell to interpret any input and standardize it to what Hyperic is expecting. We then take that input and can dynamically create Hyperic plugins that model the metrics received (ps-hyperic script). I will leave the interpretation of what can be done with this to you.. Basically, if you see a powershell script in the Everything VMware at EMC site, it is a viable candidate to now with ease be brought into Hyperic and can show dynamic capabilities that this plugin can.

1. Hyperic_plugin_EMC-Unified-NAS-092611.zip – Hyperic plugin files for EMC-Unified-NAS
2. HypericAdapter_install.exe – Hyperic Adapter installer for vCOps
3. Hyperic-hqee-installer-4.5.2-32bit.msi – Hyperic server install
4. NetFx20SP1_x86 – dotNet 2.0 SP1
5. Ps_get_unified_perf_092011.zip – Powershell scripts for monitoring EMC Unified NAS arrays
6. Vcops_SQLserver_11.exe – vCOps SQL server installation
7. Vcops_SQLserver_11.SQL – vCOps SQL table file used by above executable
8. VMware-vCOps-1.0.1.exe – vCOps Enterprise server installer (must be Enterprise Edition; Standard Edition will not work)
9. WindowsServer2003-KB968930-x86-ENG.exe – Windows Mgmt framework which includes Powershell v2 for Server 2003

Installing Hyperic 4.5.2
http://www.vmware.com/go/download-hyperic
Demo requirements – Windows Server Enterprise 2003 SP2 x86, dotNet2 SP1, Powershell v2 (mgmt. tools)

- Launch hyperic-hqee-installer-4.5.2-32bit.msi
- Click through to Finish.
- http://localhost:7080/ or http://dnsname:7080
  - o Default username: hqadmin
  - o Default password: hqadmin
- The next steps will limit the metrics being monitored by Hyperic since we are focusing on the custom plugins
  - o On the right side under discovered resources, uncheck the Agent and click Skip

- o Once the page refreshes, there should be only one resource listed with a checkbox, press Add to Inventory

Installing vCOps 1.0.1
http://downloads.vmware.com/d/info/datacenter_downloads/vmware_vcenter_operations/1_0

Demo requirements – Windows Server 2008 R2, SQL 2008 R2

- Launch vcops-SQLserver_11.exe
- Enter appropriate username and password with database access and press Run
- Launch VMware-vCOps-1.0.1
- Full Installation
- Basic
- Enter database host, database name, and credentials
- Test the database connection
- Press Finish
- Launch IE and go to http://localhost/
  - o Default username: admin
  - o Default password: admin

Installing vCOps Hyperic Adapter

- From vCOps Server
- Launch HyerpicAdapter_install.exe
- Reboot the server

Configure Hyperic for vCOps Adapter
Get from VMware.
- Launch IE session to http://vcopsserver/
- Environment -> Configuration -> Adapter Instances
- New Adapter Instance
  - o Adapter Kind -> Hyperic adapter
  - o Adapter Instance Name: hypericservername
  - o Host: hypericservername
  - o Credentials -> Add
  - o Instance Name: hqadmin
  - o Username: hqadmin
  - o Password: hqadmin
- Go to hyperic server windows console
  - o With notepad open c:\program files\Hyperic HQ Enterprise 4.5.2\server-4.5.2-EE\hqdb\data\pg_hba.conf
  - o Below # TYPE DATABASE
    - ▪ Add line - *host   all   all   0.0.0.0/0   trust*

- With notepad open c:\program files\Hyperic HQ Enterprise 4.5.2\server-4.5.2-EE\hqdb\data\postgreSQL.conf
- Above #listen_addresses = 'localhost'
  - Add line - *listen_addresses = '*'*
- Open command prompt
  - Cd "\program files\hyperic hq enterprise 4.5.2\server-4.5.2-ee\bin"
  - .\hq-server.bat stop
  - .\hq-server.bat start
- Go back to IE session with vCOps and Test connection
  - Success means files in postgreSQL were edited correctly
- Press OK
- Environment -> Environment overview
  - Review Adapter Instances and look for Hyperic adapter

Initializing the Celerra VSA

http://nickapedia.com/2010/10/04/play-it-again-sam-celerra-uber-v3-2/

You can download the guide at the below link to get real instructions which are valuable if you are interested in learning the EMC Unisphere interface.
ftp://ftp.documentum.com/vmwarechampion/Whitepapers/Celerra/VSA/6.0/UBER/Celerra%20UBER%20VSA%20Guide%20v1.pdf

The instructions below are assuming you want the quick and dirty approach to getting the VSA online without a web interface using pre-built scripts (not recommended).

- Power on the Celerra VSA
- Enter management IP for VSA
- Enter Subnet
- Enter gateway
- Enter DNS name for VSA
- Enter DNS server
- Enter NTP server
- (VSA will then reboot)
- Login with nasadmin and nasadmin
- Launch /nas/bin/vsa_rapid_config (repeat command until launches)
- 'n' to enable partner configuration and replication
- Enter network address (ie. 172.31.200.0/24)
- Enter netbios or DNS names of export interface (not relevant for NFS, anything here)
- Enter nasadmin for password
- Enter IP address for NFS export interface
- Enter subnet mask for NFS export interface
- Enter broadcast address for NFS export interface

Installing the Powershell EMC Unified NAS scripts
https://community.emc.com/message/526152#526152

- Open ps_get_unified_pef_092011.zip script
- Create c:\scripts directory
- Copy director in zip file to the scripts directory
- Rename ps_get_unified_perf_092011 directory to ps_get_unified_perf
- Start -> run -> Powershell
  - Set-executionpolicy bypass
- Cd \scripts\ps_get_unified_perf
- .\get_unified_nas_perf.ps1 –csip CSINTERFACEIP -username nasadmin -password nasadmin –once

Installing EMC-Unified-NAS Hyperic plugin
- Open hyperic_plugin_EMC-Unified-NAS_092611.zip
- Open windows explorer and navigate to c:\program files\Hyperic HQ Enterprise 4.5.2\agent-4.5.2-EE\bundles\agent-4.5.2\pdk\scripts
- Copy plugin-emc-unified-nas.vbs to this directory
- Edit plugin-emc-unified-nas.vbs with notepad and look for the directory that you installed the powershell script above to, remove date if necessary
- Copy the location of the VBS script to your clipboard
- Go back to powershell
- Create c:\program files\hyperic hq enterprise 4.5.2\hq-plugins
- Copy the other three files form the zip file (EMC-Unified-NAS-category.dict, EMC-Unified-NAS-metric.dict and EMC-Unified-NAS-plugin.xml) to the hq-plugins directory
- Restart Hyperic Agent and Server (run services.msc)
- Go back to powershell
- Cd "pasted location", ie., right click paste in between quotes (must be in quotes – if you forget the end quote, ctrl-c to get back to the prompt)
- Cscript .\plugin-emc-unfiied-nas.vbs EMC-Unified-NAS "172.31.200.118server_2" 172.31.200.118 server_2 nasadmin nasadmin (and replace 172.31.200.118 with the IP of your CS interface IP)

Adding the Celerra VSA to Hyperic
- Launch Hyperic in IE http://hypericip:7080/
- Resource tab
- Click hyperic server name link under Platform
- Tools Menu -> New Server
- Name: EMC VSA01 server_2 (replace VSA01 with you VSA name, however not relevant)
- Server Type: EMC-Unified-NAS
- Install Path: / (not relevant)
- Ok
- Configuration Properties

- Correct the instance_name and control_station_ip if necessary
- Enter password
- Ok
- Within a few minutes, you should see on the left side objects being monitored under the Monitor tab
- Take a moment to see the dynamic object file that is used to track new objects being discovered. C:\program files\hyperic hq enterprise 4.5.2\hq-plugins\emc-unified-nas-xxxxserver_2-object.list
    - –category.dict and –metric.dict are static dictionaries which tell the script how to interpret metrics
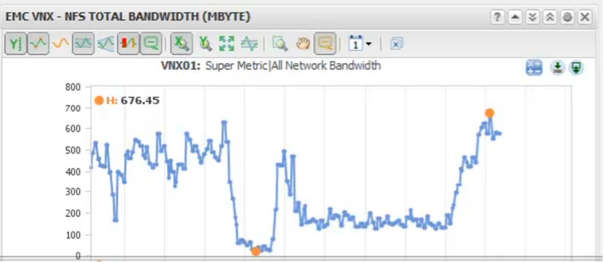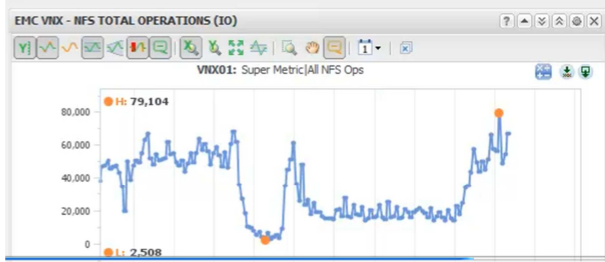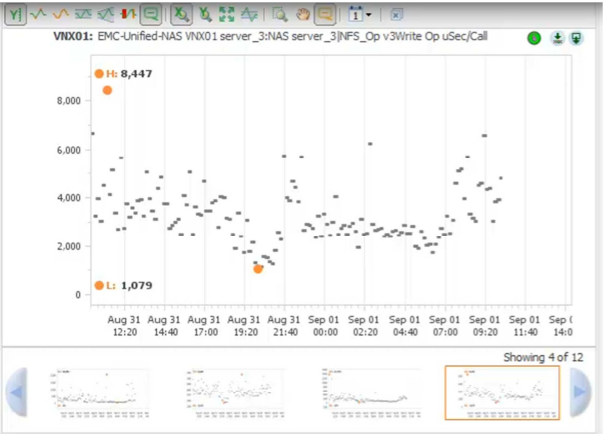
Success! EMC VSA performance information in Hyperic
At this point everything is configured for Hyperic to monitor the VSA. You should be able to open a browser to hyperic and go to resources tab. From there you can click the hyperic server under platform. On the left side you will then see the discovered services. As you click through the services and metrics, you can leverage the tree at the top to navigate between metrics.

Success! EMC VSA performance information in vCOps
If Hyperic is displaying data for the plugin then vCOps should get the same information within five minutes. Under the environment -> environment overview screen you can click the VSA adapter kind. Find the graph button at the top of the screen, and press it. Navigate through the metrics on the bottom left side and double click any metric to display in the metric graph widget.

That's it! Stay tuned for more plugins based on Powershell and more detailed information on how to create useful dashboards in vCOps!

VNX01: EMC-Unified-NAS VNX01 server_3:NAS server_3|NFS_Write Ops/s

H: 5,597
1,482 (Aug 31, 2011 11:55:00 PM)
L: 445

VNX01: EMC-Unified-NAS VNX01 server_3:NAS server_3|NFS_Op v3Write Op uSec/Call

H: 8,447
L: 1,079

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EMC VNX - NFS TOTAL OPERATIONS (IO)

VNX01: Super Metric|All NFS Ops

H: 79,104
L: 2,508

EMC VNX - NFS TOTAL BANDWIDTH (MBYTE)

VNX01: Super Metric|All Network Bandwidth

H: 676.45

EMC VNX - NAS CPU UTILIZATION

VNX01 SERVER_2 CPU 13 %	VNX02 SERVER_2 CPU 15 %
VNX01 SERVER_3 CPU 11 %	VNX02 SERVER_3 CPU 25 %
VNX01 SERVER_4 CPU 15 %	VNX02 SERVER_4 CPU 17 %

EMC VNX - NFS BANDWIDTH (MBYTE/SEC)

VNX01: Super Metric|All Network Bandwid

H: 676.45
L: 19.89
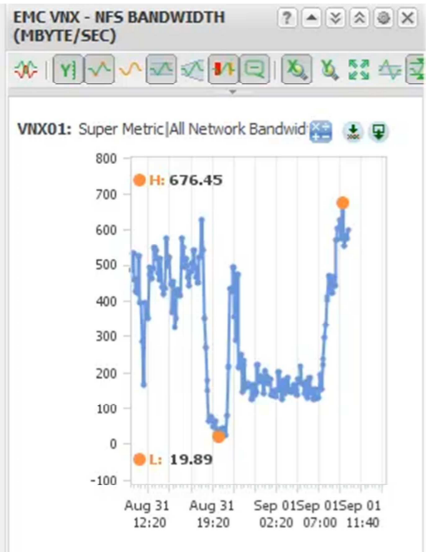
EMC VNX - NAS OPERATIONS

| VNX NFS READS 38,196 IO/SEC | VNX NFS WRITES 32,037 IO/SEC |

EMC VNX - NAS NETWORK

| VNX NETWORK OUT 171 MBYTE/SEC | VNX NETWORK IN 428 MBYTE/SEC |

EMC VNX - NFS TOTALS

| TOTAL BW 599 MBYTE/S | TOTAL OPS 70,233 IO/S |

DATA DISTRIBUTION ANALYSIS

VNX01: Super Metric|SM_VNX01_server_3 CPU

VNX01: Super Metric|SM_VNX01_server_4 CPU

DATA DISTRIBUTION ANALYSIS

VNX02: Super Metric|SM_VNX02_server_3 CPU

VNX02: Super Metric|SM_VNX02_server_4 CPU