

VMWare Monitoring Setup Instructions

Summary:

The way we have chosen to monitor VMWare Virtual Center Management Servers (VCMS), ESX Servers, and Virtual Machines is using the software Unnoc which queries the configured VCMS using the Perl VI SDK. An update script is run to auto-update *Fruity* with any changes. The special plugins then query the Unnoc database for the latest results. This document explains how to install all the software necessary to perform this monitoring. This installation assumes SuSE 10 as the OS installed on the server. Where there are differences in your OS, you may need to perform the necessary substitutions in these instructions, such as the location of files in your OS installation. Be aware that if you use the /srv partition as described below, it should be large enough to hold a large amount of data for RRD graphing purposes.

Installing Unnoc:

1. Connect to the server you are going to install Unnoc. It is recommended you run Unnoc on its own server (or VM).
2. Download the latest Mysql rpms (to /usr/local/src) from <http://dev.mysql.com/downloads/> and install (`rpm -Uvh`):
 - a. The RPMs you need are:
 - i. MySQL-client...
 - ii. MySQL-server...
 - iii. MySQL-devel...
 - iv. MySQL-shared...
 - b. Once the updates are installed, start mysql:
`/etc/init.d/mysql start`
 - c. Change the root password for mysql:
`mysqladmin -u root password [the-password-you-wish-to-use]`
3. Install the following RPMs via Yast:
 - a. gcc
 - b. apache
 - c. perl-DBD-mysql (this update may be done via CPAN, but there may be problems.)
 - d. php
 - e. php-mysql
 - f. apache2-mod_php5
 - g. OpenSSL-Devel
 - h. rrdtool
4. Install the following CPAN modules:
 - a. For the BER and SNMP_Session.pm modules, do the following:
 - i. Download the tar file (SNMP_Session-1.12.tar.gz) from <http://www.switch.ch/misc/leinen/snmp/perl/dist/> to the /usr/local/src directory.
 - ii. Extract the file from the gzip'd tar file and enter the extracted home directory for the module.
 - iii. Run the following commands:
`perl Makefile.PL`
`make`

```
make install
```

b. Install/Upgrade the following CPAN modules to latest version:

- i. DBI
- ii. Net::SMTP
- iii. Encode
- iv. Net::Ping
- v. Crypt::SSLeay
- vi. Time::HiRes:

c. VMware::VIRuntime:

- i. Click on the “VMware vSphere SDK for Perl” link on <http://www.vmware.com/download/sdk/>.
- ii. It will require you to have a login. Register for one if you don't have one.
- iii. Accept the agreement.
- iv. Download the VI Perl Toolkit – Linux Installer (currently 32-bit, use 64-bit if the main engine is running 64-bit Linux) to your local machine (as the site will not easily allow you to use wget or other utilities to access the file).
- v. Use scp to move the file from your local machine over to the unnoc server (put in /usr/local/src/).
- vi. Extract the contents of the tar file, then run the *vmware-install.pl* script found in the extracted directory structure.
- vii. Run this test to confirm it is installed correctly (fill in the blanks). Contact the Server VMWare team if you do not have any of the information. Be sure to get the *virtual center server* name as a lower case, fully qualified host name, or it may fail:

```
/usr/lib/vmware-viperl/apps/performance/viperformance.pl --server=[virtual center server]  
--username=[user name] --password=[password] --countertype=cpu --interval=20 --samples=1  
--instance=* --host=[name of esx host]
```

d. Install though CPAN:

```
cpan Net::Ping::External
```

5. Create a new directory:

```
mkdir /srv/www/unnoc
```

6. Create a new group for unnoc:

```
groupadd unnoc
```

7. Create a new user called ‘unnoc’:

```
useradd unnoc -G unnoc -d /srv/www/unnoc
```

8. Change the directory permissions on the unnoc directory:

```
chown unnoc.unnoc /src/www/unnoc
```

9. Download the current version of Unnoc from <http://unnoc.org/> to /usr/local/src. (Click on the download link. The current version is listed at the top of the page – click through to that page to find the tar.gz file.)

10. Extract the contents of the file and cd into the unnoc directory

```
tar xzf unnoc-*.gz
cd unnoc-*
```

11. Run the perl-module-checker.pl script found in the root unnoc install directory. It is okay if DBD::Pg, IO::Socket::SSL, Mail::POP3Client, or any other “Plugin Modules” are not installed.

12. Copy the files and directories in /usr/local/src/unnoc[version]/unnoc/ directory to /srv/www/unnoc:

```
cp -r /usr/local/src/unnoc[version]/unnoc /srv/www/
```

13. Change the permissions for the unnoc directory to the unnoc user:

```
chown -R unnoc.unnoc /srv/www/unnoc
```

14. Create and setup new unnoc DB on the Nagios DB server:

a. Run the following command:

```
mysqladmin -p create unnoc
```

b. Edit the /usr/local/src/unnoc[version]/mysql_table file:

i. Add the following lines starting at line 683:

```
--
-- Table structure for table `vmware_vm_disk`
--
DROP TABLE IF EXISTS `vmware_datastore`;
CREATE TABLE `vmware_datastore` (
  `id` int(10) unsigned NOT NULL auto_increment,
  `host` varchar(128) default NULL,
  `dtype` int(2) default NULL,
  `ds_name` varchar(128) default NULL,
  `vi_id` varchar(64) default NULL,
  `ds_type` varchar(128) default NULL,
  `ds_capacity` varchar(128) default NULL,
  `ds_free` varchar(128) default NULL,
  PRIMARY KEY (`id`),
  UNIQUE KEY `id` (`id`)
);
```

ii. Add the following rows to create table section for vmware_vm_mem starting at line 591:

```
`vm_maxMemoryBalloon` varchar(128) default NULL,
`vm_memoryBalloonUsage` varchar(128) default NULL,
`vm_maxMemorySwap` varchar(128) default NULL,
`vm_memorySwapUsage` varchar(128) default NULL,
```

iii. Add the following rows to the create table section for vmware_vm_cpu starting at line 611:

```
`vm_cpuReady` varchar(128) default NULL,
```

- c. Import the table into the unnoc DB you created in step a:

```
mysql unnoc -p < /usr/local/src/unnoc-1.0.10.2/mysql_table
```

- d. Create a new unnoc DB user in mysql (using the mysql root user):

```
grant all on unnoc.* to `unnoc`@`%` identified by '[password]';  
grant all on unnoc.* to `unnoc`@`localhost` identified by '[password]';  
flush privileges;
```

- e. Add Backups for the unnoc DB:

- i. Create backup directory:

```
mkdir /var/dbbackups
```

- ii. Edit the crontab (crontab -e)

- iii. Add the following lines (2 lines – note wrapping of second line):

```
# Database backups  
45 17 * * * /usr/bin/mysqldump --add-drop-table -u unnoc -p[password] unnoc >  
/var/dbbackups/daily_unnoc_backup.sql
```

15. Setup Unnoc Web Server on the same host:

- a. If you are *not* using an existing apache2 installation that has the php5 module working properly, add the following line to the end of the other modules in /etc/apache2/sysconfig.d/loadmodule.conf file (the location of your mod_php5.so module may differ):

```
LoadModule php5_module /usr/lib64/apache2/mod_php5.so
```

- b. Create a new file /etc/apache2/vhosts.d/unnoc.conf.

- c. Put the following text in the file:

```
<VirtualHost [HOST IP ADDRESS]:80>  
    ServerAdmin webmaster@localhost  
    ServerAlias noc unnoc  
    DocumentRoot /srv/www/unnoc  
    CustomLog /var/log/apache2/unnoc.log combined-pid  
  
    <Directory /srv/www/unnoc/>  
        Options Indexes FollowSymLinks MultiViews ExecCGI  
        AllowOverride All  
        Order allow,deny  
        allow from all  
  
        ## uncomment you can use the following if you want  
        ## to require a username/password  
        ## make sure to create the /etc/unnoc/htpasswd  
        ## file with the htpasswd command  
        ## or you can use the provided sample.htaccess  
        # AuthUserFile /etc/unnoc/htpasswd  
        # AuthName "unnoc"  
        # AuthType Basic  
        # require valid-user  
    </Directory>  
</VirtualHost>
```

- d. Setup Apache to start on boot:

```
insserv apache2
```

- e. Confirm the setup is correct:

```
chkconfig -l apache2
```

- f. Start/Reload apache:

```
/etc/init.d/apache2 restart
```

16. Edit the unnoc files to make the changes we have implemented:

- a. Edit the `/var/www/unnoc/etc/unnoc.conf` file:

- i. Set the following variables:

1. `webroot = /srv/www/unnoc`
2. `db_pass = "unnoc123"`
3. `db_host = "localhost"`
4. `daemon_user = unnoc`
5. `daemon_group = unnoc`
6. `alert = 0`

- b. Backup the `/srv/www/unnoc/libexec/plugins/vmware_vi.pl` file. Make the necessary modifications to this file for your environment, including any reference to `/var/www` being changed to `/srv/www` (or other location as your installation requires).

- c. Edit `/srv/www/unnoc/libexec/runtime/table.pl`, and comment out the following line (line 64) with a `#` at the start of the line:

```
&cleanup_dtype_shared_table (dbh => $dbh, dtype => $dtype_vmware_vcms, table => $db_vmware_vi_table, hosts => $all_hosts{$dtype_vmware_vcms});
```

- d. Edit `/srv/www/unnoc/libexec/runtime/config.pl`:

- i. Add the following new line after line 404:

```
db_vmware_ds_table = vmware_datastore
```

- ii. Add the following new line after line 52:

```
our $db_vmware_ds_table;
```

- e. Edit and Install the `init.d` script for unnoc:

- i. Copy the `init` script (`unnocd`) from

```
/usr/local/src/unnoc[version]/scripts/init.d/fedora/ to /etc/init.d/
```

- ii. Edit the file and change the following lines:

1. Remove lines 2-9 and paste the following in it's place:

```
### BEGIN INIT INFO
# Provides:          unnoc
# Required-Start:    network apache2
# Should-Start:
# Required-Stop:
# Should-Stop:
# Default-Start:    3 5
# Default-Stop:
# Description:       Starts and stops the Unnoc monitor
### END INIT INFO
```

2. Comment out the following line with `#` at the beginning of the line:

```
. /etc/rc.d/init.d/functions
```

3. On line 99, change the word “daemon” to “startproc”

4. Modify instances of /var/www to /srv/www.

iii. Install the new script:

```
insserv unnocd
```

iv. Check the config and confirm it will run at runtime is 3 and 5:

```
chkconfig -l unnocd
```

f. Add the VCM servers to the /srv/www/unnoc/etc/unnoc.conf file:

```
host {  
    hostname = [VCMS Server]  
    service_url = https://[VCMS server]/sdk/vimService  
    type = vcms  
    user = [user setup in Virtual Center]  
    password = [password for the user account]  
}
```

17. Setup the cron job to sync the unnoc and fruity databases. This will add hosts that meet the requirements and remove hosts that no longer appear in unnoc. It will also add or remove datastores.

a. Log into your Nagios DB server.

b. Copy the script (VMWare_fruity_update.pl) from the Monitoring Shared Drive to the tools (/usr/local/nagios/tools) directory on the DB server.

c. Copy check_ping from the main Nagios server (may be the same as your Nagios DB server).

d. Install the cpan module Net::DNS if not already installed.

e. Run the script to see if there are any errors.

f. On successful run, add the following to cron:

```
# Run Unnoc automagic updater every hour  
0 * * * * /usr/local/nagios/tools/VMWare_fruity_update.pl >/dev/null 2>&1
```

18. If the server is a Virtual Machine, you may need to also do additional changes to fix time slip issues.