

NSCA – Nagios and Distributed Monitoring

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Table of Contents

Copyright and License Notice	2
Abstract	3
Installation of NSCA	5
Set up Passive Service	6
Master Host	6
Client Host	7
Conclusion	10
Acknowledgments	10
GNU License	11

Abstract

Distributed monitoring provides advantages for the organization's information technology department. Greener computer rooms are created when monitoring processes are spread over a wider range of hosts. Network bandwidth is reduced of the constant host and service verification traffic. Nagios® is a widely used monitoring and notification application which includes a distributed monitoring addon.

Nagios® is provided to the information technology community as open source software. Nagios is capable of monitoring hosts and services either directly from the Nagios host, active host/service checks, or indirectly, passive host/service checks. Passive host/service check results are passed from the client host to the master host via the nagios service connection acceptor (NSCA). NSCA provides important functionality for Nagios®.

NSCA provides a secure communication channel for clients to send information to the master Nagios® host. The client host is authenticated by the master host prior to any exchange of host and service states. NSCA supports various methods of encryption between the client host and master host. Establishing secure communications between client hosts and the master host is vital for maintaining data integrity.

Organizations require distributed monitoring systems. Nagios's® NSCA addon provides the means to reduce computer room energy footprints, conserve network bandwidth and provide for the secure exchange of information between client hosts and the master host. This paper will sequentially examine the installation and configuration of NSCA and provide theories on how to best deploy the daemon.

Installation of NSCA

Prerequisites:

1. Nagios installed and configured.
2. Know the nagios userid and password.
3. Know the location of the default Nagios directory.
4. NRPE installed and configured on the master host and clients.
5. Mcrypt package installed on both the clients and master hosts.

All commands are being run with “sudo.” Administrators in an environment with autofs, ensure only the local binaries are used and not the autofs binaries. The reason is that you can just copy these files to clients with the same operating system versions; however, the other hosts may not have access to the same autofs binaries.

Copy the nsca-2.7.2.tar.gz to /tmp

Execute tar -zxvf nsca-2.7.2.tar.gz.

Change directory to /tmp/nsca-2.7.2

Execute ./configure --help. You will need to examine your configuration options.

Execute ./configure \

```
> --prefix=$PREFIX #default Nagios directory \
```

```
> --with-mcrypt-lib=/usr/lib \
```

```
> --with-mcrypt-inc=/usr/include \
```

```
> --with-nsca-user=nagios \
```

```
> --with-nsca-grp=nagcmd \
```

```
> --with-nsca-port=5667
```

Execute “make all” if no errors occurred during the configuration phase.

Change directory to /tmp/nsca-2.7.2/src

Copy nsca and send_nsca to \$PREFIX/bin directory

Change directory to /tmp/nsca-2.7.2/sample-configs

Copy nsca.cfg and send_nsca.cfg to \$PREFIX/etc

Copy nsca.xinetd to /etc/xinetd.d/nsca

Now modify the configuration files.

- Vi /etc/services and add “nsca 5667/tcp #NSCA(nagios)” beneath the entry for NRPE.
- Vi /etc/xinetd.d/nsca and make sure “port = 5667” is in the file and I would recommend commenting out the “only_from = 127.0.0.1.” The reason is for scalability. The environment may contain several hundred hosts and you do not want to add each host's IP address to the master host.
- Restart /etc/init.d/xinetd. You can either restart the service or execute kill -HUP <xinetd process id>.
- Execute “netstat -a | grep nsca” and you should receive the following output:


```
tcp    0    0  *:nsca          *:*              LISTEN
```
- Make sure your “command_file” points to the correct location of your nagios.cmd file. Place the nagios user password on the “password=” line. Select your decryption method.
REMEMBER: Once you set the decryption method you will be setting the encryption method for every client using NSCA.
- Change the \$PREFIX/etc/nsca.cfg file ownership to nagios:nagcmd. Change the permissions to 640, because you now have the nagios password in plain text.
- Your master host is now set up for NSCA using xinetd.

Setting up NSCA on the client is exactly the same except you will want to work with the

“send_nsca.cfg.”

- Repeat all the steps listed above for the master host.
Vi \$PREFIX/etc/send_nsca.cfg and add the nagios user password and the encryption method.

REMEMBER: the encryption method needs to be the same as your master hosts decryption method.

Set Up Passive Checks

- Now set up the passive service on the [passive service on the master host](#). A passive service for check_load will look like this:

```
define command{
    command_name      check_dummy
    command_line      $USER1$/check_dummy $ARG1$
}
define service{
    name              passive_service
    active_checks_enabled 0
    passive_checks_enabled 1 # Only passive checking
    flap_detection_enabled 0
    register          0 # This is a template, not a real service
    is_volatile       0
    check_period      24x7
    max_check_attempts 1
    normal_check_interval 5
    retry_check_interval 1
    check_freshness  0
    contacts          admins
    check_command     check_dummy!0
```

```

notification_interval      120
notification_period        24x7
notification_options       w,u,c,r
stalking_options           w,c,u
}

define service{

use                         passive_service

service_description        nsca_check_load

initial_state              o

check_freshness            1

freshness_threshold        7200

check_command              check_nrpe!check_load

host_name                  <client name>
}

```

- Reload Nagios® using `/etc/inet.d/nagios reload`.

This service is set up for active/passive checks of the `check_load` command. It will actively check the command every two hours. You will not experience any **CRITICAL** messages as long as the `check_load` command is set up on the client using NRPE. Active checks are recommended to verify a service check's actual status. The discussion will now focus on the client host setup.

Setting up passive service checks on the [client host](#) is not difficult using the predefined commands found in `$PREFIX/libexec`. You will need to set up a nagios user crontab and create containers for the commands. I used Perl to create the command container on the client hosts, because of portability. Administrators do not want to be re-creating the same commands on each client host.

Create the command container on the client host remembering one aspect, that you only want to

receive notifications when a service check changes state. Why would you want to receive an “OK” state from every client host every 20 minutes? You are already making an active service check every two hours and performing an active host check. So, I created a file to hold the last service check state. Everything becomes clearer by examination of the Perl file.

I called the Perl files: `nsca_check_load.pl` for the container and `nsca_check_load.tmp` to hold the last state. Here is the script:

```
#!/usr/bin/perl -w

#
#Developer:  Mikhail Kniaziewicz
#Email:     mikhail@ebusinessjuncture.com
#Purpose:   Created container for check_load command to support
#           NSCA passive checks
#
use strict;

use Switch;

my $host=`/bin/hostname -f`;

my $svc="nsca_check_load";

my $state=0;

my $tempfile="nsca_check_load.tmp";

my $check_load_cmd=`/opt/nagios/libexec/check_load -w 15,10,5 -c 30,25,20 -r`;

my @check_load_cmd;

my @old_load_file;

my $old_load_file;

open(OLDFILE, "<$tempfile");

$old_load_file = <OLDFILE>;
```

```
close(OLDFILE);

@old_load_file=split(/t/, $old_load_file);

open (FH, ">$tempfile") or die $!;

my $clean = `sudo /bin/cp /dev/null $tempfile`;

chomp($host);

@check_load_cmd = split( //, $check_load_cmd);

$state = $check_load_cmd[0];

switch ($state){

    case "OK" {$state = 0;}

    case "WARNING" {$state = 1;}

    case "CRITICAL" {$state = 2;}

    else      {$state = 3;}

}

print FH "$host\t$svc\t$state\t$check_load_cmd\n" or die $!;

if ($old_load_file[2] ne 0 || $state == 1 || $state == 2 || $state == 3){

    my $send_to_nagios=`/opt/nagios/bin/send_nsca nagios1 -c /opt/nagios/etc/send_nsca.cfg <
$tempfile`;

    close(FH);

    exit (0);

}
```

```

else {
    close(FH);
    exit (0);
}
exit (0);

```

What is this script doing?

1. Loading the variable required when NSCA passes a state to the master host.
2. Loading the `nsca_check_load.tmp` information into a variable and the command output for `check_load` into another variable.
3. Truncating the `nsca_check_load.tmp` for new data.
4. Splitting down the new data and old data so we can obtain a past and present state.
5. Converting the present data state into a numerical value, which is what Nagios needs.
6. Running the results through an “if” statement. If the state is other than “OK” on the past and present service checks notify the master host.
7. Closing the file handles and exiting the script.

Now we need to set up the crontab entry. The nagios user crontab would look like this for a command we want to check every 20 minutes: `20,40,02 * * * * /opt/nagios/libexec/nsca_check_load.pl`. I would not advice using an “at” command for this task. Time will be saved in the long run using cron because all you need to do is copy `/var/spool/cron/tabs/nagios` to your other hosts.

Ensuring everything is working properly is also simple. You can run the `nsca_check_load.pl` command and the master host should obtain a status. The Nagios web interface also provides the ability to test passive commands using the “Submit passive check results for this service” option. The documentation provided here should get you going with Nagios passive service checks.

Using passive service checks to check the exit status is just as easy. The only variation is that you will want to capture the exit status and send it to the master host prior to the script exiting.

Conclusion

Distributed monitoring of services can be accomplished using Nagios®. Organizations face a

growing concern over green computer rooms and conserving bandwidth. Passive service checks provide an answer to the concern. The NSCA addon was designed to facilitate passive service checks. NSCA provides for the secure exchange of data with authentication and encryption.

Obtaining accurate package exchanges requires creating containers and crontab entries on the client host. Perl provides an easy, portable, scripting language to incorporate Nagios's built-in commands. Communication with the master host only needs to occur when a state change occurs. Passive service checks will reduce computer room footprints by allowing client hosts to process service checks locally and reduce network chatter by only communicating with the master host after a change in service state.

Acknowledgments

Carlos Barahona, (2009). NSCA(with Nagios). Retrieved June 28, 2008 from <http://sourceforge.net>.

Ethan Galstad, Creator of Nagios. Installation Documentation for Nagios 3. Retrieved June 28, 2009 from <http://nagios.org>.

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```

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