Red Hat Ceph Storage 6

Monitoring Ceph with Nagios Guide

Monitoring Ceph with Nagios Core.

Red Hat Ceph Storage 6 Monitoring Ceph with Nagios Guide

Monitoring Ceph with Nagios Core.

Legal Notice

Abstract

This document provides instructions for installing and configuring Nagios to monitor a Red Hat Ceph Storage cluster. Red Hat is committed to replacing problematic language in our code, documentation, and web properties. We are beginning with these four terms: master, slave, blacklist, and whitelist. Because of the enormity of this endeavor, these changes will be implemented gradually over several upcoming releases. For more details, see our CTO Chris Wright's message.

Table of Contents

CHAPTER 1. NAGIOS AND CEPH

Nagios Core is an open-source solution for monitoring nodes. Large Red Hat Ceph Storage clusters benefit from distributed monitoring systems such as Nagios Core. The Nagios Core checks each node in a cluster, including the health of the underlying operating system, as well as the health of the Red Hat Ceph Storage cluster daemons.

To deploy Nagios Core with Ceph requires:

- A running Red Hat Ceph Storage cluster.

Instead of Nagios Core, you can also substitute the more feature-rich commercial version, Nagios XI.

> **IMPORTANT**
>
> Red Hat does not provide the Nagios packages.
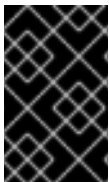
> **IMPORTANT**
>
> Red Hat works with our technology partners to provide this documentation as a service to our customers. However, Red Hat does not provide support for this product. If you need technical assistance with this product, then contact Nagios for support.

CHAPTER 2. NAGIOS CORE INSTALLATION AND CONFIGURATION

As a storage administrator, you can install Nagios Core by downloading the Nagios Core source code; then, configuring, making, and installing it on the node that will run the Nagios Core instance.

2.1. INSTALLING AND CONFIGURING THE NAGIOS CORE SERVER FROM SOURCE

There is not a Red Hat Enterprise Linux package for the Nagios Core software, so the Nagios Core software must be compiled from source.

Prerequisites

- Internet access.

- Root-level access to the Nagios Core host.

Procedure

1. Install the prerequisites:

   Example

   ```
   [root@nagios ~]# dnf install -y httpd php php-cli gcc glibc glibc-common gd gd-devel net-snmp openssl openssl-devel wget unzip make
   ```

2. If you are using a firewall, open port **80** for **httpd**:

   Example

   ```
   [root@nagios ~]# firewall-cmd --zone=public --add-port=80/tcp
   [root@nagios ~]# firewall-cmd --zone=public --add-port=80/tcp --permanent
   ```

3. Create a user and group for Nagios Core:

   Example

   ```
   [root@nagios ~]# useradd nagios
   [root@nagios ~]# passwd nagios
   [root@nagios ~]# groupadd nagcmd
   [root@nagios ~]# usermod -a -G nagcmd nagios
   [root@nagios ~]# usermod -a -G nagcmd apache
   ```

4. Download the latest version of Nagios Core and Plug-ins:

   Example

   ```
   [root@nagios ~]# wget --inet4-only https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.4.5.tar.gz
   [root@nagios ~]# wget --inet4-only http://www.nagios-plugins.org/download/nagios-plugins-2.3.3.tar.gz
   ```

```
[root@nagios ~]# tar zxf nagios-4.4.5.tar.gz
[root@nagios ~]# tar zxf nagios-plugins-2.3.3.tar.gz
[root@nagios ~]# cd nagios-4.4.5
```

5. Run **./configure**:

   Example

   ```
   [root@nagios nagios-4.4.5]# ./configure --with-command-group=nagcmd
   ```

6. Compile the Nagios Core source code:

   Example

   ```
   [root@nagios nagios-4.4.5]# make all
   ```

7. Install Nagios source code:

   Example

   ```
   [root@nagios nagios-4.4.5]# make install
   [root@nagios nagios-4.4.5]# make install-init
   [root@nagios nagios-4.4.5]# make install-config
   [root@nagios nagios-4.4.5]# make install-commandmode
   [root@nagios nagios-4.4.5]# make install-webconf
   ```

8. Copy the event handlers and change their ownership:

   Example

   ```
   [root@nagios nagios-4.4.5]# cp -R contrib/eventhandlers/ /usr/local/nagios/libexec/
   [root@nagios nagios-4.4.5]# chown -R nagios:nagios /usr/local/nagios/libexec/eventhandlers
   ```

9. Run the pre-flight check:

   Example

   ```
   [root@nagios nagios-4.4.5]# /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
   ```

10. Make and install the Nagios Core plug-ins:

    Example

    ```
    [root@nagios ~]# cd ../nagios-plugins-2.3.3
    [root@nagios nagios-plugins-2.3.3]# ./configure --with-nagios-user=nagios --with-nagios-group=nagios
    [root@nagios nagios-plugins-2.3.3]# make
    [root@nagios nagios-plugins-2.3.3]# make install
    ```

11. Create a user for the Nagios Core user interface:

    Example

> [root@nagios nagios-plugins-2.3.3]# htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
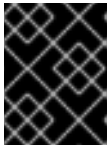
> **IMPORTANT**
>
> If adding a user other than **nagiosadmin**, ensure the **/usr/local/nagios/etc/cgi.cfg** file gets updated with the user name too.

12. Modify the **/usr/local/nagios/etc/objects/contacts.cfg** file with the user name, full name, and email address as needed.

2.2. STARTING THE NAGIOS CORE SERVICE

Start the Nagios Core service to monitor the Red Hat Ceph Storage cluster health.

Prerequisites

- Root-level access to the Nagios Core host.

Procedure

1. Add Nagios Core and Apache as a service:

   Example

   ```
   [root@nagios ~]# systemctl enable nagios
   [root@nagios ~]# systemctl enable httpd
   ```

2. Start the Nagios Core daemon and Apache:

   Example

   ```
   [root@nagios ~]# systemctl start nagios
   [root@nagios ~]# systemctl start httpd
   ```

2.3. LOGGING INTO THE NAGIOS CORE SERVER

Log in to the Nagios Core server to view the health status of the Red Hat Ceph Storage cluster.

Prerequisites

- User name and password for the Nagios dashboard.

Procedure

- With Nagios up and running, log in to the dashboard using the credentials of the default Nagios Core user:

  Syntax

  ```
  http://IP_ADDRESS/nagios
  ```

Replace *IP_ADDRESS* with the IP address of your Nagios Core server.

CHAPTER 3. NAGIOS REMOTE PLUG-IN EXECUTOR INSTALLATION

As a storage administrator, you can monitor the Ceph storage cluster hosts, install Nagios plug-ins, the Ceph plug-ins, and the Nagios remote plug-in executor (NRPE) add-on to each of the Ceph hosts.

For demonstration purposes, this section adds NRPE to a Ceph Monitor host with the hostname **host01**. Repeat the remaining procedures on all Ceph hosts that Nagios should monitor.

3.1. INSTALLING AND CONFIGURING NAGIOS REMOTE PLUG-IN EXECUTOR

Install the Nagios Remote Plug-in Executor (NPRE) and configure it to communicate with the Nagios Core server.

Prerequisites

- Root-level access to Ceph Monitor host.

Procedure

1. Install these packages on the host:

   Example

   ```
   [root@host01 ~]# dnf install openssl openssl-devel gcc make git
   ```

2. NRPE installation requires a Nagios user. Create the user first:

   Example

   ```
   [root@host01 ~]# useradd nagios
   [root@host01 ~]# passwd nagios
   ```

3. Download the latest version of the Nagios plug-ins. Then, make and install them:

   Example

   ```
   [root@host01 ~]# wget http://nagios-plugins.org/download/nagios-plugins-2.3.3.tar.gz
   [root@host01 ~]# tar zxf nagios-plugins-2.3.3.tar.gz
   [root@host01 ~]# cd nagios-plugins-2.3.3
   [root@host01 nagios-plugins-2.3.3]# ./configure
   [root@host01 nagios-plugins-2.3.3]# make
   [root@host01 nagios-plugins-2.3.3]# make install
   ```

4. Download the latest version of the Ceph plug-ins:

   Example

   ```
   [root@host01 nagios-plugins-2.3.3]# cd ~
   [root@host01 ~]# git clone --recursive https://github.com/ceph/ceph-nagios-plugins.git
   [root@host01 ~]# cd ceph-nagios-plugins
   ```

```
[root@host01 ceph-nagios-plugins]# make dist
[root@host01 ceph-nagios-plugins]# make install
```

5. Download, make, and install Nagios NRPE:

   Example

   ```
   [root@host01 ceph-nagios-plugins]# cd ~
   [root@host01 ~]# wget https://github.com/NagiosEnterprises/nrpe/releases/download/nrpe-
   4.0.3/nrpe-4.0.3.tar.gz
   [root@host01 ~]# tar xvfz nrpe-4.0.3.tar.gz
   [root@host01 ~]# cd nrpe-4.0.3
   [root@host01 nrpe-4.0.3]# ./configure
   [root@host01 nrpe-4.0.3]# make all
   [root@host01 nrpe-4.0.3]# make install-groups-users
   [root@host01 nrpe-4.0.3]# make install
   [root@host01 nrpe-4.0.3]# make install-config
   [root@host01 nrpe-4.0.3]# make install-init
   ```

6. If you are using a firewall, open port **5666** to allow communication with NRPE:

   Example

   ```
   [root@host01 ~]# firewall-cmd --zone=public --add-port=5666/tcp
   [root@host01 ~]# firewall-cmd --zone=public --add-port=5666/tcp --permanent
   ```

Additional Resources

- For more information about Nagios plug-ins for Ceph, see *Nagios plugins for Ceph*.

3.2. STARTING THE NAGIOS REMOTE PLUG-IN EXECUTOR SERVICE

Start the Nagios Remote Plug-in Executor (NRPE) service to collect data and report it back to the Nagios Core server.

Prerequisites

- Root-level access to the Ceph Monitor host

Procedure

- Enable and start the NRPE service:

  Example

  ```
  [root@host01 ~]# systemctl enable nrpe
  [root@host01 ~]# systemctl start nrpe
  ```

3.3. CONFIGURING NAGIOS CORE SERVER ACCESS TO REMOTE NODES

For the Nagios Core server to access Nagios Remote Plugin Executor (NPRE) on a remote machine, the remote machine's NRPE configurations must be updated with the IP address of the Nagios Core server.

Prerequisites

- Root-level access to the Nagios Core server.

- Internet access.

- Access to the Nagios Remote Plugin Executor.

Procedure

1. Edit the NRPE configuration with the Nagios server's IP address:

   Example

   ```
   [root@host01 ~]# vi /usr/local/nagios/etc/nrpe.cfg
   ```

2. Add the IP address of the Nagios Core server to the **allowed_hosts** setting.

   Syntax

   ```
   allowed_hosts=127.0.0.1,IP_ADDRESS_OF_NAGIOS_CORE_SERVER
   ```

   Replace *IP_ADDRESS_OF_NAGIOS_CORE_SERVER* with the IP address of your Nagios Core server.

3. Restart **nrpe**:

   Example

   ```
   [root@host01 ~]# systemctl restart nrpe
   ```

Verification

- Test the installation:

  Example

  ```
  [root@host01 ~]# /usr/local/nagios/libexec/check_nrpe -H localhost
  ```

  The check should echo **NRPE v4.0.3** if it is working correctly.

CHAPTER 4. CONFIGURING THE REMOTE NODE ON THE NAGIOS CORE SERVER

Configure the Nagios Core server to be aware of the remote hosts.

Prerequisites

- Root-level access to the remote node on the Nagios Core server.

- Internet access.

Procedure

1. Install the **check_nrpe** plug-in:

   Example

   ```
   [root@nagios ~]# cd ~
   [root@nagios ~]# wget https://github.com/NagiosEnterprises/nrpe/releases/download/nrpe-4.0.3/nrpe-4.0.3.tar.gz
   [root@nagios ~]# tar xvfz nrpe-4.0.3.tar.gz
   [root@nagios ~]# cd nrpe-4.0.3
   [root@nagios nrpe-4.0.3]# ./configure
   [root@nagios nrpe-4.0.3]# make check_nrpe
   [root@nagios nrpe-4.0.3]# make install-plugin
   ```

2. Create a configuration for the remote host:

   Syntax

   ```
   cd /usr/local/nagios/etc/objects
   cp localhost.cfg HOST_TO_ADD.cfg
   ```

   Example

   ```
   [root@nagios nrpe-4.0.3]# cd /usr/local/nagios/etc/objects
   [root@nagios objects]# cp localhost.cfg host01.cfg
   ```

3. Edit the configuration file and update the settings for the remote host:

   Syntax

   ```
   vi HOST_TO_ADD.cfg
   ```

   Example

   ```
   [root@nagios objects]# vi host01.cfg
   ```

   Syntax

   ```
   # Define a host for the local machine
   ```

```
define host {

   use    linux-server    ; Name of host template to use
                          ; This host definition will inherit all variables that are defined
                          ; in (or inherited by) the linux-server host template definition.
   host_name          LOCALHOST
   alias              LOCALHOST
   address            127.0.0.1
}
```

Replace *LOCALHOST* with the hostname of the remote host, and **127.0.0.1** with the IP address of the Ceph monitor host.

Example

```
# Define a host for the local machine

define host {
   use    linux-server   ; Name of host template to use
                         ; This host definition will inherit all variables that are defined
                         ; in (or inherited by) the linux-server host template definition.
   host_name          host01
   alias              host01
   address            10.10.128.69
}
```

4. Delete or comment out the Host Group definition:

Example

```
[root@nagios objects]# vi host01.cfg
```

```
#define hostgroup {
#
#   hostgroup_name       linux-servers         ; The name of the hostgroup
#   alias                Linux Servers         ; Long name of the group
#   members              localhost             ; Comma separated list of hosts that belong to this
group
#}
```

5. Change the file ownership to Nagios:

Example

```
[root@nagios objects]# chown nagios:nagios host01.cfg
```

6. Add a **cfg_file=** reference to the **host01.cfg** file in **/usr/local/nagios/etc/nagios.cfg**:

Example

```
[root@nagios objects]# vi /usr/local/nagios/etc/nagios.cfg
```

```
cfg_file=/usr/local/nagios/etc/objects/host01.cfg
```

7. Restart the Nagios server:

   Example

   ```
   [root@nagios objects]# systemctl restart nagios
   ```

8. Ensure that the make and install procedures worked and that there is connectivity between the Nagios Core server and the remote host containing NRPE:

   Syntax

   ```
   /usr/local/nagios/libexec/check_nrpe -H HOSTNAME_OF_REMOTE_HOST
   ```

   Replace *HOSTNAME_OF_REMOTE_HOST* with the IP address of the Ceph host to monitor.

   Example

   ```
   [root@nagios objects]# /usr/local/nagios/libexec/check_nrpe -H host01
   ```

Verification

- The check should echo **NRPE v4.0.3** if it is working correctly.

CHAPTER 5. CONFIGURING THE NAGIOS PLUGINS FOR CEPH

Configure the Nagios plug-ins for Red Hat Ceph Storage cluster.

Prerequisites

- Root-level access to the Ceph Monitor host and Nagios Core Server.

- A running Red Hat Ceph Storage cluster.

Procedure

1. Log in to the Ceph monitor host and create a Ceph key and keyring for Nagios.

   Example

   ```
   [root@nagios ~]# ssh user@host01
   [user@host01 ~]$ sudo su -
   [root@host01 ~]# cd /etc/ceph
   [root@host01 ceph]# ceph auth get-or-create client.nagios mon 'allow r' >
   client.nagios.keyring
   ```

   Each plug-in will require authentication. Repeat this procedure for each host that contains a plug-in.

2. Add a command for the **check_ceph_health** plug-in:

   Example

   ```
   [root@host01 ~]# vi /usr/local/nagios/etc/nrpe.cfg
   ```

   ```
   command[check_ceph_health]=/usr/lib/nagios/plugins/check_ceph_health --id nagios --
   keyring /etc/ceph/client.nagios.keyring
   ```

3. Enable and restart the **nrpe** service:

   Example

   ```
   [root@host01 ~]# systemctl enable nrpe
   [root@host01 ~]# systemctl restart nrpe
   ```

   Repeat this procedure for each Ceph plug-in applicable to the host.

4. Return to the Nagios Core server and define a **check_nrpe** command for the NRPE plug-in:

   Example

   ```
   [root@nagios ~]# cd /usr/local/nagios/etc/objects
   [root@nagios objects]# vi commands.cfg
   ```

   Syntax

```
define command{
 command_name check_nrpe
 command_line $USER1$/check_nrpe -H $HOSTADDRESS$ -c $ARG1$
 }
```

5. On the Nagios Core server, edit the configuration file for the node and add a service for the Ceph plug-in.

Example

```
[root@nagios objects]# vi /usr/local/nagios/etc/objects/host01.cfg
```

Syntax

```
define service {
  use                generic-service
  host_name          HOSTNAME
  service_description   Ceph Health Check
  check_command         check_nrpe!check_ceph_health
}
```

Replace *HOSTNAME* with the hostname of the Ceph host you want to monitor.

Example

```
define service {
  use                generic-service
  host_name          host01
  service_description   Ceph Health Check
  check_command         check_nrpe!check_ceph_health
}
```

> **NOTE**
>
> The **check_command** setting uses **check_nrpe!** before the Ceph plug-in name. This tells NRPE to execute the **check_ceph_health** command on the remote node.

6. Repeat this procedure for each plug-in applicable to the host.

7. Restart the Nagios Core server:

Example

```
[root@nagios ~]# systemctl restart nagios
```

8. Before proceeding with additional configuration, ensure that the plug-ins are working on the Ceph host:

Syntax

```
/usr/lib/nagios/plugins/check_ceph_health --id NAGIOS_USER --keyring
/etc/ceph/client.nagios.keyring
```

Example

```
[root@host01 ~]# /usr/lib/nagios/plugins/check_ceph_health --id nagios --keyring
/etc/ceph/client.nagios.keyring
HEALTH OK
```

> **NOTE**
>
> The **check_ceph_health** plug-in performs the equivalent of the **ceph health** command.

Additional Resources

- See *Nagios plugins for Ceph* for more information about Ceph Nagios plug-ins usage.