



IE2060
Computer Systems Administration
2nd Year, 2nd Semester

Individual Assignment

**Nagios Monitoring Setup with CentOS Server and
Fedora Client/s**

&

**DNS Caching Setup with CentOS Server and Fedora
Clients**

Submitted to

Sri Lanka Institute of Information Technology

In partial fulfillment of the requirements for the
Bachelor of Science Special Honors Degree in Information Technology

04/26/2024

Declaration

I certify that this report does not incorporate without acknowledgement, any material previously submitted for a degree or diploma in any university, and to the best of my knowledge and belief, it does not contain any material previously published or written by another person, except where due reference is made in text.

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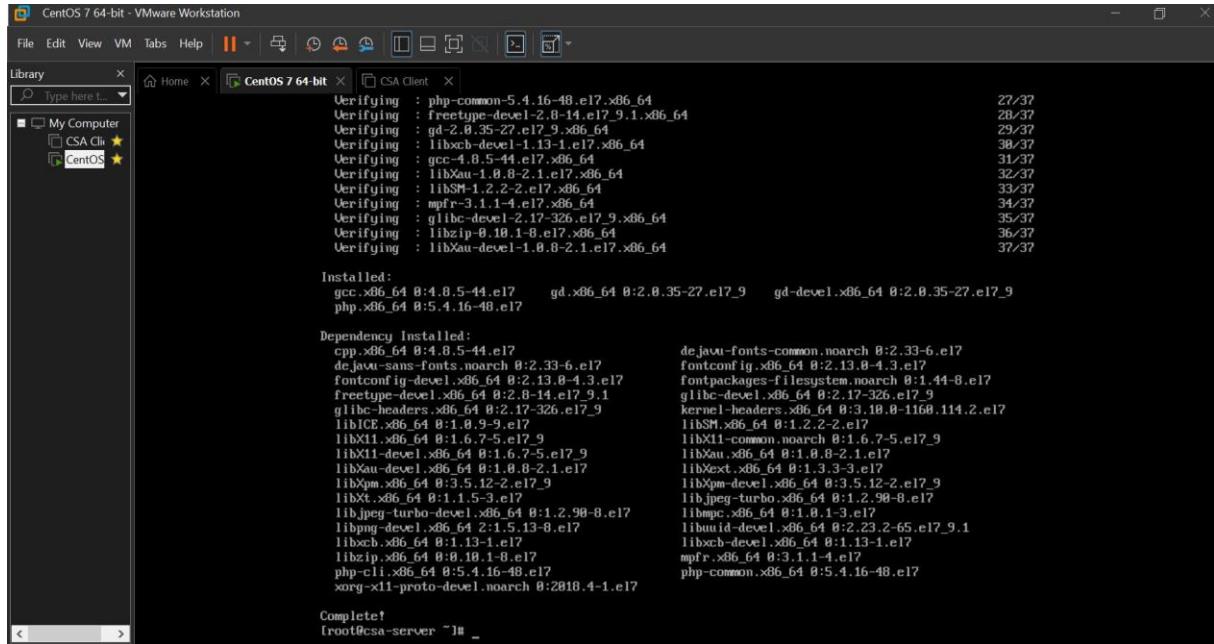
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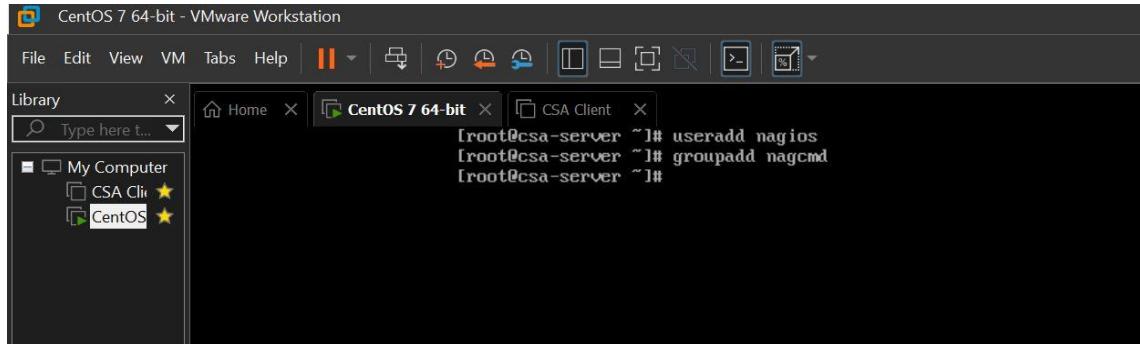
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1 Nagios Monitoring Setup with CentOS Server and Fedora Client/s-Server setup



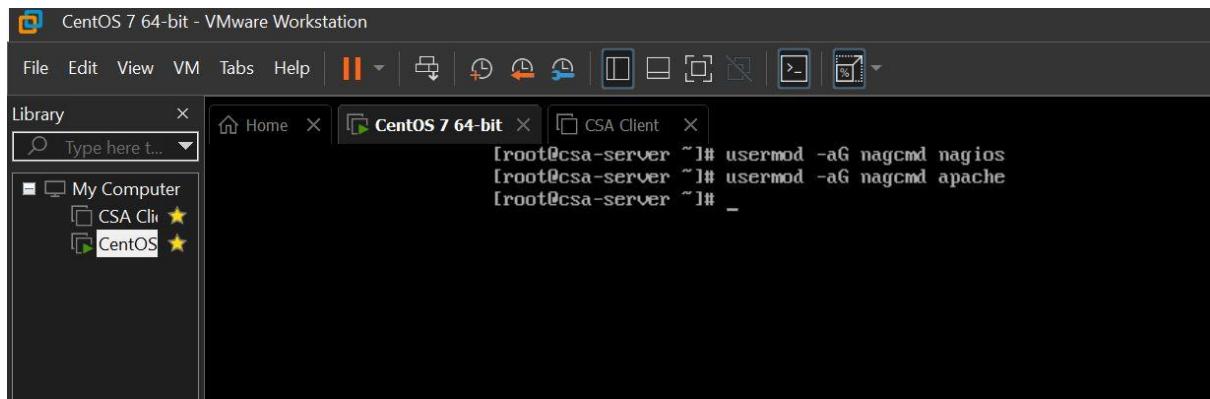
```
CentOS 7 64-bit - VMware Workstation
File Edit View VM Tabs Help ||| Home | CentOS 7 64-bit | CSA Client |
Type here t... ▾
Library X
My Computer
  CSA Cli ★
  CentOS ★
Home X
CentOS 7 64-bit X
CSA Client X
Verifying : php-common-5.4.16-48.el7.x86_64 27/37
Verifying : freetype-devel-2.8-14.el7_9_1.x86_64 28/37
Verifying : gd-2.0.35-27.el7_9.x86_64 29/37
Verifying : libxcb-devel-1.13-1.el7.x86_64 30/37
Verifying : gcc-4.8.5-44.el7.x86_64 31/37
Verifying : libXau-1.0.8-2.1.el7.x86_64 32/37
Verifying : libSM-1.2.2-2.el7.x86_64 33/37
Verifying : mpfr-3.1.1-4.el7.x86_64 34/37
Verifying : glibc-devel-2.17-326.el7_9.x86_64 35/37
Verifying : libzip-0.18.1-8.el7.x86_64 36/37
Verifying : libXau-devel-1.0.8-2.1.el7.x86_64 37/37
Installed:
  gcc.x86_64 0:4.8.5-44.el7    gd.x86_64 0:2.0.35-27.el7_9    gd-devel.x86_64 0:2.0.35-27.el7_9
  php.x86_64 0:5.4.16-48.el7
Dependency Installed:
  cpp.x86_64 0:4.8.5-44.el7
  dejavu-sans-fonts.noarch 0:2.33-6.el7
  fontconfig-devel.x86_64 0:2.13.0-4.3.el7
  freetype-devel.x86_64 0:2.8-14.el7_9_1
  glibc-headers.x86_64 0:2.17-326.el7_9
  libICE.x86_64 0:1.0.9-9.el7
  libX11.x86_64 0:1.6.7-5.el7_9
  libX11-devel.x86_64 0:1.6.7-5.el7_9
  libXau-devel.x86_64 0:1.0.8-2.1.el7
  libXpm.x86_64 0:3.5.12-2.el7_9
  libXt.x86_64 0:1.1.5-3.el7
  libjpeg-turbo-devel.x86_64 0:1.2.90-8.el7
  libpng-devel.x86_64 2:1.5.13-8.el7
  libxcb.x86_64 0:1.13-1.el7
  libzip.x86_64 0:0.18.1-8.el7
  php-cli.x86_64 0:5.4.16-48.el7
  xorg-x11proto-devel.noarch 0:2010.4-1.el7
dejavu-fon... common.noarch 0:2.33-6.el7
fontconfig.x86_64 0:2.13.0-4.3.el7
fontpackages-filesystem.noarch 0:1.44-8.el7
glibc-devel.x86_64 0:2.17-326.el7_9
kernel-headers.x86_64 0:3.10.0-1168.114.2.el7
libSM.x86_64 0:1.2.2-2.el7
libX11-common.noarch 0:1.6.7-5.el7_9
libXau.x86_64 0:1.0.8-2.1.el7
libXext.x86_64 0:1.3.3-3.el7
libXpm-devel.x86_64 0:3.5.12-2.el7_9
libjpeg-turbo.x86_64 0:1.2.98-8.el7
libmpc.x86_64 0:1.0.1-3.el7
libstdc++.x86_64 0:2.23.2-65.el7_9_1
libxcb-devel.x86_64 0:1.13-1.el7
mpfr.x86_64 0:3.1.1-4.el7
php-common.x86_64 0:5.4.16-48.el7
Complete!
[root@csa-server ~]#
```

Figure 1-1:Install Apache web server with PHP module



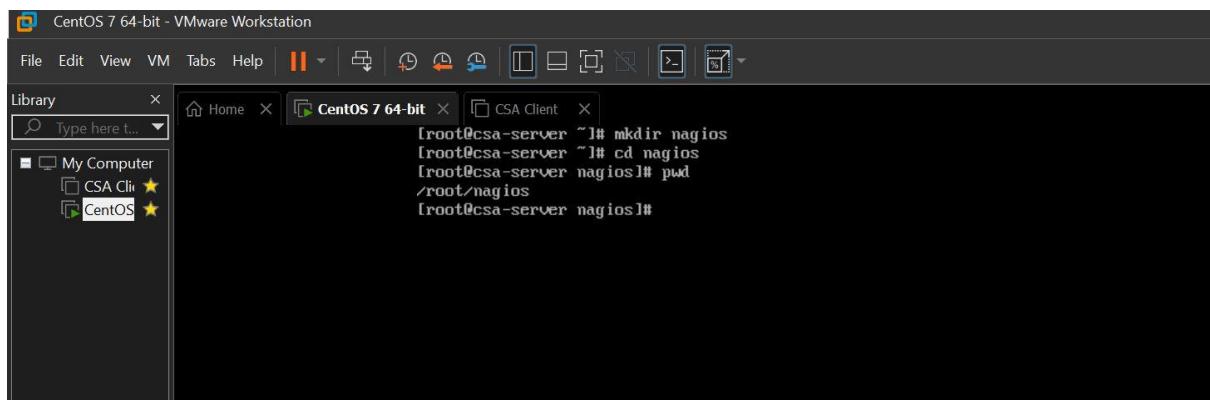
```
CentOS 7 64-bit - VMware Workstation
File Edit View VM Tabs Help ||| Home | CentOS 7 64-bit | CSA Client |
Type here t... ▾
Library X
My Computer
  CSA Cli ★
  CentOS ★
Home X
CentOS 7 64-bit X
CSA Client X
[root@csa-server ~]# useradd nagios
[root@csa-server ~]# groupadd nagcmd
[root@csa-server ~]#
```

Figure 1-2: Add Nagios User & Group nagcmd



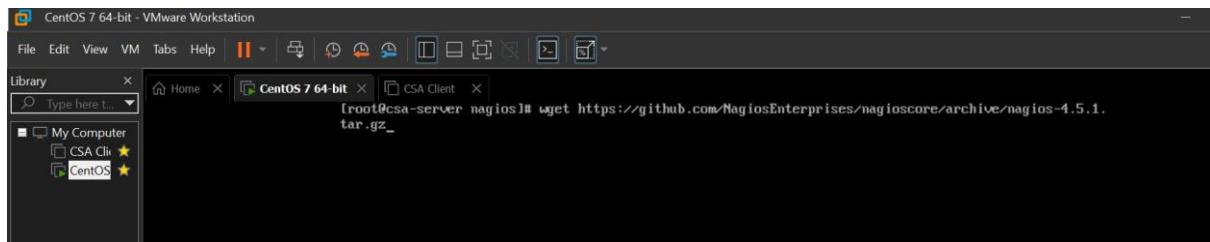
```
[root@csa-server ~]# usermod -aG nagcmd nagios
[root@csa-server ~]# usermod -aG nagcmd apache
[root@csa-server ~]#
```

Figure 1-3: Add user and Apache to the group



```
[root@csa-server ~]# mkdir nagios
[root@csa-server ~]# cd nagios
[root@csa-server nagios]# pwd
/root/nagios
[root@csa-server nagios]#
```

Figure 1-4: Create Nagios directory & change directory



```
[root@csa-server nagios]# wget https://github.com/NagiosEnterprises/nagioscore/archive/nagios-4.5.1.tar.gz
```

Figure 1-5: Download Nagios-4.5.1 Version

```
[root@csa-server nagios]# wget https://github.com/NagiosEnterprises/nagioscore/archive/nagios-4.5.1.tar.gz
--2024-04-22 08:59:27-- https://github.com/NagiosEnterprises/nagioscore/archive/nagios-4.5.1.tar.gz
Resolving github.com (github.com)... 20.205.243.166
Connecting to github.com (github.com)20.205.243.166:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://codepreload.github.com/MagiosEnterprises/nagioscore/tar.gz/refs/tags/nagios-4.5.1
Resolving codepreload.github.com (codepreload.github.com)... 20.205.243.165
Connecting to codepreload.github.com (codepreload.github.com)20.205.243.165:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [application/x-gzip]
Saving to: 'nagios-4.5.1.tar.gz'

[  =>          ] 11,540,395   351KB/s  in 70s

2024-04-22 09:00:39 (160 KB/s) - 'nagios-4.5.1.tar.gz' saved [11540395]

[root@csa-server nagios]# _
```

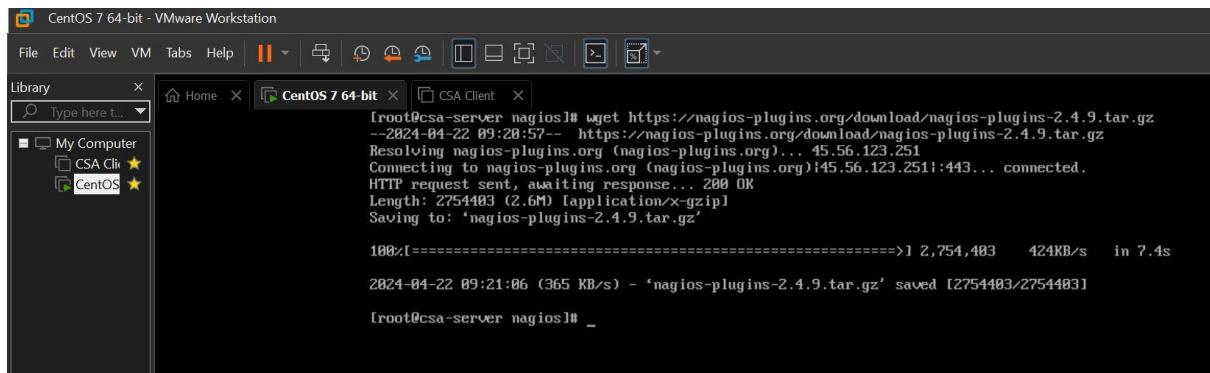
Figure 1-6: Downloaded Nagios-4.5.1 Version

```
[root@csa-server nagios]# tar -xvf nagios-4.5.1.tar.gz
```

Figure 1-7: Unzip Nagios-4.5.1 Version

```
[root@csa-server nagios]# ls
nagios-4.5.1.tar.gz  nagioscore-nagios-4.5.1
[root@csa-server nagios]# _
```

Figure 1-8: Unzipped Nagios-4.5.1 Version



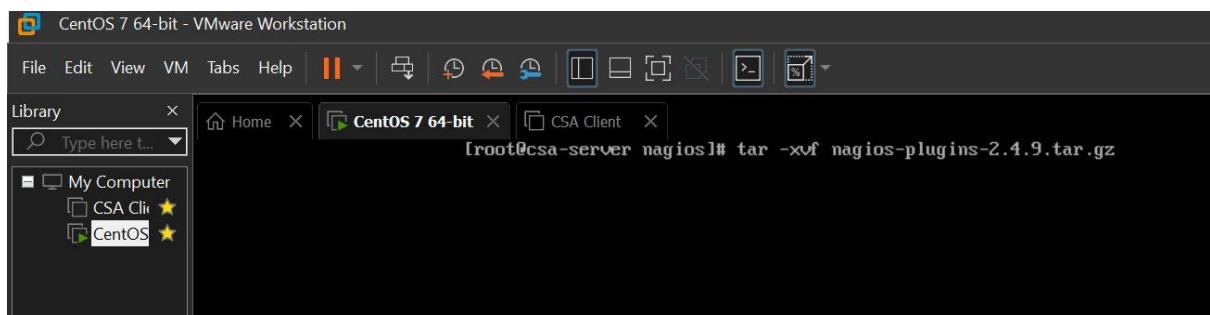
```
[root@csa-server nagios]# wget https://nagios-plugins.org/download/nagios-plugins-2.4.9.tar.gz
--2024-04-22 09:20:57--  https://nagios-plugins.org/download/nagios-plugins-2.4.9.tar.gz
Resolving nagios-plugins.org (nagios-plugins.org)... 45.56.123.251
Connecting to nagios-plugins.org (nagios-plugins.org)|45.56.123.251|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2754483 (2.6M) [application/x-gzip]
Saving to: 'nagios-plugins-2.4.9.tar.gz'

100%[=====] 2,754,483   424KB/s   in 7.4s

2024-04-22 09:21:06 (365 KB/s) - 'nagios-plugins-2.4.9.tar.gz' saved [2754483/2754483]

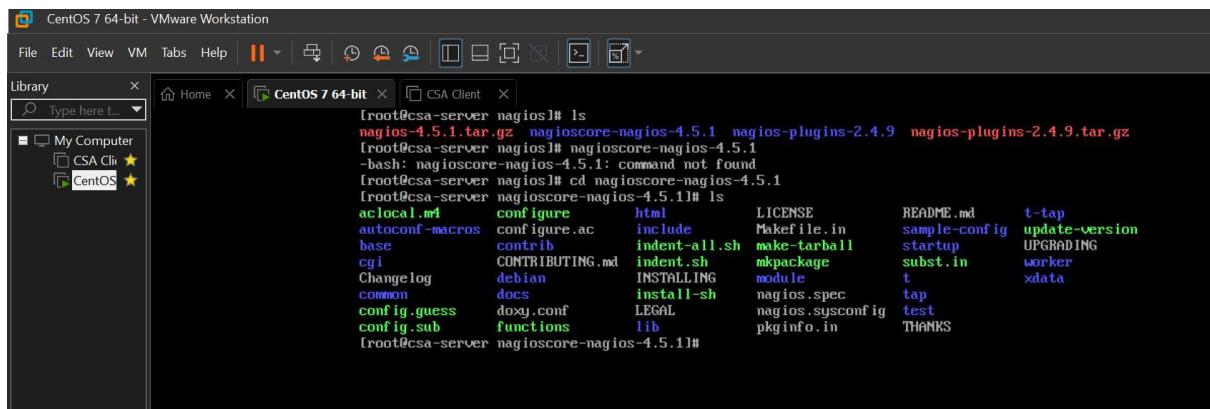
[root@csa-server nagios]# _
```

Figure 1-9: Download Nagios Plugins-2.4.9 Version



```
[root@csa-server nagios]# tar -xvf nagios-plugins-2.4.9.tar.gz
```

Figure 1-10: Unzip Nagios plugins-2.4.9 Version



```
[root@csa-server nagios]# ls
nagios-4.5.1.tar.gz  nagioscore-nagios-4.5.1  nagios-plugins-2.4.9  nagios-plugins-2.4.9.tar.gz
[root@csa-server nagios]# nagioscore-nagios-4.5.1
-bash: nagioscore-nagios-4.5.1: command not found
[root@csa-server nagios]# cd nagioscore-nagios-4.5.1
[root@csa-server nagioscore-nagios-4.5.1]# ls
aclocal.m4  configure  html      LICENSE    README.md  t-tap
autoconf-macros  configure.ac  include   Makefile.in  sample-config  update-version
base        contrib     indent-all.sh  make-tarball  startup    UPGRADING
cgi         CONTRIBUTING.md  indent.sh  mpackage    subst.in    worker
Changelog   debian     INSTALLING  module      t          xdata
common      docs       install-sh  nagios.spec  tap
config.guess doxy.conf  LEGAL     nagios.sysconfig  test
config.sub   functions  lib       pkginfo.in  THANKS
```

Figure 1-11: Unzipped Nagios plugins-2.4.9 Version

Figure 1-12 shows a screenshot of a CentOS 7 64-bit VMware Workstation terminal window. The terminal window title is "CentOS 7 64-bit - VMware Workstation". The window contains a menu bar with File, Edit, View, VM, Tabs, Help, and several icons. Below the menu is a tab bar with Home, CentOS 7 64-bit (which is active), and CSA Client. The main area of the terminal shows the command "make all" being typed at the root prompt: [root@csa-server nagioscore-nagios-4.5.1]# make all

Figure 1-12: Compile Nagios 4.5.1 source code

Figure 1-13 shows a screenshot of a CentOS 7 64-bit VMware Workstation terminal window. The terminal window title is "CentOS 7 64-bit - VMware Workstation". The window contains a menu bar with File, Edit, View, VM, Tabs, Help, and several icons. Below the menu is a tab bar with Home, CentOS 7 64-bit (which is active), and CSA Client. The main area of the terminal shows the output of the "make all" command, which includes support notes and a link to the Nagios library:

```
make install-exfoliation
  - This installs the Exfoliation theme for the Nagios
    web interface

make install-classicui
  - This installs the classic theme for the Nagios
    web interface

*** Support Notes *****
If you have questions about configuring or running Nagios,
please make sure that you:
  - Look at the sample config files
  - Read the documentation on the Nagios Library at:
    https://library.nagios.com

before you post a question to one of the mailing lists.
Also make sure to include pertinent information that could
help others help you. This might include:
  - What version of Nagios you are using
  - What version of the plugins you are using
  - Relevant snippets from your config files
  - Relevant error messages from the Nagios log file

For more information on obtaining support for Nagios, visit:
  https://support.nagios.com
*****
Enjoy.
```

[root@csa-server nagioscore-nagios-4.5.1]# _

Figure 1-13: Compiled Nagios 4.5.1 source code

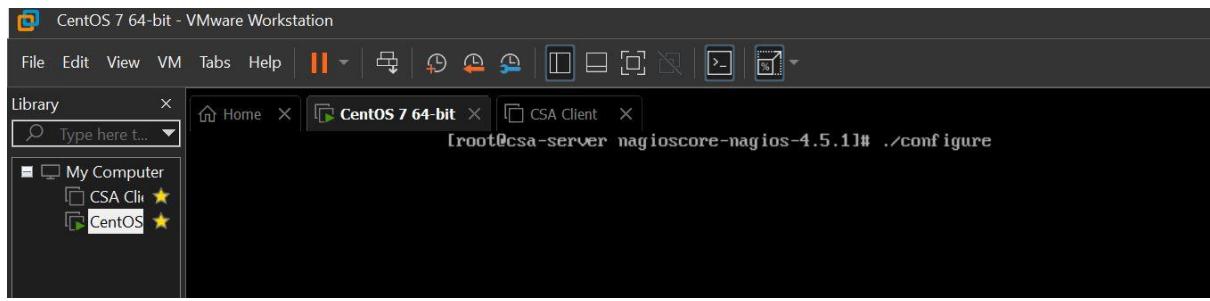


Figure 1-14: Configure Nagios 4.5.1 source code

```
config.status: creating t-tap/Makefile
config.status: creating include/config.h
config.status: creating lib/snprintf.h
config.status: creating lib/iobroker.h

Creating sample config files in sample-config/ ...

*** Configuration summary for nagios 4.5.1 2024-02-28 ***:

General Options:
-----
      Nagios executable: nagios
      Nagios user/group: nagios,nagios
      Command user/group: nagios,nagios
      Event Broker: yes
      Install ${prefix}: /usr/local/nagios
      Install ${includedir}: /usr/local/nagios/include/nagios
      Lock file: /run/nagios.lock
      Check result directory: /usr/local/nagios/var/spool/checkresults
      Init directory: /lib/systemd/system
      Apache conf.d directory: /etc/httpd/conf.d
      Mail program: /sbin/sendmail
      Host OS: linux-gnu
      IOBroker Method: epoll

Web Interface Options:
-----
      HTML URL: http://localhost/nagios/
      CGI URL: http://localhost/nagios/cgi-bin/
      Traceroute (used by WAP): _ 

Review the options above for accuracy. If they look okay,
type 'make all' to compile the main program and CGIs.

[root@csa-server nagioscore-nagios-4.5.1]# _
```

A screenshot of a terminal window titled "CentOS 7 64-bit - VMware Workstation". The terminal window has a dark background. At the top, there is a menu bar with options: File, Edit, View, VM, Tabs, Help. Below the menu bar is a toolbar with various icons. The main area of the terminal shows the output of the "configure" command for Nagios 4.5.1. It includes a summary of configuration options like executable path, user/group, and web interface URLs. At the bottom, it prompts the user to type "make all" to compile the program. To the left of the terminal is a "Library" sidebar with a search bar and a list of items: My Computer, CSA Client, and CentOS.

Figure 1-15: Configure Nagios 4.5.1 source code

```
[root@csa-server nagioscore-nagios-4.5.1]# make install
```

Figure 1-16: Place compiled files into the default system path

```
/bin/install -c -m 664 -o nagios -g nagios bootstrap-3.3.7/css/bootstrap-theme.min.css /usr/local/nagios/share/bootstrap-3.3.7/css
/bin/install -c -m 664 -o nagios -g nagios d3/d3.min.js /usr/local/nagios/share/d3
/bin/install -c -m 664 -o nagios -g nagios ./spin/spin.min.js /usr/local/nagios/share/spin
make[1]: Leaving directory '/root/nagios/nagioscore-nagios-4.5.1/html'
make install-exfoliation
make[1]: Entering directory '/root/nagios/nagioscore-nagios-4.5.1'

*** Exfoliation theme installed ***
NOTE: Use 'make install-classicui' to revert to classic Nagios theme

make[1]: Leaving directory '/root/nagios/nagioscore-nagios-4.5.1'
make install-basic
make[1]: Entering directory '/root/nagios/nagioscore-nagios-4.5.1'
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/libexec
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/var
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/var/archives
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/var/spool/checkresults
chmod g+s /usr/local/nagios/var/spool/checkresults

*** Main program, CGIs and HTML files installed ***

You can continue with installing Nagios as follows (type 'make' without any arguments for a list of all possible options):

make install-init
- This installs the init script in /lib/systemd/system

make install-commandmode
- This installs and configures permissions on the directory for holding the external command file

make install-config
- This installs sample config files in /usr/local/nagios/etc

make[1]: Leaving directory '/root/nagios/nagioscore-nagios-4.5.1'
[root@csa-server nagioscore-nagios-4.5.1]# _
```

Figure 1-17: Place compiled files into the default system path

```
[root@csa-server nagioscore-nagios-4.5.1]# make install-init
/bin/install -c -m 755 -d -o root -g root /lib/systemd/system
/bin/install -c -m 755 -o root -g root startup/default-service /lib/systemd/system/nagios.service
```

Figure 1-18: Install init script

```
[root@csa-server nagioscore-nagios-4.5.1]# make install-commandmode
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/var/rw
chmod g+s /usr/local/nagios/var/rw

*** External command directory configured ***

[root@csa-server nagioscore-nagios-4.5.1]# _
```

Figure 1-19: Install commandmode script

```
[root@csa-server nagioscore-nagios-4.5.1]# make install-commandmode
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/etc
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/etc/objects
/bin/install -c -b -m 664 -o nagios -g nagios sample-config/nagios.cfg /usr/local/nagios/etc/nagios.cfg
/bin/install -c -b -m 664 -o nagios -g nagios sample-config/cgi.cfg /usr/local/nagios/etc/cgi.cfg
/bin/install -c -b -m 660 -o nagios -g nagios sample-config/resource.cfg /usr/local/nagios/etc/resource.cfg
/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/templates.cfg /usr/local/nagios/etc/objects/templates.cfg
/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/commands.cfg /usr/local/nagios/etc/objects/commands.cfg
/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/contacts.cfg /usr/local/nagios/etc/objects/contacts.cfg
/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/timeperiods.cfg /usr/local/nagios/etc/objects/timeperiods.cfg
/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/localhost.cfg /usr/local/nagios/etc/objects/localhost.cfg
/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/windows.cfg /usr/local/nagios/etc/objects/windows.cfg
/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/printer.cfg /usr/local/nagios/etc/objects/printer.cfg
/bin/install -c -b -m 664 -o nagios -g nagios sample-config/template-object/switch.cfg /usr/local/nagios/etc/objects/switch.cfg

*** Config files installed ***

Remember, these are *SAMPLE* config files. You'll need to read the documentation for more information on how to actually define services, hosts, etc. to fit your particular needs.

[root@csa-server nagioscore-nagios-4.5.1]# _
```

Figure 1-20: Install config script

```
[root@csa-server nagioscore-nagios-4.5.1]# make install-webconf
/bin/install -c -m 644 sample-config/httpd.conf /etc/httpd/conf.d/nagios.conf
if [ $? -eq 1 ]; then \
    ln -s /etc/httpd/conf.d/nagios.conf /etc/apache2/sites-enabled/nagios.conf; \
fi

*** Nagios/Apache conf file installed ***

[root@csa-server nagioscore-nagios-4.5.1]#
```

Figure 1-21: Install web conf script

```

# NOTES: This config file provides you with some example contact and contact
# group definitions that you can reference in host and service
# definitions.

#
# CONTACTS
#
#####
# Just one contact defined by default - the Nagios admin (that's you)
# This contact definition inherits a lot of default values from the
# 'generic-contact' template which is defined elsewhere.

define contact {
    contact_name      nagiosadmin          ; Short name of user
    use               generic-contact       ; Inherit default values from generic-contact template (defined above)
    alias             Nagios Admin         ; Full name of user
    email             maleesharangana@gmail.com ; ***** CHANGE THIS TO YOUR EMAIL ADDRESS ***
}

"/usr/local/nagios/etc/objects/contacts.cfg" 51L, 1806C written
[root@csa-server ~]#

```

Figure 1-22: edit contacts.cfg file

```

[root@csa-server ~]# sudo htpasswd -s -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
New password:
Re-type new password:
Adding password for user nagiosadmin
[root@csa-server ~]#

```

Figure 1-23: create a user & password for Nagios

```

[root@csa-server nagios-plugins-2.4.9]# ./configure --with-nagios-user=nagios --with-nagios-group=nagcmd

```

Figure 1-24:configure user & group for Nagios

```
[root@csa-server nagios-plugins-2.4.9]# make_
```

Figure 1-25: List Compile Nagios plugins 4.5.1 source code

```
[root@csa-server nagios-plugins-2.4.9]# make install_
```

Figure 1-26: Compile Nagios plugins 4.5.1 source code

```
[root@csa-server ~]# sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg
```

Figure 1-27: Check Nagios

```

CentOS 7 64-bit - VMware Workstation
File Edit View VM Tabs Help ||| Type here t...
Library CentOS 64-bit
Copyright (c) 2009-present Nagios Core Development Team and Community Contributors
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 2024-02-28
License: GPL

Website: https://www.nagios.org
Reading configuration data...
  Read main config file okay...
  Read object config files okay...

Running pre-flight check on configuration data...

Checking objects...
  Checked 8 services.
  Checked 1 hosts.
  Checked 1 host groups.
  Checked 0 service groups.
  Checked 1 contacts.
  Checked 1 contact groups.
  Checked 24 commands.
  Checked 5 time periods.
  Checked 0 host escalations.
  Checked 0 service escalations.

Checking for circular paths...
  Checked 1 hosts
  Checked 0 service dependencies
  Checked 0 host dependencies
  Checked 5 timeperiods

Checking global event handlers...
Checking obsessive compulsive processor commands...
Checking misc settings...

Total Warnings: 0
Total Errors: 0

Things look okay - No serious problems were detected during the pre-flight check
[root@csa-server ~]#

```

Figure 1-28: Pre-flight check

```

CentOS 7 64-bit - VMware Workstation
File Edit View VM Tabs Help ||| Type here t...
Library CentOS 64-bit CSA Client
[root@csa-server ~]# systemctl start nagios_

```

Figure 1-29

```

CentOS 7 64-bit - VMware Workstation
File Edit View VM Tabs Help ||| Type here t...
Library CentOS 64-bit CSA Client
[root@csa-server ~]# systemctl enable nagios

```

Figure 1-30: enable Nagios

Current Network Status

Last Updated: Mon Apr 22 11:43:40 EDT 2024
Updated every 90 seconds
Nagios® Core™ 4.5.1 - www.nagios.org
Logged in as nagosadmin

Host Status Totals

Up	1
Down	0
Unreachable	0
Pending	0

Service Status Totals

Ok	1
Warning	0
Unknown	0
Critical	0
Pending	7

Service Status Details For All Hosts

Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	04-22-2024 11:43:37	0d 0h 0m 40s+	1/4	OK - load average: 0.35, 0.45, 0.23
localhost	Current Users	PENDING	N/A	0d 0h 0m 40s+	1/4	Service check scheduled for Mon Apr 22 11:44:15 EDT 2024
localhost	HTTP	CRITICAL	PENDING	N/A	1/4	Service check scheduled for Mon Apr 22 11:44:52 EDT 2024
localhost	PING	PENDING	N/A	0d 0h 0m 40s+	1/4	Service check scheduled for Mon Apr 22 11:45:30 EDT 2024
localhost	Root Partition	PENDING	N/A	0d 0h 0m 40s+	1/4	Service check scheduled for Mon Apr 22 11:46:07 EDT 2024
localhost	SSH	CRITICAL	PENDING	N/A	1/4	Service check scheduled for Mon Apr 22 11:46:45 EDT 2024
localhost	Swap Usage	PENDING	N/A	0d 0h 0m 40s+	1/4	Service check scheduled for Mon Apr 22 11:47:22 EDT 2024
localhost	Total Processes	PENDING	N/A	0d 0h 0m 40s+	1/4	Service check scheduled for Mon Apr 22 11:48:00 EDT 2024

Results 1 - 8 of 8 Matching Services

Figure 1-31: Localhost Nagios services

```

[root@csa-server nagios]# wget https://github.com/NagiosEnterprises/nrpe/releases/download/nrpe-4.1.0/nrpe-4.1.0.tar.gz
--2024-04-22 15:31:59-- https://github.com/NagiosEnterprises/nrpe/releases/download/nrpe-4.1.0/nrpe-4.1.0.tar.gz
Resolving github.com (github.com)... 20.285.243.166
Connecting to github.com (github.com) port 22... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://objects.githubusercontent.com/github-production-release-asset-2e65be/16119653/15952b1c-13e6-4e48-939d-2923484278c?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAVUC0DYL5H53PQK4ZGzF2F2824R4Z2-2Fus-east-1%2F53%2Faws4-requestX-Amz-Date=20240422T193200Z&X-Amz-Expires=3008X-Amz-Signature=300c91a71595233434823d2f6d8b7b0d165b06fde35c7e06850d516e6fb03a0X-Amz-SignedHeaders=host&actor_id=0&repo_id=0&repo_id=16119653&response-content-disposition=attachment%3Bfilename%3Dnrpe-4.1.0.tar.gz&response-content-type=application%2Foctet-stream[following]
--2024-04-22 15:32:00-- https://objects.githubusercontent.com/github-production-release-asset-2e65be/16119653/15952b1c-13e6-4e48-939d-2923484278c?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAVUC0DYL5H53PQK4ZGzF2F2824R4Z2-2Fus-east-1%2F53%2Faws4-requestX-Amz-Date=20240422T193200Z&X-Amz-Expires=3008X-Amz-Signature=300c91a71595233434823d2f6d8b7b0d165b06fde35c7e06850d516e6fb03a0X-Amz-SignedHeaders=host&actor_id=0&repo_id=0&repo_id=16119653&response-content-disposition=attachment%3Bfilename%3Dnrpe-4.1.0.tar.gz&response-content-type=application%2Foctet-stream
Resolving objects.githubusercontent.com (objects.githubusercontent.com)... 185.199.108.133, 185.199.189.133, 185.199.189.110, 185.199.110.133...
Connecting to objects.githubusercontent.com (objects.githubusercontent.com) port 22... connected.
HTTP request sent, awaiting response... 200 OK
Length: 528228 (516K) [application/octet-stream]
Saving to: 'nrpe-4.1.0.tar.gz'

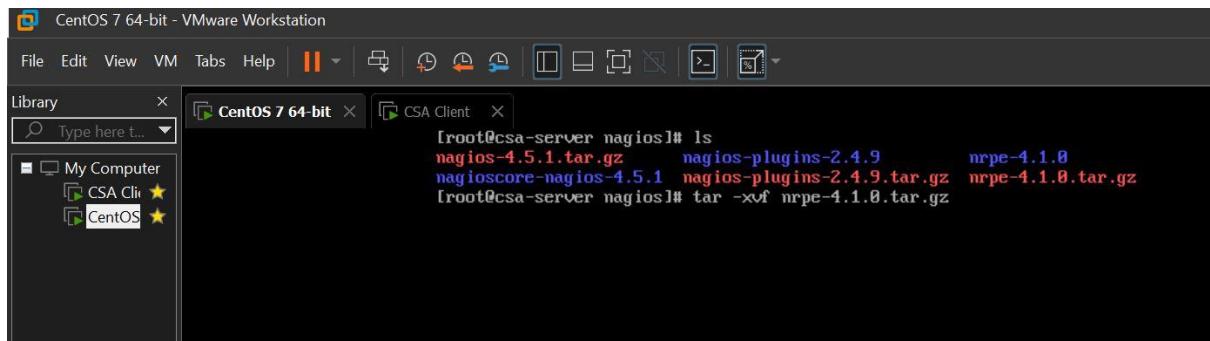
100%[=====] 528,228      252KB/s   in 2.8s

2024-04-22 15:32:03 (252 KB/s) - 'nrpe-4.1.0.tar.gz' saved [528228/528228]

[root@csa-server nagios]#

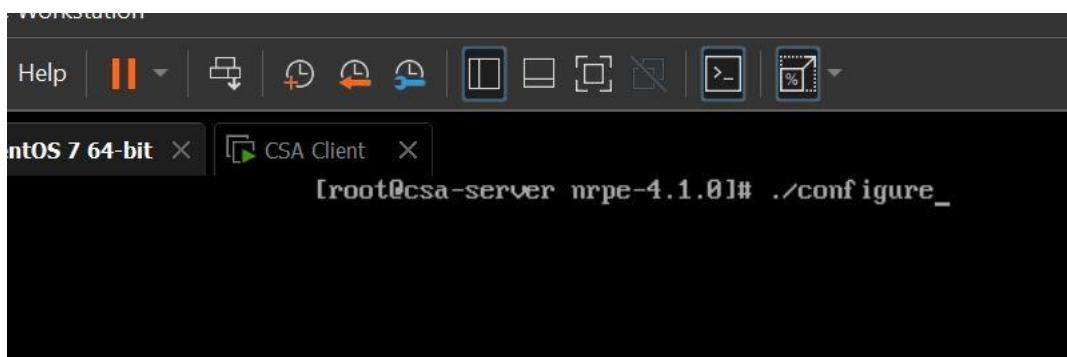
```

Figure 1-32: Install nrpe plugin



```
[root@csa-server nagios]# ls
nagios-4.5.1.tar.gz      nagios-plugins-2.4.9      nrpe-4.1.0
nagioscore-nagios-4.5.1  nagios-plugins-2.4.9.tar.gz nrpe-4.1.0.tar.gz
[root@csa-server nagios]# tar -xvf nrpe-4.1.0.tar.gz
```

Figure 1-33: unzip nrpe & list Nagios file



```
[root@csa-server nrpe-4.1.0]# ./configure
```

Figure 1-34: Configure nrpe

```

config.status: creating startup/default-init
config.status: creating startup/default-inetd
config.status: creating startup/default-service
config.status: creating startup/default-socket
config.status: creating startup/default-socket-svc
config.status: creating startup/default-xinetd
config.status: creating startup/mac-init.plist
config.status: creating startup/mac-inetd.plist
config.status: creating startup/newbsd-init
config.status: creating startup/openbsd-init
config.status: creating startup/openrc-conf
config.status: creating startup/openrc-init
config.status: creating startup/solaris-init.xml
config.status: creating startup/solaris-inetd.xml
config.status: creating startup/tmpfile.conf
config.status: creating startup/upstart-init
config.status: creating startup/rh-upstart-init
config.status: creating include/common.h
config.status: creating include/config.h

*** Configuration summary for nrpe 4.1.0 2022-07-18 ***:

General Options:
-----
NRPE port:      5666
NRPE user:      nagios
NRPE group:     nagios
Magios user:    nagios
Magios group:   nagios

Review the options above for accuracy. If they look okay,
type 'make all' to compile the NRPE daemon and client
or type 'make' to get a list of make options.

[root@csa-server nrpe-4.1.0]#

```

Figure 1-35: Configured nrpe

```

[root@csa-server nrpe-4.1.0]# make all
cd ./src/; make
make[1]: Entering directory '/root/nagios/nrpe-4.1.0/src'
gcc -g -O2 -I/usr/include/krb5 -DHAVE_CONFIG_H -I ../../include -I ../../include -o nrpe ./nrpe.c ./ut
ils.c ./acl.c -lssl -lcrypto -lssl
gcc -g -O2 -I/usr/include/krb5 -DHAVE_CONFIG_H -I ../../include -I ../../include -o check_nrpe ./check
_nrpe.c ./utils.c -lssl -lcrypto -lssl
make[1]: Leaving directory '/root/nagios/nrpe-4.1.0/src'

*** Compile finished ***

You can now continue with the installation or upgrade process.

Read the PDF documentation (docs/NRPE.pdf) for information on the next
steps you should take to complete the installation or upgrade.

[root@csa-server nrpe-4.1.0]#

```

Figure 1-36: Compile nrpe

```

[root@csa-server nrpe-4.1.0]# make install
cd ./src/; make install
make[1]: Entering directory `/root/nagios/nrpe-4.1.0/src'
make install-plugin
make[2]: Entering directory `/root/nagios/nrpe-4.1.0/src'
/bin/install -c -m 755 -d /usr/local/nagios/bin
/bin/install -c -m 755 ..../uninstall /usr/local/nagios/bin/nrpe-uninstall
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/libexec
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/libexec
/bin/install -c -m 775 -o nagios -g nagios check_nrpe /usr/local/nagios/libexec
make[2]: Leaving directory `/root/nagios/nrpe-4.1.0/src'
make install-daemon
make[2]: Entering directory `/root/nagios/nrpe-4.1.0/src'
/bin/install -c -m 755 -d /usr/local/nagios/bin
/bin/install -c -m 755 ..../uninstall /usr/local/nagios/bin/nrpe-uninstall
/bin/install -c -m 755 nrpe /usr/local/nagios/bin
/bin/install -c -m 755 -d /usr/lib/tmpfiles.d
/bin/install -c -m 644 ..../startup/tmpfile.conf /usr/lib/tmpfiles.d/nrpe.conf
make[2]: Leaving directory `/root/nagios/nrpe-4.1.0/src'
make[1]: Leaving directory `/root/nagios/nrpe-4.1.0/src'
[root@csa-server nrpe-4.1.0]#

```

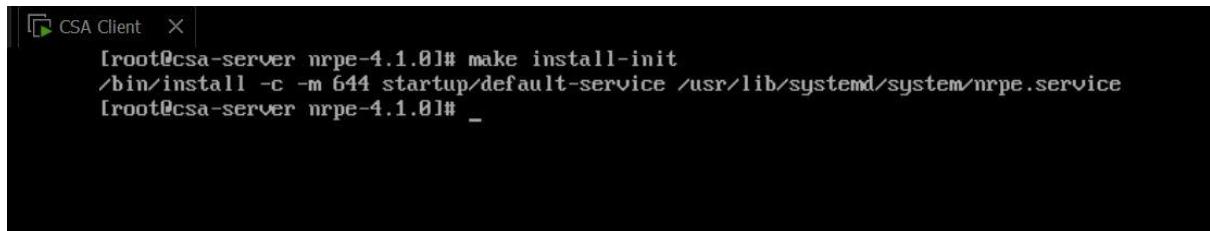
Figure 1-37: Compile nrpe 4.0.1 source code

```

[root@csa-server nrpe-4.1.0]# make install-plugin
cd ./src/; make install-plugin
make[1]: Entering directory `/root/nagios/nrpe-4.1.0/src'
/bin/install -c -m 755 -d /usr/local/nagios/bin
/bin/install -c -m 755 ..../uninstall /usr/local/nagios/bin/nrpe-uninstall
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/libexec
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/libexec
/bin/install -c -m 775 -o nagios -g nagios check_nrpe /usr/local/nagios/libexec
make[1]: Leaving directory `/root/nagios/nrpe-4.1.0/src'
[root@csa-server nrpe-4.1.0]# make install-daemon
cd ./src/; make install-daemon
make[1]: Entering directory `/root/nagios/nrpe-4.1.0/src'
/bin/install -c -m 755 -d /usr/local/nagios/bin
/bin/install -c -m 755 ..../uninstall /usr/local/nagios/bin/nrpe-uninstall
/bin/install -c -m 755 nrpe /usr/local/nagios/bin
/bin/install -c -m 755 -d /usr/lib/tmpfiles.d
/bin/install -c -m 644 ..../startup/tmpfile.conf /usr/lib/tmpfiles.d/nrpe.conf
make[1]: Leaving directory `/root/nagios/nrpe-4.1.0/src'
[root@csa-server nrpe-4.1.0]# make install-config
/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/etc
/bin/install -c -m 644 -o nagios -g nagios sample-config/nrpe.cfg /usr/local/nagios/etc
[root@csa-server nrpe-4.1.0]#

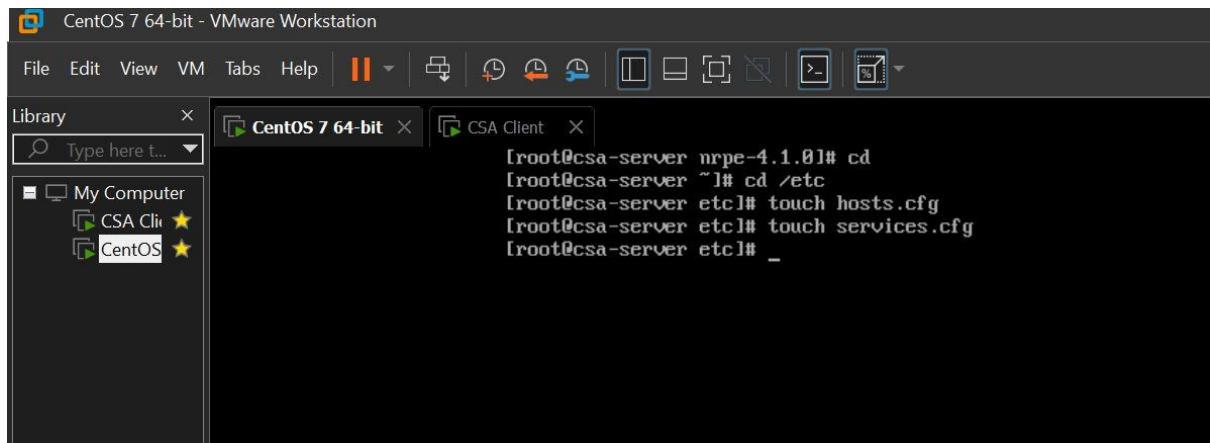
```

Figure 1-38: Install plugin script



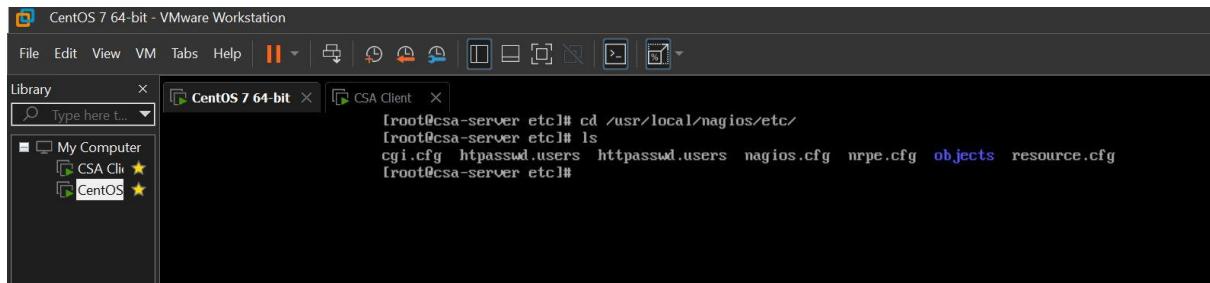
```
[root@csa-server nrpe-4.1.0]# make install-init
/bin/install -c -m 644 startup/default-service /usr/lib/systemd/system/nrpe.service
[root@csa-server nrpe-4.1.0]# _
```

Figure 1-39: install init script



```
[root@csa-server nrpe-4.1.0]# cd
[root@csa-server ~]# cd /etc
[root@csa-server etc]# touch hosts.cfg
[root@csa-server etc]# touch services.cfg
[root@csa-server etc]# _
```

Figure 1-40: create hosts.cfg & services.cfg files



```
[root@csa-server etc]# cd /usr/local/nagios/etc/
[root@csa-server etc]# ls
cgi.cfg  htpasswd.users  httpasswd.users  nagios.cfg  nrpe.cfg  objects  resource.cfg
[root@csa-server etc]# _
```

Figure 1-41: list ect folder

```
# Definitions for monitoring the local (Linux) host
cfg_file=/usr/local/nagios/etc/objects/localhost.cfg
cfg_file=/usr/local/nagios/etc/objects/linuxclient.cfg
```

Figure 1-42: edit nagios.cfg files

```
#!/usr/bin/python
# HOST DEFINITION
#
# Define a host for the local machine
define host {
    use          linux-server      ; Name of host template to use
    s that are defined           ; This host definition will inherit all
    plate definition.
        host_name    nagios-linuxclient
        alias       nagios-linuxclient
        address     192.168.175.129
}

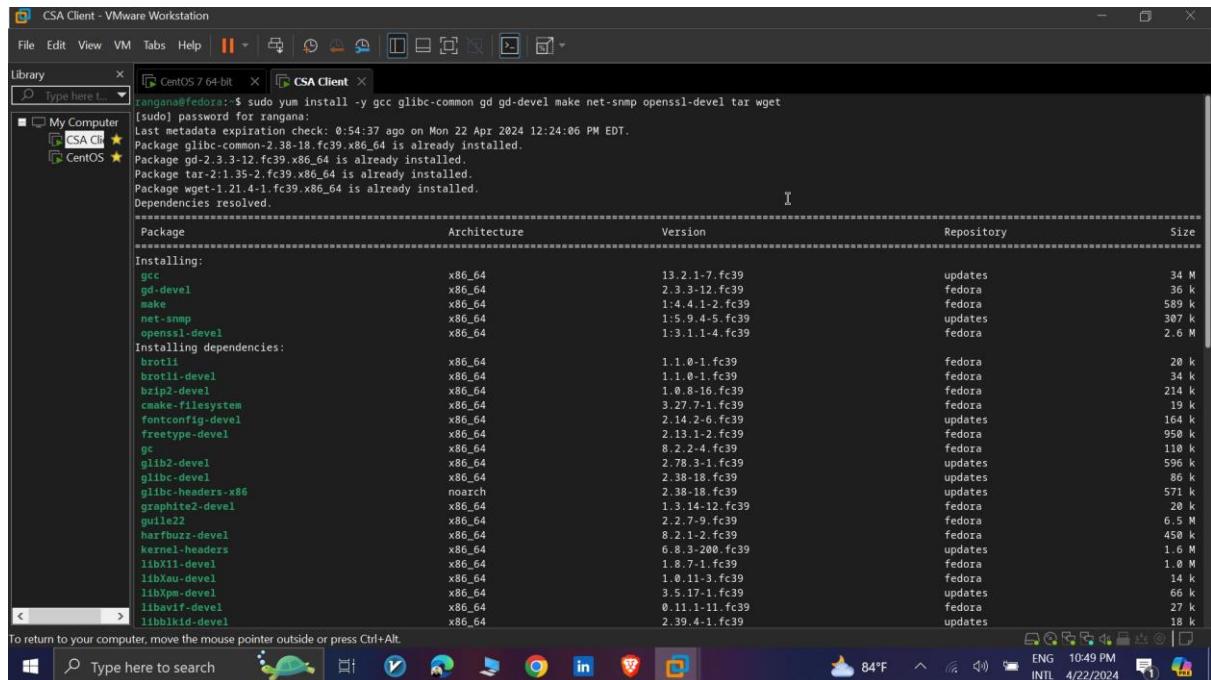
# HOST GROUP DEFINITION
#
```

Figure 1-43: edit linuxclient.cfg

```
[root@csa-server objects]# chown nagios:nagios linuxclient.cfg
[root@csa-server objects]#
```

Figure 1-44: change owner

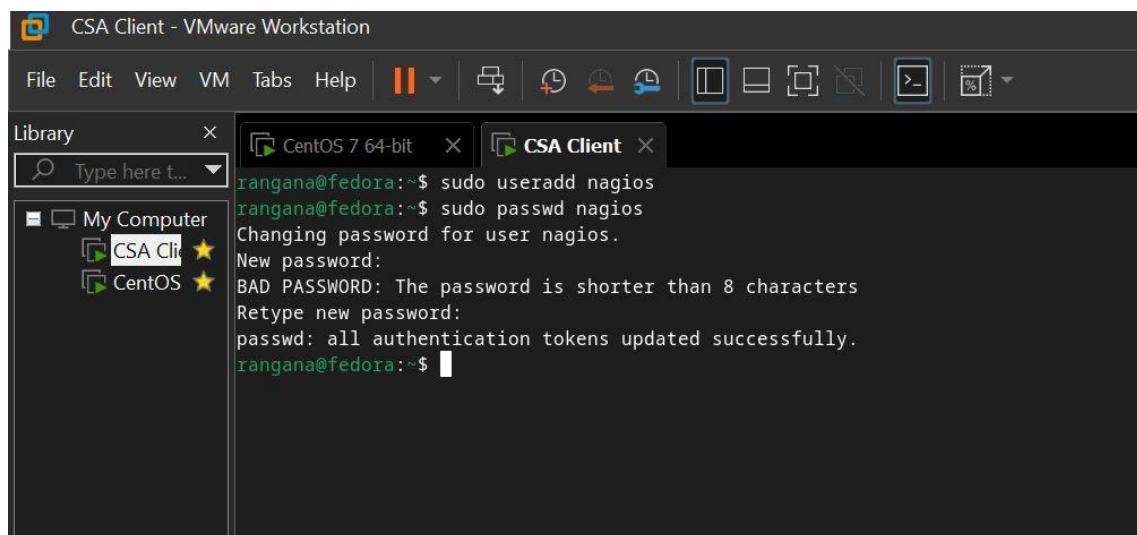
Part 1: Nagios Monitoring Setup with CentOS Server and Fedora Client/s-Client setup



```
tangana@fedora:~$ sudo yum install -y gcc glibc-common gd gd-devel make net-snmp openssl-devel tar wget
[sudo] password for tangana:
Last metadata expiration check: 0:54:37 ago on Mon 22 Apr 2024 12:24:06 PM EDT.
Package glibc-common-2.38-18.fc39.x86_64 is already installed.
Package gd-2.3.3-12.fc39.x86_64 is already installed.
Package tar-2.1.35-2.fc39.x86_64 is already installed.
Package wget-1.21.4-1.fc39.x86_64 is already installed.
Dependencies resolved.

=====
| Package           | Architecture | Version      | Repository | Size
|=====|
| Installing:
|   gcc              | x86_64       | 13.2.1-7.fc39 | updates    | 34 M
|   gd-devel         | x86_64       | 2.3.3-12.fc39 | fedora    | 36 k
|   make             | x86_64       | 1:4.4.1-2.fc39 | fedora    | 589 k
|   net-snmp         | x86_64       | 1:5.9.4-5.fc39 | updates    | 307 k
|   openssl-devel   | x86_64       | 1:3.1.1-4.fc39 | fedora    | 2.6 M
| Installing dependencies:
|   brotli           | x86_64       | 1.1.0-1.fc39  | fedora    | 20 k
|   brotli-devel     | x86_64       | 1.1.0-1.fc39  | fedora    | 34 k
|   brotli2-devel    | x86_64       | 1.0.8-16.fc39 | fedora    | 214 k
|   cmake-filesystem | x86_64       | 3.27.7-1.fc39 | fedora    | 19 k
|   fontconfig-devel | x86_64       | 2.14.2-6.fc39 | updates    | 164 k
|   freetype-devel   | x86_64       | 2.13.1-2.fc39 | fedora    | 950 k
|   glib              | x86_64       | 2.78.3-1.fc39 | fedora    | 110 k
|   glib2-devel       | x86_64       | 2.38.18.fc39  | updates    | 596 k
|   glibc-devel       | x86_64       | 2.38.18.fc39  | updates    | 86 k
|   glibc-headers-x86 | noarch       | 2.38.18.fc39  | updates    | 571 k
|   graphite2-devel  | x86_64       | 1.3.14-12.fc39 | fedora    | 28 k
|   guile22           | x86_64       | 2.2.7-9.fc39  | fedora    | 6.5 M
|   harfbuzz-devel   | x86_64       | 8.2.1-2.fc39  | fedora    | 458 k
|   kernel-headers    | x86_64       | 6.8.3-200.fc39 | updates    | 1.6 M
|   libX11-devel      | x86_64       | 1.8.7-1.fc39  | fedora    | 1.0 M
|   libXau-devel      | x86_64       | 1.0.11-3.fc39 | fedora    | 14 k
|   libXpm-devel      | x86_64       | 3.5.17-11.fc39 | updates    | 66 k
|   libXvif-devel     | x86_64       | 0.11.1-11.fc39 | fedora    | 27 k
|   libblkid-devel    | x86_64       | 2.39.4-1.fc39  | updates    | 18 k
To return to your computer, move the mouse pointer outside or press Ctrl+Alt.
```

Figure 1-45: Download OpenSSL



```
rangana@fedora:~$ sudo useradd nagios
rangana@fedora:~$ sudo passwd nagios
Changing password for user nagios.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
rangana@fedora:~$
```

Figure 1-46: Create user Nagios & password

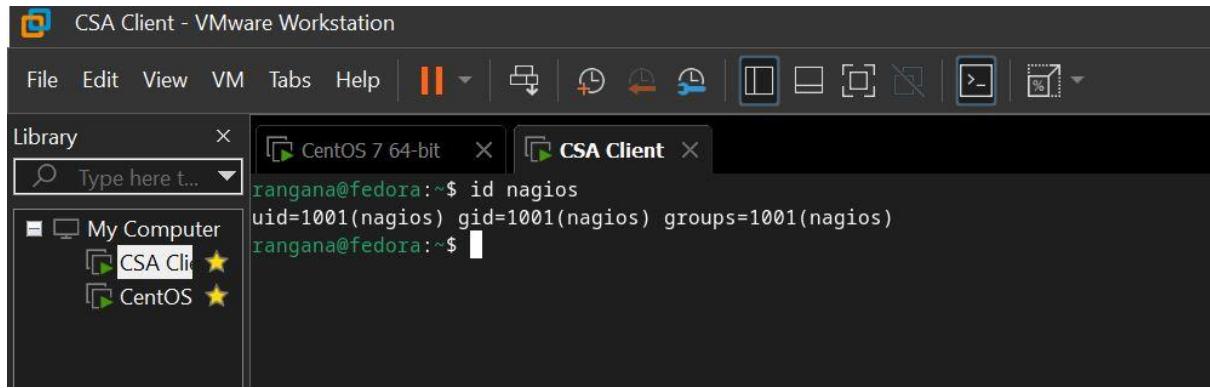


Figure 1-47: Check Nagios ids(user id,group id)

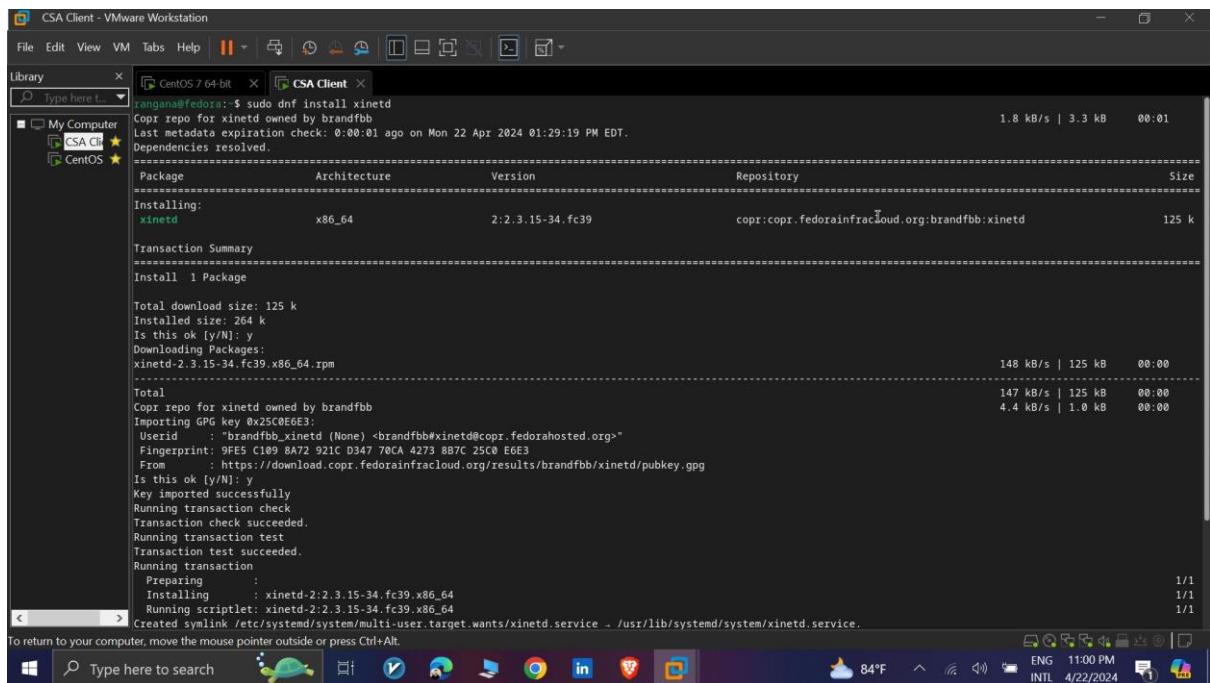


Figure 1-48: install xinetd

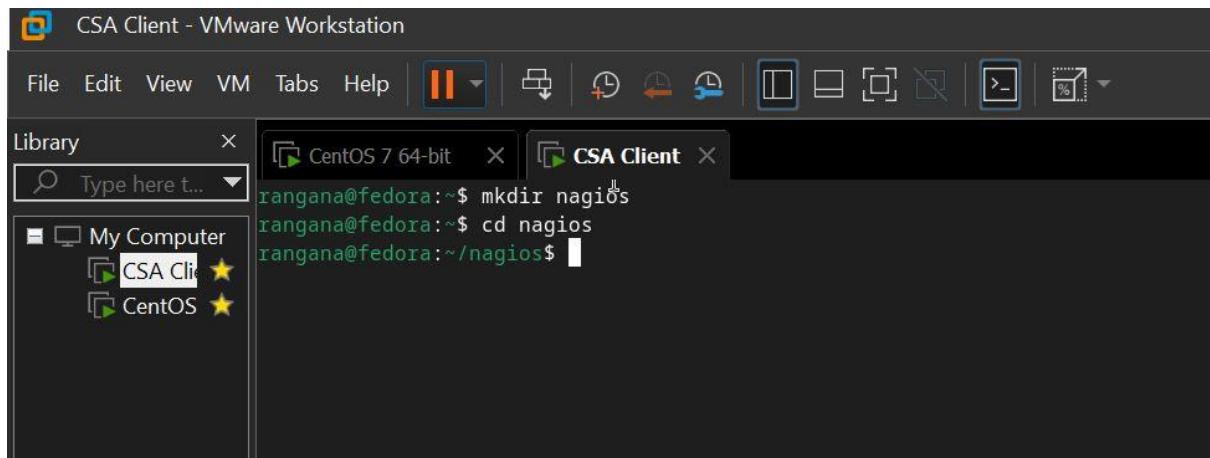


Figure 1-49: Create Nagios directory & change the directory to it

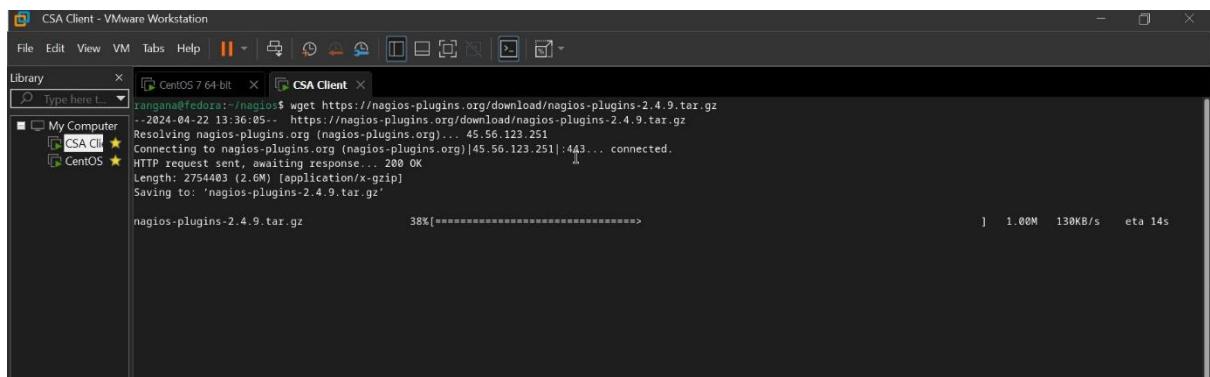


Figure 1-50: Install Nagios-plugins-2.4.9

The screenshot shows a VMware Workstation interface with a terminal window open. The terminal window title is 'CSA Client' and the command being run is 'tar -xvf nagios-plugins-2.4.9.tar.gz'. The output of the command is displayed in the terminal window, showing the extraction of numerous files and subdirectories from the tar archive.

```
rangana@fedora:~/nagios$ ls
nagios-plugins-2.4.9.tar.gz
rangana@fedora:~/nagios$ tar -xvf nagios-plugins-2.4.9.tar.gz
nagios-plugins-2.4.9/
nagios-plugins-2.4.9/build-aux/
nagios-plugins-2.4.9/build-aux/compile
nagios-plugins-2.4.9/build-aux/config.guess
nagios-plugins-2.4.9/build-aux/config.rpath
nagios-plugins-2.4.9/build-aux/config.sub
nagios-plugins-2.4.9/build-aux/install-sh
nagios-plugins-2.4.9/build-aux/ltdlmain.sh
nagios-plugins-2.4.9/build-aux/missing
nagios-plugins-2.4.9/build-aux/mkinstalldirs
nagios-plugins-2.4.9/build-aux/depcomp
nagios-plugins-2.4.9/build-aux/snippet/
nagios-plugins-2.4.9/build-aux/snippet/_Noreturn.h
nagios-plugins-2.4.9/build-aux/snippet/arg-nonnull.h
nagios-plugins-2.4.9/build-aux/snippet/c++defs.h
nagios-plugins-2.4.9/build-aux/snippet/warn-on-use.h
nagios-plugins-2.4.9/build-aux/test-driver
nagios-plugins-2.4.9/config_test/
nagios-plugins-2.4.9/config_test/Makefile
nagios-plugins-2.4.9/config_test/run_tests
nagios-plugins-2.4.9/config_test/child_test.c
nagios-plugins-2.4.9/g1/
nagios-plugins-2.4.9/g1/m4/
nagios-plugins-2.4.9/g1/m4/00nonullh.m4
```

Figure 1-51: extract nagios-plugins-2.4.9

The screenshot shows a VMware Workstation interface with a terminal window open. The terminal window title is 'CSA Client' and the command being run is './configure'. The output of the command is displayed in the terminal window, showing the configuration process for the nagios-plugins-2.4.9 source code, including various checks and dependencies.

```
rangana@fedora:~/nagios$ cd nagios-plugins-2.4.9
rangana@fedora:~/nagios/nagios-plugins-2.4.9$ ./configure
checking for a BSD-compatible install... /usr/bin/install -c
checking whether build environment is sane... yes
checking for a thread-safe mkdir -p... /usr/bin/mkdir -p
checking for gawk... gawk
checking whether make sets $(MAKE)... yes
checking whether make supports nested variables... yes
checking whether to enable maintainer-specific portions of Makefiles... yes
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out
checking for suffix of executables...
checking whether we are cross compiling... no
checking for suffix of object files... o
checking whether we are using the GNU C compiler... yes
checking whether gcc accepts -g... yes
checking for gcc option to accept ISO C89... none needed
checking whether gcc understands -c and -o together... yes
checking whether make supports the include directive... yes (GNU style)
checking dependency style of gcc... gcc3
checking how to run the C preprocessor... gcc -E
checking for grep that handles long lines and -e... /usr/bin/grep
checking for egrep... /usr/bin/grep -E
checking for Minix Amsterdam compiler... no
checking for ar... ar
checking for ranlib... ranlib
checking for ANSI C header files... yes
checking for sys/types.h... yes
checking for sys/stat.h... yes
checking for stdlib.h... yes
checking for string.h... yes
```

Figure 1-52: Configure nagios-plugins-2.4.9

The screenshot shows a CSA Client interface running on a VMware Workstation. The terminal window displays the command 'make install' being run in the directory '/home/rangana/nagios/nagios-plugins-2.4.9'. The output of the command is as follows:

```
rangana@fedora:~/nagios/nagios-plugins-2.4.9$ make install
Making install in gl
make[1]: Entering directory '/home/rangana/nagios/nagios-plugins-2.4.9/gl'
rm -f alloca.h-t alloca.h && \
{ echo /* DO NOT EDIT! GENERATED AUTOMATICALLY! */; \
cat ./alloca.in.h; \
} > alloca.h-t && \
mv -f alloca.h-t alloca.h
rm -f c++defs.h-t c++defs.h && \
sed -n -e '/_GL_CXXDEFS/, $p' \
< ../build-aux/snippet/c++defs.h \
> c++defs.h-t && \
mv c++defs.h-t c++defs.h
rm -f warn-on-use.h-t warn-on-use.h && \
sed -n -e '/^.ifndef/, $p' \
< ../build-aux/snippet/warn-on-use.h \
> warn-on-use.h-t && \
mv warn-on-use.h-t warn-on-use.h
rm -f arg-nonnull.h-t arg-nonnull.h && \
sed -n -e '/GL_ARG_NONNULL/, $p' \
< ../build-aux/snippet/arg-nonnull.h \
> arg-nonnull.h-t && \
mv arg-nonnull.h-t arg-nonnull.h
/usr/bin/mkdir -p arpa
rm -f arpa/inet.h-t arpa/inet.h && \
{ echo /* DO NOT EDIT! GENERATED AUTOMATICALLY! */; \
sed -e 's|@'|'GUARD_PREFIX'|@|GL|g' \
-e 's|@'|'INCLUDE_NEXT'|@|include_next|g' \
-e 's|@'|'PRAGMA_SYSTEM_HEADER'|@|#pragma GCC system_header|g' \
-e 's|@'|'PRAGMA_COLUMNS'|@||g' \
-e 's|@'|'HAVE_FEATURES_H'|@|1|g' \
-e 's|@'|'NEXT_ARPA_INET_H'|@|<arpa/inet.h>|g' \
-e 's|@'|'HAVE_ARPA_INET_H'|@|1|g' \

```

Figure 1-53: compile nagios-plugins-2.4.9

The screenshot shows a CSA Client interface running on a VMware Workstation. The terminal window displays the command 'ls -l /usr/local/nagios' being run as root. The output of the command is as follows:

```
root@fedora:~# ls -l /usr/local/nagios
total 0
drwxr-xr-x. 1 root root 1352 Apr 22 14:06 libexec
drwxr-xr-x. 1 root root    12 Apr 22 14:06 share
root@fedora:~#
```

Figure 1-54: list nagios folder permissions

```

root@fedora: # cd nagios
root@fedora:~/nagios# ls
nagios-plugins-2.4.9  nagios-plugins-2.4.9.tar.gz
root@fedora:~/nagios# wget https://github.com/NagiosEnterprises/nrpe/releases/download/nrpe-4.1.0/nrpe-4.1.0.tar.gz
--2024-04-22 14:25:39- https://github.com/NagiosEnterprises/nrpe/releases/download/nrpe-4.1.0/nrpe-4.1.0.tar.gz
Resolving github.com (github.com) ... 20.205.243.166
Connecting to github.com (github.com) |20.205.243.166|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://objects.githubusercontent.com/github-production-release-asset-2e65be/16119653/15952b1c-13e6-4e48-939d-292348427f8c?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAVCDYLSA53PQ4ZAK2F20240422T1823562X-Amz-Expires=3008X-Amz-Signature=59c0e837d3304819fcac778e5bfb2980e79cb5ea54b53169ac75076598c408X-Amz-SignedHeaders=host&xactor_id=0&key_id=16119653&response-content-disposition=attachment&filename=nrpe-4.1.0.tar.gz&response-content-type=application/x-facet-stream [following]
--2024-04-22 14:25:39- https://objects.githubusercontent.com/github-production-release-asset-2e65be/16119653/15952b1c-13e6-4e48-939d-292348427f8c?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAVCDYLSA53PQ4ZAK2F20240422T1823562X-Amz-Expires=3008X-Amz-Signature=59c0e837d3304819fcac778e5bfb2980e79cb5ea54b53169ac75076598c408X-Amz-SignedHeaders=host&xactor_id=0&key_id=16119653&response-content-disposition=attachment&filename=nrpe-4.1.0.tar.gz&response-content-type=application/x-facet-stream
Resolving objects.githubusercontent.com (objects.githubusercontent.com) |185.199.109.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 528228 (516K) [application/x-facet-stream]
Saving to: 'nrpe-4.1.0.tar.gz'

nrpe-4.1.0.tar.gz          100%[=====] 515.85K   333KB/s    in 1.5s

2024-04-22 14:25:42 (333 KB/s) - 'nrpe-4.1.0.tar.gz' saved [528228/528228]

```

Figure 1-55: Download nrpe-4.1.0

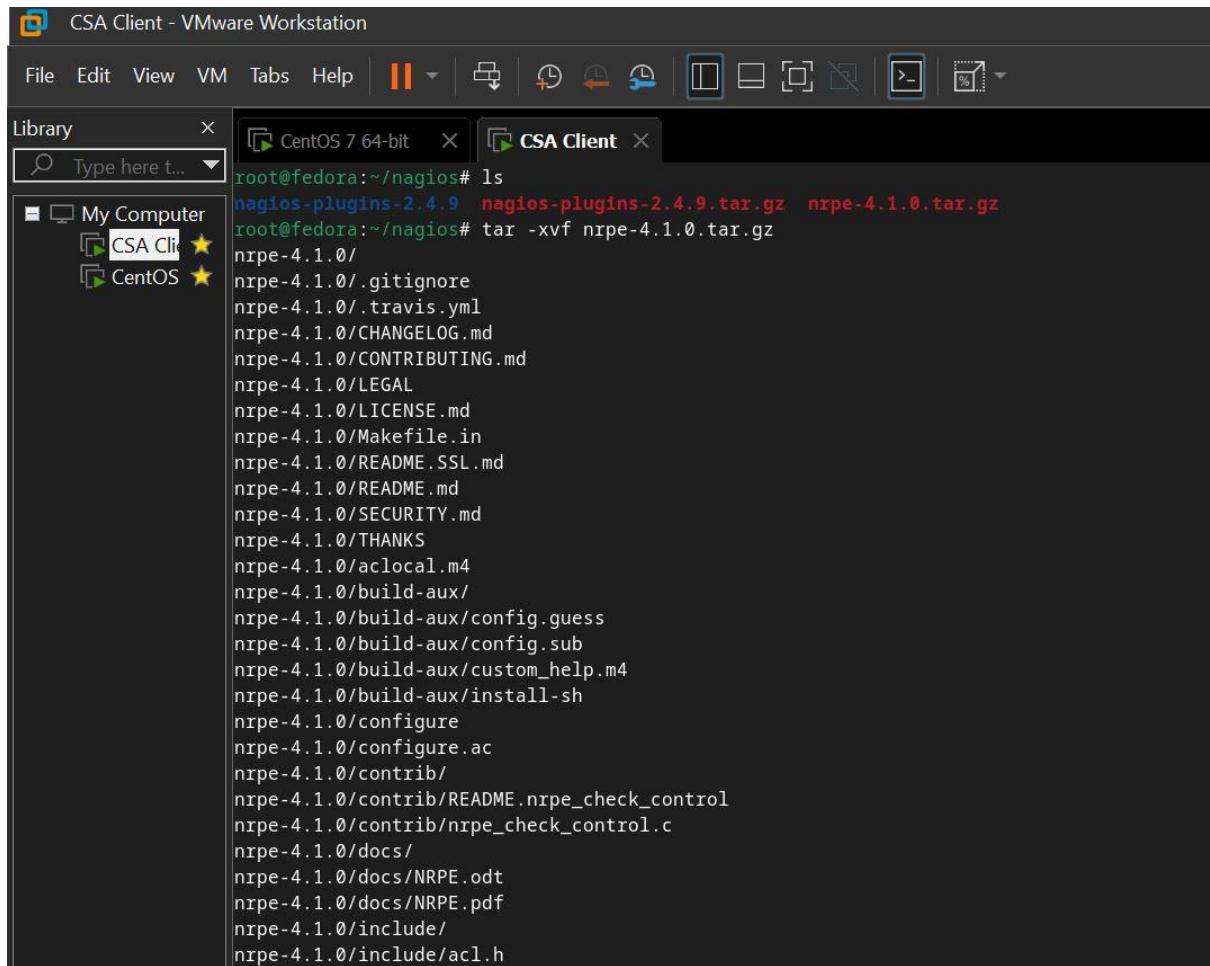


Figure 1-56: Extract nrpe-4.1.0

```

root@fedora:~/nagios# ls
nagios-plugins-2.4.9 nagios-plugins-2.4.9.tar.gz nrpe-4.1.0 nrpe-4.1.0.tar.gz
root@fedora:~/nagios# cd nrpe-4.1.0
root@fedora:~/nagios/nrpe-4.1.0# ./configure
checking for a BSD-compatible install... /usr/bin/install -c
checking what the operating system is ... linux
checking what the distribution type is ... fedora
checking what init system is being used ... systemd
checking what inetd is being used ... xinetd (Not running)
checking for which paths to use ... default
checking for which init file to use ... default-service
checking for which inetd files to use ... default-xinetd
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out
checking for suffix of executables...
checking whether we are cross compiling... no
checking for suffix of object files... o
checking whether we are using the GNU C compiler... yes
checking whether gcc accepts -g... yes
checking for gcc option to accept ISO C89... none needed
checking whether make sets $(MAKE)... yes
checking how to run the C preprocessor... gcc -E
checking for grep that handles long lines and -e... /usr/bin/grep
checking for egrep... /usr/bin/grep -E
checking for ANSI C header files... yes
checking whether time.h and sys/time.h may both be included... yes
checking for sys/wait.h that is POSIX.1 compatible... yes
checking for sys/types.h... yes

```

Figure 1-57: Configure nrpe-4.1.0

```

config.status: creating startup/default-inetd
config.status: creating startup/default-service
config.status: creating startup/default-socket
config.status: creating startup/default-socket-svc
config.status: creating startup/default-xinetd
config.status: creating startup/mac-init.plist
config.status: creating startup/mac-inetd.plist
config.status: creating startup/newbsd-init
config.status: creating startup/openbsd-init
config.status: creating startup/openrc-conf
config.status: creating startup/openrc-init
config.status: creating startup/solaris-init.xml
config.status: creating startup/solaris-inetd.xml
config.status: creating startup/tmpfile.conf
config.status: creating startup/upstart-init
config.status: creating startup/rh-upstart-init
config.status: creating include/common.h
config.status: creating include/config.h

*** Configuration summary for nrpe 4.1.0 2022-07-18 ***:

General Options:
-----
NRPE port:      5666
NRPE user:     nagios
NRPE group:    nagios
Nagios user:   nagios
Nagios group:  nagios

Review the options above for accuracy. If they look okay,
type 'make all' to compile the NRPE daemon and client
or type 'make' to get a list of make options.

root@fedora:~/nagios/nrpe-4.1.0#

```

Figure 1-58: Configure summary nrpe-4.1.0

```

root@fedora:~/nagios/nrpe-4.1.0# make all
cd ./src/; make
make[1]: Entering directory '/root/nagios/nrpe-4.1.0/src'
gcc -g -O2 -DHAVE_CONFIG_H -I ../../include -I ./include -o nrpe ./nrpe.c ./utils.c ./acl.c -lssl -lcrypto
./nrpe.c: In function 'init_ssl':
./nrpe.c:294:9: warning: 'ENGINE_load_builtin_engines' is deprecated: Since OpenSSL 3.0 [-Wdeprecated-declarations]
  294 |     ENGINE_load_builtin_engines();
      | ^
In file included from ../../include/common.h:40,
                 from ./nrpe.c:38:
/usr/include/openssl/engine.h:358:28: note: declared here
  358 | OSSL_DEPRECATEDIN_3_0 void ENGINE_load_builtin_engines(void);
      | ^
./nrpe.c:295:9: warning: 'RAND_set_rand_engine' is deprecated: Since OpenSSL 3.0 [-Wdeprecated-declarations]
  295 |     RAND_set_rand_engine(NULL);
      | ^
In file included from ../../include/common.h:39:
/usr/include/openssl/rand.h:52:27: note: declared here
  52 | OSSL_DEPRECATEDIN_3_0 int RAND_set_rand_engine(ENGINE *engine);
      | ^
./nrpe.c:296:9: warning: 'ENGINE_register_all_complete' is deprecated: Since OpenSSL 3.0 [-Wdeprecated-declarations]
  296 |     ENGINE_register_all_complete();
      | ^
/usr/include/openssl/engine.h:415:27: note: declared here
  415 | OSSL_DEPRECATEDIN_3_0 int ENGINE_register_all_complete(void);
      | ^
./nrpe.c:432:25: warning: 'ERR_get_error_line_data' is deprecated: Since OpenSSL 3.0 [-Wdeprecated-declarations]
  432 |     while ((x = ERR_get_error_line_data(NULL, NULL, NULL, NULL)) != 0) {
      | ^
In file included from ../../include/common.h:38:
/usr/include/openssl/exr.h:425:15: note: declared here
  425 | unsigned long ERR_get_error_line_data(const char **file, int *line,
      | ^
./nrpe.c: In function 'handle_conn_ssl':
./nrpe.c:2057:25: warning: 'ERR_get_error_line_data' is deprecated: Since OpenSSL 3.0 [-Wdeprecated-declarations]
  2057 |     while ((x = ERR_get_error_line_data(NULL, NULL, NULL, NULL)) != 0) {
      | ^

```

Figure 1-59: Compile nrpe-4.1.0

```

root@fedora:~/nagios/nrpe-4.1.0# make install
cd ./src/; make install
make[1]: Entering directory '/root/nagios/nrpe-4.1.0/src'
make install-plugin
make[2]: Entering directory '/root/nagios/nrpe-4.1.0/src'
/usr/bin/install -c -m 755 -d /usr/local/nagios/bin
/usr/bin/install -c -m 755 ../uninstall /usr/local/nagios/bin/nrpe-uninstall
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/libexec
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/libexec
/usr/bin/install -c -m 775 -o nagios -g nagios check_nrpe /usr/local/nagios/libexec
make[2]: Leaving directory '/root/nagios/nrpe-4.1.0/src'
make install-daemon
make[2]: Entering directory '/root/nagios/nrpe-4.1.0/src'
/usr/bin/install -c -m 755 -d /usr/local/nagios/bin
/usr/bin/install -c -m 755 ../uninstall /usr/local/nagios/bin/nrpe-uninstall
/usr/bin/install -c -m 755 nrpe /usr/local/nagios/bin
/usr/bin/install -c -m 755 -o nagios -g nagios -d /usr/local/nagios/var
/usr/bin/install -c -m 755 -d /usr/lib/tmpfiles.d
/usr/bin/install -c -m 644 ../startup/tmpfile.conf /usr/lib/tmpfiles.d/nrpe.conf
make[2]: Leaving directory '/root/nagios/nrpe-4.1.0/src'
make[1]: Leaving directory '/root/nagios/nrpe-4.1.0/src'
root@fedora:~/nagios/nrpe-4.1.0#

```

Figure 1-60: compile nrpe-4.1.0

```

root@fedora:~/nagios/nrpe-4.1.0# make install-plugin
cd ./src/; make install-plugin
make[1]: Entering directory '/root/nagios/nrpe-4.1.0/src'
/usr/bin/install -c -m 755 -d /usr/local/nagios/bin
/usr/bin/install -c -m 755 ../uninstall /usr/local/nagios/bin/nrpe-uninstall
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/libexec
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/libexec
/usr/bin/install -c -m 775 -o nagios -g nagios check_nrpe /usr/local/nagios/libexec
make[1]: Leaving directory '/root/nagios/nrpe-4.1.0/src'
root@fedora:~/nagios/nrpe-4.1.0# make install-daemon
cd ./src/; make install-daemon
make[1]: Entering directory '/root/nagios/nrpe-4.1.0/src'
/usr/bin/install -c -m 755 -d /usr/local/nagios/bin
/usr/bin/install -c -m 755 ../uninstall /usr/local/nagios/bin/nrpe-uninstall
/usr/bin/install -c -m 755 nrpe /usr/local/nagios/bin
/usr/bin/install -c -m 755 -d /usr/lib/tmpfiles.d
/usr/bin/install -c -m 644 ../startup/tmpfile.conf /usr/lib/tmpfiles.d/nrpe.conf
make[1]: Leaving directory '/root/nagios/nrpe-4.1.0/src'
root@fedora:~/nagios/nrpe-4.1.0# make install-config
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/etc
/usr/bin/install -c -m 644 -o nagios -g nagios sample-config/nrpe.cfg /usr/local/nagios/etc
root@fedora:~/nagios/nrpe-4.1.0#

```

Figure 1-61: Install plugin script

```

root@fedora: # yum install dnf nrpe
Last metadata expiration check: 1:44:52 ago on Mon 22 Apr 2024 01:29:19 PM EDT.
Package dnf-4.19.2-1.fc39.noarch is already installed.
Dependencies resolved.

=====
                         Package           Architecture      Version          Repository      Size
=====
Installing:
  nrpe                           x86_64            4.1.0-5.fc39
Installing dependencies:
  nagios-common                   x86_64            4.4.14-1.fc39

Transaction Summary
=====
Install 2 Packages

Total download size: 265 k
Installed size: 368 k
Is this ok [y/N]: y
Downloading Packages:
(1/2): nagios-common-4.4.14-1.fc39.x86_64.rpm           9.2 kB/s | 8.7 kB   00:00
(2/2): nrpe-4.1.0-5.fc39.x86_64.rpm                     46 kB/s | 256 kB   00:05
Total                                         4.3 kB/s | 265 kB   01:01

Total
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing :
    Running scriptlet: nagios-common-4.4.14-1.fc39.x86_64
  Installing  : nagios-common-4.4.14-1.fc39.x86_64
    Running scriptlet: nrpe-4.1.0-5.fc39.x86_64
  Installing  : nrpe-4.1.0-5.fc39.x86_64
warning: /usr/lib/tmpfiles.d/nrpe.conf created as /usr/lib/tmpfiles.d/nrpe.conf.rpmnew

```

Figure 1-62: Download dnf nrpe

```

CSA Client - VMware Workstation
File Edit View VM Tabs Help | || Type here to search | CSA Client | CentOS 7 64-bit | CSA Client

Library X Type here to search CSA Client X CentOS 7 64-bit X
My Computer CSA Client CentOS
rangana@fedora:~$ systemctl enable nrpe
Created symlink /etc/systemd/system/multi-user.target.wants/nrpe.service → /usr/lib/systemd/system/nrpe.service.
rangana@fedora:~$ systemctl start nrpe
rangana@fedora:~$ systemctl status nrpe
● nrpe.service - Nagios Remote Plugin Executor
   Loaded: loaded (/usr/lib/systemd/system/nrpe.service; enabled; preset: disabled)
   Drop-In: /usr/lib/systemd/system/service.d
             └─10-timeout-abort.conf
     Active: active (running) since Mon 2024-04-22 15:16:52 EDT; 14s ago
       Docs: http://www.nagios.org/documentation
       Main PID: 58855 (nrpe)
          Tasks: 1 (limit: 2262)
         Memory: 1.5M
            CPU: 41ms
          CGroup: /system.slice/nrpe.service
                  └─58855 /usr/sbin/nrpe -c /etc/nagios/nrpe.cfg -f

Apr 22 15:16:52 fedora systemd[1]: Started nrpe.service - Nagios Remote Plugin Executor.
Apr 22 15:16:52 fedora nrpe[58855]: Starting up daemon
Apr 22 15:16:52 fedora nrpe[58855]: Server listening on 0.0.0.0 port 5666.
Apr 22 15:16:52 fedora nrpe[58855]: Server listening on :: port 5666.
Apr 22 15:16:52 fedora nrpe[58855]: Listening for connections on port 5666
Apr 22 15:16:52 fedora nrpe[58855]: Allowing connections from: 127.0.0.1,::1
rangana@fedora:~$ 

```

Figure 1-63: enable, stat & check the status of nrpe

```

CSA Client - VMware Workstation
File Edit View VM Tabs Help | || Type here to search | CSA Client | CentOS 7 64-bit | CSA Client

Library X Type here to search CSA Client X CentOS 7 64-bit X
My Computer CSA Client CentOS
root@fedora: # yum install openssl openssl-devel
Last metadata expiration check: 0:00:15 ago on Tue 23 Apr 2024 01:10:58 AM EDT.
Dependencies resolved.
=====
Transaction Summary
=====
Install 1 Package

Total download size: 1.0 M
Installed size: 1.6 M
Is this ok [y/N]: y
Downloading Packages:
openssl-3.1.1-4.fc39.x86_64.rpm
Total                                         176 kB/s | 1.0 MB  00:05
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing :                                                 1/1
  Installing : openssl-1:3.1.1-4.fc39.x86_64               1/1
  Running scriptlet: openssl-1:3.1.1-4.fc39.x86_64          1/1
  Verifying  : openssl-1:3.1.1-4.fc39.x86_64               1/1
Installed:
  openssl-1:3.1.1-4.fc39.x86_64
Complete!
To return to your computer, move the mouse pointer outside or press Ctrl+Alt.

```

Figure 1-64: Download OpenSSL

The screenshot shows the CSA Client interface with two tabs open: 'CentOS 7 64-bit' and 'CSA Client'. The 'CSA Client' tab displays a configuration file for NRPE (Nagios Remote Plugin Executor) in xinetd format. The file contains the following content:

```
# default: on
# description: NRPE (Nagios Remote Plugin Executor)
service nrpe
{
    flags          = REUSE
    socket_type   = stream
    port          = 5666
    wait          = no
    user          = nagios
    group         = nagios
    server        = /usr/local/nagios/bin/nrpe
    server_args   = -c /usr/local/nagios/etc/nrpe.cfg --inetd
    log_on_failure += USERID
    log_on_success =
    disable       = no
    only_from     = 127.0.0.1 10.25.5.1
}
```

Figure 1-65: Import nrpe.xinetd folder & edit

The screenshot shows the CSA Client interface with two tabs open: 'CentOS 7 64-bit' and 'CSA Client'. The 'CSA Client' tab displays a terminal session with the following command being run:

```
root@fedora:~/nagios/nrpe-4.1.0/sample-config# cp nrpe.xinetd /etc/xinetd.d/
```

Figure 1-66: copy nrpe.xinetd to /etc/xinetd.d

```
# default: on
# description: NRPE (Nagios Remote Plugin Executor)
service nrpe
{
    flags          = REUSE
    socket_type   = stream
    port           = 5666
    wait           = no
    user           = nagios
    group          = nagios
    server         = /usr/local/nagios/bin/nrpe
    server_args    = -c /usr/local/nagios/etc/nrpe.cfg --inetd
    log_on_failure += USERID
    log_on_success =
    disable        = no
    only_from      = 10.0.1.2
}
```

Figure 1-67: Edit copied nrpe.xinetd folder

```
root@fedora:~/nagios/nrpe-4.1.0/sample-config# ls
nrpe.cfg  nrpe.cfg.in  nrpe.xinetd
root@fedora:~/nagios/nrpe-4.1.0/sample-config# more nrpe.xinetd
# default: on
# description: NRPE (Nagios Remote Plugin Executor)
service nrpe
{
    flags          = REUSE
    socket_type   = stream
    port           = 5666
    wait           = no
    user           = nagios
    group          = nagios
    server         = /usr/local/nagios/bin/nrpe
    server_args    = -c /usr/local/nagios/etc/nrpe.cfg --inetd
    log_on_failure += USERID
    log_on_success =
    disable        = no
    only_from      = 127.0.0.1 10.25.5.1
}
root@fedora:~/nagios/nrpe-4.1.0/sample-config# cp nrpe.cfg /usr/local/nagios/etc/
cp: overwrite '/usr/local/nagios/etc/nrpe.cfg'? n
root@fedora:~/nagios/nrpe-4.1.0/sample-config# cd /usr/local/nagios/etc/
root@fedora:/usr/local/nagios/etc# ls
nrpe.cfg
root@fedora:/usr/local/nagios/etc# vi nrpe.cfg
root@fedora:/usr/local/nagios/etc#
```

Figure 1-68: view nrpe.cfg file

```

nrpe_user=nagios

# NRPE GROUP
# This determines the effective group that the NRPE daemon should run as.
# You can either supply a group name or a GID.
#
# NOTE: This option is ignored if NRPE is running under either inetd or xinetd

nrpe_group=nagios

# ALLOWED HOST ADDRESSES
# This is an optional comma-delimited list of IP address or hostnames
# that are allowed to talk to the NRPE daemon. Network addresses with a bit mask
# (i.e. 192.168.1.0/24) are also supported. Hostname wildcards are not currently
# supported.
#
# Note: The daemon only does rudimentary checking of the client's IP
# address. I would highly recommend adding entries in your /etc/hosts.allow
# file to allow only the specified host to connect to the port
# you are running this daemon on.
#
# NOTE: This option is ignored if NRPE is running under either inetd or xinetd

allowed_hosts=127.0.0.1,10.0.1.2

# COMMAND ARGUMENT PROCESSING
# This option determines whether or not the NRPE daemon will allow clients
# to specify arguments to commands that are executed. This option only works
--- INSERT --

```

To direct input to this VM, move the mouse pointer inside or press **Ctrl+G**.

Figure 1-69: Edit allowed host in nrpe.cfg file

```

root@fedora:~/nagios/nrpe-4.1.0/sample-config# cp nrpe.cfg /usr/local/nagios/etc/
cp: overwriting '/usr/local/nagios/etc/nrpe.cfg'?
root@fedora:~/nagios/nrpe-4.1.0/sample-config# cd /usr/local/nagios/etc/
root@fedora:/usr/local/nagios/etc# ls
nrpe.cfg
root@fedora:/usr/local/nagios/etc# vi nrpe.cfg
root@fedora:/usr/local/nagios/etc# vi nrpe.cfg
root@fedora:/usr/local/nagios/etc# cd /usr/local/nagios/libexec
root@fedora:/usr/local/nagios/libexec# pwd
/usr/local/nagios/libexec
root@fedora:/usr/local/nagios/libexec# ls
check_apt    check_disk    check_http    check_jabber   check_ntp     check_nwstat  check_rps      check_smtp    check_users
check_breeze  check_disk_smb  check_icmp    check_load    check_ntp     check_overcr  check_sensors  check_swap    check_wave
check_by_ssh  check_dns     check_idemsmart  check_log     check_ntp     check_overcr  check_ssimpp  check_tcp     negate
check_cldmnd check_dummy    check_ifoperstatus  check_mailq   check_nt      check_ping    check_smtp    check_time   remove_perfdata
check_cluster check_file_age  check_ifstatus   check_mrtg    check_ntp     check_pop     check_spop    check_udp    urlize
check_dhcp    check_flexlm   check_imap     check_mrtgraf  check_ntp     check_ntp     check_procs   check_ssh    check_ups   utilis.pm
check_dig     check_ftpm    check_irrd    check_nagios   check_ntp     check_ntp     check_ntp_time  check_real   check_ssl_validity  check_uptime  utilis.sh
root@fedora:/usr/local/nagios/libexec# ./check_nrpe -H 127.0.0.1
NRPE v4.1.0
root@fedora:/usr/local/nagios/libexec# ./check_nrpe -H 127.0.0.1

```

Figure 1-70: copy nrpe.cfg & check nrpe

```

root@fedora: /etc/sysconfig# sudo yum install iptables-services
Last metadata expiration check: 2:31:12 ago on Tue 23 Apr 2024 01:10:50 AM EDT.
Dependencies resolved.

=====
Installing:
  iptables-services           noarch          1.8.9-5.fc39
  Dependencies:
    iptables-utils             x86_64         1.8.9-5.fc39

Transaction Summary
=====
Install 2 Packages

Total download size: 57 k
Installed size: 118 k
Is this ok [y/N]: y
Downloading Packages:
(1/2): iptables-services-1.8.9-5.fc39.noarch.rpm      19 kB/s | 16 kB   00:00
(2/2): iptables-utils-1.8.9-5.fc39.x86_64.rpm        36 kB/s | 41 kB   00:01
Total                                         23 kB/s | 57 kB   00:02

Total
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing       :
  Installing     : iptables-utils-1.8.9-5.fc39.x86_64
  Installing     : iptables-services-1.8.9-5.fc39.noarch
  Running scriptlet: iptables-services-1.8.9-5.fc39.noarch
  Verifying      : iptables-services-1.8.9-5.fc39.noarch
  Verifying      : iptables-utils-1.8.9-5.fc39.x86_64

Installed:
  iptables-services-1.8.9-5.fc39.noarch
To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

```

Figure 1-71: install iptables services

```

# sample configuration for iptables service
# you can edit this manually or use system-config-firewall
# please do not ask us to add additional ports/services to this default configuration
*filter
:INPUT ACCEPT [0:0]
:FORWARD ACCEPT [0:0]
:OUTPUT ACCEPT [0:0]
-A INPUT -m state --state RELATED,ESTABLISHED -j ACCEPT
-A INPUT -p icmp -j ACCEPT
-A INPUT -i lo -j ACCEPT
-A INPUT -p tcp -m state --state NEW -m tcp --dport 22 -j ACCEPT
-A INPUT -p tcp -m state --state NEW -m tcp --dport 5666 -j ACCEPT
-A INPUT -j REJECT --reject-with icmp-host-prohibited
-A FORWARD -j REJECT --reject-with icmp-host-prohibited
COMMIT
~
~
~
~
~
```

Figure 1-72: Edit iptables services

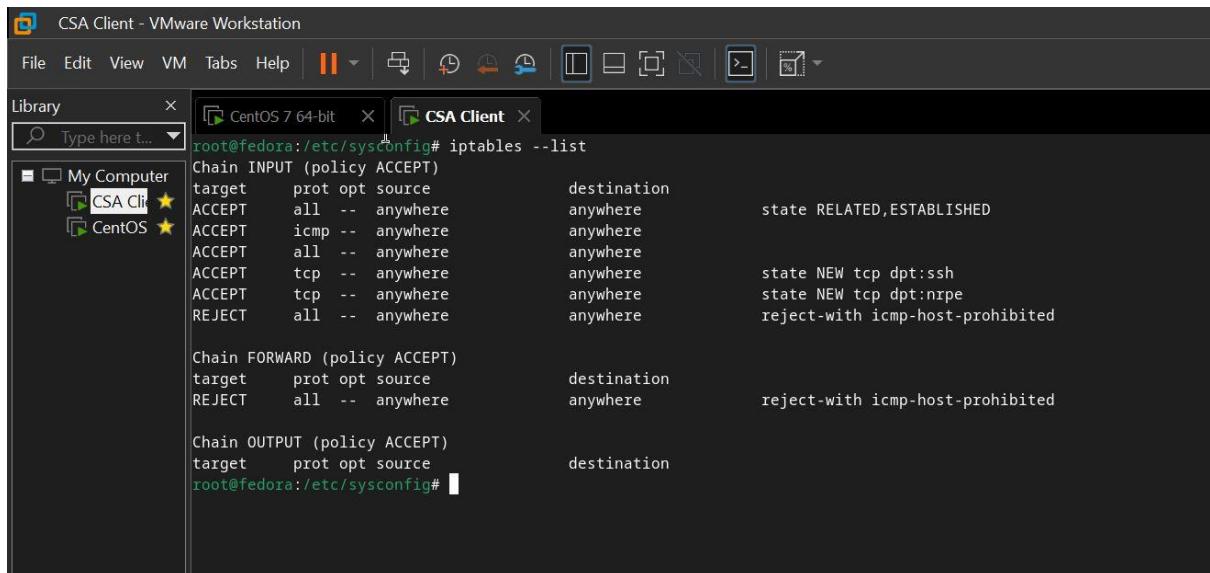
```

root@fedora:/etc/sysconfig# sudo systemctl start iptables
root@fedora:/etc/sysconfig# sudo systemctl enable iptables
Created symlink /etc/systemd/system/multi-user.target.wants/iptables.service → /usr/lib/systemd/system/iptables.service.
root@fedora:/etc/sysconfig# sudo systemctl status iptables
● iptables.service - IPv4 firewall with iptables
   Loaded: loaded (/usr/lib/systemd/system/iptables.service; enabled; preset: disabled)
   Drop-In: /usr/lib/systemd/system/service.d
             └─10-timeout-abort.conf
     Active: active (exited) since Tue 2024-04-23 03:51:07 EDT; 40s ago
       Main PID: 3774 (code=exited, status=0/SUCCESS)
         CPU: 32ms

Apr 23 03:51:07 fedora systemd[1]: Starting iptables.service - IPv4 firewall with iptables...
Apr 23 03:51:07 fedora iptables.init[3774]: iptables: Applying firewall rules: [  OK  ]
Apr 23 03:51:07 fedora systemd[1]: Finished iptables.service - IPv4 firewall with iptables.
root@fedora:/etc/sysconfig#

```

Figure 1-73: start iptables,enable & check status



The screenshot shows a terminal window titled 'CSA Client' running on a CentOS 7 64-bit host. The terminal displays the output of the 'iptables --list' command. The output shows three chains: INPUT, FORWARD, and OUTPUT. The INPUT chain has several rules, including ACCEPT for all protocols from anywhere to anywhere, and REJECT for all protocols from anywhere to anywhere. The FORWARD chain has one rule: REJECT for all protocols from anywhere to anywhere. The OUTPUT chain has no listed rules.

```

root@fedora:/etc/sysconfig# iptables --list
Chain INPUT (policy ACCEPT)
target    prot opt source          destination
ACCEPT    all  --  anywhere        anywhere        state RELATED,ESTABLISHED
ACCEPT    icmp --  anywhere       anywhere
ACCEPT    all  --  anywhere       anywhere
ACCEPT    tcp --  anywhere       anywhere        state NEW tcp dpt:ssh
ACCEPT    tcp --  anywhere       anywhere        state NEW tcp dpt:nrpe
REJECT    all  --  anywhere       anywhere        reject-with icmp-host-prohibited

Chain FORWARD (policy ACCEPT)
target    prot opt source          destination
REJECT    all  --  anywhere       anywhere        reject-with icmp-host-prohibited

Chain OUTPUT (policy ACCEPT)
target    prot opt source          destination
root@fedora:/etc/sysconfig#

```

Figure 1-74: list iptables

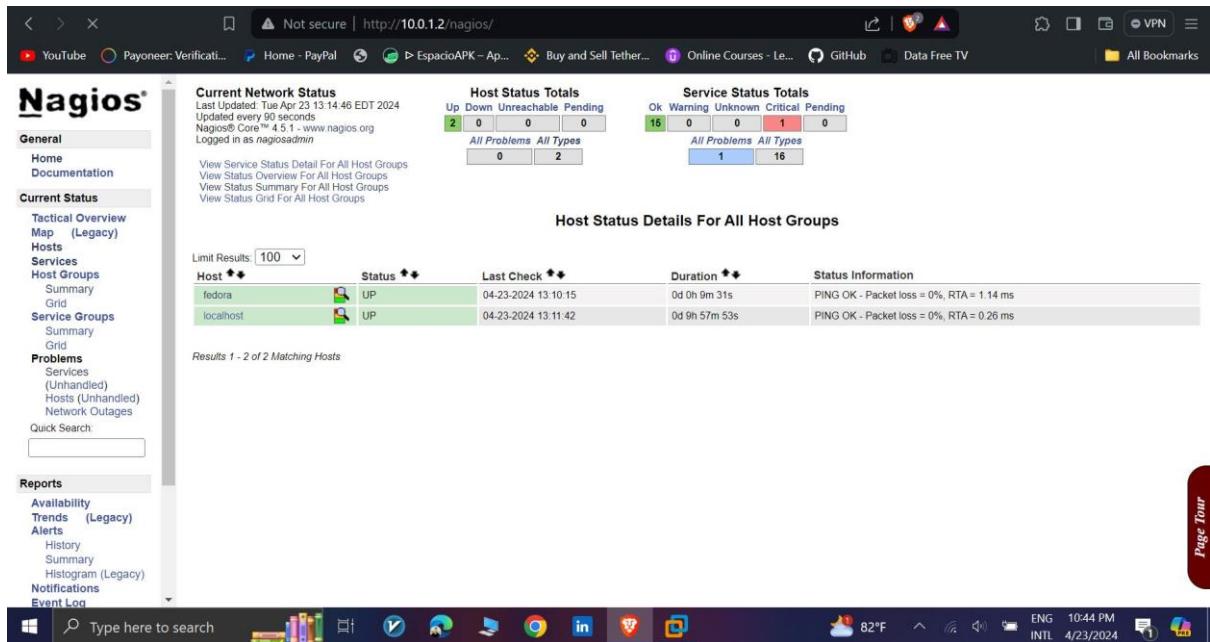


Figure 1-75: host in nagios window(localhost & fedora)

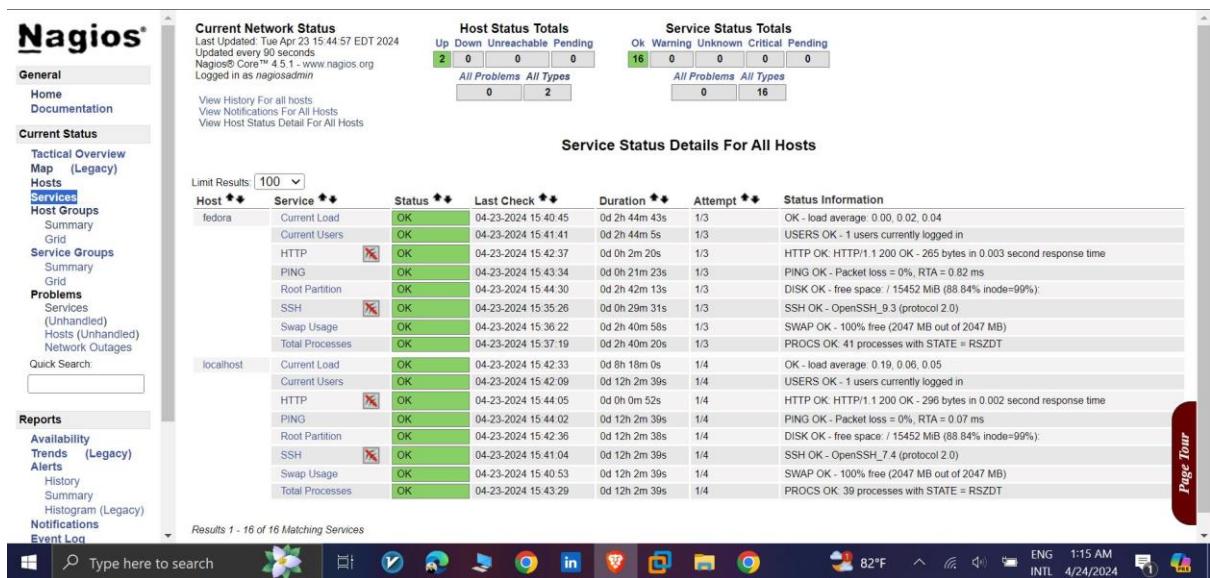
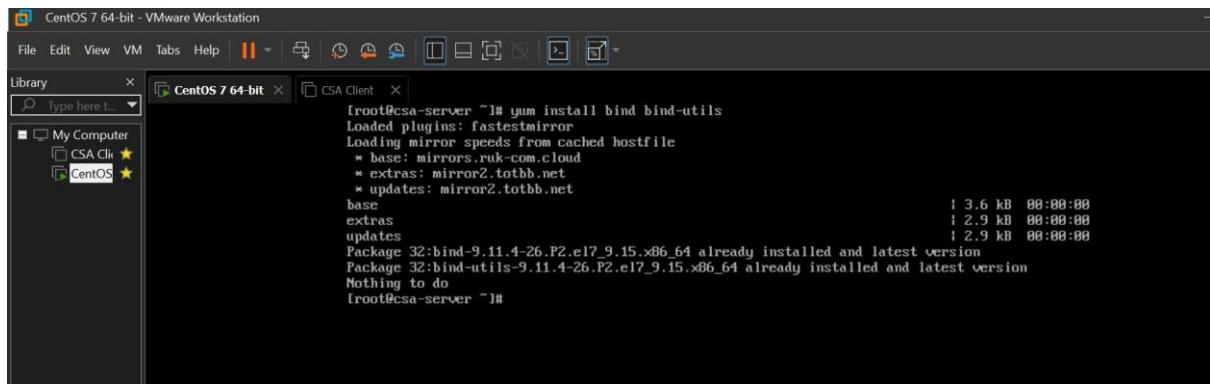


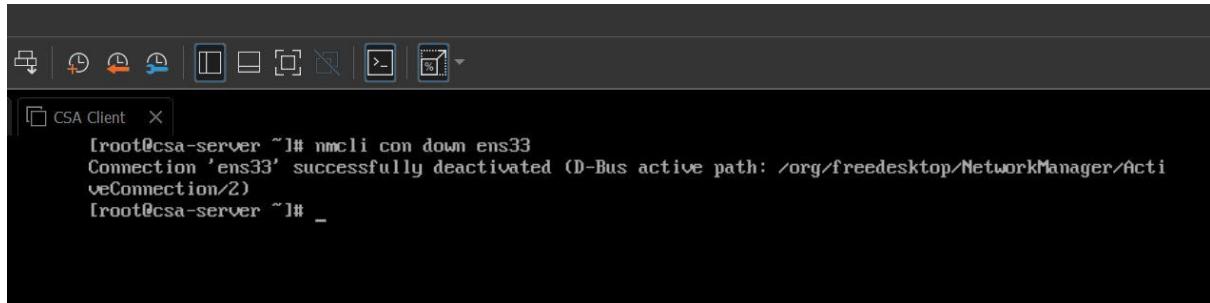
Figure 1-76: view the service list of Fedora & localhost

Part 2: DNS Caching Setup with CentOS Server and Fedora Clients



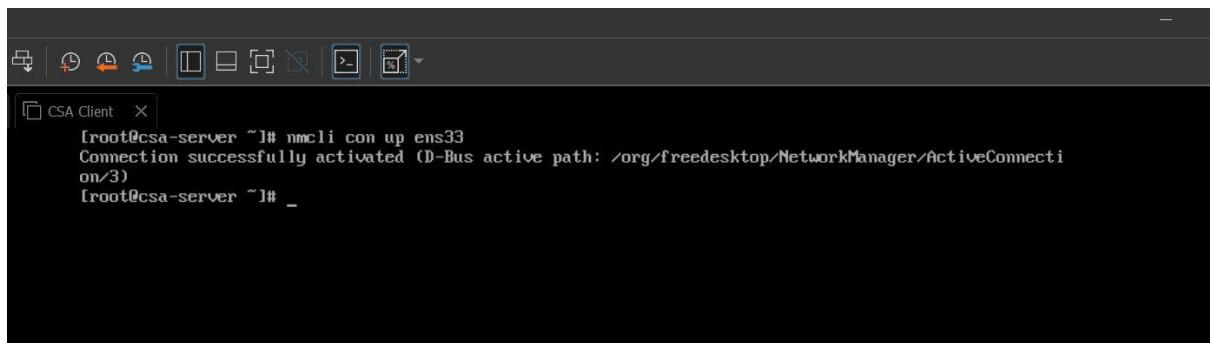
```
[root@csa-server ~]# yum install bind bind-utils
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirrors.ruk-com.cloud
 * extras: mirror2.totbb.net
 * updates: mirror2.totbb.net
base
extras
updates
Package 32:bind-9.11.4-26.el7_9.15.x86_64 already installed and latest version
Package 32:bind-utils-9.11.4-26.el7_9.15.x86_64 already installed and latest version
Nothing to do
[root@csa-server ~]#
```

Figure 1-77: Install packages to provide named service



```
[root@csa-server ~]# nmcli con down ens33
Connection 'ens33' successfully deactivated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/2)
[root@csa-server ~]# _
```

Figure 1-78: Down localhost interface



```
[root@csa-server ~]# nmcli con up ens33
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/3)
[root@csa-server ~]# _
```

Figure 1-79: Up localhost interface



```
[root@csa-server ~]# vi /etc/resolv.conf
```

Figure 1-80: view resolv.conf file

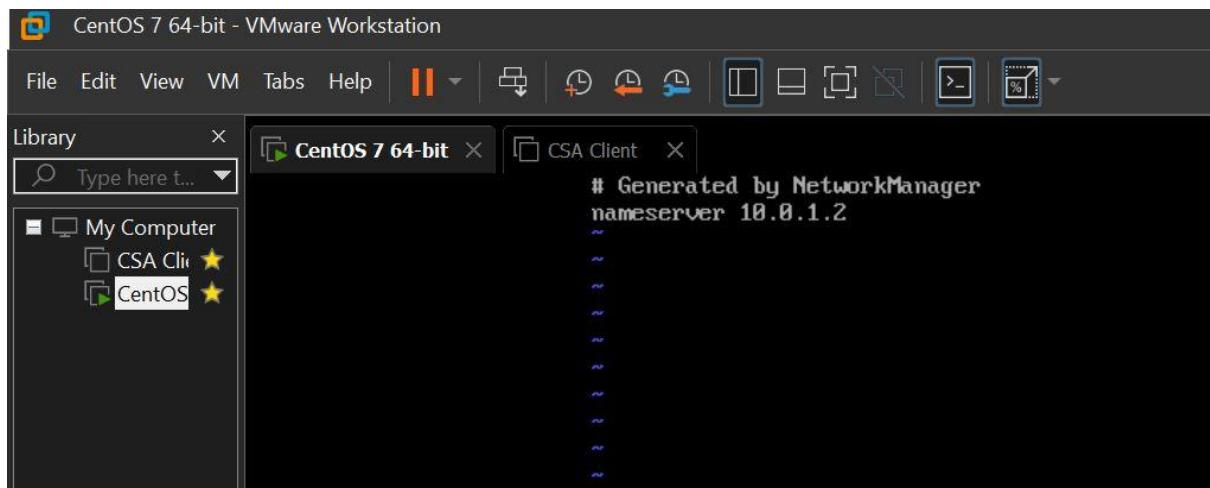
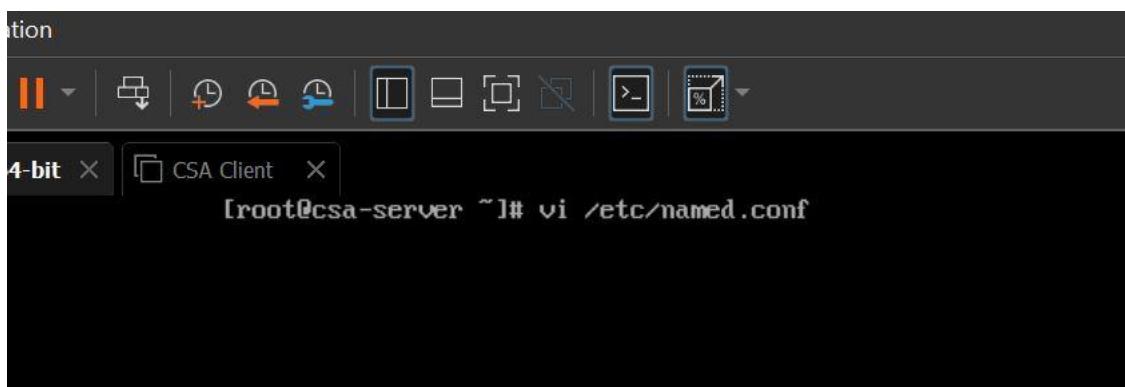


Figure 1-81: Edit resolv.conf file



```
[root@csa-server ~]# vi /etc/named.conf
```

Figure 1-82: view named.conf file

```

// named.conf
//
// Provided by Red Hat bind package to configure the ISC BIND named(8) DNS
// server as a caching only nameserver (as a localhost DNS resolver only).
//
// See /usr/share/doc/bind*/sample/ for example named configuration files.
//
// See the BIND Administrator's Reference Manual (ARM) for details about the
// configuration located in /usr/share/doc/bind-{version}/Bv9ARM.html

options {
    listen-on port 53 { 127.0.0.1; 10.0.1.2; };
    listen-on-v6 port 53 { ::1; };
    directory      "/var/named";
    dump-file     "/var/named/data/cache_dump.db";
    statistics-file "/var/named/data/named_stats.txt";
    memstatistics-file "/var/named/data/named_mem_stats.txt";
    recursing-file "/var/named/data/named.recurse";
    secroots-file  "/var/named/data/named.secroots";
    allow-query    { localhost; any; };

/*
 - If you are building an AUTHORITATIVE DNS server, do NOT enable recursion.
 - If you are building a RECURSIVE (caching) DNS server, you need to enable
   recursion.
 - If your recursive DNS server has a public IP address, you MUST enable access
   control to limit queries to your legitimate users. Failing to do so will
   cause your server to become part of large scale DNS amplification
   attacks. Implementing BCP38 within your network would greatly
   reduce such attack surface
*/
recursion yes;

dnssec-enable yes;
dnssec-validation yes;
"/etc/named.conf" 74L, 2845C

```

Figure 1-83: Edit resolv.conf file

```

[root@csa-server ~]# dnf install net-tools
-bash: dnf: command not found
[root@csa-server ~]# yum install net-tools
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: centos.excellmedia.net
 * extras: mirror2.totbb.net
 * updates: mirror2.totbb.net
Resolving Dependencies
--> Running transaction check
--> Package net-tools.x86_64 0:2.0-0.25.20131004git.el7 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package           Arch       Version            Repository      Size
=====
Installing:
net-tools        x86_64    2.0-0.25.20131004git.el7      base      306 k

Transaction Summary
=====
Install 1 Package

Total download size: 306 k
Installed size: 917 k
Is this ok [y/d/N]: y

```

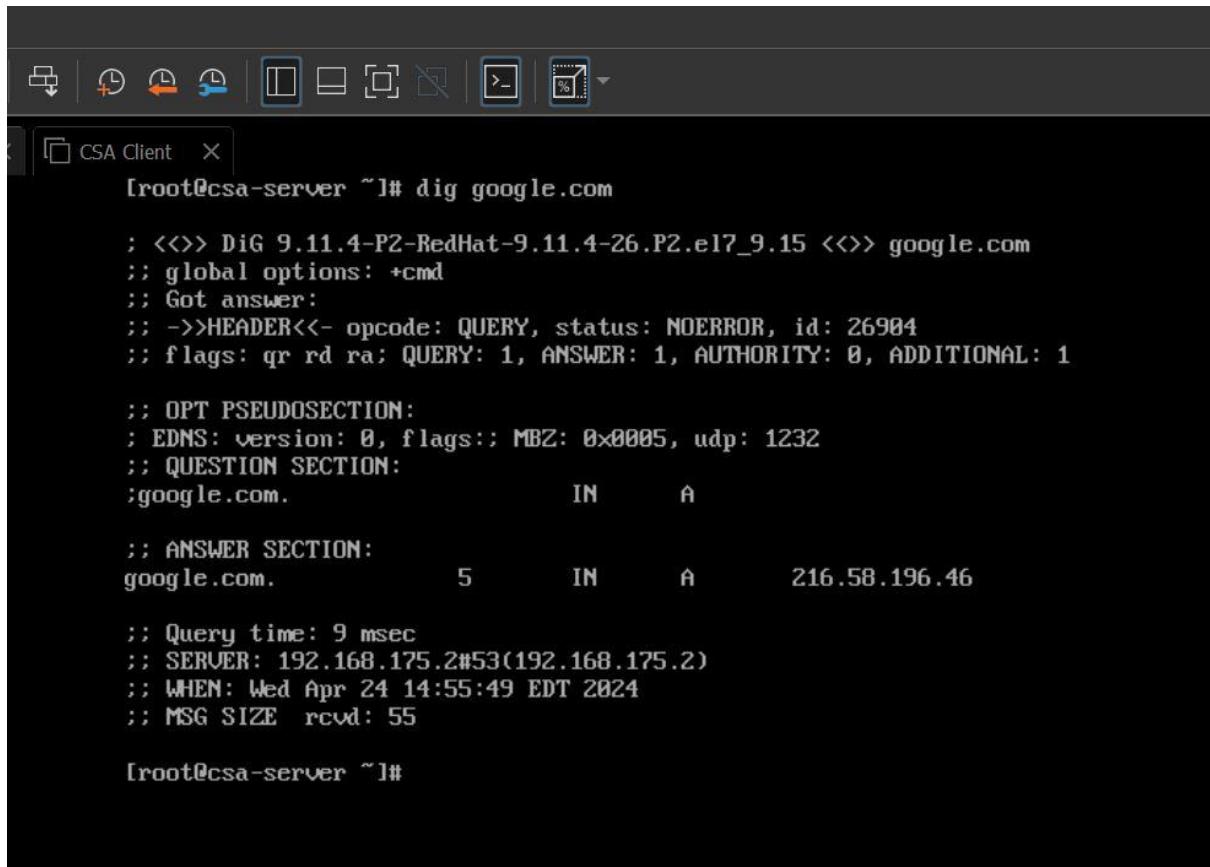
Figure 1-84: Install net-tools set

```
[root@csa-server ~]# netstat -antp
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address          Foreign Address        State      PID/Program name
tcp     0      0 127.0.0.1:25            0.0.0.0:*
tcp     0      0 0.0.0.0:22             0.0.0.0:*
tcp     0      0 192.168.175.131:43232   103.27.200.78:80    TIME_WAIT
tcp     0      0 192.168.175.131:40676   210.246.200.236:80   TIME_WAIT
tcp6    0      0 ::1:25                  ::*:*
tcp6    0      0 ::::443                ::*:*
tcp6    0      0 ::::80                 ::*:*
tcp6    0      0 ::::22                 ::*:*
[root@csa-server ~]# _
```

Figure 1-85: List all opened TCP ports

```
[root@csa-server ~]# netstat -antu
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
tcp     0      0 127.0.0.1:953           0.0.0.0:*
tcp     0      0 127.0.0.1:25            0.0.0.0:*
tcp     0      0 10.0.1.2:53            0.0.0.0:*
tcp     0      0 127.0.0.1:53            0.0.0.0:*
tcp     0      0 0.0.0.0:22             0.0.0.0:*
tcp6    0      0 ::1:953                ::*:*
tcp6    0      0 ::1:25                 ::*:*
tcp6    0      0 ::::443               ::*:*
tcp6    0      0 ::::80                ::*:*
tcp6    0      0 ::1:53                 ::*:*
tcp6    0      0 ::::22                ::*:*
tcp6    0      0 127.0.0.1:80           127.0.0.1:37240      TIME_WAIT
udp     0      0 127.0.0.1:323           0.0.0.0:*
udp     0      0 10.0.1.2:53            0.0.0.0:*
udp     0      0 127.0.0.1:53            0.0.0.0:*
udp     0      0 0.0.0.0:68             0.0.0.0:*
udp6   0      0 ::1:323                ::*:*
udp6   0      0 ::1:53                 ::*:*
[root@csa-server ~]# _
```

Figure 1-86: List all opened ports



```
[root@csa-server ~]# dig google.com

; <>> DiG 9.11.4-P2-RedHat-9.11.4-26.P2.el7_9.15 <>> google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 26904
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags: MBZ: 0x0005, udp: 1232
;; QUESTION SECTION:
:google.com.           IN      A

;; ANSWER SECTION:
google.com.          5       IN      A      216.58.196.46

;; Query time: 9 msec
;; SERVER: 192.168.175.2#53(192.168.175.2)
;; WHEN: Wed Apr 24 14:55:49 EDT 2024
;; MSG SIZE  rcvd: 55

[root@csa-server ~]#
```

Figure 1-87: Display answer from ‘google.com’

```
CSA Client X
:: flags: qr rd ra; QUERY: 1, ANSWER: 6, AUTHORITY: 4, ADDITIONAL: 9
:: OPT PSEUDOSECTION:
:: EDNS: version: 0, flags:: MBZ: 0x0005, udp: 4096
:: QUESTION SECTION:
:google.com.           IN      A
:: ANSWER SECTION:
google.com.          5       IN      A      142.251.12.101
google.com.          5       IN      A      142.251.12.138
google.com.          5       IN      A      142.251.12.100
google.com.          5       IN      A      142.251.12.139
google.com.          5       IN      A      142.251.12.113
google.com.          5       IN      A      142.251.12.102
:: AUTHORITY SECTION:
google.com.          5       IN      NS      ns1.google.com.
google.com.          5       IN      NS      ns4.google.com.
google.com.          5       IN      NS      ns3.google.com.
google.com.          5       IN      NS      ns2.google.com.
:: ADDITIONAL SECTION:
ns1.google.com.      5       IN      A      216.239.32.10
ns2.google.com.      5       IN      A      216.239.34.10
ns3.google.com.      5       IN      A      216.239.36.10
ns4.google.com.      5       IN      A      216.239.38.10
ns1.google.com.      5       IN      AAAA    2001:4860:4802:32::a
ns2.google.com.      5       IN      AAAA    2001:4860:4802:34::a
ns3.google.com.      5       IN      AAAA    2001:4860:4802:36::a
ns4.google.com.      5       IN      AAAA    2001:4860:4802:38::a
:: Query time: 9 msec
:: SERVER: 192.168.175.2#53(192.168.175.2)
:: WHEN: Wed Apr 24 14:58:54 EDT 2024
:: MSG SIZE rcvd: 383
[root@csa-server ~]#
```

Figure 1-88: Display answer from ‘google.com’

```
CSA Client X
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 15234
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:: MBZ: 0x0005, udp: 4896
;; QUESTION SECTION:
google.com.           IN      A

;; ANSWER SECTION:
google.com.          5       IN      A      216.58.199.238

;; Query time: 5 msec
;; SERVER: 192.168.175.2#53(192.168.175.2)
;; WHEN: Wed Apr 24 15:03:34 EDT 2024
;; MSG SIZE rcvd: 55

[root@csa-server ~]# dig google.com

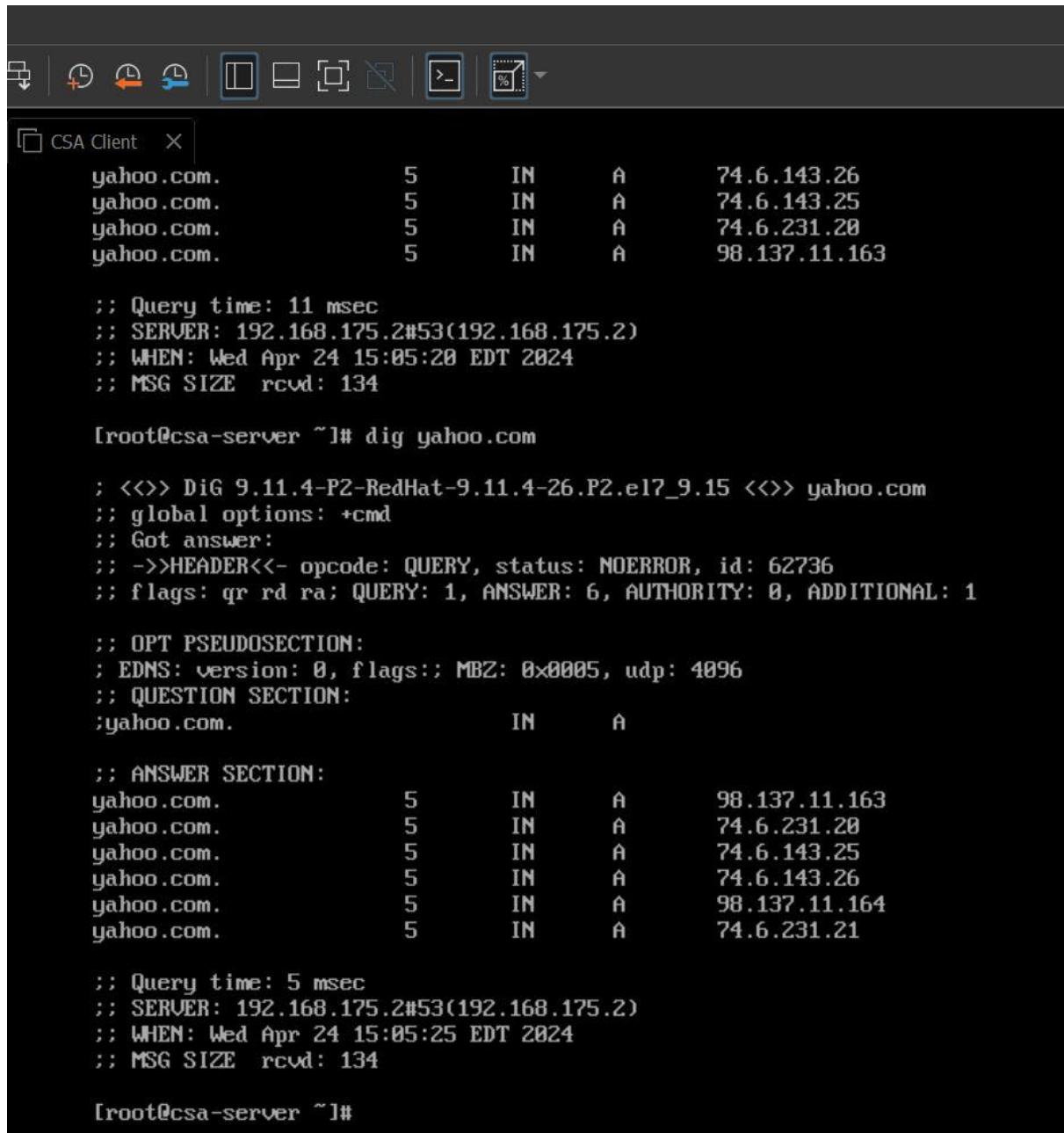
; <>> DiG 9.11.4-P2-RedHat-9.11.4-26.P2.el7_9.15 <>> google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: SERVFAIL, id: 6896
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:: udp: 4096
;; QUESTION SECTION:
google.com.           IN      A

;; Query time: 0 msec
;; SERVER: 10.0.1.2#53(10.0.1.2)
;; WHEN: Wed Apr 24 15:03:36 EDT 2024
;; MSG SIZE rcvd: 39

[root@csa-server ~]#
```

Figure 1-89: Caching name server verified



The screenshot shows a software interface titled 'CSA Client' with a list of DNS records for the domain 'yahoo.com'. The records are listed in a table format with columns for the domain name, TTL, type, and IP address. Below the table, there is a summary of the query and server information.

	TTL	Type	IP Address
yahoo.com.	5	IN A	74.6.143.26
yahoo.com.	5	IN A	74.6.143.25
yahoo.com.	5	IN A	74.6.231.20
yahoo.com.	5	IN A	98.137.11.163

;; Query time: 11 msec
;; SERVER: 192.168.175.2#53(192.168.175.2)
;; WHEN: Wed Apr 24 15:05:20 EDT 2024
;; MSG SIZE rcvd: 134

[root@csa-server ~]# dig yahoo.com

; <>> DiG 9.11.4-P2-RedHat-9.11.4-26.P2.el7_9.15 <>> yahoo.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 62736
;; flags: qr rd ra; QUERY: 1, ANSWER: 6, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
;; EDNS: version: 0, flags:; MBZ: 0x0005, udp: 4096
;; QUESTION SECTION:
;yahoo.com. IN A

;; ANSWER SECTION:
yahoo.com. 5 IN A 98.137.11.163
yahoo.com. 5 IN A 74.6.231.20
yahoo.com. 5 IN A 74.6.143.25
yahoo.com. 5 IN A 74.6.143.26
yahoo.com. 5 IN A 98.137.11.164
yahoo.com. 5 IN A 74.6.231.21

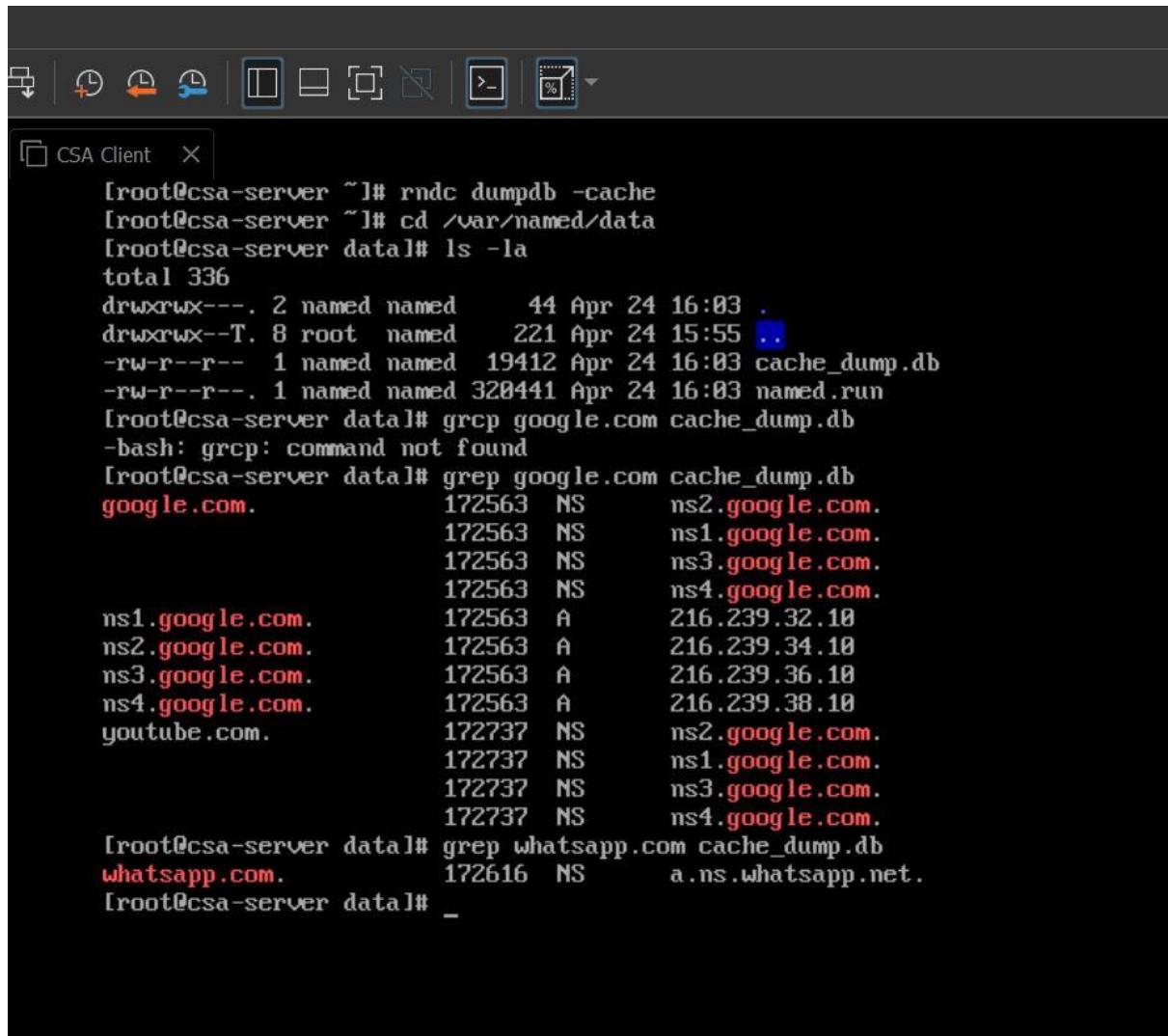
;; Query time: 5 msec
;; SERVER: 192.168.175.2#53(192.168.175.2)
;; WHEN: Wed Apr 24 15:05:25 EDT 2024
;; MSG SIZE rcvd: 134

[root@csa-server ~]#

Figure 1-90: Display answer from 'yahoo.com'

```
CSA Client X |  
  
; <>> DiG 9.11.4-P2-RedHat-9.11.4-26.P2.el7_9.15 <>> whatsapp.com  
;; global options: +cmd  
;; Got answer:  
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 6067  
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 4, ADDITIONAL: 9  
  
;; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags: udp: 4096  
;; QUESTION SECTION:  
:whatsapp.com. IN A  
  
;; ANSWER SECTION:  
whatsapp.com. 9 IN A 157.240.7.54  
  
;; AUTHORITY SECTION:  
whatsapp.com. 172747 IN NS c.ns.whatsapp.net.  
whatsapp.com. 172747 IN NS a.ns.whatsapp.net.  
whatsapp.com. 172747 IN NS d.ns.whatsapp.net.  
whatsapp.com. 172747 IN NS b.ns.whatsapp.net.  
  
;; ADDITIONAL SECTION:  
a.ns.whatsapp.net. 172748 IN A 129.134.30.12  
b.ns.whatsapp.net. 172748 IN A 129.134.31.12  
c.ns.whatsapp.net. 172748 IN A 185.89.218.12  
d.ns.whatsapp.net. 172748 IN A 185.89.219.12  
a.ns.whatsapp.net. 172748 IN AAAA 2a03:2880:f0fc:c:face:b00c:0:35  
b.ns.whatsapp.net. 172748 IN AAAA 2a03:2880:f0fd:c:face:b00c:0:35  
c.ns.whatsapp.net. 172748 IN AAAA 2a03:2880:f1fc:c:face:b00c:0:35  
d.ns.whatsapp.net. 172748 IN AAAA 2a03:2880:f1fd:c:face:b00c:0:35  
  
;; Query time: 0 msec  
;; SERVER: 10.0.1.2#53(10.0.1.2)  
;; WHEN: Wed Apr 24 16:01:41 EDT 2024  
;; MSG SIZE rcvd: 312  
  
[root@csa-server ~]#
```

Figure 1-91: Caching name server verified

A screenshot of a software application window titled "CSA Client". The window contains a terminal session window with the following content:

```
[root@csa-server ~]# rndc dumpdb -cache
[root@csa-server ~]# cd /var/named/data
[root@csa-server data]# ls -la
total 336
drwxrwx---. 2 named named    44 Apr 24 16:03 .
drwxrwx--T. 8 root  named   221 Apr 24 15:55 ..
-rw-r--r--  1 named named  19412 Apr 24 16:03 cache_dump.db
-rw-r--r--  1 named named 320441 Apr 24 16:03 named.run
[root@csa-server data]# grcp google.com cache_dump.db
-bash: grcp: command not found
[root@csa-server data]# grep google.com cache_dump.db
google.com.          172563  NS      ns2.google.com.
                           172563  NS      ns1.google.com.
                           172563  NS      ns3.google.com.
                           172563  NS      ns4.google.com.
ns1.google.com.        172563  A       216.239.32.10
ns2.google.com.        172563  A       216.239.34.10
ns3.google.com.        172563  A       216.239.36.10
ns4.google.com.        172563  A       216.239.38.10
youtube.com.           172737  NS      ns2.google.com.
                           172737  NS      ns1.google.com.
                           172737  NS      ns3.google.com.
                           172737  NS      ns4.google.com.
[root@csa-server data]# grep whatsapp.com cache_dump.db
whatsapp.com.         172616  NS      a.ns.whatsapp.net.
[root@csa-server data]# _
```

Figure 1-92: View cached data

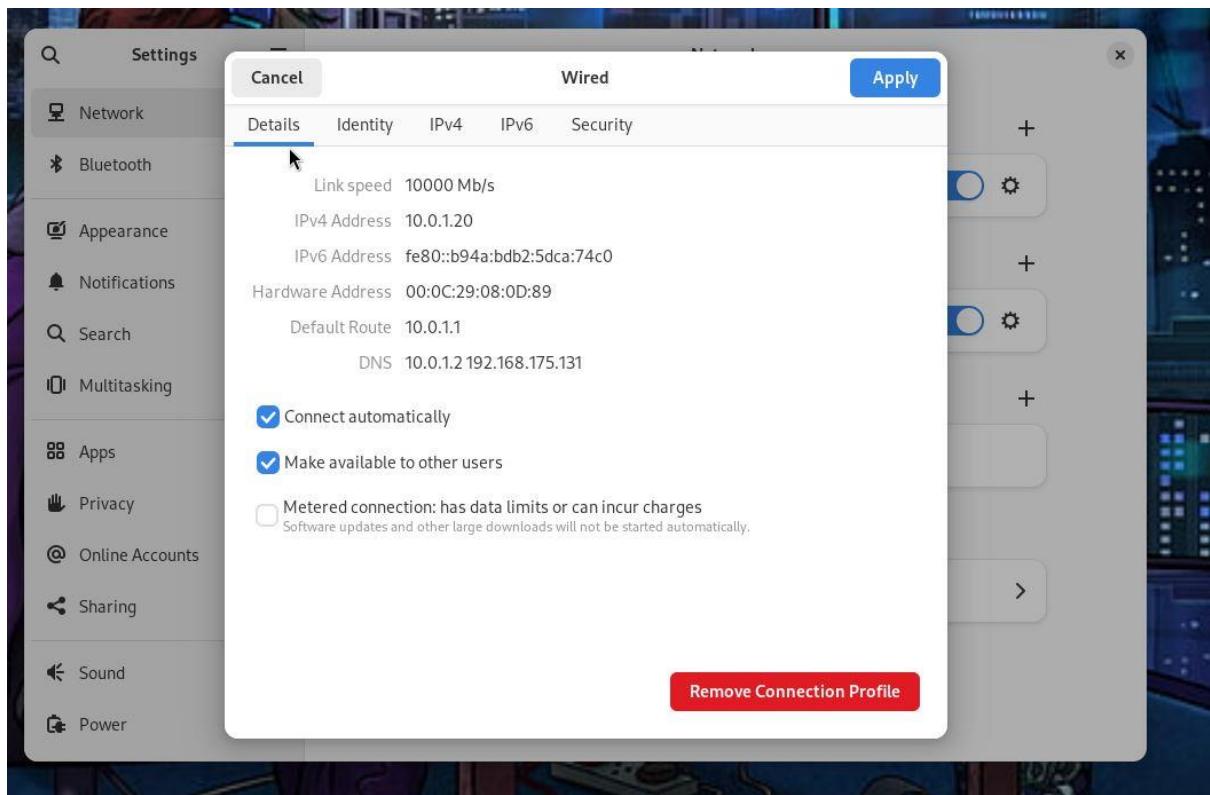


Figure 1-93: Client's DNS server IP address configured

A screenshot of a terminal window titled 'CSA Client'. The terminal shows the following command history:

```
[root@csa-server data]# firewall-cmd --get-default-zone
public
[root@csa-server data]# firewall-cmd --zone=public --add-service=dns
success
[root@csa-server data]#
```

The terminal interface includes a toolbar with icons for file operations and a tab bar with multiple windows open.

Figure 1-94: Allow DNS traffic through firewall

The screenshot shows a Linux desktop environment with two windows open. The top window is titled "CentOS 7 64-bit" and the bottom window is titled "CSA Client". The time in the top right corner is "Apr 24 16:23". The CSA Client window has a decorative background image of a person working at a desk with a computer monitor and keyboard. A terminal window is open in the foreground, showing the command-line interface. The prompt is "root@fedora:~". The content of the terminal is as follows:

```
# Do not edit.
#
# This file might be symlinked as /etc/resolv.conf. If you're looking at
# /etc/resolv.conf and seeing this text, you have followed the symlink.
#
# This is a dynamic resolv.conf file for connecting local clients to the
# internal DNS stub resolver of systemd-resolved. This file lists all
# configured search domains.
#
# Run "resolvectl status" to see details about the uplink DNS servers
# currently in use.
#
# Third party programs should typically not access this file directly, but only
# through the symlink at /etc/resolv.conf. To manage man:resolv.conf(5) in a
# different way, replace this symlink by a static file or a different symlink.
#
# See man:systemd-resolved.service(8) for details about the supported modes of
# operation for /etc/resolv.conf.

nameserver 10.0.1.2

~  
~  
:wq
```

Figure 1-95: Edit the '/etc/resolv.conf' file

The screenshot shows a terminal window titled "root@fedora:~" running on a CentOS 7 64-bit system. The window displays the results of a DNS query for "google.com". The output includes the following sections:

- Root Section:** google.com. 263 IN A 74.125.24.100
- Authority Section:** google.com. 171321 IN NS ns3.google.com. google.com. 171321 IN NS ns2.google.com. google.com. 171321 IN NS ns4.google.com. google.com. 171321 IN NS ns1.google.com.
- Additional Section:** ns2.google.com. 171321 IN A 216.239.34.10 ns1.google.com. 171321 IN A 216.239.32.10 ns3.google.com. 171321 IN A 216.239.36.10 ns4.google.com. 171321 IN A 216.239.38.10 ns2.google.com. 171321 IN AAAA 2001:4860:4802:34::a ns1.google.com. 171321 IN AAAA 2001:4860:4802:32::a ns3.google.com. 171321 IN AAAA 2001:4860:4802:36::a ns4.google.com. 171321 IN AAAA 2001:4860:4802:38::a

Below the sections, the terminal shows the following statistics and timestamp:

- ;; Query time: 0 msec
- ;; SERVER: 10.0.1.2#53(10.0.1.2) (UDP)
- ;; WHEN: Wed Apr 24 16:24:34 EDT 2024
- ;; MSG SIZE rcvd: 411

The terminal prompt at the bottom is "root@fedora:~#".

Figure 1-96: Resolution test for 'google.com'

Reference

[1]

“Nagios Core Part 1: Server (CentOS) and Client (Linux & Windows) Setup Tutorial,” www.youtube.com. https://youtu.be/BtaSY1ALZzE?si=FQI3oJvstW4bvb_g (accessed Apr. 23, 2024).

[2]

“Nagios Core Part 2: Client (Linux & Windows) Setup Tutorial,” www.youtube.com. https://youtu.be/wKXVz_9GDbM?si=kbxSNPY6F3dMDvHT (accessed Apr. 23, 2024).

[3]

“Quickstart Installation Guides · Nagios Core Documentation,” *assets.nagios.com*. <https://assets.nagios.com/downloads/nagioscore/docs/nagioscore/4/en/quickstart.html> (accessed Apr. 26, 2024).