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Course/Section: CPE31S2	Date Submitted: 10/10/25
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Midterm Skills Exam: Install, Configure, and Manage Log Monitoring tools

1. Objectives

Create and design a workflow that installs, configure and manage enterprise availability, performance and log monitoring tools using Ansible as an Infrastructure as Code (IaC) tool.

2. Instructions

1. Create a repository in your GitHub account and label it CPE_MIDEXAM_SURNAME.
2. Clone the repository and do the following:
 - 2.1. Create an Ansible playbook that does the following with an input of a config.yaml file and arranged Inventory file:
 - 2.2. Install and configure Elastic Stack in separate hosts (Elastic Search, Kibana, Logstash) • Install Nagios in one host
 - 2.3. Install Grafana, Prometheus and Influxdb in separate hosts (Influxdb, Grafana, Prometheus)
 - 2.4. Install Lamp Stack in separate hosts (Httpd + Php, Mariadb)
3. Document all your tasks using this document. Provide proofs of all the ansible playbooks codes and successful installations.
4. Document the push and commit from the local repository to GitHub.
5. Finally, paste also the link of your GitHub repository in the documentation.

3. Output

```
PLAY RECAP ****
192.168.56.107 : ok=6    changed=0    unreachable=0    failed=0    skipped=1    rescued=0
                   ignored=0
192.168.56.112 : ok=7    changed=2    unreachable=0    failed=0    skipped=1    rescued=0
                   ignored=0
```

Figure 3.1. Ansible playbook recap

```
north@server1: $ systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset:
   Active: active (running) since Fri 2025-10-10 08:51:38 UTC; 1h 40min ago
     Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 1286 (apache2)
      Tasks: 6 (limit: 2266)
     Memory: 17.4M (peak: 18.1M)
        CPU: 304ms
       CGroup: /system.slice/apache2.service
           ├─1286 /usr/sbin/apache2 -k start
           ├─1298 /usr/sbin/apache2 -k start
           ├─1300 /usr/sbin/apache2 -k start
           ├─1301 /usr/sbin/apache2 -k start
           ├─1305 /usr/sbin/apache2 -k start
           └─1306 /usr/sbin/apache2 -k start

Oct 10 08:51:38 server1 systemd[1]: Starting apache2.service - The Apache HTTP
Oct 10 08:51:38 server1 apachectl[1269]: AH00558: apache2: Could not reliably d
Oct 10 08:51:38 server1 systemd[1]: Started apache2.service - The Apache HTTP S

● mariadb.service - MariaDB 10.11.13 database server
   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset:
   Active: active (running) since Fri 2025-10-10 10:04:31 UTC; 27min ago
     Docs: man:mariadb(8)
           https://mariadb.com/kb/en/library/systemd/
   Main PID: 5421 (mariadb)
     Status: "Taking your SQL requests now..."
   Tasks: 11 (limit: 14961)
     Memory: 78.9M (peak: 81.9M)
        CPU: 655ms
       CGroup: /system.slice/mariadb.service
               └─5421 /usr/sbin/mariadb

Oct 10 10:04:31 server1 mariadb[5421]: 2025-10-10 10:04:31 0 [Note] InnoDB: lo
Oct 10 10:04:31 server1 mariadb[5421]: 2025-10-10 10:04:31 0 [Note] Plugin 'FE
Oct 10 10:04:31 server1 mariadb[5421]: 2025-10-10 10:04:31 0 [Note] InnoDB: Lo
Oct 10 10:04:31 server1 mariadb[5421]: 2025-10-10 10:04:31 0 [Warning] You nee
Oct 10 10:04:31 server1 mariadb[5421]: 2025-10-10 10:04:31 0 [Note] Server soc
Oct 10 10:04:31 server1 mariadb[5421]: 2025-10-10 10:04:31 0 [Note] InnoDB: Bu
Oct 10 10:04:31 server1 mariadb[5421]: 2025-10-10 10:04:31 0 [Note] /usr/sbin/
Oct 10 10:04:31 server1 mariadb[5421]: Version: '10.11.13-MariaDB-0ubuntu0.24.
Oct 10 10:04:31 server1 mariadb[5421]: Started mariadb.service - MariaDB 10.11.13
Oct 10 10:04:31 server1 /etc/mysql/debian-start[5440]: Upgrading MariaDB tables
```

Figure 3.2. Evidence of installation on Ubuntu host (Lamp)

```
[north@centos ~]$ systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: disabled)
   Drop-In: /usr/lib/systemd/system/httpd.service.d
             └─php-fpm.conf
     Active: active (running) since Fri 2025-10-10 16:51:44 PST; 1h 41min ago
       Docs: man:httpd.service(8)
   Main PID: 923 (httpd)
     Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Bytes
   Tasks: 177 (limit: 10516)
   Memory: 18.2M (peak: 18.6M)
      CPU: 10.446s
     CGroup: /system.slice/httpd.service
             ├─923 /usr/sbin/httpd -DFOREGROUND
             ├─1008 /usr/sbin/httpd -DFOREGROUND
             ├─1015 /usr/sbin/httpd -DFOREGROUND
             ├─1016 /usr/sbin/httpd -DFOREGROUND
             ├─1018 /usr/sbin/httpd -DFOREGROUND

Oct 10 16:51:43 centos systemd[1]: Starting The Apache HTTP Server...
Oct 10 16:51:44 centos httpd[923]: AH00558: httpd: Could not reliably determine the fully qualified domain name for your site through /etc/hostname or /etc/hosts
Oct 10 16:51:44 centos systemd[1]: Started The Apache HTTP Server.
Oct 10 16:51:44 centos httpd[923]: Server configured, listening on: port 80

[north@centos ~]$ systemctl status mariadb
● mariadb.service - MariaDB 10.5 database server
   Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset: disabled)
   Drop-In: /usr/lib/systemd/system/mariadb.service.d
             └─mariadb-check-socket.conf
     Active: active (running) since Fri 2025-10-10 18:05:35 PST; 27min ago
       Docs: man:mariadb(8)
   Main PID: 3873 (mariadb)
     Status: "Taking your SQL requests now..."
   Tasks: 8 (limit: 10516)
   Memory: 65.3M (peak: 66.3M)
      CPU: 664ms
     CGroup: /system.slice/mariadb.service
             └─3873 /usr/libexec/mariadb --basedir=/usr

Oct 10 18:05:34 centos systemd[1]: Starting MariaDB 10.5 database server...
Oct 10 18:05:34 centos mariadb-prepare-db-dir[3895]: Database MariaDB is probably up to date
Oct 10 18:05:34 centos mariadb-prepare-db-dir[3895]: If this is not the case, run
Oct 10 18:05:35 centos systemd[1]: Started MariaDB 10.5 database server.
```

Figure 3.3. Evidence of installation on CentOS host (Lamp)

```
● nagios4.service - nagios4
   Loaded: loaded (/usr/lib/systemd/system/nagios4.service; disabled; preset: disabled)
   Active: active (running) since Fri 2025-10-10 11:02:35 UTC; 59s ago
     Docs: man:nagios4
 Process: 21302 ExecStartPre=sh -c nagiospipe=$$(sed -n "s/^command_file=\(.*/\1/g" /etc/nagios/nagios.cfg)
 Main PID: 21304 (nagios4)
   Tasks: 6 (limit: 2266)
   Memory: 2.8M (peak: 3.8M)
      CPU: 54ms
     CGroup: /system.slice/nagios4.service
             ├─21304 /usr/sbin/nagios4 /etc/nagios/nagios.cfg
             ├─21306 /usr/sbin/nagios4 --worker /var/lib/nagios4/rw/nagios.que
             ├─21307 /usr/sbin/nagios4 --worker /var/lib/nagios4/rw/nagios.que
             ├─21308 /usr/sbin/nagios4 --worker /var/lib/nagios4/rw/nagios.que
             ├─21309 /usr/sbin/nagios4 --worker /var/lib/nagios4/rw/nagios.que
             └─21562 /usr/sbin/nagios4 /etc/nagios/nagios.cfg

Oct 10 11:02:35 server1 nagios4[21304]: wproc: Registry request: name=Core Workstation
Oct 10 11:02:35 server1 nagios4[21304]: wproc: Registry request: name=Core Workstation
Oct 10 11:02:35 server1 nagios4[21304]: wproc: Registry request: name=Core Workstation
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```

Figure 3.4. Evidence of installation on Ubuntu host (Nagios)

```
north@workstation:~/CPE_MIDEXAM_POTESTADES$ git add --all
[north@workstation:~/CPE_MIDEXAM_POTESTADES$ git commit -m "Update 6 Midterm Exam"
[main 11203a2] Update 6 Midterm Exam
 2 files changed, 51 insertions(+), 47 deletions(-)
[north@workstation:~/CPE_MIDEXAM_POTESTADES$ git push origin main
Enumerating objects: 16, done.
Counting objects: 100% (16/16), done.
Delta compression using up to 4 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (9/9), 1.17 KiB | 599.00 KiB/s, done.
Total 9 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), completed with 2 local objects.
To github.com:northpotestades/CPE_MIDEXAM_POTESTADES.git
 ee2174b..11203a2  main -> main
```

Figure 3.5. Final commit and push to GitHub

GitHub link: [Midterm Exam Repository](#)

Conclusions: (link your conclusion from the objective)

In conclusion, I was able to perform the task of creating a workflow which installs the Lamp Stack on both CentOS and Ubuntu, and installing Nagios on one system, but I was not able to implement the ELK/Elastic Stack on either one. In the future, I should do more experimenting with unknown commands like wget, so that I do not have the same problems in the future. Overall, I was at least able to do one task properly, which was to implement the Lamp Stack on both systems.