

Steps for Using Docker Compose

1. Install Docker and Docker Compose

Make sure Docker and Docker Compose are installed on your machine. You can check the installations using the following commands:

```
docker --version
```

```
docker-compose --version
```

```
root@Wisse-PC:~/devsecops-tools# docker --version
Docker version 23.0.3, build 3e7cbfd
root@Wisse-PC:~/devsecops-tools# docker-compose --version
Docker Compose version v2.16.0
root@Wisse-PC:~/devsecops-tools#
```

Create the `docker-compose.yml` File

Create a file named `docker-compose.yml` in your desired directory. Paste the following content into this file:

```
version: '3.8'

services:
  sonarqube:
    image: sonarqube
    container_name: sonarqube
    ports:
      - "9001:9000"
    volumes:
      - sonarqube_data:/opt/sonarqube/data
      - sonarqube_extensions:/opt/sonarqube/extensions
    networks:
      - devsecops
networks:
  devsecops:
    driver: bridge

volumes:
  sonarqube_data:
  sonarqube_extensions:
```

Explanations:

- **version: '3.8':** Specifies the version of the Docker Compose file format.
- **services:** Defines the services to be deployed. Here, the `sonarqube` service is defined with:
 - **image:** Uses the official SonarQube Docker image.
 - **container_name:** Names the container for this service.
 - **ports:** Maps port 9000 of the container to port 9001 on the host.
 - **volumes:** Mounts volumes to persist data and extensions.
 - **networks:** Associates the service with the `devsecops` network.
- **networks:** Defines a network named `devsecops` using the `bridge` driver.
- **volumes:** Defines volumes `sonarqube_data` and `sonarqube_extensions` used to persist data.

Start the Services

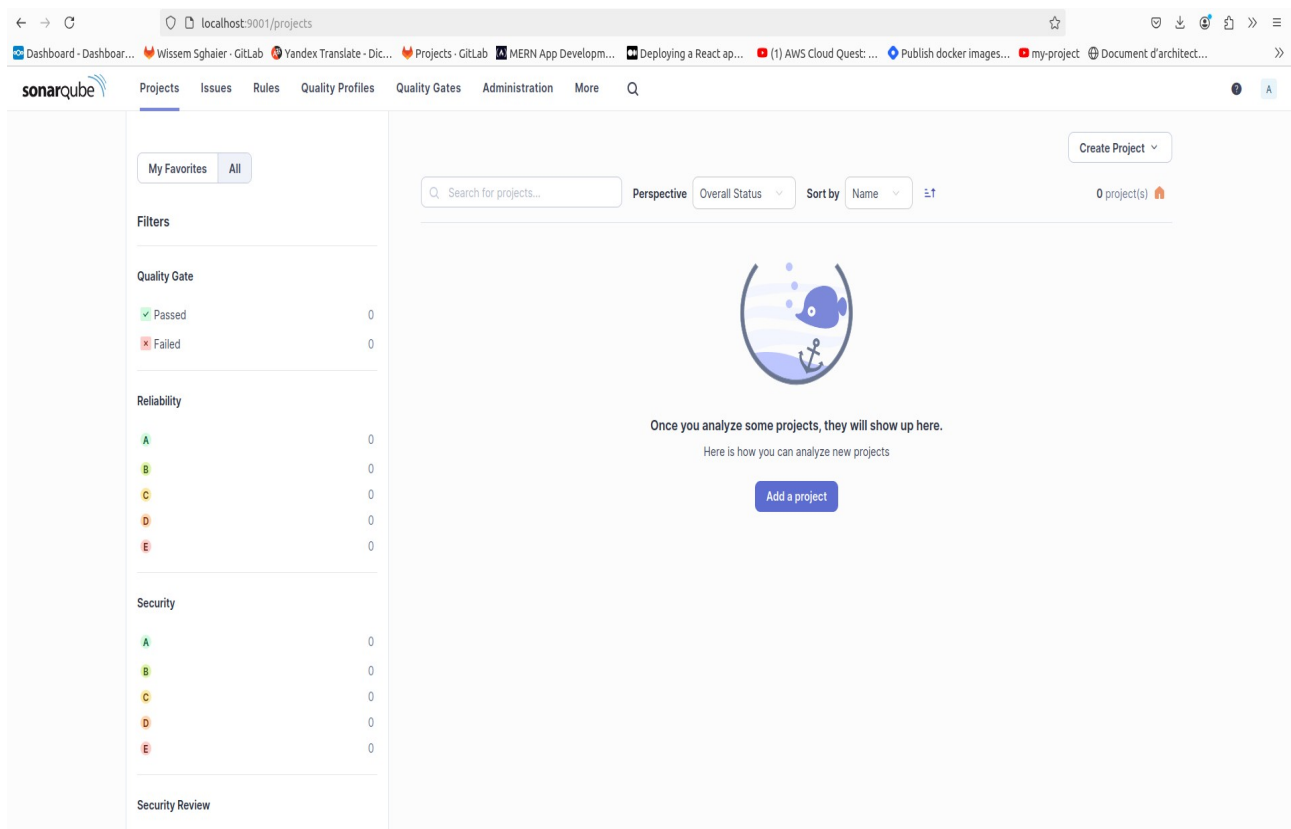
Open a command line in the directory containing the `docker-compose.yml` file and run the following command to start the services:

`docker-compose up -d`

```
root@Wissem-PC:~/devsecops-tools/05-static-analysis/SonarQube# docker-compose up -d
[+] Running 1/1
  :: Container sonarqube Started
root@Wissem-PC:~/devsecops-tools/05-static-analysis/SonarQube#
```

- This command lists the running containers along with their status.
- **Access the Application**

You can access SonarQube by opening a web browser and visiting `http://localhost:9001`. The port 9001 on your host is mapped to port 9000 on the SonarQube container.



Create the docker-compose.yml File

Create a file named `docker-compose.yml` in your desired directory. Paste the following content into this file:

```
version: '3.8'

services:
  dependency-track:
    image: dependencytrack/bundled:latest
    container_name: dependency-track
    ports:
      - "9090:8080" # Maps host port 9090 to container port 8080
    environment:
      - DATABASE_URL=jdbc:postgresql://db:5432/dependencytrack
      - DATABASE_USER=dependencytrack
      - DATABASE_PASSWORD=dependencytrack
    volumes:
      - dependencytrack_data:/opt/dependency-track/data
    networks:
      - devsecops
    depends_on:
      - db

  db:
    image: postgres:latest
    container_name: dependencytrack_db
    environment:
      - POSTGRES_USER=dependencytrack
      - POSTGRES_PASSWORD=dependencytrack
      - POSTGRES_DB=dependencytrack
    volumes:
      - postgres_data:/var/lib/postgresql/data
    networks:
      - devsecops

networks:
  devsecops:
    driver: bridge

volumes:
  dependencytrack_data:
  postgres_data:
```

- **Explanations:**
- `version: '3.8'`: Specifies the Docker Compose file format version.
- `services`: Defines the services to be deployed. Here, two services are defined:
 - `dependency-track`:
 - `image`: Uses the `dependencytrack/bundled:latest` Docker image.
 - `container_name`: Names the container `dependency-track`.
 - `ports`: Maps port 8080 of the container to port 9090 on the host.
 - `environment`: Sets environment variables for the service.
 - `volumes`: Mounts a volume to persist data.
 - `networks`: Associates the service with the `devsecops` network.
 - `depends_on`: Specifies that `dependency-track` depends on the `db` service to start first.
 - `db`:

- **image:** Uses the `postgres:latest` Docker image.
- **container_name:** Names the container `dependencytrack_db`.
- **environment:** Sets environment variables for the PostgreSQL database.
- **volumes:** Mounts a volume to persist database data.
- **networks:** Associates the service with the `devsecops` network.
- **networks:** Defines a network named `devsecops` with the `bridge` driver.
- **volumes:** Defines volumes `dependencytrack_data` and `postgres_data` to persist data.

Start the Services

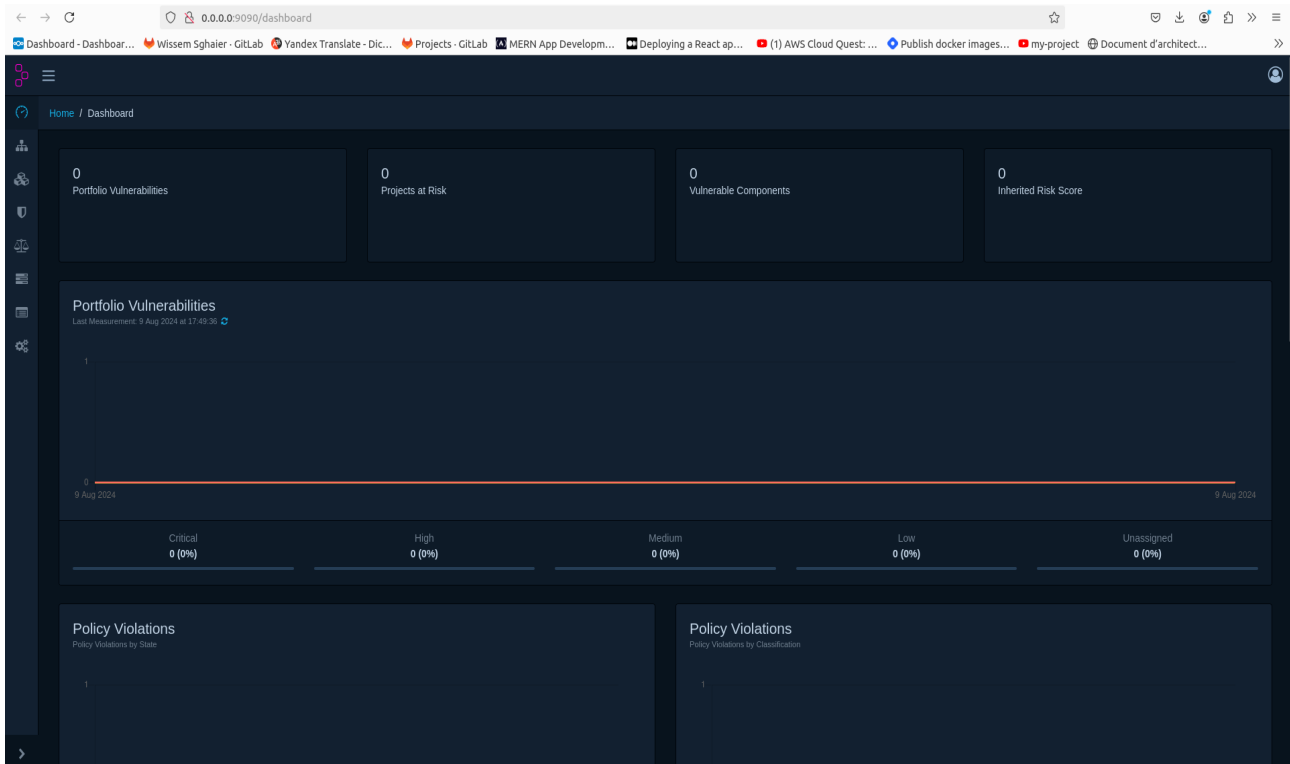
Open a command line in the directory containing the `docker-compose.yml` file and run the following command to start the services:

`docker-compose up -d`

```
root@Wissem-PC:~/devsecops-tools/06-dependency-tests/dependency-track# docker-compose up -d
[+] Running 2/2
  :: Container dependencytrack_db Started
  :: Container dependency-track Started
root@Wissem-PC:~/devsecops-tools/06-dependency-tests/dependency-track# vim docker-compose.yml
```

Access the Application

You can access SonarQube by opening a web browser and visiting `http://localhost:9090/dashboard`. The port 9090 on your host is mapped to port 9090 on the `Dependency-track` container.



Create the docker-compose.yml File

Create a file named `docker-compose.yml` in your desired directory. Paste the following content into this file:

```
Version: '3'

services:
  nexus:
    image: sonatype/nexus3:latest
    container_name: nexus
    ports:
      - "9091:8081" # Maps host port 9091 to container port 8081
    volumes:
      - nexus_data:/nexus-data
    networks:
      - devsecops

volumes:
  nexus_data:

networks:
  devsecops:
    driver: bridge
```

Explanations:

- `version: '3'`: Specifies the Docker Compose file format version.
- `services`: Defines the services to be deployed. Here, the `nexus` service is defined with:
 - `image`: Uses the `sonatype/nexus3:latest` Docker image for Nexus Repository.
 - `container_name`: Names the container `nexus`.
 - `ports`: Maps port 8081 of the container to port 9091 on the host. This allows you to access Nexus on port 9091 on your local machine.
 - `volumes`: Mounts a volume `nexus_data` to persist Nexus data.
 - `networks`: Associates the service with the `devsecops` network.
- `volumes`: Defines a volume named `nexus_data` for persisting Nexus data.
- `networks`: Defines a network named `devsecops` using the `bridge` driver.
- **Start the Services**

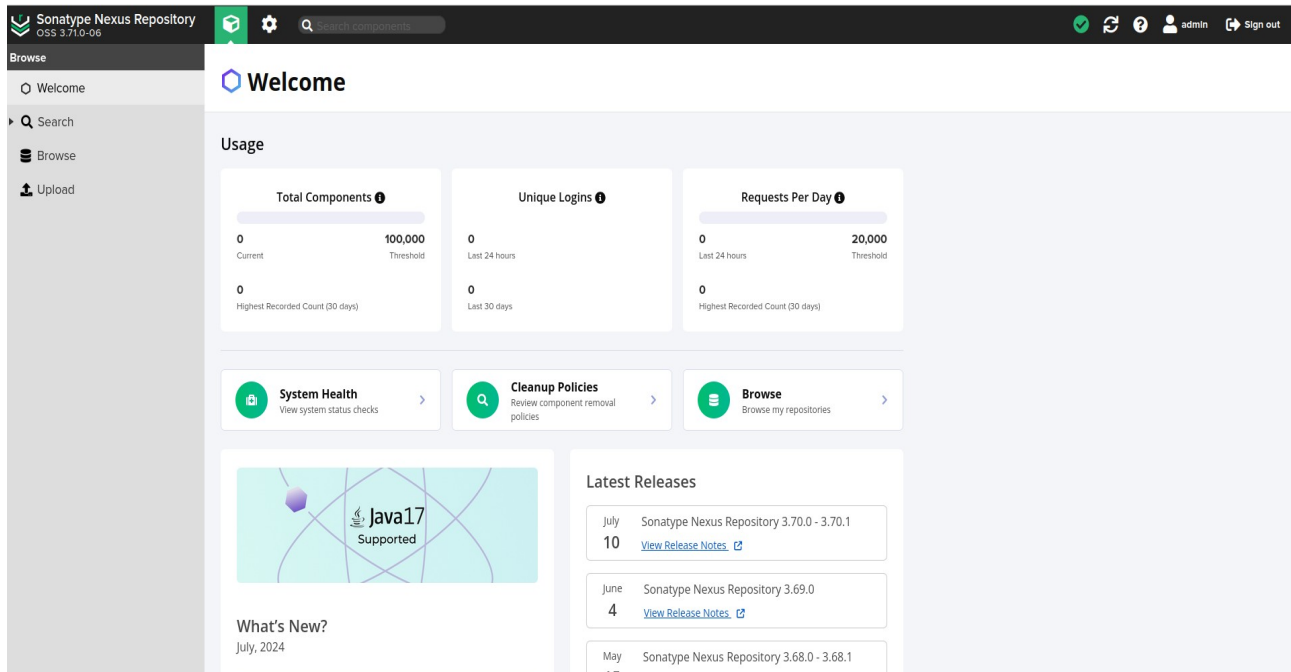
Open a command line in the directory containing the `docker-compose.yml` file and run the following command to start the services:

`docker-compose up -d`

```
root@Wissen-PC:~/devsecops-tools/09-publish-to-repository/nexus# docker-compose up -d
[+] Running 8/8
  :: nexus Pulled                                639.1s
  :: a15b996d0c1b Pull complete                  187.6s
  :: bb22e51e480a Pull complete                  422.9s
  :: 118609e58957 Pull complete                  422.9s
  :: d8298bee2d31 Pull complete                  636.2s
  :: 6f2ab2d3131d Pull complete                  636.2s
  :: 5e687d34326e Pull complete                  636.2s
  :: 9998b5f103fd Pull complete                  636.3s
[+] Running 3/3
  :: Network nexus_devsecops    Created           0.1s
  :: Volume "nexus_nexus_data" Created           0.0s
  :: Container nexus            Started           0.5s
root@Wissen-PC:~/devsecops-tools/09-publish-to-repository/nexus#
```

Access the Application

You can access the Nexus Repository Manager by opening a web browser and visiting `http://localhost:9091`. Port 9091 on your host is mapped to port 8081 on the Nexus container.



Create the `docker-compose.yml` File

Create a file named `docker-compose.yml` in your desired directory. Paste the following content into this file:

```
version: '3'

services:
  trivy:
    image: aquasec/trivy:latest
    container_name: trivy
    entrypoint: ["trivy"]
    volumes:
      - trivy_cache:/root/.cache/trivy
    networks:
      - devsecops

volumes:
  trivy_cache:

networks:
  devsecops:
    driver: bridge
```

Explanations:

- `version: '3'`: Specifies the version of the Docker Compose file format.
- `services`: Defines the services to be deployed. Here, the `trivy` service is defined with:
 - `image`: Uses the `aquasec/trivy:latest` Docker image for Trivy, a vulnerability scanner.
 - `container_name`: Names the container `trivy`.
 - `entrypoint`: Sets the entrypoint for the container to the `trivy` command, allowing you to specify the command to run when the container starts.
 - `volumes`: Mounts a volume `trivy_cache` to persist Trivy cache data, which can speed up subsequent scans.
 - `networks`: Associates the service with the `devsecops` network.
- `volumes`: Defines a volume named `trivy_cache` for persisting cache data.
- `networks`: Defines a network named `devsecops` using the `bridge` driver.

Start the Services

Open a command line in the directory containing the `docker-compose.yml` file and run the following command to start the services:

docker-compose up -d

```
root@Wissen-PC:~/devsecops-tools/11-scan-docker-image/trivy# docker-compose up -d
[+] Running 5/5
  :: trivy Pulled                                                                                               53.2s
  :: d25f557d7f31 Pull complete                                                                                12.5s
  :: 2604e3772690 Pull complete                                                                                20.1s
  :: 6ec2f4265730 Pull complete                                                                                50.7s
  :: b1b34ef0f504 Pull complete                                                                                50.7s
[+] Running 2/2
  :: Volume "trivy_trivy_cache" Created                                                                      0.0s
  :: Container trivy Started                                                                                    0.4s
root@Wissen-PC:~/devsecops-tools/11-scan-docker-image/trivy# docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
				NAMES	

Using Trivy

Once the Trivy container is running, you can execute commands in it using `docker exec`. For example, to scan a Docker image for vulnerabilities, use:

docker-compose logs trivy

```
root@Wissen-PC:~/devsecops-tools/11-scan-docker-image/trivy# docker-compose logs trivy
trivy | Scanner for vulnerabilities in container images, file systems, and Git repositories, as well as for configuration issues and hard-coded secrets
trivy |
trivy | Usage:
trivy |   trivy [global flags] command [flags] target
trivy |   trivy [command]
trivy |
trivy | Examples:
trivy |   # Scan a container image
trivy |   $ trivy image python:3.4-alpine
trivy |
trivy |   # Scan a container image from a tar archive
trivy |   $ trivy image --input ruby-3.1.tar
trivy |
trivy |   # Scan local filesystem
trivy |   $ trivy fs .
trivy |
trivy |   # Run in server mode
trivy |   $ trivy server
trivy |
trivy | Scanning Commands
trivy |   config      Scan config files for misconfigurations
trivy |   filesystem  Scan local filesystem
trivy |   image       Scan a container image
trivy |   kubernetes  [EXPERIMENTAL] Scan kubernetes cluster
trivy |   repository  Scan a repository
trivy |   rootfs      Scan rootfs
trivy |   sbom        Scan SBOM for vulnerabilities and licenses
trivy |   vm          [EXPERIMENTAL] Scan a virtual machine image
trivy |
trivy | Management Commands
trivy |   module      Manage modules
trivy |   plugin      Manage plugins
trivy |   vex         [EXPERIMENTAL] VEX utilities
trivy |
trivy | Utility Commands
trivy |   clean       Remove cached files
trivy |   completion  Generate the autocompletion script for the specified shell
trivy |   convert     Convert Trivy JSON report into a different format
trivy |   help        Help about any command
trivy |   server      Server mode
trivy |   version     Print the version
trivy |
trivy | Flags:
trivy |   --cache-dir string      cache directory (default "/root/.cache/trivy")
trivy |   -c, --config string     config path (default "trivy.yaml")
trivy |   -d, --debug             debug mode
trivy |   -f, --format string     version format (json)
trivy |   --generate-default-config write the default config to trivy-default.yaml
trivy |   -h, --help              help for trivy
trivy |   --insecure              allow insecure server connections
trivy |   -q, --quiet             suppress progress bar and log output
trivy |   --timeout duration      timeout (default 5m0s)
trivy |   -v, --version           show version
```

docker exec trivy trivy image your-image:tag

Create the `docker-compose.yml` File

Create a file named `docker-compose.yml` in your desired directory. Paste the following content into this file:

```
version: '3'

services:
  falco:
    image: falcosecurity/falco:latest
    container_name: falco
    privileged: true
    volumes:
      - /proc:/host/proc:ro
      - /boot:/host/boot:ro
      - /lib/modules:/host/lib/modules:ro
      - falco_rules:/etc/falco
    networks:
      - devsecops

volumes:
  falco_rules:

networks:
  devsecops:
    driver: bridge
```

Explanations:

- `version: '3'`: Specifies the Docker Compose file format version.
- `services`: Defines the services to be deployed. Here, the `falco` service is defined with:
 - `image`: Uses the `falcosecurity/falco:latest` Docker image for Falco.
 - `container_name`: Names the container `falco`.
 - `privileged: true`: Grants the container elevated privileges, which is necessary for Falco to access kernel and system data.
 - `volumes`: Mounts directories and volumes into the container:
 - `/proc:/host/proc:ro`: Mounts the host's `/proc` directory as read-only inside the container.
 - `/boot:/host/boot:ro`: Mounts the host's `/boot` directory as read-only inside the container.
 - `/lib/modules:/host/lib/modules:ro`: Mounts the host's `/lib/modules` directory as read-only inside the container.
 - `falco_rules:/etc/falco`: Mounts a named volume for Falco rules.
 - `networks`: Associates the service with the `devsecops` network.
- `volumes`: Defines a volume named `falco_rules` for Falco rule configurations.
- `networks`: Defines a network named `devsecops` using the `bridge` driver.

Start the Services

Open a command line in the directory containing the `docker-compose.yml` file and run the following command to start the services:

docker-compose up -d

```
root@Wissen-PC:~/devsecops-tools/11-scan-docker-image/falco# docker-compose up -d
[+] Running 8/8
  :: falco Pulled                                629.3s
  :: fea1432adf09 Pull complete                  239.0s
  :: 67260c2425de Pull complete                  239.0s
  :: 04a1f75c00f5 Pull complete                  612.7s
  :: 554ce18c6c04 Pull complete                  613.2s
  :: bdabb1402de8 Pull complete                  613.2s
  :: 5a4ee743e436 Pull complete                  613.2s
  :: 710ad78be923 Pull complete                  613.3s
[+] Running 3/3
  :: Network falco_devsecops Created              0.1s
  :: Volume "falco_falco_rules" Created           0.0s
  :: Container falco Started                      0.8s
root@Wissen-PC:~/devsecops-tools/11-scan-docker-image/falco#
```

Configure Falco Rules

Falco uses rules to detect suspicious activity. The rules are typically placed in a configuration file. Since you are mounting a volume `falco_rules` to `/etc/falco`, you should ensure that the Falco rules are available in this volume. You can modify or add rules to the `falco_rules` volume based on your requirements.

```
root@df11e24b3438:/# ls
bin boot dev docker-entrypoint.sh etc home host lib lib64 media mnt opt proc root run sbin srv sys usr var
root@df11e24b3438:/# cd etc
root@df11e24b3438:/etc#
root@df11e24b3438:/etc# ls
all ca-certificates.conf dkms gal.conf hostname ld.so.cache logrotate.d nsswitch.conf perl rc4.d selinux systemd
adduser.conf cron.d dpkg gprofng.rc hosts ld.so.conf mke2fs.conf opt profile rc5.d shadow terminfo
alternatives cron.daily e2scrub.conf group init.d ld.so.conf.d modprobe.d os-release profile.d rc6.d shells timezone
apt debconf.conf environment group-inputrc libaudit.conf modules pam.conf rc0.d rc8.d skel update-motd.d
bash.bashrc debian_version falco gshadow issue localtime motd pam.d rc1.d resolv.conf ssl xattr.conf
bindresvport.blacklist default falcoctl gss issue.net logcheck mtab passwd rc2.d rmt subgid
ca-certificates deluser.conf fstab host.conf kernel login.defs netconfig passwd- rc3.d security subuid
root@df11e24b3438:/etc# cd falco
root@df11e24b3438:/etc/falco# ls
config.d falco.yaml falco_rules.local.yaml falco_rules.yaml rules.d
root@df11e24b3438:/etc/falco#
```

- **View Falco Logs**

You can view the logs of the Falco container to ensure it is running correctly and to see any potential errors or output:

docker-compose logs falco

```
root@Wissem-PC:~/devsecops-tools/11-scan-docker-image/falco# docker-compose logs falco
falco | * Setting up /usr/src links from host
falco | 2024-08-09 18:12:09 INFO Running falcoctl driver config
falco |     | name: falco
falco |     | version: 7.2.0+driver
falco |     | type: modern_ebpf
falco |     | host-root: /host
falco |     | repos: https://download.falco.org/driver
falco | 2024-08-09 18:12:09 INFO Committing driver config to local Falco config
falco | 2024-08-09 18:12:09 INFO Storing falcoctl driver config
falco | 2024-08-09 18:12:09 INFO Running falcoctl driver install
falco |     | driver version: 7.2.0+driver
falco |     | driver type: modern_ebpf
falco |     | driver name: falco
falco |     | compile: true
falco |     | download: true
falco |     | target: undetermined
falco |     | arch: x86_64
falco |     | kernel release: 6.5.0-44-generic
falco |     | kernel version: #44-22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Tue Jun 18 14:36:16 UTC 2
falco | 2024-08-09 18:12:09 INFO No artifacts needed for the selected driver.
falco | 2024-08-09T18:12:09+0000: Falco version: 0.38.1 (x86_64)
falco | 2024-08-09T18:12:09+0000: Falco initialized with configuration files:
falco | 2024-08-09T18:12:09+0000: /etc/falco/falco.yaml
falco | 2024-08-09T18:12:09+0000: System info: Linux version 6.5.0-44-generic (buildd@lcy02-amd64-103) (x86_64-linux-gnu-gcc-12 (Ubuntu 12.3.0-1ubuntu1-22.04) 12.3.0, GNU ld (GNU Binutils for Ubuntu) 2.38) #44-22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Tue Jun 18 14:36:16 UTC 2
falco | 2024-08-09T18:12:09+0000: Loading rules from file /etc/falco/falco_rules.yaml
falco | 2024-08-09T18:12:09+0000: Loading rules from file /etc/falco/falco_rules.local.yaml
falco | 2024-08-09T18:12:09+0000: The chosen syscalls buffer dimension is: 8388608 bytes (8 MBs)
falco | 2024-08-09T18:12:09+0000: Starting health webserver with threadiness 8, listening on 0.0.0.0:8765
falco | 2024-08-09T18:12:09+0000: Loaded event sources: syscalls
falco | 2024-08-09T18:12:09+0000: Enabled event sources: syscalls
falco | 2024-08-09T18:12:09+0000: Opening 'syscalls' source with modern BPF probe.
falco | 2024-08-09T18:12:09+0000: One ring buffer every '2' CPUs.
```

This will display the logs for the `falco` service. Look for any startup messages or errors that might indicate issues.

Check Container Health

If you want to perform a more automated health check, you can create a custom script that tests basic functionality of Falco. For example:

docker-compose exec falco falco --version

```
root@Wissem-PC:~/devsecops-tools/11-scan-docker-image/falco# docker-compose exec falco falco --version
2024-08-09T18:24:27+0000: Falco version: 0.38.1 (x86_64)
2024-08-09T18:24:27+0000: Falco initialized with configuration files:
2024-08-09T18:24:27+0000: /etc/falco/falco.yaml
2024-08-09T18:24:27+0000: System info: Linux version 6.5.0-44-generic (buildd@lcy02-amd64-103) (x86_64-linux-gnu-gcc-12 (Ubuntu 12.3.0-1ubuntu1-22.04) 12.3.0, GNU ld (GNU Binutils for Ubuntu) 2.38) #44-22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Tue Jun 18 14:36:16 UTC 2
Falco version: 0.38.1
Libs version: 0.17.2
Plugin API: 3.6.0
Engine: 0.40.0
Driver:
  API version: 8.0.0
  Schema version: 2.0.0
  Default driver: 7.2.0+driver
root@Wissem-PC:~/devsecops-tools/11-scan-docker-image/falco#
```

This command will return the version of Falco, confirming that Falco is installed and accessible within the container.

Create the `docker-compose.yml` File

Create a file named `docker-compose.yml` in your desired directory. Paste the following content into this file:

Version: '3.7'

services:

elasticsearch:

image: docker.elastic.co/elasticsearch/elasticsearch:7.14.0

container_name: elasticsearch

environment:

- discovery.type=single-node
- xpack.security.enabled=false
- bootstrap.memory_lock=true
- "ES_JAVA_OPTS=-Xms512m -Xmx512m"
- ELASTIC_PASSWORD=elastic

ulimits:

memlock:

- soft: -1
- hard: -1

volumes:

- esdata:/usr/share/elasticsearch/data

ports:

- "9200:9200"
- "9300:9300"

networks:

- devsecops

logstash:

image: docker.elastic.co/logstash/logstash:7.14.0

container_name: logstash

volumes:

- ./logstash/pipeline:/usr/share/logstash/pipeline
- ./logstash/config:/usr/share/logstash/config

environment:

- ELASTIC_PASSWORD=elastic

ports:

- "5000:5000"
- "9600:9600"

networks:

- devsecops

depends_on:

- elasticsearch

kibana:

image: docker.elastic.co/kibana/kibana:7.14.0

container_name: kibana

environment:

- ELASTICSEARCH_URL=http://elasticsearch:9200
- ELASTIC_PASSWORD=elastic

ports:

- "5601:5601"

networks:

- devsecops

depends_on:

- elasticsearch

networks:

2. Explanation of the Docker Compose File

- **version:** '3.7': Specifies the version of the Docker Compose file format.
- **services:** Defines the services that will be run. Each service corresponds to a container.
 - **elasticsearch:**
 - **image:** Specifies the Docker image to use.
 - **container_name:** The name of the container.
 - **environment:** Sets environment variables inside the container.
 - **ulimits:** Configures resource limits for the container.
 - **volumes:** Mounts volumes to persist data.
 - **ports:** Maps container ports to host ports.
 - **networks:** Connects the container to a specific network.
 - **logstash:**
 - **image:** Specifies the Docker image to use.
 - **container_name:** The name of the container.
 - **volumes:** Mounts configuration files and pipelines from the host to the container.
 - **environment:** Sets environment variables inside the container.
 - **ports:** Maps container ports to host ports.
 - **depends_on:** Ensures that **elasticsearch** starts before **logstash**.
 - **kibana:**
 - **image:** Specifies the Docker image to use.
 - **container_name:** The name of the container.
 - **environment:** Sets environment variables inside the container.
 - **ports:** Maps container ports to host ports.
 - **depends_on:** Ensures that **elasticsearch** starts before **kibana**.
- **networks:** Defines the network configuration.
 - **devsecops:** Creates a bridge network named **devsecops**.
- **volumes:** Defines named volumes to persist data.
 - **esdata:** A volume used by Elasticsearch to store data.

Start the Services

Open a command line in the directory containing the `docker-compose.yml` file and run the following command to start the services:

```
docker-compose up -d
```

```
root@Wissen-PC:~/devsecops-tools/16-monitoring-and-logging/E-L-K# docker-compose up -d
[+] Running 35/3
  :: logstash Pulled                                1660.4s
  :: kibana Pulled                                  1333.0s
  :: elasticsearch Pulled                          1746.2s
[+] Running 7/7
  :: Network e-l-k_devsecops                        Created          0.1s
  :: Volume "e-l-k_logstash_config"                 Created          0.0s
  :: Volume "e-l-k_logstash_pipelines"              Created          0.0s
  :: Volume "e-l-k_elasticsearch_data"              Created          0.0s
  :: Container logstash                             Started          29.3s
  :: Container elasticsearch                         Started          29.4s
  :: Container kibana                               Started          1.1s
root@Wissen-PC:~/devsecops-tools/16-monitoring-and-logging/E-L-K#
```

```
root@Wissen-PC:~/devsecops-tools/16-monitoring-and-logging/E-L-K# docker-compose up -d
[+] Running 11/11
  :: elasticsearch Pulled                                751.6s
  :: 4fb807caa40a Already exists                        0.0s
  :: fe259c2cfb37 Pull complete                        28.9s
  :: 5a1f83eba229 Pull complete                        21.0s
  :: 23719bad09c Pull complete                         747.1s
  :: 239bfee9d5ad Pull complete                       747.1s
  :: a0b060ce44e0 Pull complete                       747.2s
  :: d79c49847382 Pull complete                       747.3s
  :: 54022f7ed62 Pull complete                        747.3s
  :: 1b3b32eb35fb Pull complete                       747.4s
  :: 1a692ef55082 Pull complete                       747.4s
[+] Running 3/3
  :: Container logstash                             Started          1.3s
  :: Container elasticsearch                         Started          1.3s
  :: Container kibana                               Started          1.0s
root@Wissen-PC:~/devsecops-tools/16-monitoring-and-logging/E-L-K# docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS
289321e8ad1e   docker.elastic.co/kibana:8.0.0      "/bin/tini -- /usr/L..." 4 minutes ago  Up 4 minutes  0.0.0.0:5601->5601/tcp, :::5601->5601/tcp
f003cbb77cad   docker.elastic.co/logstash:8.0.0    "/usr/local/bin/dock..." 4 minutes ago  Up 4 minutes  0.0.0.0:5044->5044/tcp, :::5044->5044/tcp, 9600/tcp
e4fa205ef955   docker.elastic.co/elasticsearch:8.0.0 "/bin/tini -- /usr/L..." 4 minutes ago  Up 4 minutes  0.0.0.0:9200->9200/tcp, :::9200->9200/tcp, 0.0.0.0:9300->9300/tcp, :::9300->9300/tcp
9b7bf85097b    jenkins-config-jenkins              "/usr/bin/tini -- /u..." 16 months ago  Up 13 hours   0.0.0.0:8080->8080/tcp, :::8080->8080/tcp, 0.0.0.0:50000->50000/tcp, :::50000->50000/tcp
c45ccbcee92b   portainer/portainer-ce:latest       "/portainer"             17 months ago  Up 13 hours   0.0.0.0:8000->8000/tcp, :::8000->8000/tcp, 0.0.0.0:9000->9000/tcp, :::9000->9000/tcp
root@Wissen-PC:~/devsecops-tools/16-monitoring-and-logging/E-L-K#
```

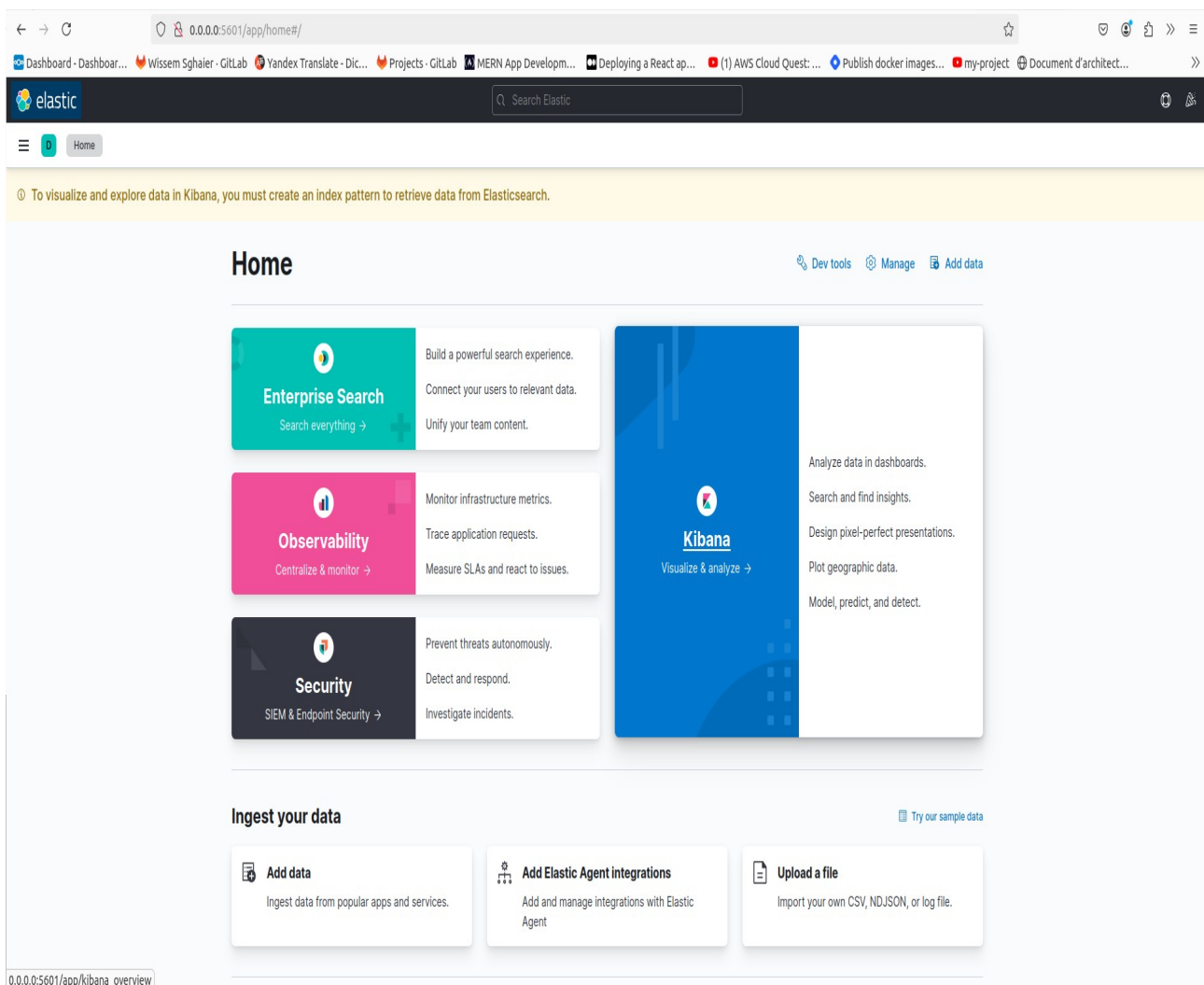
Access the ELK Stack

- **Elasticsearch:** Access Elasticsearch at <http://localhost:9200>.
- **Logstash:** Access Logstash at <http://localhost:5044> (typically used for HTTP input and output).
- **Kibana:** Access Kibana at <http://localhost:5601> to visualize and interact with data stored in Elasticsearch.

```
docker exec -it elasticsearch bin/elasticsearch-setup-passwords interactive
```

Access the Services:

- **Elasticsearch:** Open a web browser and navigate to `http://localhost:9200` to access Elasticsearch.
- **Logstash:** Open a web browser and navigate to `http://localhost:9600` to access Logstash's monitoring interface.
- **Kibana:** Open a web browser and navigate to `http://localhost:5601` to access Kibana.



1. Create `docker-compose.yml` File

Save the following configuration to a file named `docker-compose.yml`:

`profilpicture.png`

version: '3'

services:

elasticsearch:

image: docker.elastic.co/elasticsearch/elasticsearch:8.0.0

container_name: elasticsearch

environment:

- discovery.type=single-node
- ES_JAVA_OPTS=-Xms2g -Xmx2g # Set heap size to 2GB

ports:

- "9200:9200"
- "9300:9300"

volumes:

- elasticsearch_data:/usr/share/elasticsearch/data

networks:

- devsecops

logstash:

image: docker.elastic.co/logstash/logstash:8.0.0

container_name: logstash

ports:

- "5044:5044"

volumes:

- logstash_config:/usr/share/logstash/config
- logstash_pipelines:/usr/share/logstash/pipeline

networks:

- devsecops

kibana:

image: docker.elastic.co/kibana/kibana:8.0.0

container_name: kibana

ports:

- "5601:5601"

depends_on:

- elasticsearch

environment:

- ELASTICSEARCH_HOSTS=http://elasticsearch:9200
- ELASTICSEARCH_USERNAME=kibana
- ELASTICSEARCH_PASSWORD=kibana

networks:
- devsecops

volumes:
elasticsearch_data:
logstash_config:
logstash_pipelines:
kibana_data:

networks:
devsecops:
driver: bridge