Lab Exercise 22- Docker Image Vulnerability Scanning Using Trivy (Windows)

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Batch 2 DevOps

Objective

By the end of this lab, you will be able to:

- Install and configure **Trivy** on Windows
- Scan **Docker images** for vulnerabilities
- Interpret scan reports and take remediation actions

Prerequisites

- Windows 10/11 (with **Docker Desktop** installed and running)
- Internet access (Trivy downloads vulnerability databases)
- Basic familiarity with Docker CLI commands

Step 1: Verify Docker Setup

Before using Trivy, make sure Docker is working correctly.

```
docker --version

docker run hello-world
```

Expected Output:

Docker runs successfully and displays the “Hello from Docker!” message.

Step 2: Install Trivy on Windows

Manual Installation

1. Go to the official GitHub releases page:

   https://github.com/aquasecurity/trivy/releases
2. Download the Windows ZIP file (trivy_x.x.x_windows_amd64.zip)
3. Extract it (e.g., to C:\trivy)
4. Add that folder to your **System PATH** environment variable

Verify Installation

Open **PowerShell** and run:

```
trivy --version
```

Expected Output: Trivy version and build information.

Step 3: Pull a Docker Image

Let’s pull an image that we’ll scan:

```
docker pull nginx:latest
```

Check it’s downloaded:

```
docker images
```

Step 4: Scan Docker Image with Trivy

Now, run a vulnerability scan on the image:

```
trivy image nginx:latest
```

Explanation:

Trivy will:

- Fetch the latest vulnerability database
- Analyze all OS packages and libraries inside the image
- Display severity levels (LOW, MEDIUM, HIGH, CRITICAL)

Sample Output

nginx:latest (debian 12.2)

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Total: 12 (LOW: 2, MEDIUM: 4, HIGH: 5, CRITICAL: 1)

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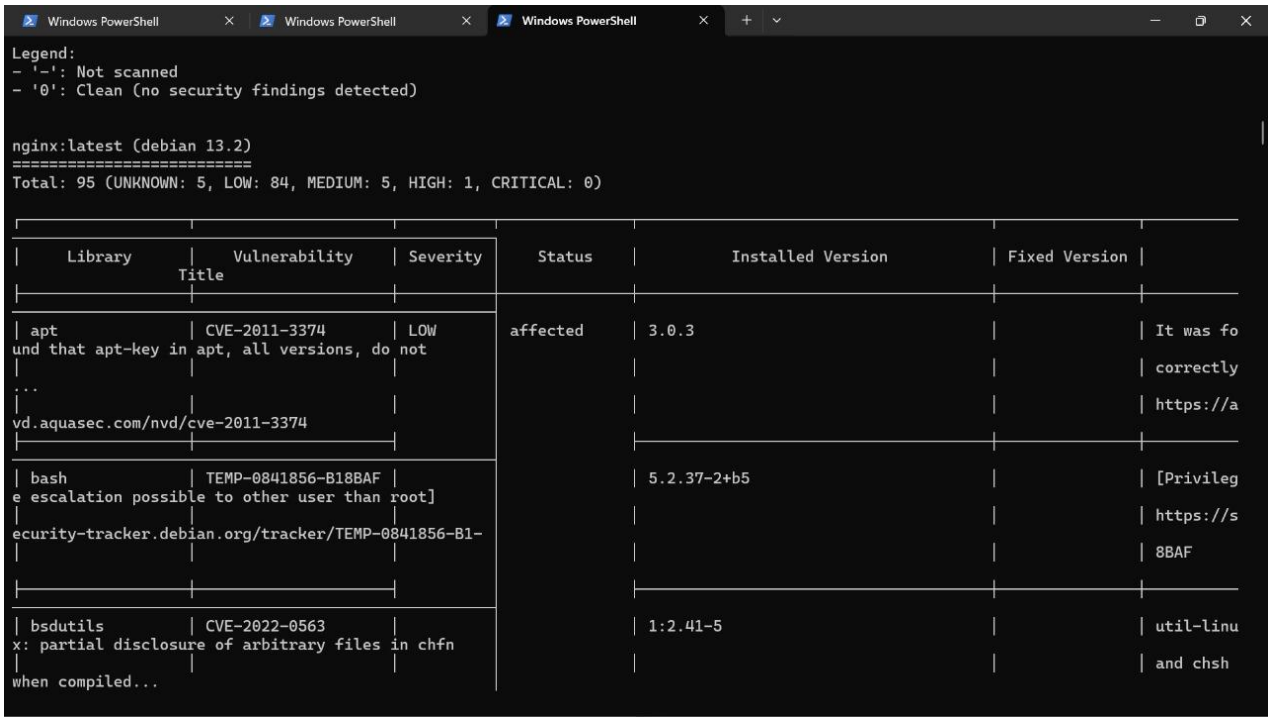
PACKAGE	VULNERABILITY ID	SEVERITY	INSTALLED VERSION	FIXED VERSION
openssl	CVE-2023-0464	HIGH	3.0.9-1	3.0.9-2
zlib	CVE-2022-37434	MEDIUM	1.2.11-5	1.2.12



Step 5: Save Report to a File

You can export the results in different formats.

Save as a text file:

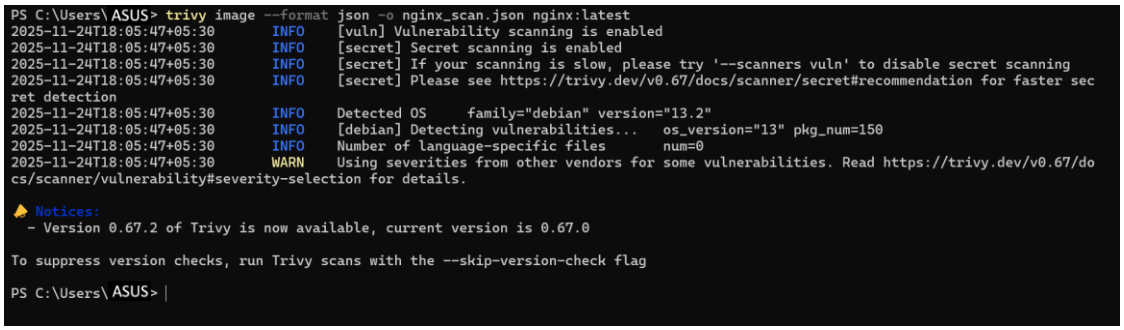
trivy image nginx:latest > nginx_scan.txt

```
PS C:\Users\ASUS> trivy image nginx:latest > nginx_scan.txt
2025-11-24T18:07:32+05:30       INFO    [vuln] Vulnerability sca
nning is enabled
2025-11-24T18:07:32+05:30       INFO    [secret] Secret scanning
 is enabled
2025-11-24T18:07:32+05:30       INFO    [secret] If your scannin
g is slow, please try '--scanners vuln' to disable secret scanni
ng
2025-11-24T18:07:32+05:30       INFO    [secret] Please see http
s://trivy.dev/v0.67/docs/scanner/secret#recommendation for faste
r secret detection
2025-11-24T18:07:32+05:30       INFO    Detected OS     family="
debian" version="13.2"
2025-11-24T18:07:32+05:30       INFO    [debian] Detecting vulne
rabilities...   os_version="13" pkg_num=150
2025-11-24T18:07:32+05:30       INFO    Number of language-speci
fic files       num=0
2025-11-24T18:07:32+05:30       WARN    Using severities from ot
her vendors for some vulnerabilities. Read https://trivy.dev/v0.
67/docs/scanner/vulnerability#severity-selection for details.

Notices:
  - Version 0.67.2 of Trivy is now available, current version is
 0.67.0

To suppress version checks, run Trivy scans with the --skip-vers
ion-check flag

PS C:\Users\ASUS>
```

Save as a JSON report:

trivy image --format json -o nginx_scan.json nginx:latest

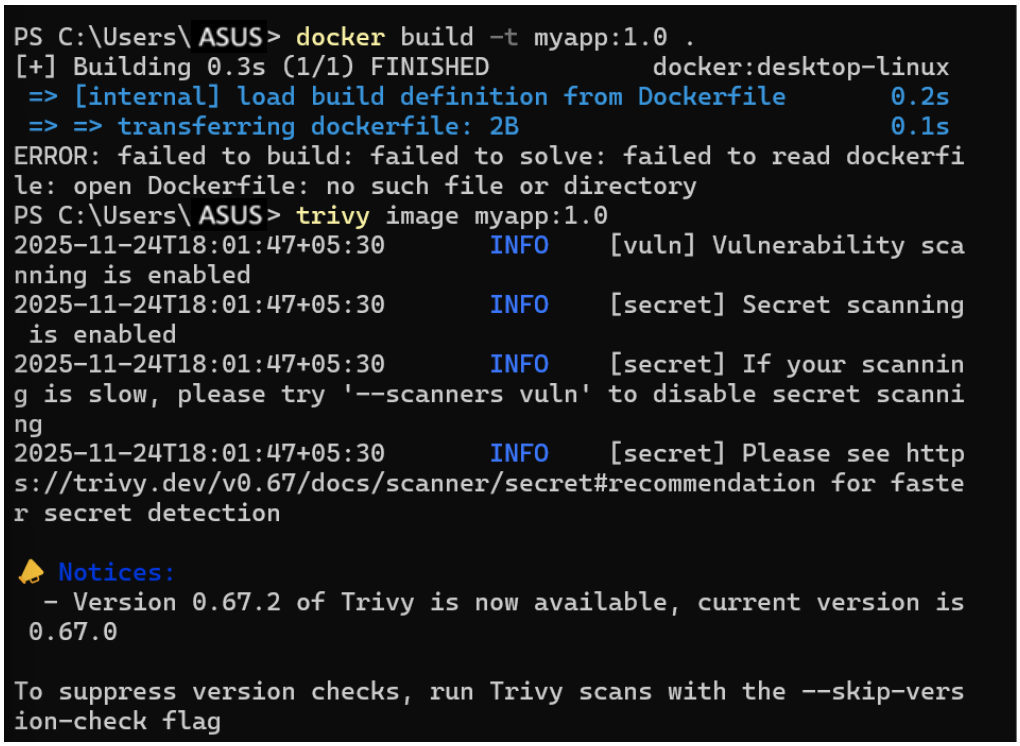
Tip: JSON format is useful for automation or CI/CD integration.



Step 6: Scan a Local Image

If you've built your own Docker image:

```
docker build -t myapp:1.0 .

trivy image myapp:1.0
```



Step 7: Update Vulnerability Database

Keep Trivy's database up-to-date:

```
trivy image --download-db-only
```

Step 8: Clean Up

Remove images (optional):

```
docker rmi nginx:latest
```