

Docker Security

Spoken Tutorial Project

<https://spoken-tutorial.org>

National Mission on Education through ICT

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Learning Objectives

In this tutorial, we will learn about



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- Security in Docker



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- Docker Content Trust and Image Signing



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In this tutorial, we will learn about

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- Docker Content Trust and Image Signing
- Tools for Security Scanning



System Requirements

To record this tutorial, I am using



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- **Ubuntu Linux OS 22.04**



System Requirements

To record this tutorial, I am using

- Ubuntu Linux OS 22.04
- Docker 27.0.2



Pre-requisites

To follow this tutorial,



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To follow this tutorial,

- You must have basic knowledge of using Linux terminal



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- For pre-requisite Linux tutorials, please visit this site

<https://www.spoken-tutorial.org/>



Security in Docker

- Security in Docker protects containerized apps from threats



Security in Docker

- Security in Docker protects containerized apps from threats
- It ensures data integrity and confidentiality



Docker Content Trust and Image Signing

- **Docker Content Trust i.e. DCT, allows you to verify the integrity**



Docker Content Trust and Image Signing

- Docker Content Trust i.e. DCT, allows you to verify the integrity
- It also verifies the publisher of Docker images through digital signatures



Docker Content Trust and Image Signing

- Docker Content Trust i.e. DCT, allows you to verify the integrity
- It also verifies the publisher of Docker images through digital signatures
- It ensures that only signed images are pulled and run



Tools for Security Scanning

Docker Scout:



Tools for Security Scanning

Docker Scout:

- It is integrated with Docker Hub



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- It scans images for vulnerabilities and provides detailed results



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Trivy:



Tools for Security Scanning

Docker Scout:

- It is integrated with Docker Hub
- It scans images for vulnerabilities and provides detailed results

Trivy:

- It is an open-source tool that scans Docker images for vulnerabilities



Summary

In this tutorial, we have learnt about

- Security in Docker
- Docker Content Trust and Image Signing
- Tools for Security Scanning



Assignment

As an assignment, please do the following

- Pull `nginx` image and scan it for vulnerabilities using `trivy` tool
- Save the output in `trivyReport.txt` file



Assignment Observation

```
user1p@pranjal-VirtualBox:~$ sudo docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
2d429b9e73a6: Pull complete
9b1039c85176: Pull complete
9ad567d3b8a2: Pull complete
773c63cd62e4: Pull complete
1d2712910bdf: Pull complete
4b0adc47c460: Pull complete
171eabbdf235: Pull complete
Digest: sha256:bc5eac5eafc581aeda3008b4b1f07ebba230de2f27d47767
129a6a905c84f470
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
```



Assignment Observation

```
user1p@pranjal-VirtualBox:~$ sudo docker run --rm -v /var/run/d  
ocker.sock:/var/run/docker.sock -v $(pwd)/trivy:/root/.cache/ g  
hcr.io/aquasecurity/trivy:latest image nginx:latest > trivyRepo  
rt.txt
```



Assignment Observation

```
Open ▾ | trivyReport.txt | [Settings] [Menu] [Close] [Maximize] [Fullscreen]
```

nginx:latest (debian 12.8)

=====

Total: 141 (UNKNOWN: 0, LOW: 95, MEDIUM: 28, HIGH: 16, CRITICAL: 2)

Library	Vulnerability	Severity	Status	Installed Version	Fixed Version	Title
apt	<u>CVE-2011-3374</u>	LOW	affected	2.6.1		It was found that apt-key in apt, all versions, do not



About the Spoken Tutorial Project

- Watch the video available at http://spoken-tutorial.org/What_is_a_Spoken_Tutorial
- It summarises the Spoken Tutorial project
- If you do not have good bandwidth, you can download and watch it



Spoken Tutorial Workshops

The Spoken Tutorial Project Team

- Conducts workshops using spoken tutorials
- Gives certificates to those who pass an online test
- For more details, please write to contact@spoken-tutorial.org



Answers for THIS spoken tutorial

- Questions in THIS Spoken Tutorial
- Please Visit <https://forums.spoken-tutorial.org>
- Choose the minute and second where you have the question
- Explain your question briefly
- The Spoken Tutorial project will ensure an answer
- You will have to register to ask questions



FOSSEE Forum

- For any general or technical questions on Docker, visit the FOSSEE forum and post your question
<https://forums.fossee.in/>



Acknowledgement

- **Spoken Tutorial Project was established by the Ministry of Education, Government of India**



Thank you

- **This is Pranjal Mahajan, a FOSSEE Semester Long Intern 2024, IIT Bombay**

