CONTAINER BASICS
Introduction to Containers

Container Basics

This section explores the container management systems Docker and Podman. The labs also cover the low-level components of the Docker system e.g. containerd, runc. Beginners will learn how to perform the basic operations like pushing, pulling, creating and running containers.

What will you learn?

- Using Docker client to perform basic operations including push, pull, build images and interacting with container/network
- Using podman to create, manage and interact with containers, images and networks
- Interacting with containerd to run containers
- Running Docker containers using Docker image with runc and umoci

References:

1. Why Docker? (https://www.docker.com/why-docker)
2. What is a container? (https://www.docker.com/resources/what-container)
3. Getting started with Docker (https://docs.docker.com/get-started/)
4. What is Podman? (https://podman.io/)
5. RunC runtime (https://github.com/opencontainers/runc)

Labs:

- Docker Basics Lab

  In this lab, you will learn to perform the basic operation with Docker CLI. A non-exhaustive list of topics to be covered includes:
  - Check Docker and Docker host information
  - Pull and list Docker images
  - Run and interact with container
  - List and inspect containers
  - List and manage networks
  - Build and push image
  - Commit a running container
  - Export image as tar
  - Remove image/container/network

- Containerd Basics Lab

  In this lab, you will learn to perform the basic operation with ctr (containerd) CLI. A non-exhaustive list of topics to be covered includes:
  - Check ctr version
  - Pull and list Docker images
  - Create and list container
  - Start, pause, resume, kill, delete task and attach to a task (running container)
  - Export image as tar
  - Push and delete Docker image

- Podman Basics Lab

  In this lab, you will learn to perform the basic operation with Podman CLI. A non-exhaustive list of topics to be covered includes:
  - Check Podman information
  - Pull and list images
  - Run and interact with container
  - List and inspect containers
  - List and manage networks
  - Build and push image

- [Containers With Runc]
  In this lab, you will learn to fetch and run a Docker image without using Docker. A non-exhaustive list of topics to be covered includes:
  - Using curl to list images/tags present on local Docker registry
  - Fetch the image using curl
  - Using umoci to convert OCI image to image bundle
  - Run the image using runc

Docker Basics Lab

Start

Containerd Basics Lab

Start

Podman Basics Lab

Start

Containers With Runc

Start

Multi Container Setups

Start

Cgroups and Namespaces

Start