



# Building Advanced Docker Skills

## SKILLSOFT ASPIRE JOURNEY

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# Building Advanced Docker Skills

Welcome to the Building Advanced Docker Skills Aspire Journey. For this journey, we assume that the learner is familiar with Docker and has either been through some beginning and intermediate training or has some experience configuring and deploying Docker solutions.

After completing this journey, learners will advance their skills in various Docker technologies, including Docker Compose, multi-Docker deployments within and outside the cloud, advanced security and administration topics, performance enhancement, and advanced debugging techniques. The Building Advanced Docker Skills Proficiency Aspire Journey will focus primarily on developer resources, including front and back end developers, full stack developers, and product/project managers. The latter primarily providing resourcing and project guidance.

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 14 courses | 16h 11m 46s



## Tracks



### Track 1: Advanced Docker Principles

In this track of the Building Advanced Docker Skills Skillsoft Aspire journey, the focus will be on advanced Docker best practices, advanced Docker Compose, and working with multiple Docker con...

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### Track 2: Advanced Docker Skills

In this track of the Building Advanced Docker Skills Skillsoft Aspire journey, the focus will be on advanced Docker administration, debugging Docker solutions, performance computing, advanced D...

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## PREREQUISITES

In order to fully profit from the potential of this Aspire Journey, we recommend the following prerequisite skills:

- Basic Docker knowledge

# Track 1: Advanced Docker Principles

In this track of the Building Advanced Docker Skills Skillsoft Aspire journey, the focus will be on advanced Docker best practices, advanced Docker Compose, and working with multiple Docker containers.

▶ 7 courses | 7h 42m 52s



**Colin Calnan**  
Senior Web Developer

## Advanced Docker: Exploring Advanced Docker Principles & Practices

### Objectives:

- describe Docker basic functionality and purpose
- recognize the common myths and misconceptions about Docker and its functionality
- identify main benefits of using Docker containers, multiple Docker containers, and the reasons for doing so
- describe what microservices are, their purpose, and reasons for use
- outline Docker architecture concepts and describe service and application decentralization
- describe functionality and concepts behind Docker multi-containers
- outline the common design patterns using Docker
- describe design patterns for API management using Docker
- describe design patterns for delineation of services using Docker
- describe design patterns for testing and monitoring Docker containers
- describe various strategies for configuring continuous integration strategies for Docker
- outline development, deployment automation, container, and security best practices using the multi-Docker approach



**Colin Calnan**  
Senior Web Developer

## Advanced Docker: Working with Services & Applications on Multiple Containers

### Objectives:

- describe the concept of multiple Docker containers
- describe the process for defining multiple Docker containers in the same solution
- outline one approach to running Docker containers in the same environment
- install and configure a simple application where services are running on two distinct Dockers, yet working together
- describe the principles of running an application using two Docker containers in the same cloud environment
- install and configure a simple application running two supporting services on two Docker containers in the same cloud environment
- describe the principles of running an application using two Docker containers in the two different cloud environment
- install and configure a simple application running two supporting services on two Docker container in two different cloud environments



**Colin Calnan**  
Senior Web Developer

## Docker Compose: Terminology & Installation

### Objectives:

- describe the concept of multiple Docker containers
- describe the process for defining multiple Docker containers in the same solution
- outline one approach to running Docker containers in the same environment
- install and configure a simple application where services are running on two distinct Docker containers, yet working together
- describe the principles of running an application using two Docker containers in the same cloud environment
- install and configure a simple application running two supporting services on two Docker containers in the same cloud environment
- describe the principles of running an application using two Docker containers in the two different cloud environments
- install and configure a simple application running two supporting services on two Docker container in two different cloud environments



**Colin Calnan**  
Senior Web Developer

## Docker Compose: Using Docker Compose

### Objectives:

- describe the available Docker and Docker Compose installation environments
- describe the fundamentals and key features of Docker Compose
- describe best practices when working with Docker Compose
- recognize the steps for defining, building, and completing a Docker Compose project
- describe the features of the Docker Compose CLI
- build a simple Python web application on Docker Compose
- build a simple PHP web application running on Apache 2 web server using Docker Compose
- build a Django/PostgreSQL application using Docker Compose
- build a Python Flask application using Docker Compose
- build a WordPress application using Docker Compose



**Boris Misljencevic**  
Big Data Consultant and Programming Expert

## Advanced Docker Principles: Multiple Docker Containers

### Objectives:

- provide an overview of the Docker platform as a service product
- list characteristics of container storage in Docker
- describe why you might have multiple Docker containers
- list and describe some popular multi-Docker scenarios
- provide an overview of Docker Compose and list its features
- provide an overview of common use cases for Docker Compose
- demonstrate how to build a simple Python web application running on Docker Compose
- demonstrate how to add new containers to a project
- demonstrate how to debug in Docker Compose
- demonstrate how to work with multiple Compose files
- review and describe a multi-application strategy
- describe considerations for customizing the Compose up command based on requirements



**Boris Misljencevic**  
Big Data Consultant and Programming Expert

## Advanced Docker Principles: Docker for Microservices Strategies

### Objectives:

- provide an overview of microservices in Docker and understand their value
- list common areas to address when designing a microservice architecture
- provide an overview on how Docker technology can help build a microservice architecture
- recognize how to stay in control of a complex environment powered by microservices
- recognize security challenges of microservices
- recognize why and how to benchmark microservices
- list common examples of Docker and microservices working together
- deploy Docker with multiple microservices
- recognize how to design individual services and how to avoid common mistakes



## Final Exam: Advanced Docker Principles

### Objectives:

- build a WordPress application using Docker Compose
- demonstrate how to add new containers to a project
- demonstrate how to deploy Docker with multiple microservices
- demonstrate how to work with multiple Compose files
- describe Docker basic functionality and purpose
- describe functionality and concept behind Docker multi-container
- describe some of the best practice when working with Docker Compose
- describe the available Docker and Docker Compose installation environments
- describe the components of the Docker environment
- describe the elements, features and purpose of Docker Compose
- describe the features of Docker
- describe the features of the Docker Compose CLI
- describe the fundamentals of Docker Compose and the key features
- describe the principles of running an application using two Docker containers in the two different cloud environment
- describe the process for defining multiple Docker containers in the same solution
- describe what microservices are, their purpose and reasons for use
- identify main benefits of using multiple Docker containers and reasons for doing so
- install the Docker system and Docker Compose on the Linux operating system
- install the Docker system, and Docker Compose on the Windows 10 Pro, Enterprise, and Education operating systems
- list characteristics of container storage in Docker
- list common areas to address when designing a microservice architecture
- outline best practices during deployment automation using a multi-Docker approach
- outline one approach to running Docker containers in the same environment
- provide an overview of common use cases for Docker Compose
- provide an overview of Docker Compose and list its features
- provide an overview of microservices in Docker and understand their value
- recall the concept of multiple Docker containers
- recognize how to work with multiple Compose files
- recognize security challenges of microservices
- recognize the common myths and misconceptions about Docker and its functionality

# Track 2: Advanced Docker Skills

In this track of the [Building Advanced Docker Skills](#) Skillsoft Aspire journey, the focus will be on advanced Docker administration, debugging Docker solutions, performance computing, advanced Docker orchestration, and advanced Docker security considerations.


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**Colin Calnan**  
Senior Web Developer

## Advanced Docker Skills: Advanced Docker Administration

### Objectives:

- describe continuous integration and how it relates to Docker, Docker Hub, and Docker Compose
- describe Docker's lifecycle in continuous integration
- describe Docker security challenges and how to configure security and Transport Layer Security (TLS) options
- describe the Docker Hub and the process of building, managing, and distributing Docker images
- build, manage, and distribute Docker images
- describe the Docker architecture and the Docker daemon
- describe Docker content trust, trust delegation, how to deploy a notary, and trust key management
- describe storage management with Docker, including volumes, bind mounts, and tmpfs mounts
- describe the administration of Docker networking components, services, and containers
- configure Docker to use the default bridge network
- configure Docker to use a user-defined bridge network

**Joe Khoury**  
IT / Business Expert

## Advanced Docker Skills: Debugging Docker Solutions

### Objectives:

- describe the 'art and science' of troubleshooting infrastructure solutions and common troubleshooting strategies
- describe strategies, methods, and tools for debugging infrastructure solutions
- describe common Docker issues and solutions to resolve them
- describe the main files for Docker logs and how to manage log levels
- describe the options for logging drivers that can be used with Docker
- describe how to troubleshoot Docker images and Docker deployments
- describe how to troubleshoot Kubernetes-managed deployments that use Docker containers
- describe some of the common tools used to troubleshoot Docker
- describe how to troubleshoot common Docker deployment issues
- troubleshoot common issues with the Dockerfile and use techniques to resolve these issues
- troubleshoot common Docker container naming issues and use techniques to resolve these issues
- troubleshoot common Docker communication issues and use techniques to resolve these issues



**Bill Brooks**  
Senior Software Developer

### Advanced Docker Skills:

Performance  
Troubleshooting

#### Objectives:

- describe the history and purpose of performance engineering
- describe various techniques for using performance engineering
- describe tips and techniques for applying performance engineering to Docker containers
- describe how to manage Docker resources to help prevent performance issues
- describe some common Docker performance issues
- describe how to diagnose and resolve common Docker performance issues
- describe some of the tools that can be used for performance testing on Docker containers
- describe some common tools for monitoring Docker containers
- use the ManageEngine monitoring tool to monitor Docker containers
- use the Prometheus monitoring tool to monitor Docker containers
- optimize a Docker container running MySQL
- optimize a Docker container running WordPress



**Bill Brooks**  
Senior Software Developer

### Advanced Docker Skills:

Docker Performance  
Optimization

#### Objectives:

- describe why performance needs to be part of the design and planning process
- describe some best practices for designing Docker containers
- describe the common bottlenecks encountered when running Docker containers
- describe some best practices when performance optimization with Docker containers
- describe some of the considerations to take when planning for Docker performance
- describe considerations for scaling and capacity planning Docker containers in a production environment
- describe the different methods for Docker orchestration and how it relates to performance optimization
- configure Docker swarm and add nodes, as well as deploy, inspect, scale and delete services
- describe some of the considerations to take when planning for Docker storage performance
- describe some of the considerations to take when planning for Docker network performance
- configure and use bridge networks
- configure and use overlay networks



**Bill Brooks**  
Senior Software Developer

## Docker Skills: Advanced Docker Orchestration

### Objectives:

- describe the purpose for using orchestration with Docker
- describe orchestration and cluster management tools and services
- describe various orchestration tools such as Kubernetes, Marathon, ECS, and Nomad, as well as how they can be used to manage clusters
- recognize reasons and use cases for using multiple Docker containers
- describe how to work with multiple Docker hosts
- describe the purpose of the Docker swarm
- set up and create a Docker Swarm and add nodes
- describe the options for configuring the Docker network to work with multiple containers
- describe how cloud providers manage and automate orchestration compared to Swarm
- describe how to manage backups, remote access, and upgrades in multi-container environments
- deploy an application stack to a swarm
- deploy services to a swarm



**Bill Brooks**  
Senior Software Developer

## Docker Skills: Advanced Docker Security

### Objectives:

- describe some of the traditional software development models such as client server applications and REST-based web services, as well as how much of each model still applies to Docker
- compare the features, benefits, and challenges of using virtual machines versus Docker to deploy applications
- describe some major Docker security concerns and methods for hardening Docker containers
- describe aspects of Docker security planning, specifically during the design phases of a project, such as daemons, kernel namespaces, control groups, trust signatures, and underlying infrastructure dependencies
- describe the purpose of Docker content trust and how to digitally sign images
- describe the purpose of the Docker daemon and methods for ensuring it is secure
- describe the purpose of the Docker kernel namespaces and methods for ensuring they are secure
- describe Docker Seccomp profiles and why are they important
- describe AppArmor profiles and why are they important
- configure Seccomp security profiles for Docker
- configure AppArmor security profiles for Docker



## Final Exam: Advanced Docker Practices

### Objectives:

- compare the features, benefits and challenges of using Virtual Machines versus Docker to deploy applications
- demonstrate how to configure AppArmor security profiles for Docker
- demonstrate how to configure Docker swarm and how to add nodes and deploy, inspect, scale and deleted services
- demonstrate how to set up and create a Docker Swarm, add nodes, deploy services, inspect services, scales services and delete services in a Docker Swarm
- demonstrate how to use the ManageEngine monitoring tool to monitor Docker containers
- demonstrate how to use the Prometheus monitoring tool to monitor Docker containers
- describe administering Docker networking components, services and containers
- describe and define Docker security challenges and how to configure security and Transport Layer Security (TLS) options
- describe and review Docker's lifecycle in continuous integration
- describe common docker issues and solutions to resolve these issues
- describe considerations for scaling and capacity planning Docker containers in a production environment
- describe continuous integration and how it relates to docker, docker hub, and docker compose
- describe how to manage Docker resources to help prevent performance issues
- describe some best practices for designing docker containers
- describe some best practices when performance optimization with Docker containers
- describe some common docker performance issues
- describe some major Docker security concerns and methods for hardening Docker containers
- describe some of the considerations to take when planning for Docker network performance
- describe the Docker architecture and the Docker daemon
- describe the features of the Kubernetes container cluster management tool
- describe the history and purpose of performance engineering
- describe the purpose of the Docker Daemon and methods for ensuring it is secure
- describe the purpose of the Docker swarm
- describe the reasons and Use Cases for using multiple Docker containers
- discuss AppArmor profiles, what they are, and why are they important
- discuss orchestration and cluster management tools and services
- Docker Troubleshooting Tools
- troubleshoot common Docker communication issues and learn techniques to resolve these issues
- troubleshoot common Docker Container naming issues and learn techniques to resolve these issues
- troubleshoot common issues with the Dockerfile and learn techniques to resolve these issues

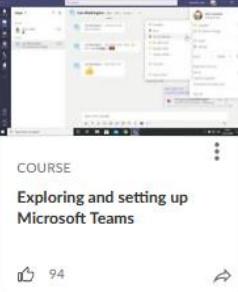
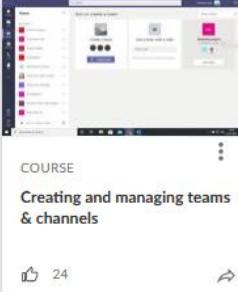
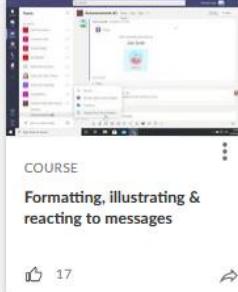
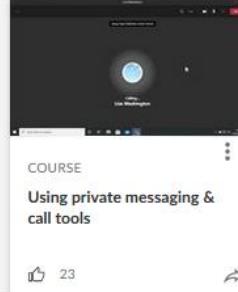
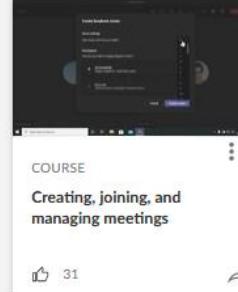
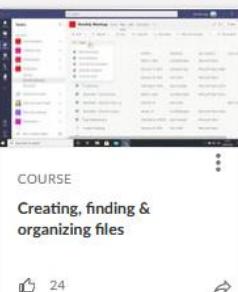
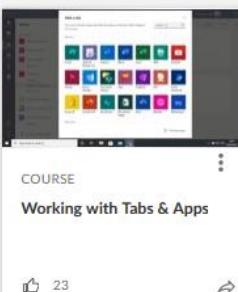
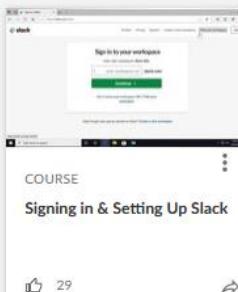
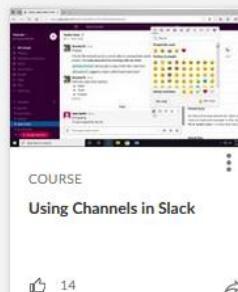
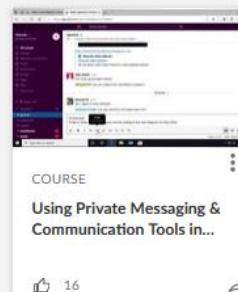
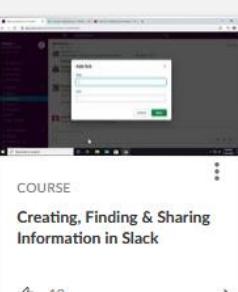
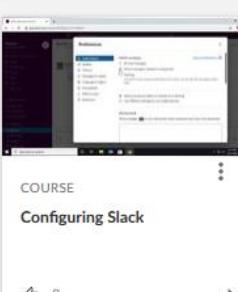
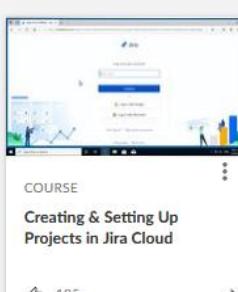
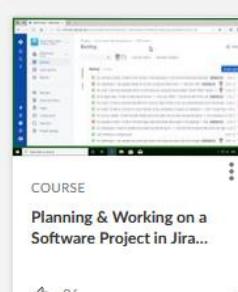
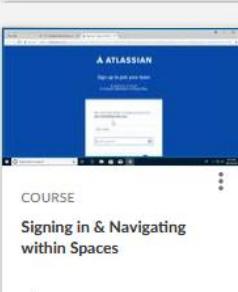
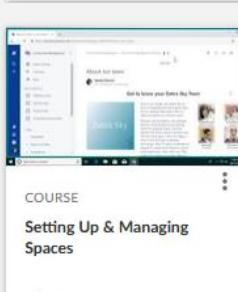
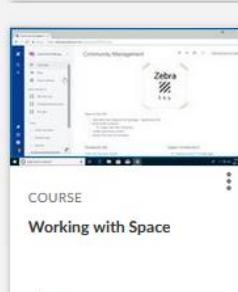
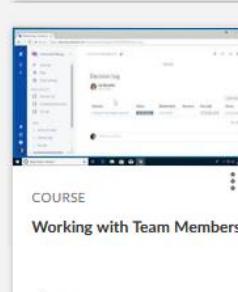
# Business & Leadership for Building Advanced Docker Skills

Optional

 <p>COURSE Improving Your Technical Writing Skills  540</p>	 <p>COURSE Getting to the Root of a Problem  968</p>	 <p>COURSE Big Data Interpretation  780</p>	 <p>COURSE Being an Effective Team Member  1739</p>	 <p>COURSE Developing and Supporting an Agile Mindset  1123</p>
 <p>COURSE Trust Building through Effective Communication  2250</p>	 <p>COURSE Agile Project Planning  1176</p>	 <p>COURSE Choosing and Using the Best Solution  635</p>	 <p>COURSE Encouraging Team Communication and...  1658</p>	 <p>COURSE Managing for Operational Excellence  458</p>
 <p>COURSE Enabling Business Process Improvement  979</p>	 <p>COURSE Finding the Quality in Your Data  200</p>			

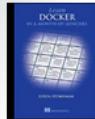
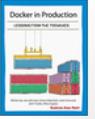
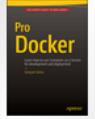
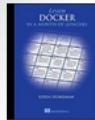
# Productivity Tools for Building Advanced Docker Skills

Optional

 <p>COURSE Exploring and setting up Microsoft Teams  Like 94 Share</p>	 <p>COURSE Creating and managing teams &amp; channels  Like 24 Share</p>	 <p>COURSE Formatting, illustrating &amp; reacting to messages  Like 17 Share</p>	 <p>COURSE Using private messaging &amp; call tools  Like 23 Share</p>	 <p>COURSE Creating, joining, and managing meetings  Like 31 Share</p>
 <p>COURSE Creating, finding &amp; organizing files  Like 24 Share</p>	 <p>COURSE Working with Tabs &amp; Apps  Like 23 Share</p>	 <p>COURSE Signing in &amp; Setting Up Slack  Like 29 Share</p>	 <p>COURSE Using Channels in Slack  Like 14 Share</p>	 <p>COURSE Using Private Messaging &amp; Communication Tools in...</p>
 <p>COURSE Creating, Finding &amp; Sharing Information in Slack  Like 10 Share</p>	 <p>COURSE Configuring Slack  Like 8 Share</p>	 <p>COURSE Creating &amp; Setting Up Projects in Jira Cloud  Like 185 Share</p>	 <p>COURSE Configuring &amp; Managing Boards in Jira Cloud  Like 118 Share</p>	 <p>COURSE Planning &amp; Working on a Software Project in Jira...</p>
 <p>COURSE Reporting in Jira Software  Like 94 Share</p>	 <p>COURSE Signing in &amp; Navigating within Spaces  Like 46 Share</p>	 <p>COURSE Setting Up &amp; Managing Spaces  Like 36 Share</p>	 <p>COURSE Working with Space  Like 30 Share</p>	 <p>COURSE Working with Team Members  Like 82 Share</p>
 <p>COURSE Configuring Spaces  Like 21 Share</p>				

## Bookshelf

Optional

 <p>BOOK Docker Deep Dive: Zero to Docker in a Single Book!</p> <p>1 like 3 views</p>	 <p>BOOK Learn Docker in a Month of Lunches</p> <p>1 like 2 views</p>	 <p>BOOK Docker Deep Dive</p> <p>32 likes 32 views</p>	 <p>BOOK Docker in Practice, Second Edition</p> <p>17 likes 17 views</p>	 <p>BOOK Docker in Action, Second Edition</p> <p>7 likes 7 views</p>
 <p>BOOK DevOps and Containers Security: Security and...</p> <p>3 likes 3 views</p>	 <p>BOOK Accelerating Development Velocity Using Docker...</p> <p>2 likes 2 views</p>	 <p>BOOK Docker for Data Science: Building Scalable and...</p> <p>4 likes 4 views</p>	 <p>BOOK Docker in Production: Lessons from the Trenches</p> <p>6 likes 6 views</p>	 <p>BOOK Pro Docker</p> <p>72 likes 72 views</p>
 <p>BOOK Docker Deep Dive: Zero to Docker in a Single Book!</p> <p>3 likes 3 views</p>	 <p>BOOK Learn Docker in a Month of Lunches</p> <p>2 likes 2 views</p>	 <p>BOOK Docker Deep Dive</p> <p>32 likes 32 views</p>	 <p>BOOK Docker in Practice, Second Edition</p> <p>17 likes 17 views</p>	 <p>BOOK Docker in Action, Second Edition</p> <p>7 likes 7 views</p>

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