CN110: Docker Swarm Application Essentials

Course Content

Course Description:

In this course, you'll learn what a containerized application looks like when orchestrated by Docker Swarm. We'll cover scheduling workloads across a cluster, networking stateless and stateful applications, provisioning dynamic configuration and persistent storage, and scaling highly available applications in this course intended to set a strong foundation in orchestration for all technical roles.

At Course Completion:

Students will learn:
- Setting up and configuring a Swarm
- Deploying workloads on Swarm
- Networking Swarm workloads
- Provisioning dynamic configuration
- Provisioning persistent storage
- Application rollout and upgrade
- Advanced scheduling control

Prerequisites:
- CN100 course or equivalent experience
- Familiarity with the Bash shell
- Filesystem navigation and manipulation
- Command line text editors like vim or nano
- Common tooling like curl, wget and ping
- Familiarity with YAML and JSON notation

Target Student:
- Motivations: Develop, operate, or manage scalable containerized applications orchestrated by Docker Swarm
- Roles: General technical audiences & IT professionals

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Course ID #: 7000-450-ZZ-Z

Hours: 7

Topics:

Setting up and configuring a Swarm
- Operational priorities of container orchestration
- Containerized application architecture
- Swarm scheduling workflow & task model
- Automatic failure mitigation
- Swarm installation & advanced customization

Deploying workloads on Swarm
- Defining workloads as services
- Scaling workloads
- Container scheduling control
- Rolling application updates and rollback
- Application healthchecks
- Application troubleshooting
- Deploying applications as Stacks

Networking Swarm workloads
- Swarm service discovery and routing implementation
- Routing strategies for stateful and stateless workloads
- Swarm ingress traffic

Provisioning dynamic configuration
- Application configuration design
- Environment variable management
- Configuration file management
- Provisioning sensitive information

Provisioning persistent storage
- Storage backend architecture patterns
- NFS backed Swarms

Monitoring Swarm
- What to monitor in production-grade Swarms
- Potential Swarm failure modes & mitigations
- Swarm workload monitoring