BTECH TRAINING

Study Plan

Kubernetes Administration (K9-ADM)

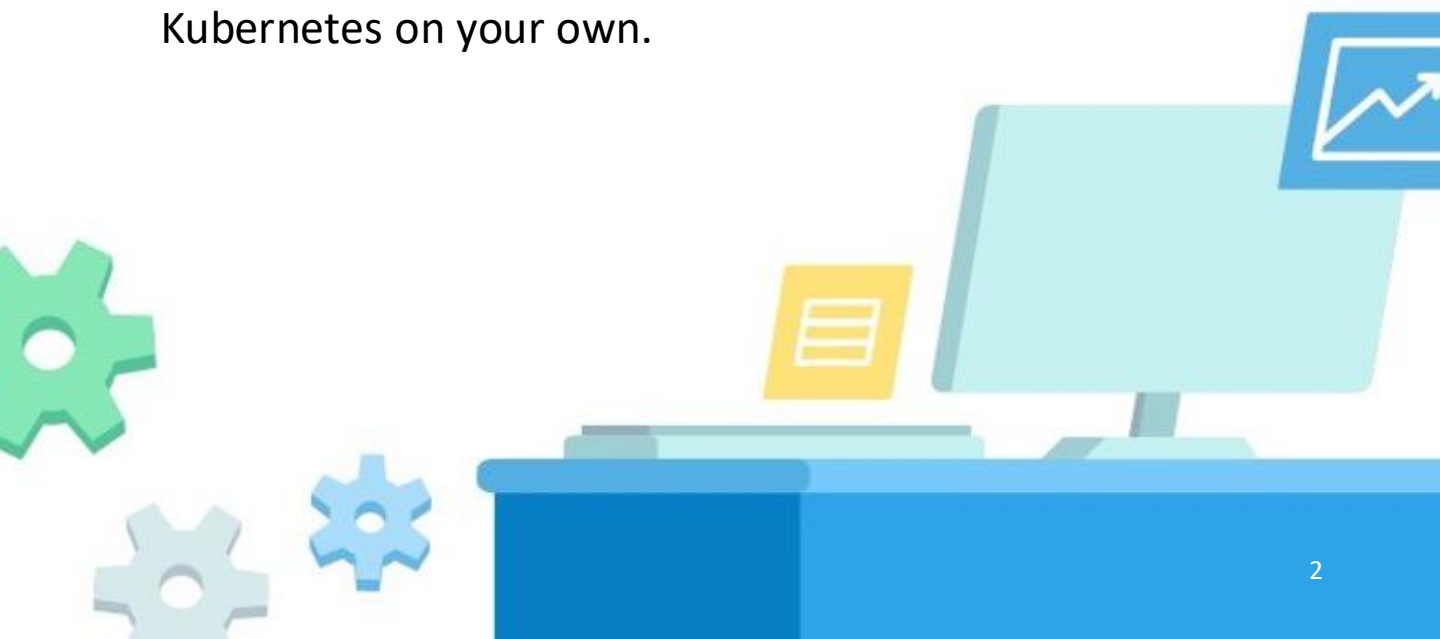
boer technology

www.btech.id

About This Course

This course will teach you how to use the container management platform used by companies like Google to manage their application infrastructure. This course covers the fundamentals needed to understand Kubernetes and get quickly up-to-speed, to start building distributed applications that will scale, be fault-tolerant, and be simple to manage. From understanding its origin to its high-level architecture, powerful API, and key primitives.

This course takes you from nothing to being in a position to start building complex applications. This course will distill key principles, such as pods, deployments, replica sets, and services, and will give you enough information so that you can start using Kubernetes on your own.



Summary

Training Duration: 32 Hours (4 Days)

Course Main Subjects

- Introduction to Kubernetes
- Installing Kubernetes with kubeadm
- Kubernetes Deployment
- How to access the cluster
- Kubernetes Services
- Kubernetes Advanced Scheduling
- Kubernetes deployments using the Helm package manage.
- Preparing Certified Kubernetes Administrator Exam

Target Audience

System Administrators, Cloud Administrators, Developers, Site Reliability Engineer.

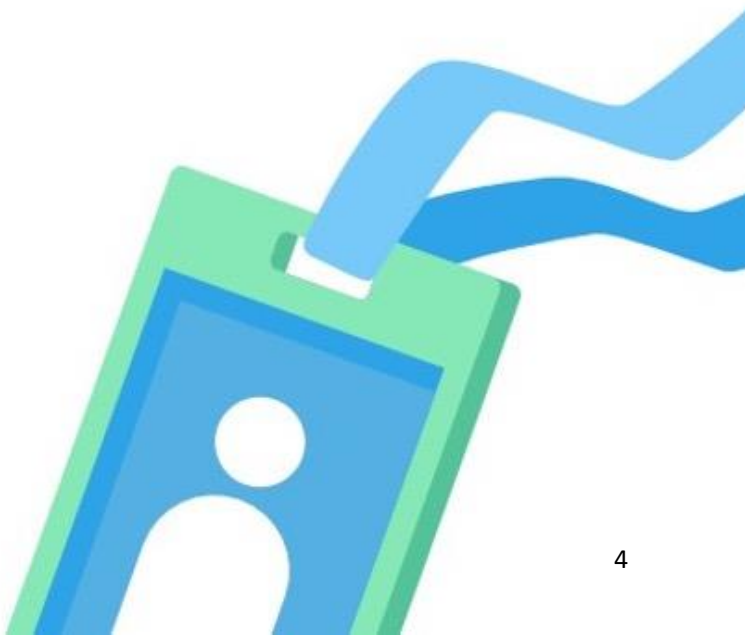
Prerequisites

- Docker for Administration (DO-ADM)

Learning Output

The learning topics will assist participants in :

1. Understanding how to deploy Kubernetes Cluster
2. Understanding how to setup K8s Load Balancer.
3. Management Kubernetes Cluster.



Technical Requirements

Participants must have a laptop or computer with the following minimum specifications and tools installed:

Specification	Details
Operating System	Windows, Linux, or MacOs
Processor	Intel Core i3
Memory	4 GB RAM
SSH Client	Termius / Putty / MobaXTerm
Text Editor	Sublime Text / VSCode
Browser	Chrome and Firefox
VPN (Optional)	https://client.pritunl.com/

Facilities and Resources

Participants will have access to the following resources on and after the training:

- **Virtual machine lab** : Available until H+5 post-training for hands-on practice and experimentation.
- **Discussion group** : Available until H+30 post-training for ongoing support and collaboration with peers.
- **Class materials** : Access to all class materials for 1 year (start day one training)
- **Certificate** : Participants will receive a certificate of completion upon finishing the course.
- **Recording Class** : Access to recorded sessions for review and reinforcement of learning.

Terms and Conditions

Course Purchase Rules

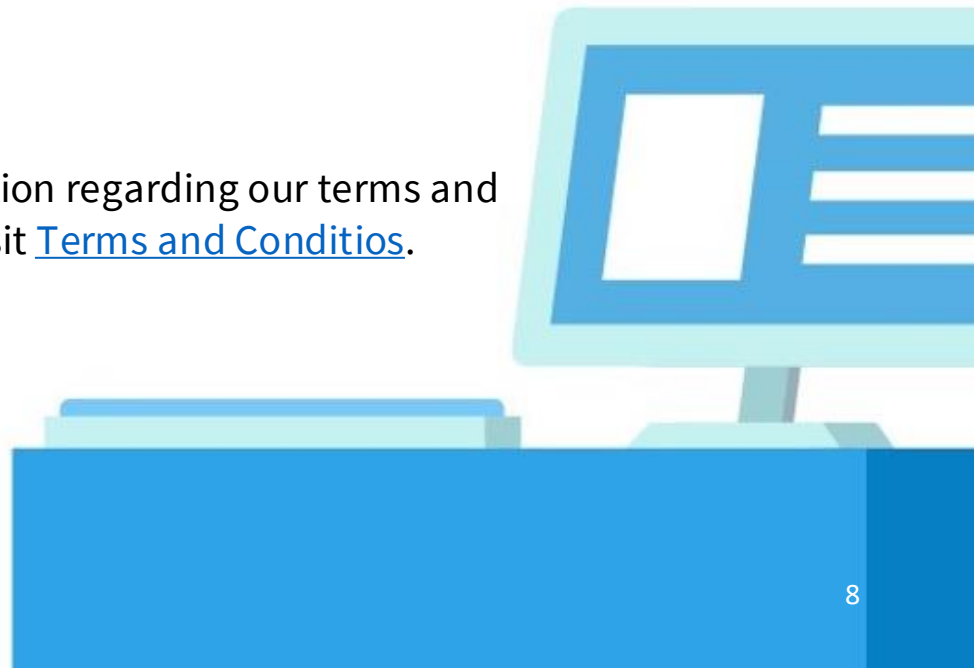
- **Registration**:
  Participants must register through the official ADINUSA website and fill out the registration form with accurate and complete information.
- **Payment**:
  Course payment must be made in full before access to training materials is granted. Accepted payment methods include bank transfer, credit card, and digital payment.
- **Purchase Confirmation**:
  After payment is received, participants will receive a confirmation email containing course details and instructions for accessing the materials.
- **Schedule Changes**:
  ADINUSA reserves the right to change the course schedule or replace instructors if necessary. Participants will be notified of such changes via email or whatsapp.

Terms and Conditions

Access Management

- **Access License**:
  Each participant will be granted an access license for 1 year, starting from the date of registration. This license includes access to all relevant training materials.
- **Use of Materials**:
  Training materials may only be used for personal purposes and may not be distributed, sold, or published without written permission from ADINUSA.
- **Account Security**:
  Participants are responsible for maintaining the confidentiality of their account information. ADINUSA is not liable for any losses arising from unauthorized account use.
- **Access Termination**:
  ADINUSA reserves the right to terminate a participant's access to training materials if violations of the applicable terms and conditions are found, including but not limited to unauthorized distribution of materials.

For detailed information regarding our terms and conditions, please visit Terms and Conditios.



Certification

Upon successful completion of the course, participants will receive two certificates with validation 2 years:

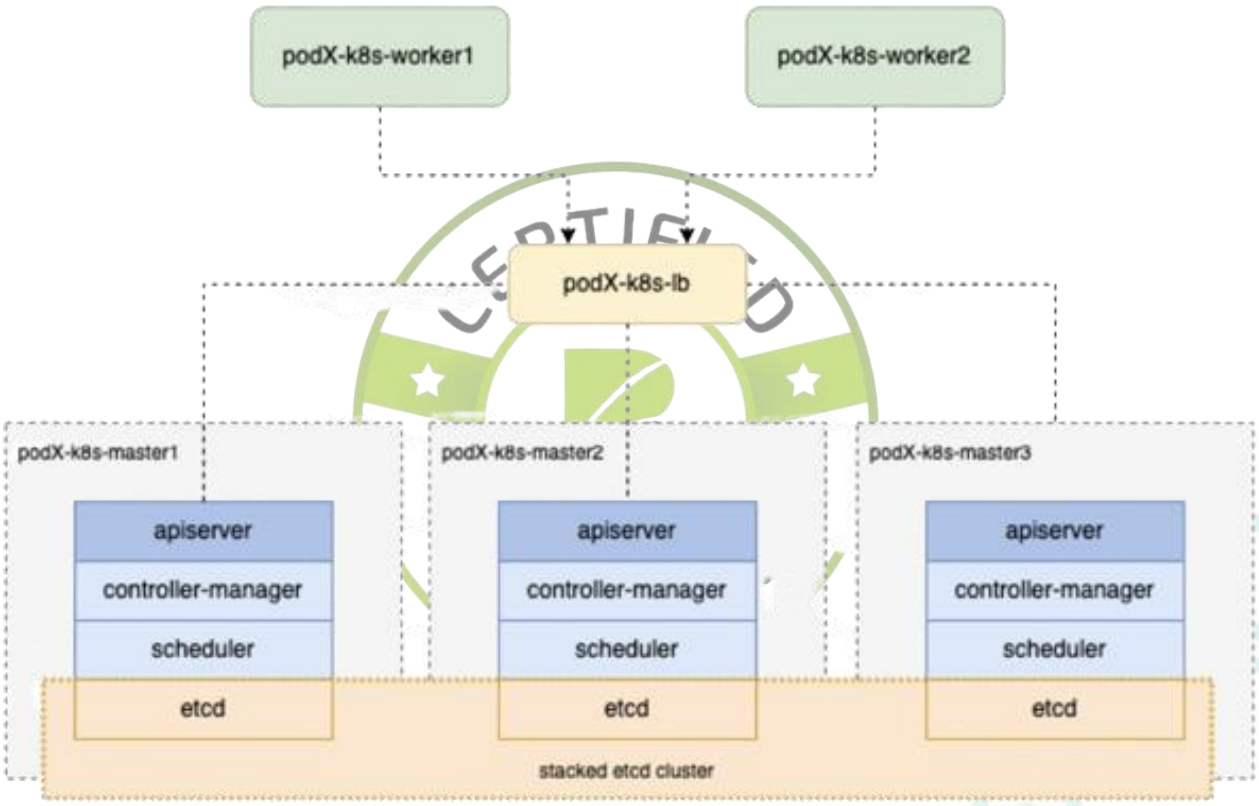
Physical Certificate

Digital Certificate

Learning Strategies

- Pre-Test
- Theory
- Hands-on Lab
- Post-Test
- Internal Exam
- Reporting
- Forum Discussion

Training Topology



Learning Modules

Training Plan	
Topic	**Outcome**
Introduction	• Understand the fundamentals of containers and container orchestration. • Learn Kubernetes terminology, its role in orchestration, and community involvement. • Explore tools and the Cloud Native Computing Foundation's impact on containerized applications.
Kubernetes Architecture	• Understand the main components of Kubernetes, including control plane, nodes, and services. • Learn about Pods, containers, and networking within Kubernetes clusters. • Gain hands-on experience in preparing environments and configuring Kubernetes clusters.
Kubernetes Installation and Configuration	• Learn Kubernetes installation using kubeadm, upgrading clusters, and configuring a pod network. • Configure Kubernetes nodes, including master and worker nodes, along with load balancer setup. • Gain hands-on experience in deploying microservices and managing Kubernetes dashboards.

Kubernetes APIs and Access	• Understand Kubernetes API access, including RESTful methods and using annotations for external access. • Learn how to manage namespaces and API resources with kubectl. • Practice accessing the Kubernetes API, creating pods, and working with namespaces through hands-on labs.
API Objects	• Learn how to deploy applications using DaemonSets, StatefulSets, and Autoscaling in Kubernetes. • Understand and implement Role-Based Access Control (RBAC) for managing permissions. • Practice deploying applications and configuring RBAC through hands-on labs.
Managing State with Deployments	• Understand deployment concepts, including object relationships, configuration specs, and scaling. • Learn how to manage rolling updates, rollbacks, and use DaemonSets for application deployment. • Gain hands-on experience with ReplicaSets, DaemonSets, and managing deployment updates through labs.
Volumes and Data	• Understand Kubernetes volumes, including types, persistent volumes (PV), and persistent volume claims (PVC). • Learn how to manage configuration data with ConfigMaps and secure sensitive information using Secrets. • Gain hands-on experience with creating and using ConfigMaps, Secrets, and Persistent Volumes through labs and quizzes.

Kubernetes Service	• Understand Kubernetes Service types: ClusterIP, LoadBalancer, and NodePort. • Learn how to expose services externally and use DNS for service discovery. • Practice creating and exposing Kubernetes services through hands-on labs.
Ingress	• Understand Ingress resources and how to create Ingress rules for traffic routing. • Learn how to define multiple Ingress rules for managing different services. • Practice setting up an Ingress controller and exposing applications using Ingress in hands-on labs
Scheduling	• Understand the kube-scheduler, scheduling policies, and how to use node labels and affinity rules for pod placement. • Learn about taints, tolerations, and how they control pod deployment across nodes. • Practice assigning pods using labels and applying taints/tolerations through hands-on labs.
Cluster & Security	• Understand cloud-native security concepts, including authentication, authorization, and security policies in Kubernetes. • Learn about Admission Controllers, security contexts, and network security policies to secure Kubernetes environments. • Gain hands-on experience with security contexts, metrics server installation, autoscaling, and Kubernetes cluster upgrades.

Thank You

Explore our full course offerings in the training catalog:

https://adinusa.id/pro-training/catalogue

For further assistance, please contact us at:
Phone: +62 8111123242
Email: kontak@adinusa.id