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INSTITUTE OF PROFESSIONAL CERTIFICATIONS

CERTIFIED KUBERNETES LEADER™

CKL™

**Fully Accredited
By:**

Chartered Institute of
Professional Certifications

CPD
Certification Service





PROGRAM OVERVIEW



Kubernetes is one of the highest trending technologies in Cloud Computing as of today with 173% growth in key skills required in job searches from a year before. This **Certified Kubernetes Leader (CKL™)** is a **highly sought-after certification** that will help you architect and kickstart the deployment of Kubernetes across your organization today.

Using a combination of case studies, liberating structures and hands-on experience, you will gain key knowledge and competency to become an effector administrator of your organization's Kubernetes clusters while **understanding the foundation of administrating, install and configure Kubernetes settings to your system**. This program will also help you to discover how to **control access to the Kubernetes API server through Role-based Access Control (RBAC) and Kubernetes Clusters to harness your system security**. In addition, you will also walk away with **best deployment approaches of your Kubernetes in the Cloud infrastructure and subsequently enable you to scale your deployment with upgraded Kubernetes clusters**. By the end of this program, you are also able to use the Kubernetes Network model and identify networking problems that need to be addressed using Kubernetes Cluster Networking.

After completing this program and upon passing the Chartered exam, you will have earned the **Certified Kubernetes Leader (CKL™)** designation which you can use to demonstrate your professional credentials and track record in managing Kubernetes environments as a successful Kubernetes leader and administrator.

ACCREDITATIONS



4.8




4.6



KEY SKILLS YOU WILL GAIN

From This Program



**KUBERNETES ADMINISTRATION
KUBERNETES INSTALLATION
KUBERNETES CONFIGURATION
ROLE-BASED ACCESS CONTROL**

**HIGHLY AVAILABLE CLUSTERS
KUBERNETES DEPLOYMENTS
CONFIGMAPS
PODS MANAGEMENT**

**CLUSTER NETWORKING
KUBERNETES SERVICE MANAGEMENT
INGRESS CONTROL MANAGEMENT
CLUSTER DNS**

**CONTAINER NETWORK INTERFACE
KUBERNETES STORAGECLASS
KUBERNETES RESOURCES
REPLICASET CREATION
KUBERNETES NETWORKING MODEL**

**PERSISTENTVOLUMECLAIM
MULTICLOUD
KUBEADM**

YOUR FACULTY DIRECTOR



NIRANJAN PANDEY

Faculty Leader and Contributor

Niranjan Pandey has over **20 years of experience** in the IT industry. As a **Chief Cloud Technologist**, he has handled many Design, Development, Build, Integration, Release, Delivery Management, and Migration of DevOps tools involving cloud infrastructure services such as AWS, Azure and GCP.

As a **leading DevOps expert**, he has **designed and implemented the DevOps platform** (automating build, deployment automation, test, SDLC orchestration, environment management, monitoring, and production release procedures) for large organizations. With his mastery over App containerization technology, Niranjan has helped multiple businesses **build and automate microservices, taking DevOps to the Next Level with Docker and Kubernetes.**

He has extensive expertise in setting up configuration and management tools like **Chef, Puppet, Jenkins, and Ansible**; Writing puppet manifests, implementing Puppet agent-based and agentless configurations. He's well-versed in the optimization of enterprise Redhat OpenShift systems. Being a maven in Ansible, he has provisioned AWS environments using Ansible Playbooks. He has also helped design, implement and migrate scalable enterprise monitoring systems like Splunk.

Niranjan is **one of the most sought-after mentors and consultants for DevOps** in the technology circles. He is also presently serving as an **advisor and a member of the board of directors for many technology firms.**

OUR PARTICIPANTS

Over 70% of FORTUNE 500 Companies Have Attended Our Accredited Programs Before



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ExxonMobil



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Life is our life's work



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PROGRAM AGENDA



MODULE 1: KUBERNETES IN MULTI-CLOUD ENVIRONMENTS

- Lesson 1 - Kubernetes Architecture And Components
- Lesson 2 - Kubernetes Cluster Patterns Management Tools And Features
- Lesson 3 - Production Deployments Patterns
- Lesson 4 - Multicloud Challenges And Role Of Kubernetes
- Lesson 5 - Patterns Of Kubernetes Deployment
- Lesson 6 - Deployment Strategy Fixed And Recreate
- Lesson 7 - Kubernetes Deployment With Zero Downtime
- Lesson 8 - Deployment And Testing Of The Canary
- Lesson 9 - Federation Of Kubernetes Clusters
- Lesson 10 - Single Node Cluster Installation And Configuration
- Lesson 11 - Patterns Of Extension And Operators

MODULE 2: KUBERNETES FUNDAMENTALS FOR ADMINISTRATORS

- Lesson 1 - Monolithic Applications' Challenges
- Lesson 2 - Changing From A Monolith To A Microservices Architecture
- Lesson 3 - Orchestration Of Containers
- Lesson 4 - Options For Container Orchestration
- Lesson 5 - The Cloud Native Computing Foundation's Function
- Lesson 6 - Features And Components Of Kubernetes
- Lesson 7 - Installation And Configuration Options For Kubernetes

- Lesson 8 - Evaluating The Kubernetes Workloads Solution
- Lesson 9 - Using Containers To Install Kubernetes All-In-One
- Lesson 10 - Using Kubectl To Create And Manage Deployments
- Lesson 11 - Pods In Kubernetes
- Lesson 12 - Services For Kubernetes
- Lesson 13 - Putting Together A Kubernetes Service

MODULE 3: KUBERNETES CLUSTER INSTALLATION & CONFIGURATION

- Lesson 1 - Runtime Interface For Containers
- Lesson 2 - Container States And The Lifecycle Of Pods
- Lesson 3 - Workloads In Kubernetes
- Lesson 4 - Tools For Kubernetes
- Lesson 5 - Kubernetes Tool Installation And Configuration
- Lesson 6 - Creating A Kubernetes Cluster With Kubectl
- Lesson 7 - Kubectl: Finding And Connecting To Kubernetes
- Lesson 8 - Node.js With Linux And Windows
- Lesson 9 - Using Kubectl As A Proxy
- Lesson 10 - LimitRange And Pod Configuration After Creating A Namespace
- Lesson 11 - Annotation And Labels
- Lesson 12 - Label Selectors And Labels

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MODULE 4 - MANAGING ROLE-BASED ACCESS CONTROL

- Lesson 1 - Authorization And Modes In Kubernetes
- Lesson 2 - Controlling Access To The Kubernetes API In Stages
- Lesson 3 - Querying The Authorization Layer Of The API
- Lesson 4 - RBAC In Kubernetes: Implementation Principles
- Lesson 5 - RBAC In Kubernetes: Implementation Components
- Lesson 6 - Creating Roles
- Lesson 7 - Creating RoleBinding
- Lesson 8 - Creating ClusterRole
- Lesson 9 - Creating ClusterRoleBinding
- Lesson 10 - RBAC Objects Retrieval
- Lesson 11 - Using Kubeconfig To Manage User Access
- Lesson 12 - Aggregated ClusterRoles Implementation
- Case Study 1 - Retail Company's Case Study To Streamline Access To All Of The Tools

MODULE 5 - MANAGING HIGHLY-AVAILABLE KUBERNETES CLUSTER

- Lesson 1 - Kubectl Commands For Cluster Management
- Lesson 2 - HA Architecture In Kubernetes
- Lesson 3 - Setup Methods For Kubernetes HA Clusters
- Lesson 4 - HA Topologies In Kubernetes
- Lesson 5 - Control Plane Components
- Lesson 6 - Installing A Load Balancer

- Lesson 7 - Stacked Control Plane Initialization
- Lesson 8 - Using External Etcd To Set Up Clusters
- Lesson 9 - Installing Workers
- Lesson 10 - Etcd's Properties And Role In Kubernetes
- Lesson 11 - Putting Together Three Node Etcd Clusters
- Lesson 12 - Backup Approach
- Lesson 13 - Cluster Restoration Snd Snapshot

MODULE 6 - UNDERLYING INFRASTRUCTURE FOR KUBERNETES CLUSTER

- Lesson 1 - Considerations For Deployment
- Lesson 2 - Deployment Of Kubernetes In The Cloud
- Lesson 3 - Provisioning Components
- Lesson 4 - Provisioning Approaches And Node Features
- Lesson 5 - Exploring Output And Viewing Node Status
- Lesson 6 - Default CPU Requests And Limits Configuration
- Lesson 7 - Creating Quotas For Total Memory And CPU Use
- Lesson 8 - Quota For The Total Number Of Pods
- Lesson 9 - Setting CPU Resource Minimum And Maximum Values
- Lesson 10 - Upgrading Clusters
- Lesson 11 - Kubernetes Cluster Control Plane Nodes Upgrade
- Lesson 12 - Kubelet & Kubectl Upgrades On Control Plane Nodes
- Lesson 13 - Kubectl, Kubelet, And Kubectl Upgrades On Worker Nodes

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MODULE 7 - MANAGING KUBERNETES DEPLOYMENTS

- Lesson 1 - Deployment Methodologies For Kubernetes
- Lesson 2 - Workload Resource
- Lesson 3 - Make A Deployment And A Replica Set
- Lesson 4 - View And Update Your Deployment Status
- Lesson 5 - Examine The Rollout And Rollback Of An Update
- Lesson 6 - Rollback Of Deployment
- Lesson 7 - Lifecycle And Stages Of Deployment
- Lesson 8 - Pod Management And Resource Definition Customization
- Lesson 9 - Workload Situations With StatefulSet
- Lesson 10 - Scale Particular Statefulset And List Statefulset
- Lesson 11 - Diagnostic Instructions For Pods
- Lesson 12 - Putting Together An Autoscaler

MODULE 8 - CONFIGURING AND USING CONFIGMAPS AND KUBERNETES SECRETS

- Lesson 1 - Introduction To ConfigMaps
- Lesson 2 - Using The Kubectl Command, Create A Configmap
- Lesson 3 - Creating Config Map With The Help Of A Generator
- Lesson 4 - Configmap Used In Defining A Container env Variable
- Lesson 5 - Create ConfigMap With Several Key-Value Pairs
- Lesson 6 - Volume In A ConfigMap To Populate

- Lesson 7 - Describe The Type Of Kubernetes Secrets
- Lesson 8 - Utilising A Secret File To Generate Secret
- Lesson 9 - Using SecretGenerator To Create Secret
- Lesson 10 - Establish A Pod That Has Access To Confidential Information
- Lesson 11 - Container Containing Several Secrets
- Lesson 12 - Create imagePullSecrets And Add imagePullSecrets

MODULE 9 - SCALING AND MANAGING KUBERNETES RESOURCES

- Lesson 1 - Scale Deployment
- Lesson 2 - Scale StatefulSets
- Lesson 3 - Define Horizontal Pod Autoscaler
- Lesson 4 - DaemonSet Concepts
- Lesson 5 - RollingUpdate Is Used To Generate A DaemonSet
- Lesson 6 - Make A Job Out of A Configuration File
- Lesson 7 - Using A Statefulset Controller To Observe Downtime Resistance Of Replicated Topologies
- Lesson 8 - Garbage Collector In Kubernetes
- Lesson 9 - Deleting In A Cascade Fashion
- Lesson 10 - Kubernetes Resource Types And Units
- Lesson 11 - Using Kustomize Tool
- Lesson 12 - Imperative Commands
- Lesson 13 - Service Catalog Using Helm
- Lesson 14 - Templating Tools

MODULE 10 - MANAGING POD AND DEPLOYMENTS

- Lesson 1 - Replicaset Creation And Verification
- Lesson 2 - Removing a Pod

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Lesson 3 - Use HPA To Scale Up/Down Pods
Lesson 4 - Build Copies For Deployment And Scaling
Lesson 5 - Scheduling In Kubernetes
Lesson 6 - Kubernetes User Account Creation
Lesson 7 - To Schedule Pods, Utilise The Label Selector
Lesson 8 - Taint A Node
Lesson 9 - Limit Resources Of Pod
Lesson 10 - Manually Schedule A Pod
Lesson 11 - Use Environmental Variables With Pod
Lesson 12 - Create And Use Secret With Pod
Case Study 2 - Case Study On Telecom Provider To Operate The Same Product On Different Infrastructures Without Changing The Product Itself

MODULE 11 - CONFIGURE NETWORKING AND SERVICES

Lesson 1 - Model Of The Kubernetes Network
Lesson 2 - Kubernetes Networking Model Implementation Technologies
Lesson 3 - Container-To-Container And Pod-To-Pod Networking Are Both Available
Lesson 4 - Network Spaces
Lesson 5 - Implement Pod Networking
Lesson 6 - Pod Networking Problems And Leveraging A Cloud-Native Discovery Service
Lesson 7 - Define The Service And Map
Lesson 8 - Multiple Port Definition
Lesson 9 - Exploring EndPointSlices
Lesson 10 - Kubernetes ServiceTypes
Lesson 11 - Configure NodePort And LoadBalancer
Lesson 12 - Create An Internal TCP Load Balancer

MODULE 12 - KUBERNETES SERVICE MANAGEMENT

Lesson 1 - Using The Kubectl Expose Command, Build A Service
Lesson 2 - Finding Service
Lesson 3 - Create ClusterIP Service
Lesson 4 - Create NodePort Service
Lesson 5 - Create LoadBalancer Service
Lesson 6 - Create ExternalName Service
Lesson 7 - Object Management For ServiceAccounts
Lesson 8 - Add imagePullSecrets To The Service Account
Lesson 9 - Account Automation For Service
Lesson 10 - Using The Kubectl Command To Manage API Tokens
Lesson 11 - Kubernetes Service Catalogue
Lesson 12 - Instance Of Managed Service Plan And Provisioning

MODULE 13 - INGRESS AND CLUSTER DNS AND CNI MANAGEMENT

Lesson 1 - Ingress' Role And Requirements
Lesson 2 - Ingress Controllers
Lesson 3 - Make A New Ingress Resource And Update It
Lesson 4 - HostName Wildcards And Path Types
Lesson 5 - Ingress Resource Configuration
Lesson 6 - Features Of CoreDNS
Lesson 7 - Kube-DNS Vs. CoreDNS
Lesson 8 - Kubeadm Is Used To Install CoreDNS

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Lesson 9 - Upgrade DNS Service
Lesson 10 - Network Plugins In Kubernetes
Lesson 11 - CNI For Kubernetes
Lesson 12 - Configuring Network Policies

MODULE 14 - MANAGING STORAGECLASS AND VOLUME

Lesson 1 - Kubernetes StorageClass
Lesson 2 - Storage Class And Volume Types
Lesson 3 - Copy Local File To Pod
Lesson 4 - Volume And Supported Types In
Kubernetes
Lesson 5 - Volumes And Volume Expansion/Binding
Lesson 6 - Create A Pod And Set The Volume
Lesson 7 - Create A PersistentVolume Using The
HostPath
Lesson 8 - Creating A PersistentVolumeClaim
Lesson 9 - Configure It To Generate A Pod With
PersistentVolumeClaim Enabled
Lesson 10 - Volume And Claim's Lifecycle
Lesson 11 - VolumeSnapshot's Function
Lesson 12 - Existing CSI Volumes Cloning
Case Study 3 - eCommerce Site To Increase Its
Efficiency And Technology Operations

EXAMINATION

YOUR CHARTER DESIGNATION



Chartered Institute of Professional Certification's programs are unique as they provide you with professional charter designation and mark that can be used across your lifetime once you have completed our programs.

After completing the program and passing the exam, you will be awarded the **Certified Kubernetes Leader (CKL™) Designation charter** that can be used in your resume, CV and other professional credentials. This designation is a global accreditation with industry-recognized and lifelong validity.

Globally demanded and recognized, this designation will help you distinguish your skillsets and show that you have attained expertise in **Kubernetes installation, configuration and management of Kubernetes clusters that can orchestrate your app containers physical or virtual machines across multiple hosts.**

ABOUT US

49,525

Business Leaders Have Attained Their Chartered Certifications Since 2009

390

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of Our Programs

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