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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

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The CPD Certification Service

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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

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 Kubeadm
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

PROGRAM AGENDA

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 - Kubeadm 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 - Kubeadm, 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 ManagementAnd 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
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By the vested power in the Board of Governors of Chartered Institute of Professional Certifications, the Advisory Board, Faculty and Curriculum Committee, do hereby certify

Juliana Silva

Has Been Conferred the Designation of

Certified Kubernetes Leader™

CKL™

Has satisfied all the examination and experience requirements, and is duly admitted and license to use this charter, board certificate, and membership credentials

And has committed to abide by the membership declaration of ethics, rules of professional conduct and continuing education requirements as a member of Chartered Institute of Professional Certifications

Chair of the Board

CKL™ CERTIFIED KUBERNETES LEADER™

Director

Chartered Institute of Professional Certifications is unique as they provide you with professional charter designation and mark that can be used across your lifetime once your 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 Certified and Fully Accredited Programs

87% Chartered Leaders Have Reported Career Promotions and Enhancements

Chartered Institute of Professional Certifications

All of Chartered Institute of Professional Certifications programs are fully accredited programs. The professional charter and designations are trademarked credentials that can only be used by professionals who have completed and passed our accredited program. It is also independently accredited by CPD as adhering to the highest standards of continuing professional principles.

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OUR FACULTY DIRECTORS

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We Thank You for Your Ongoing Support of Our Programs

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