VMWA-51 - VSPHERE KUBERNETES SERVICE: DESIGN, DEPLOY AND OPERATE [V9.0]

Categoria: **VMware**

INFORMAZIONI SUL CORSO

Durata:	Categoria:	Qualifica Istruttore:	Dedicato a:	Produttore:
5 Giorni	VMware	VMware Certified Instructor	Professionista IT	VMware

OBIETTIVI

By the end of the course, you should be able to meet the following objectives:

- -Identify the key components of a Kubernetes architecture
- -Explain Volumes and persistent storage mechanisms in Kubernetes
- -Explain Kubernetes networking
- -Explain the concepts and components of vSphere Supervisor
- -Explain the vSphere Supervisor authentication workflow using vCenter Single Sign-On
- -Explain the key features of VCF Consumption CLI
- -Describe the vSphere Supervisor deployment models
- -Identify the vSphere Supervisor networking and load-balancing requirements
- -Explain the vSphere Supervisor storage options including cross Datacenter topologies
- -Outline the steps to configure vSphere Namespaces and Zones
- -Explain the VCF Cloud Services enablement options
- -Identify available Services in vSphere Supervisor including Velero and Extensible Services
- -Explain how the vSphere Supervisor is monitored and upgraded.
- -Explain the VM creation workflow with VM Service
- -Outline the VM Service deployment models for Virtual Machines with configurable OVF Properties
- -Explain how to deploy a vSphere Pod using kubectl and expose it through a Load Balancer IP
- -Describe how building an extensible ecosystem enables organizations to deploy cloud-native applications with integrated services
- -Explain how VKS Cluster monitoring functions and how standard packages are managed
- -Describe VKS Cluster provisioning using TanzuKubernetesCluster and ClusterClass
- -Describe the application deployment workflow using Helm
- -Describe the steps for creating snapshots in VKS Cluster
- -Explain the process of upgrading the VKS Version
- -Outline the steps to update VKS Cluster using VCF CLI
- -Explain how VKS cluster management enables platform engineers to manage VKS clusters at scale
- -Outline the process for installing Istio on a VKS cluster.
- -Illustrate how to visualize the Istio Service Mesh using Kiali.
- -Explain how to use the Gateway API to configure traffic routing within Istio the service mesh.

PREREQUISITI

This course has the following prerequisites:

-Working experience and knowledge of VMware vSphere®, VMware NSX®, and vSAN environments.

CONTENUTI

Module 1. Course Introduction

-Introductions and course logistics

-Course objectives

Module 2. Kubernetes Overview

-Differentiate between containers and virtual machines

-Describe Docker workflow, including the build, ship, and run processes

-Explain Container Networking concepts

-Describe Container Runtime Interface (CRI) and the containerd role in Kubernetes

-Identify the key components of a Kubernetes architecture

-Describe different Kubernetes objects and their purposes

-Explain the functionality of Services in Kubernetes

-Explain Volumes and persistent storage mechanisms in Kubernetes

-Explain Kubernetes networking

-Describe Antrea, Calico, and Multus CNI plug-ins

-Describe the whereabouts IPAM plug-in

-Describe Istio Service Mesh

-Explain Helm Package Manager

Module 3. VCF Cloud Services Overview

-Describe vSphere Supervisor

-Explain the concepts and components of vSphere Supervisor

-Explain the Services in vSphere Supervisor

-Outline the hierarchy of vSphere Supervisor folders

-Explain the identity providers supported by vSphere Supervisor

-Define the roles and permissions within vSphere Namespaces

-Explain the vSphere Supervisor authentication workflow using vCenter Single Sign-On

-Explain the key features of VCF Consumption CLI

Module 4. vSphere Supervisor Deployment Models

-Describe vSphere Supervisor deployment model with NSX VPC networking

-Describe vSphere Supervisor deployment model with NSX Segment networking

-Outline vSphere Supervisor deployment model with VDS and Foundation Load Balancer

-Outline vSphere Supervisor deployment model with NSX and Avi Load Balancer

-Outline vSphere Supervisor deployment model with VDS and Avi Load Balancer

-Describe the requirements for the networking stack with NSX VPC Networking

-Outline the requirements for the networking stack with NSX Segment Networking

-Outline the requirements for the networking stack with VDS Networking

-Explain the Load Balancer options

-Outline the requirements for Avi Load Balancer

-Outline the requirements for Foundation Load Balancer
-Explain the vSphere Supervisor Zone Deployment Models
-Outline the vSphere Supervisor Zone Model Attributes
-Describe the vSphere Supervisor Control Plane Availability Models

Module 5. VCF Cloud Services Enablement Options
-Explain how to activate the vSphere Supervisor when creating a Workload Domain
-Describe the workflow for deploying a vSphere Supervisor with NSX VPC and NSX Load Balancer.
-Explain how to connect to the vSphere Supervisor using the VCF CLI.
-Outline the deployment process for a vSphere Supervisor using an NSX segment.
-Explain the workflow for deploying a vSphere Supervisor with VDS and the Foundation Load Balancer.
-Describe the deployment process for a vSphere Supervisor with NSX and Avi Load Balancer.
-Explain how to deploy a vSphere Supervisor using VDS and Avi Load Balancer.
-Illustrate how to deploy a vSphere Supervisor from an exported configuration.

Module 6. vSphere Supervisor Storage Topologies
-Describe the Storage Options for vSphere Supervisor in VCF
-Explain the concepts and components of the Storage Topologies for vSphere Zones and vSphere Supervisor
-Describe the integration of vSphere Storage and vSphere Supervisor
-Outline the Data Persistence for vSphere Supervisor in vSphere Zones
-Identify the supported topologies when running vSphere Supervisor on top of vSAN clusters

Module 7. Configuring and Managing vSphere Namespaces and Zones
-Explain the steps to create a vSphere Namespace on the vSphere Supervisor
-Explain the steps to set Resource and Object Limits to a vSphere Namespace
-Outline the steps to add Security Policies to an NSX vSphere Namespace
-Outline the procedure to add a cluster as a vSphere Zone to a vSphere Supervisor
-Describe the steps required to associate a vSphere Zone with a vSphere Namespace
-Explain the workflow for removing a vSphere Zone from a vSphere Namespace and vSphere Supervisor

Module 8. Services in vSphere Supervisor
-Define vSphere Kubernetes Service (VKS) and its key features
-Explain the architecture of VKS
-Explain the VKS Cluster topology with vSphere Zones
-Identify networking and load-balancing options for VKS clusters
-Explain storage policy configurations for VKS clusters
-Outline the VKS Core and Standard packages
-Describe the integrated backup and restore solution
-Identify considerations for vSphere Supervisor protection (backup and restore)
-Describe the process of protecting the vSphere Supervisor Control Plane
-Outline the design considerations for protecting VKS service clusters with Velero
-Outline the design considerations for protecting VM service VMs with Velero
-Identify the extensible services you can run on top of vSphere Supervisor
-Outline the requirements for the extensible services

Module 9. Monitoring and Lifecycle Management of vSphere Supervisor
-Explain monitoring and managing resources in a vSphere Namespace from vCenter
-Describe how vSphere Supervisor monitoring works
-Explain monitoring of vSphere Supervisor from VCF Operations

-Explain the vSphere Supervisor update Options
-Outline the steps to configure a Subscribed Content Library for Supervisor Images
-Outline the steps for updating the vSphere Supervisor
-Outline the steps for setting the Default CNI for VKS Clusters
-Explain the process of registering a Supervisor Service to vCenter Server
-Explain the process of installing a Supervisor Service to vCenter Server
-Explain the process of upgrading a Supervisor Service to vCenter Server
-Explain the process of deactivating a Supervisor Service to vCenter Server
-Outline the backup and restore methods for vSphere Supervisor

Module 10. Managing Virtual Machines with VM Service

-Differentiate between traditional VMs and API-driven declarative VMs
-Explain the features of VM Service
-Explain the architecture of VM Service
-Explain the VM creation workflow with VM Service
-Explain the VM deployment process
-Explain the process of deploying a VM with configurable OVF properties in vSphere Supervisor
-Describe vSphere Pod storage and networking
-Outline the steps to create a vSphere Namespace and configure resource limits
-Explain the steps for creating VM Classes
-Explain how to deploy a vSphere Pod using kubectl and expose it through a Load Balancer IP

Module 11.Multi-Tenancy in VCF

-Describe Multi-Tenancy in VCF
-Explain the VCF Private Cloud experience for each persona
-Explain the relationship between vSphere Supervisor instances, Regions, and Zones
-Describe the different types of Organizations in VCF Automation
-Outline the steps to create an Organization
-Explain the steps to create Content Libraries
-Describe how to set up Projects and Namespaces within an Organization

Module 12. Consuming VCF Cloud Services for building an Extensible Ecosystem

-Describe how building an extensible ecosystem enables organizations to deploy cloud-native applications with integrated services
-Explain the steps for deploying Contour Ingress Controller to manage external access
-Explain the steps for deploying Harbor Image Registry for managing container images
-Outline the steps for deploying Argo CD service on Supervisor for GitOps continuous delivery
-Outline the deployment and management of Virtual Machines using VCF Automation
-Describe the deployment and management of VKS Clusters through VCF Automation
-Describe management of Harbor image repositories via projects
-Explain various ways to connect to VKS Clusters
-Explain the steps for deploying and consuming container-based applications using VCF Automation

Module 13. VKS Cluster Deployment using Kubectl

-Explain how Kubernetes software distribution for VKS clusters is managed using vSphere Kubernetes releases (VKrs)
-Describe VKS Cluster provisioning using TanzuKubernetesCluster
-Describe VKS Cluster provisioning using ClusterClass

-Outline the steps to create a Subscribed Content Library
-Outline the steps for publishing a Local Content Library
-Outline the steps for VKS Cluster Provisioning with Calico CNI
-Explain the process of fetching the VKS Cluster admin kubeconfig from vSphere Supervisor
-Explain the process of connecting to the VKS Cluster using VCF CLI
-Explain the process of integrating VKS Clusters with Private Container Registry
-Outline the steps to integrate Harbor with a v1beta1 API cluster

Module 14. Monitoring and Lifecycle Management of VKS Clusters

-List the supported Standard Packages for VKS Clusters
-Outline the requirements for Installing Packages on VKS Clusters
-Explain the process of Managing VKS Standard Packages
-Describe how VKS Cluster monitoring works
-Outline the step for Enabling Monitoring for VKS Clusters
-Explain monitoring of VKS Cluster from VCF Operations
-Explain monitoring and managing resources in a vSphere Namespace from vCenter
-Explain monitoring of VKS Cluster from VCF Automation
-Explain monitoring of VKS Cluster using kubectl

Module 15. Deploying Workloads on VKS Clusters using Helm

-Describe the application deployment workflow using Helm
-Explain how Docker images and Helm charts are managed in OCI registry on Harbor
-Outline the steps for deploying an application using Helm
-Outline the steps for upgrading an application using Helm

Module 16. VKS Cluster Day-2 Operations

-Describe Volume Snapshots
-Describe the lifecycle of a Volume Snapshot and Volume Snapshot Content
-Outline the steps to Install and Deploy vSphere pvCSI Webhook
-Outline the steps to Install and Deploy External CSI Snapshot Webhook
-Outline the steps to Restore a Volume Snapshot
-Explain the process of registering a New VKS Version
-Explain the process of upgrading the VKS Version
-Outline the steps to update VKS Cluster using VCF CLI

Module 17. VKS Cluster Management and Istio Service Mesh

-Explain how VKS cluster management enables platform engineers to manage VKS clusters at scale
-Describe VKS cluster management architecture
-Describe how VKS cluster management delivers centralized visibility across the entire VKS cluster fleet
-Explain how consistent policies are enforced across clusters through VKS cluster management
-Explain how VKS clusters can be backed up using VKS cluster management
-Describe how VKS standard packages are deployed and managed through VKS cluster management
-Describe the functionality and key components of the Istio Service Mesh
-Outline the steps required to install Istio on a VKS cluster
-Explain the process for deploying the Kiali dashboard
-Illustrate how to visualize the Istio Service Mesh using Kiali
-Explain how to use the Gateway API to configure traffic routing within Istio the service mesh
-Describe the steps for collecting Istio support bundle files

INFO

Materiale didattico: Materiale didattico ufficiale VMware in formato digitale
Costo materiale didattico: incluso nel prezzo del corso a Calendario
Natura del corso: Operativo (previsti lab su PC)