**+ Section 1:** Understand VMware NSX Technology and Architecture

**+ Objective 1.1:** Compare and Contrast the Benefits of a VMware NSX Implementation

Knowledge

* Determine challenges with physical network implementations
* Understand common VMware NSX terms
* Differentiate NSX network and security functions and services
* Differentiate common use cases for VMware NSX

**+ Objective 1.2:** Understand VMware NSX Architecture

Knowledge

* Differentiate component functionality of NSX stack infrastructure components
* Compare and contrast with advantages/disadvantages of topologies (star, ring, etc.) as well as scaling limitations
* Compare and contrast VMware NSX data center deployment models
* Prepare a vSphere implementation for NSX

**+ Objective 1.3:** Differentiate Physical and Virtual Network Technologies

Knowledge

* Differentiate logical and physical topologies, components and services
* Differentiate logical and physical security constructs
  + Endpoint Security
  + Data Security
  + Flow Monitoring
  + Activity Monitoring
  + Distributed Firewall
  + Perimeter Firewall

**+ Objective 1.4:** Understand VMware NSX Integration with Third-Party Products and Services

Knowledge

* Determine integration with third-party services
  + Network services
  + Security services
  + Load Balancing
  + Anti-malware
  + IDS/IPS
* Determine integration with third-party hardware
  + Network Interface Cards (NICs)
  + Terminating overlay networks
  + HW VTEP
  + VXLAN offload
  + RSS
* Install/register a third-party service with NSX

**+ Section 2:** Understand VMware NSX Physical Infrastructure Requirements

**+Objective 2.1:** Compare and Contrast the Benefits of Running VMware NSX on Physical Network Fabrics Fabrics

Knowledge

* Differentiate physical network topologies
  + Differentiate physical network trends
  + Understand the purpose of a Spine node
  + Understand the purpose of a Leaf node
* Differentiate virtual network topologies
  + Enterprise
  + Service Provider Multi-Tenant
  + Multi-Tenant Scalable
* Given a specific physical topology, determine what challenges could be addressed by a VMware NSX implementation.
* Differentiate physical/virtual QoS implementation
* Differentiate single/multiple vSphere Distributed Switch (vDS)/Distributed Logical Router implementations
* Differentiate NSX Edge High Availability (HA)/Scale-out implementations
* Differentiate Separate/Collapsed vSphere Cluster topologies
* Differentiate Layer 3 and Converged cluster infrastructures

**+Objective 2.2:** Determine Physical Infrastructure Requirements for a VMware NSX Implementation

Knowledge

* Discern management and edge cluster requirements
* Differentiate minimum/optimal physical infrastructure requirements for a VMware NSX implementation
* Determine how traffic types are handled in a physical infrastructure
* Determine use cases for available virtual architectures
* Describe ESXi host vmnic requirements
* Differentiate virtual to physical switch connection methods
* Compare and contrast VMkernel networking scenarios

**+ Section 3:** Configure and Manage vSphere Networking

**+ Objective 3.1:**Configure and Manage vSphere Distributed Switches (vDS)

Knowledge

* Compare and contrast vDS capabilities
* Create/Delete a vDS
* Add/Remove ESXi hosts from a vDS
* Edit general vSphere vDS settings
* Add/Configure/Remove dvPortgroups
* Configure dvPort settings
* Add/Remove uplink adapters to dvUplinkgroups
* Create/Configure/Remove virtual adapters
* Migrate virtual machines to/from a vDS
* Monitor dvPort state
* Determine use cases for a vDS

**+ Objective 3.2:**Configure and Manage vDS Policies

Knowledge

* Compare and contrast common vDS policies
* Configure dvPortgroup blocking policies
* Explain benefits of Multi-Instance TCP/IP stack
* Configure load balancing and failover policies
* Configure VLAN settings
* Configure traffic shaping policies
* Enable TCP Segmentation Offload (TOE) support for a virtual machine
* Enable Jumbo Frame support on appropriate components
* Determine appropriate VLAN configuration for a vSphere implementation
* Understand how DSCP is handled in a VXLAN frame

**+ Section 4:** Install and Upgrade VMware NSX

**+ Objective 4.1:** Configure Environment for Network Virtualization

Knowledge

* Comprehend physical infrastructure configuration for NSX Compute, Edge and Management clusters (MTU, Dynamic Routing for Edge, etc.)
* Prepare a Greenfield vSphere Infrastructure for NSX Deployment
* Configure Quality of Service (QoS)
* Configure Link Aggregation Control Protocol (LACP)
* Configure a Brownfield vSphere Infrastructure for NSX
* Determine how IP address assignments work in VMware NSX
* Determine minimum permissions required to perform an NSX deployment task in a vSphere implementation

**+ Objective 4.2:** Deploy VMware NSX Components

Knowledge

* Install/Register NSX Manager
* Prepare ESXi hosts
* Deploy NSX Controllers
* Understand assignment of Segment ID Pool and appropriate need for Multicast addresses
* Install vShield Endpoint
* Create an IP pool
* Understand when to use IP Pools versus DHCP for NSX Controller Deployment

**+ Objective 4.3:** Expand Transport Zone to Include New Cluster(s)

Knowledge

* Explain the function of a Transport Zone
* Understand proper addition of a Transport Zone
* Understand necessity to expand or contract a Transport Zone
* Edit a Transport Zone
* Understand appropriate use of Control Plane mode modification of a Transport zone

**+ Section 5:** Configure VMware NSX Virtual Networks

**+ Objective 5.1:** Create and Administer Logical Switches

Knowledge

* Given a scenario, demonstrate the proper way to add/remove a logical switch
* Determine use case for and contrast the three Control Plane Modes
  + Multi-cast
  + Hybrid
  + Unicast
* Determine use case for connecting a logical switch to an NSX Edge gateway
* Deploy services to a logical switch
* Demonstrate multiple ways of adding or removing virtual machines from a logical switch
* Test logical switch connectivity

**+ Objective 5.2:** Configure VXLAN

Knowledge

* Describe and understand areas where VXLANs should be configured
* Understand physical network requirements for virtual topologies with VXLANs
* Understand how to prepare a vSphere cluster for VXLAN
* Determine the appropriate teaming policy for a given implementation
* Understand how to configure and modify the options of a Transport Zone
* Understand how prepare VXLAN Tunnel End Points (VTEPs) on vSphere clusterss

**+ Objective 5.3:** Configure and Manage Layer 2 Bridging

Knowledge

* Given a scenario, determine an appropriate High Availability configuration for Layer 2 Bridging
* Understand how to add a Layer 2 Bridge to an NSX Edge device
* Determine when Layer 2 Bridging would be required for a given NSX implementation
* Determine use cases for multiple Layer 2 Bridges
* Compare and contrast software and hardware bridging

**+ Objective 5.4:** Configure and Manage Logical Routers

Knowledge

* Install NSX Edge
* Understand how to connect/disconnect a logical switch from a logical router
* Understand and describe the different types of router interfaces
* Determine NSX components needed to build out topologies with logical routers
* Understand how to add and configure a new logical router
* Determine use case for and configure a management interface
* Determine use case for and configure High Availability for a logical router
* Configure routing protocols
  + Static
  + OSPF
* Configure default gateway
* Determine if cross-protocol route sharing is needed for a given NSX implementation
* Understand how to configure administrative distances for routing
* Understand and configure route redistribution

**+ Section 6:** Configure and Manage NSX Network Services

**+ Objective 6.1:** Configure and Manage Logical Load Balancing

Knowledge

* Differentiate when to use the two topologies for load balancing
* Understand how to configure load balancing
* Configure and understand service monitors
* Understand how to Add/Edit/Delete a server pool
* Understand how to Add/Edit/Delete an application profile
* Understand how to Add/Edit/Delete virtual servers
* Determine appropriate NSX Edge instance size based on load balancing requirements

**+ Objective 6.2:** Configure and Manage Logical Virtual Private Networks (VPN)

Knowledge

* Understand how to configure IPSec VPN
  + Configure IPSec VPN parameters
  + Enable logging
* Understand how to configure Layer 2 VPN
  + Add Layer 2 VPN Client/Server
  + View Layer 2 VPN Statistics
* Configure Network Access/Web Access SSL VPN-Plus
  + Edit Client Configurations
  + Edit General Settings
  + Edit Web Portal Designs
  + Add/Edit/Delete IP Pools
  + Add/Edit/Delete Private Networks
  + Add/Edit/Delete Installation Packages
  + Add/Edit/Delete Users
  + Add/Edit/Delete Login/Logoff script
* Determine appropriate VPN service type for a given NSX implementation

**+ Objective 6.3:** Configure and Manage DHCP/DNS/NAT

Knowledge

* Understand proper use and addition of a DHCP IP Pool
* Enable a DHCP IP pool
* Describe use and proper implementation of DNS services
* Describe when and how to configure Source NAT
* Describe when and how to configure Destination NAT
* Given a scenario, compare and contrast proper DHCP uses

**+ Objective 6.4:** Configure and Manage Edge Services High Availability

Knowledge

* Given a scenario, compare and contrast proper HA uses
* Determine service availability during an Edge High Availability failover
* Differentiate NSX Edge High Availability and vSphere High Availability
* Configure NSX Edge High Availability
  + Configure heartbeat settings
  + Configure management IP addresses
* Modify and existing Edge High Availability deployment
* Determine resource pool requirements for a given Edge High Availability configuration
* Configure Equal-Cost Multi-Path Routing (ECMP)
  + Determine ECMP timers
  + Understand process flows
* Combine ECMP with other stateful services

**+ Section 7:** Configure and Administer Network Security

**+ Objective 7.1:** Configure and Administer Logical Firewall Services

Knowledge

* Add/Edit/Delete an Edge Firewall rule
* Configure Source/Destination/Service/Action rule components
* Compare and contrast between Edge Rule Types (Pre Rules/Internal/User Rules/Default Rules)
* Change the order of an Edge User Firewall rule
* Demonstrate how to configure an Edge Firewall Pre Rule
* Understand the limitations of ECMP and Edge Firewall Policy

**+ Objective 7.2:** Configure Distributed Firewall Services

Knowledge

* Describe VM IP Address learning for the purposes of DFW vCenter attribute learning
* Differentiate between Layer 2 and Layer 3 rules
* Differentiate between entity-based and identity-based rules
* Identify firewall rule entities
* Explain rule processing order
* Explain rule segregation
* Demonstrate steps to Add/Delete a Distributed Firewall rule
* Demonstrate configuration of Source/Destination/Service/Action rule components
* Change the order of a Distributed Firewall rule
* Add/Merge/Delete a Distributed Firewall rule section
* Determine publishing requirements for rules in a given NSX implementation
* Demonstrate Import/Export Distributed Firewall Configuration
* Load Distributed Firewall configuration
* Determine need for excluding virtual machines from distributed firewall protection
* Describe SpoofGuard Operation and Default Policy and Actions
* Describe SpoofGuard IP Address Learning
* Identify requirements for a Spoofguard Policy
* Demonstrate how to Create and Edit a SpoofGuard Policy
  + IP Local Addresses
  + Approve IP addresses
  + Edit/Clear IP addresses

**+ Objective 7.3:** – Configure and Manage Service Composer

Knowledge

* Identify assets that can be used with a Security Group
* Describe and differentiate services contained in a Security Policy
* Explain common Service Composer use cases
* Describe third party integration and service redirection
* Differentiate Security Groups and Security Policies
* Demonstrate the ability to redirect specific flows (e.g. 80) to network introspection services
* Differentiate between vCenter attribute based Firewall rules (including IP Sets) vs Active Directory identity-based rule
* Create/Edit a Security Group in Service Composer
* Create/Edit/Delete a Security Policy in Service Composer
* Map a Security Policy to a Security Group
* Add/Edit/Delete a Security Tag
* Assign and view a Security Tag

**+ Section 8:** Perform Operations Tasks in a VMware NSX Environment

**+ Objective 8.1:** Configure Roles, Permissions, and Scope

Knowledge

* Understand default roles
* Understand Single Sign-On (SSO) integration
* Configure SSO
* Assign a role to a vCenter Server user or group
* Compare and contrast the uses for the various NSX Security Roles
* Determine how roles can be applied to a subset of the vCenter infrastructure for multi Tenancy purposes
* Understand how to apply NSX Roles to an AD group
* Assign objects to a user
* Enable/Disable a user account
* Edit/Delete a user account

**+ Objective 8.2:** Monitor a VMware NSX Implementation

Knowledge

* Compare and contrast available monitoring methods (UI, CLI, etc.)
* Monitor infrastructure components
  + Control Cluster Health
  + Manager Health
  + Hypervisor Health
* Perform Inbound/Outbound activity monitoring
* Enable data collection for single/multiple virtual machines
* Perform virtual machine activity monitoring
* Monitor activity between inventory containers (security groups, AD groups)
* Monitor logical networks and services
  + Identify available statistics/counters
  + Network/service health
  + Configure and collect data from network

**+ Objective 8.3:** Perform Auditing and Compliance

Knowledge

* Given an auditing scenario, determine where applicable log information can be located
* Differentiate permissions for auditing
* Differentiate information available in audit logs
* Use flow monitoring to audit firewall rules
* Audit deleted users
* Audit infrastructure changes
* View NSX Manager audit logs and change data
* View and download compliance reports
* Create a regular expression
* Configure Guest Introspection (Install vShield Endpoint)

**+ Objective 8.4:** Administer Logging

Knowledge

* Given a scenario, utilize information contained in technical support bundles/logs to assist in troubleshooting
* Explain usage of CLI for logging
* Configure Syslog(s)
* Configure logging for Dynamic Routing information
* Log Distributed Firewall rule processing information
* Log Edge Firewall rule processing information
* Log address translation information
* Log VPN traffic
* Configure basic/advanced Load Balancer logging
* Log DHCP assignments
* Log DNS resolutions
* Log security policy session information
* Download NSX Edge tech support logs
* Generate NSX Manager tech support logs

**+ Objective 8.5:** Backup and Recover Configurations

Knowledge

* Understand how to backup and recover various components
* Schedule backups
* Export/Restore vSphere Distributed Switch configuration
* Import/Export Service Composer profiles
* Perform NSX Manager backup and restore operations

Duration : 20-25 hours

Cost: Rs 30k