

# CNS-220-1I: Citrix NetScaler Traffic Management



## Overview

Designed for students with little or no previous NetScaler experience, this course is best suited for individuals who will be deploying or managing NetScaler environments.

### What's New:

The course has been completely redeveloped and improves upon CNS-205: Citrix NetScaler Essentials and Networking via the following:

- Improved course structure and flow to focus on NetScaler essentials for the first 3 days, and traffic management for the remaining 2.
- A new lab environment, redesigned and built for enhanced performance.
- Incorporated course feedback that has been gathered over the last year.
- New content introduced throughout the course.

### Part 1: NetScaler Essentials (Days 1-3)

Learn the skills required to implement NetScaler components including secure Load Balancing, High Availability, and NetScaler Management. At the end of the course students will be able to configure their NetScaler environments to address traffic delivery and management requirements including load balancing, availability, and NetScaler operation management.

### Part 2: NetScaler Traffic Management (Days 4-5)

Learn the skills required to configure and manage NetScaler Traffic Management features, including Content Switching, Traffic Optimization, and Global Server Load Balancing. At the end of the course students will be able to configure their NetScaler environments to address efficient traffic switching and resilience requirements including content switching, traffic optimization, and disaster recovery.

### Recommended pre-requisite courses:

- CNS-102 NetScaler Overview

*Note: Students looking to expand their knowledge around NetScaler Gateway functionality are recommended to take CNS-207 (Implementing Citrix NetScaler for Apps and Desktop Solutions) instead of this class.*

*This course is based on the Citrix NetScaler 11 product, but the skills and fundamental concepts learned are common to earlier product versions.*

### Key Skills



- Identify the functionality and capabilities of the NetScaler
- Explain basic NetScaler network architecture
- Obtain, install, and manage NetScaler licenses
- Explain how SSL is used to secure the NetScaler
- Optimize the NetScaler system for traffic handling and management
- Customize the NetScaler system for traffic flow and content-specific requirements
- Employ recommended tools and techniques to troubleshoot common NetScaler network and connectivity issues
- Implement NetScaler TriScale technology, including clustering
- Configure advanced load balancing and GSLB on the NetScaler system
- Identify the functionality and characteristics of the NetScaler SDX platform

**Audience:**

Students interested in learning how to implement and manage the advanced NetScaler features using leading practices. Specifically:

- Administrators
- Implementers / Engineers
- Architects

**Instructional Method**

This course is offered in instructor-led training (ILT)/virtual instructor-led training (vILT) formats with application of concepts through hands-on exercises in a live lab environment.

**Course Length**

5 days

**Course Materials**

As part of this course, students will receive the following materials:

- Access to a lab environment for the duration of the course
- Lab exercise guide
- Access to final course deliverables once the course is available in general availability including copies of all official materials presented by the instructor with additional notes and references as well as videos with experts throughout Citrix around course topics and lab exercises.

**Preparatory Recommendations**

Citrix recommends students prepare for this course by taking the following course:

- CNS-102 NetScaler Overview

It is also recommended to gain a basic understanding of the following concepts and technologies:

- Basic Networking

- Windows and Linux Server administration
- TCP/IP, HTTP protocols and the OSI model
- Server load balancing and content switching concepts
- Web server software
- DNS, SSL and compression concepts
- Network security threats and site protection concepts

## **Certification Preparation**

In addition to field experience, this course helps prepares candidates for the 1Y0-351: Citrix NetScaler 10.5 Essentials for Networking exam. By passing the 1Y0-351: Citrix NetScaler 10.5 Essentials for Networking exam, candidates will gain the Citrix Certified Professional – Networking (CCP-N) certification.

## **Topic Outline**

### Part 1

- Getting Started
  - Introduction to the NetScaler System
  - TriScale
  - NetScaler Use Cases
  - NetScaler Functionality
  - NetScaler Overview
  - Product Features
  - NetScaler Operating System Overview
  - nCore Configuration Architecture
  - NetScaler File system
  - Deployment Scenarios
  - Logging in to the NetScaler System
  - NetScaler Licenses
- Basic Networking
  - OSI Networking Model
  - NetScaler Architecture Overview
  - NetScaler-Owned IP Addresses
  - Network Topology
  - NetScaler Network Interfaces
  - Virtual Local Area Networks (VLANs)
  - IP Routing
  - Determining the Source IP Address
  - Packet Forwarding

- Use Source IP Mode
- Client-IP HTTP Header Insertion
- Path MTU Discovery
- Link Aggregation
- Access Control Lists
- Network Address Translation (NAT)
- NetScaler Platforms
  - Architecture and General Concepts
  - Hardware Platforms
  - Hardware Components
  - MPX Overview
  - VPX Overview
  - CPX Overview
  - SDX Overview
  - Identify the unique capabilities and functionality of the NetScaler SDX platform
  - Identify the networking characteristics of the NetScaler SDX platform
  - Explain the process of provisioning and administration of NetScaler VPX instances on a NetScaler SDX appliance
- High Availability
  - High Availability Functionality
  - High Availability Node Configuration
  - Propagation and Synchronization
  - Failover, Route Monitors, Fail Safe
  - Propagation, Synchronization
  - High Availability Management
  - Performing an Upgrade
  - Troubleshooting
  - Upgrading HA pair
- Load Balancing
  - Local Load Balancing concepts
  - Naming conventions
  - Persistence
  - Service Types
  - LB Methods
  - Disabling Entities
  - Diagnostics/Troubleshooting
  - L4 vs L7 for TCP services
  - UDP ping vs L7

- Monitor attributes
- Built in L7 monitors
- Monitors from Scripts
- EAV Monitors
- ECV Monitors
- DataStream
- SSL Offload
  - SSL and TLS
  - SSL Session Process
  - SSL Administration
  - SSL Offload Overview
  - SSL Attacks Overview
  - SSL Troubleshooting
  - Cipher Suites
  - Certificate Management
  - Feature and Benefits
  - Offload Performance
  - Deployment Scenarios
  - Citrix Recommendations for SSL
- Securing the NetScaler
  - NetScaler Communication Ports
  - Overview of AAA
  - Authentication on the NetScaler
  - NetScaler Users
  - Command Policies
  - Admin Partitions
- Monitoring, Management, and Troubleshooting
  - Monitoring Needs
  - NetScaler Log Management
  - Simple Network Management Protocol
  - AppFlow on the NetScaler System
  - NetScaler Insight Overview
  - NetScaler Command Center Overview
  - Network Traffic Capture using NSTRACE
  - Troubleshooting with Filter Expressions
  - Decoding SSL Traffic with Wireshark
  - Display NetScaler System Information
  - NetScaler Command Line Tools

## Part 2

- AppExpert Classic Policy Engine
  - Policies Overview
  - Expression Structures
  - Content Filtering
  - Content Filtering Actions
  - Content Filtering Rules
- AppExpert Default Policy Engine
  - Understanding Packet-Processing Flow
  - Understanding Policies
  - Policy Process Evaluation Flow
  - Identifying Default Policy Expressions
  - Actions
  - Understanding Bind Points
  - Understanding Policy Labels
  - Pattern Sets
  - Typecasting
- Rewrite, Responder, and URL Transform
  - Configuring Rewrite Policies and Actions
  - Responder Actions
  - Respond with
  - Responder Action for Timeouts
  - Responder Policies
  - Responder HTML Page Imports
  - Binding Policies
  - URL Transformation
  - URL Transformation Actions
  - Binding of URL Transformations
- Content Switching
  - Introduction to Content Switching
  - Content Switching Based on Network Characteristics
  - Content-Switching Virtual Servers and Load-Balancing Virtual Servers
  - Configuring Content-Switching Virtual Servers
  - Configure a Load-Balancing Setup for Content Switching
  - Content-Switching Policies
  - Content-Switching Rule Precedence With Priority Specified
- Global Server Load Balancing

- DNS overview and records
- GSLB Deployment Methods
- GSLB Concepts
- GSLB Entities
- GSLB DNS Methods
- Metric Exchange Protocol
- Viewing and Configuring GSLB with the Visualizer
- GSLB Persistence
- Optimizing Traffic
  - Introduction to Compression
  - Frontend Optimization
  - Surge Queue
  - TCP Optimization
  - HTTP Optimization
- Clustering (Optional)
  - How Clustering Works
  - Cluster Synchronization
  - Cluster Communication Interfaces
  - Striped and Spotted IP Addresses
  - Traffic Distribution
  - Cluster and Node States
  - NetScaler Cluster Set up
  - Dynamic Configuration for a Cluster Link Aggregation Group
  - NetScaler Cluster Management
  - NetScaler Cluster Troubleshooting