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## CCIE Routing & Switching Preparation Theory Course

**Duration: 5 Days**    **Course Code: CCIET**

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### Overview:

This instructor led theory course is designed to build upon the knowledge gained from the CCNP or CCIP Certification. This course will refresh and enhance your knowledge focusing on the key areas required in preparation for the CCIE Routing and Switching Theory Exam V3.0. This latest version of the CCIET course has been revised in line with Cisco's most recently updated Lab Blueprint and now includes coverage of recently untested topics, such as MPLS and IPv6.

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### Target Audience:

This course is aimed at anyone studying for the CCIE Routing & Switching Theory exam.

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### Objectives:

- At the end of this course delegates will be able to;
  - Confidently sit the CCIE Routing & Switching Theory Exam 350-001 V3
  - Detail the theory behind configuring complex Routing and Switching networks
  - Have an enhanced knowledge of Cisco Routing & Switching technology and methodology
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### Prerequisites:

Delegates are required to meet the following prerequisites:

- CCNP
- QoS
- BGP – Not essential but recommended

### Testing and Certification:

Recommended as preparation for exam(s):

- 350-001 V3 Theory Exam
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### Follow-on-Courses:

The following courses are recommended for further study:

- CCIE1 and CCIE2 only after passing the Theory Exam.
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## Content:

### General Networking Theory

#### General Routing Concepts

- Link State and Distance Vector Protocols
- Split Horizons
- Summarisation
- Classful and a Classless routing protocol
- Routing decision criteria

#### Routing Information Base (RIB) and Routing Protocols Interaction

- Administrative Distance
- Routing Table
- RIB and Forwarding Information Base Interaction

#### Redistribution

- Redistribution between routing
- Troubleshooting Routing Loop

#### Bridging and LAN Switching

- Spanning Tree Protocols (STP)
- 802.1d
- 802.1w
- 802.1s
- Loopguard
- Rootguard
- Bridge Protocol Data Unit (BPDU) Guard
- Storm Control
- Rapid Spanning Tree Protocol (RSTP)
- Unicast flooring
- STP port roles, failure propagation and loopguard operation

#### Lan Switching

- Trunks
- VLAN Trunking Protocol (VTP) administrative functions

#### Ethernet

- Speed
- Duplex
- Ethernet
- Fast Ethernet
- Gigabit Ethernet

### Addressing

- Subnetting
- Hot Standby Routing Protocol (HSRP)
- Gateway Load Balancing Protocol (GLBP)
- Virtual Router Redundancy Protocol
- Network Address Translation (NAT)

### Services

- Network Time Protocol (NTP)
- Dynamic Host Control Protocol (DHCP)
- Web Cache Communication Protocol (WCCP)

### Network Management

- Logging and Syslog

### IP Routing

#### OSPF

- Standard OSPF area
- Stub area
- Totally stub area
- Not-so-stubby-area (NSSA)
- Totally NSSA
- Link State Advertisement (LSA) types
- Adjacency on a point-to-point and on a multi-access (broadcast)
- OSPF graceful restart Troubleshooting failing adjacency formation to fail
- Troubleshooting of external route installation in the RIB

#### BGP

- Protocol on which BGP peers communicate
- Next Hop
- Peering
- Troubleshooting of BGP route that will not install in the routing tables.

#### EIGRP

- Best Path
- Loop free Paths
- EIGRP operations when alternate loop free path are available and when it is not available
- EIGRP queries
- Manual summarisation
- Auto-summarisation
- EIGRP Stubs
- Troubleshooting of EIGRP neighbour adjacencies

### Policy Routing

- Concept of policy routing

### QoS

- Modular QoS command-line (MQC) applied to:
- Network Based Application Recognition (NBAR)
- Class based weighted fair queuing (CBWFQ)/Modified Deficit Round Robin (MDRR)
- Policing
- Shaping
- Marking
- Random Early Detection (RED)

### WAN

- Frame Delay
- Local Management Interface (LMI)
- Traffic Shaping
- HUB and Spoke routers
- Dynamic Multipoint VPN (DMVPN)
- DE

### IP Multicast

- Internet Group Management Protocols (IGMP)v2B. Group addresses
- Shared Trees
- Source Trees
- Protocol Independent Multicast (PIM) Mechanic
- PIM Sparse Mode
- Auto-RP
- Anycast RP

### Security

- Extended IP access lists
- Unicast Reverse Path Forwarding (uRPF)
- IP Source Guard
- Context Based Access Control (CBAC)

### MPLS (New)

- Label Switching Router (LSR)
- Unicast Reverse Path Forwarding (uRPF)
- Route Descriptor
- Label Format
- Label imposition/disposition
- Label Distribution

### IPv6 (New)

- IPv6 Addressing and types
- IPv6 Neighbor Discovery
- Basic IPv6 functionality protocols
- IPv6 Multicast and related Multicast protocols
- Tunneling Techniques
- OSPFv3

### Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 01924 377489

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