

# Layer 2 CCIE Training: VLAN, EtherChannel & STP Tutorial

This expert Layer 2 CCIE tutorial prepares network engineers to manage advanced VLAN topics, including trunking, VLAN databases, and VTP. Learn to implement LACP, EtherChannel Misconfiguration Guard, and choose between PVST+, Rapid PVST+, and MST. Ideal for advanced configurations and practical skills in deploying and troubleshooting Layer 2 technologies in enterprise networks. Perfect for onboarding or reference.

[CBT Nuggets course material](#) →

## WEEK 1

### Perform Switch Administration

151 min.

MAC Learning	5
MAC Table Updates	8
Static and Dynamic MAC Entries	4
CAM Tables	6
Ternary CAM (TCAM)	5
Lab Demo	12
Lab Challenge	7

### Explain L2 MTU

Resources	3
MTU Concepts	9
MTU and Transmissions	6
MTU in Designs	8
MTU Examples	6
Lab Demo	10
Lab Challenge	5

### Deploy L2 Protocols

Resources	3
Cisco Discovery Protocol (CDP)	9
Securing CDP with TLV Lists	6
Link Layer Discovery Protocol (LLDP)	7
Lab Demo	19
Lab Challenge	13

## WEEK 2

158 min.

## Deploy VLAN Technologies

Resources	3
Standard VLANs	7
Extended VLANs	9
L2 and L3 Topologies	9
VLAN Interfaces (SVIs)	11
Lab Demo	15
Lab Challenge	12

## Configure VLAN Trunking

Resources	3
802.1Q Trunking	10
Allowed VLAN List	10
Native VLANs	8
Lab Demo	19
Lab Challenge	11

## Configure Dynamic Trunking Protocol (DTP)

Resources	3
Dynamic Trunking Protocol (DTP)	7
DTP Negotiations	7
Lab Demo	14

## WEEK 3

**167 min.**

Lab Challenge	12
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## Configure VLAN Trunking Topologies

Resources	3
Router Subinterfaces	10

Voice VLANs	12
Lab Demo	18
Lab Challenge	13

## Configure Static Etherchannels

Resources	3
Etherchannel Overview	10
Types of Etherchannels	13
Port-Channel and Member Interfaces	9
Lab Demo	10
Lab Challenge	15

## Configure LACP Etherchannels

Resources	3
LACP Operation	8
LACP Redundancy	8
Lab Demo	20

## WEEK 4

**162 min.**

Lab Challenge	9
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## Configure LACP Priorities and Signaling

Resources	3
LACP Priorities	10
LACP Signaling	13
Lab Demo	15
Lab Challenge	15

## Configure Etherchannel Load-Balancing

Resources	3
Etherchannel Load-balancing	11
Choosing a Member Link	11
Tuning Etherchannel Load-balancing	8
Lab Demo	8
Lab Challenge	6

## Implement Private VLANs

Resources	3
Protected Ports and L2 Security	7
Private VLANs	7
Private VLAN Configuration	10
Lab Demo	10
Lab Challenge	13

## WEEK 5

### CCIE Lab Practice: L2 Infrastructure 1

160 min.

Resources	2
Lab Challenge	1
Lab Solution	41

### CCIE Lab Practice: L2 Infrastructure 2

Resources	2
Lab Challenge	2
Lab Solution	52

## Explain 802.1D Spanning-Tree Protocol

Resources	3
Intro	1

Loop Prevention	14
802.1D STP Operation	12
Elections and Bridge Priority	11
Lab Demo	6

## Explain PVST+ Operation

Resources	3
PVST+	10

## WEEK 6

151 min.

PVST+ Instances	9
Lab Demo	19
Lab Challenge	10

## Explain PVST+ Convergence

Resources	3
Bridge Protocol Data Units (BPDUs)	7
STP Timers	13
Topology Change Notifications (TCNs)	12
Lab Demo	12
Lab Challenge	5

## Calculate STP Blocking

Resources	3
Path Costs	12
Blocking Decisions	5
Port Priorities	10
Lab Demo	12

Lab Challenge 7

### Configure STP Blocking

Resources 3

Changing Blocked Ports 9

## WEEK 7

168 min.

Lab Challenge 31

### Tune STP Timers

Resources 3

Timer Tuning 12

STP Design 12

Lab Demo 7

Lab Challenge 15

### Identify STP Topologies

Resources 1

Skill Objectives 1

Topology 1 19

Topology 2 11

Topology 3 10

Solution Diagrams 1

### CCIE Lab Practice: STP Ports and Priorities

Resources 2

Lab Challenge 1

Lab Solution 42

## WEEK 8

### CCIE Lab Practice: STP Timers and Tuning

157 min.

Resources 2

Lab Challenge 1

Lab Solution 46

### Configure L2 Protection Mechanisms

Resources 3

Err-disable Status 11

Storm Control 11

Etherchannel Misconfig 10

Lab Demo 15

Lab Challenge 9

### Explain Cisco STP Enhancements

Resources 1

Portfast 11

Uplinkfast 20

Backbonefast 17

## WEEK 9

### Configure Cisco STP Enhancements

158 min.

Resources 4

Portfast Lab Demo 12

Uplinkfast Lab Demo 8

Backbonefast Lab Demo 8

Lab Challenge 12

## Configure STP Topology Protection Mechanisms

Resources	3
BPDU Guard	11
Root Guard	8
BPDU Filter	7
Lab Demo	18
Lab Challenge	8

## Configure STP Loop Protection Mechanisms

Resources	3
Unidirectional Link Detection (UDLD)	11
UDLD Modes of Operation	5
STP Loopguard	7
Lab Demo	16
Lab Challenge	5

## Configure STP Bridge Assurance

Resources	3
Bridge Assurance (BA)	9

## WEEK 10

151 min.

Bridge Assurance Configuration	7
Lab Demo	11
STP Topology Challenge	13

## Explain NTP and PTP

Intro	1
Network Time Protocol (NTP)	7
Configuring NTP	11

Precision Time Protocol (PTP)	11
Lab Validation	13

## Explain Rapid-PVST+ Mechanisms

Resources	3
Rapid Spanning-Tree (RSTP)	15
RSTP Proposals and Acceptances	12
RSTP Port States	5
Lab Demo	12
Lab Challenge	3

## Explain Rapid-PVST+ Roles and Topology Changes

Resources	3
Rapid STP Port Roles	12
Rapid STP and BPDU Expiration	3
Rapid STP Topology Changes	9

## WEEK 11

151 min.

Lab Demo	7
Lab Challenge	9

## CCIE Lab Practice: Rapid-PVST+

Resources	2
Lab Challenge	1
Lab Solution	42

## CCIE Lab Practice: STP Features

Resources	2
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Lab Challenge	2
Lab Solution	41

**Explain Multiple Spanning-Tree (MST)**

Resources	3
MST Principles	10
MST Mechanics	8
Lab Demo	14
Lab Challenge	10

**WEEK 12**

**Configure MST Regions**

**151 min.**

Resources	3
Regions and Attributes	9
MST and CST	14
Lab Demo	17
Lab Challenge	8

**Configure STP Compatibility**

Resources	3
Rapid-PVST+ and PVST+	7
MST and PVST Simulation Mode	12
PVST Simulation Checks	15
Lab Demo	11
Lab Challenge	5

**CCIE Practice Lab: MST Topologies**

Resources	2
Lab Challenge	1

Lab Solution	41
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**CCIE Practice Lab: MST Regions**

Resources	2
Lab Challenge	1

**WEEK 13**

**184 min.**

Lab Solution	42
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**CCIE Practice Lab: STP Compatibility**

Resources	2
Lab Challenge	1
Lab Solution	41

**CCIE Practice Lab: L2 Review 1**

Resources	2
Lab Challenge	2
Lab Solution	45

**CCIE Practice Lab: L2 Review 2**

Resources	2
Lab Challenge	2
Lab Solution	45

**WEEK 14**

**CCIE Practice Lab: L2 Review 3**

**98 min.**

Resources	2
Lab Challenge	2

Lab Solution 45

**CCIE Practice Lab: L2 Review 4**

Resources 2

Lab Challenge 1

Lab Solution 46