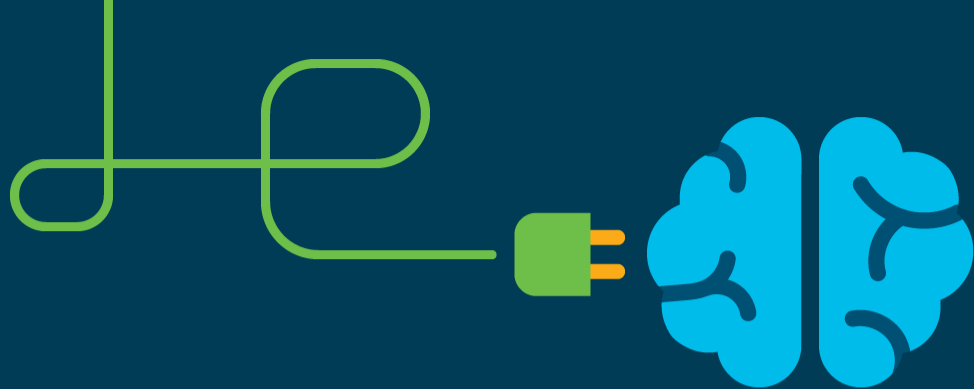




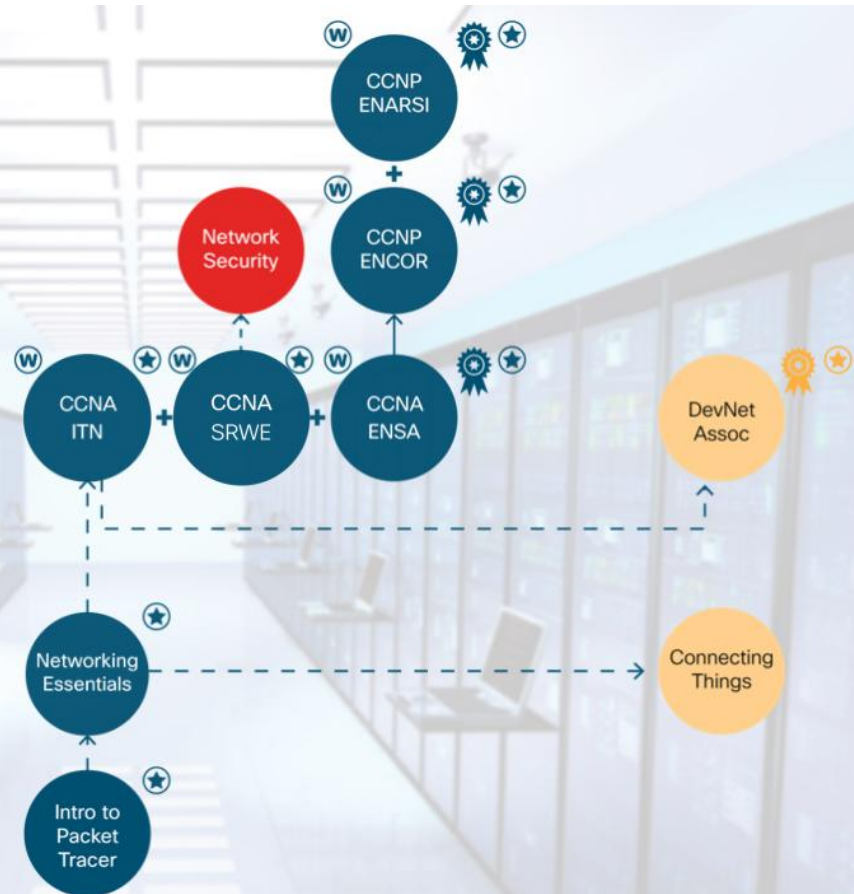
CCNA 7.0



Worlds of networks, IT infrastructure and applications are no longer siloed but inseparable. Opening the door for truly amazing innovation. Networking Academy's CCNA courses have evolved to teach you the latest concepts.



- Rest APIs
- Model-Driven Programmability (★)



- Pre-requisite knowledge
- > Recommended pre-requisite knowledge
-  Certification preparation
-  Digital badge earned

CCNA: Introduction to Networks

Course Overview

The first course in the CCNA curriculum introduces the architectures, models, protocols, and networking elements that connect users, devices, applications and data through the Internet and across modern computer networks - including IP addressing and Ethernet fundamentals.

Benefits

By the end of the course, students can build simple local area networks (LAN) that integrate IP addressing schemes, foundational network security, and perform basic configurations for routers and switches.

Learning Components

- 17 modules
- 24 hands-on labs
- 31 Cisco Packet Tracer activities
- 36 videos
- 10 syntax checkers
- 13 interactive activities
- 64 CYU quizzes
- 17 module exams
- 6 module group exams
- 1 final exam



Features

Target Audience: Secondary vocational students, 2-year and 4-year college students in Networking or Engineering

Prerequisites: None

Instructor Training Required: Yes

Languages: English

Course Delivery: Instructor-led

Course Recognitions: Certificate of Completion, Letter of Merit, Digital Badge

Estimated Time to Complete: 70 hours

Recommended Next Course: CCNA: Switching, Routing, and Wireless Essentials



Accelerated Path to Job Readiness

Module Objectives

Introduction to Networks (ITN)

Module		Module Group Assessments
Module 1	Networking Today	Basic Network Connectivity and Communications
Module 2	Basic Switch and End Device Configuration	
Module 3	Protocol Models	
Module 4	Physical Layer	Ethernet Concepts
Module 5	Number Systems	
Module 6	Data Link Layer	
Module 7	Ethernet Switching	Communicating Between Networks
Module 8	Network Layer	
Module 9	Address Resolution	
Module 10	Basic Router Configuration	IP Addressing
Module 11	IPv4 Addressing	
Module 12	IPv6 Addressing	
Module 13	ICMP	Network Application Communications
Module 14	Transport Layer	
Module 15	Application Layer	
Module 16	Network Security Fundamentals	Building and Securing a Small Network
Module 17	Build a Small Network	

CCNA: Switching, Routing, and Wireless Essentials

Course Overview

The second course in the CCNA curriculum focuses on switching technologies and router operations that support small-to-medium business networks and includes wireless local area networks (WLAN) and security concepts.

Benefits

Students learn key switching and routing concepts. They can perform basic network configuration and troubleshooting, identify and mitigate LAN security threats, and configure and secure a basic WLAN.

Learning Components

- 16 modules
- 14 hands-on labs
- 31 Cisco Packet Tracer activities
- 15 videos
- 19 syntax checkers
- 1 interactive activity
- 36 CYU quizzes
- 16 module exams
- 5 module group exams
- 1 final exam



Features

Target Audience: Secondary vocational students, 2-year and 4-year college students in Networking or Engineering

Prerequisites: None

Instructor Training Required: Yes

Languages: English

Course Delivery: Instructor-led

Course Recognitions: Certificate of Completion, Letter of Merit, Digital Badge

Estimated Time to Complete: 70 hours

Recommended Next Course: CCNA: Enterprise Networking, Security, and Automation



Accelerated Path to Job Readiness

Module Objectives

Switching,
Routing, and
Wireless
Essentials
(SRWE)

Module		Module Group Assessments
Module 1	Basic Device Configuration	Switching Concepts and VLANs
Module 2	Switching Concepts	
Module 3	VLANs	
Module 4	Inter-VLAN Routing	
Module 5	STP	Redundant Networks
Module 6	Etherchannel	
Module 7	DHCPv4	Available and Reliable Networks
Module 8	SLAAC and DHCPv6 Concepts	
Module 9	FHRP Concepts	
Module 10	LAN Security Concepts	L2 Security and WLANs
Module 11	Switch Security Configuration	
Module 12	WLAN Concepts	
Module 13	WLAN Configuration	
Module 14	Routing Concepts	Routing Concepts and Configuration
Module 15	IP Static Routing	
Module 16	Troubleshoot Static and Default Routes	

CCNA: Enterprise Networking, Security, and Automation

Course Overview

The third CCNA course describes the architectures and considerations related to designing, securing, operating, and troubleshooting enterprise networks – including wide area network (WAN) technologies & quality of service (QoS) mechanisms for secure remote access, along with software-defined networking, virtualization, & automation concepts supporting network digitization.

Benefits

Students gain skills to configure and troubleshoot enterprise networks, and learn to identify and protect against cybersecurity threats. They are introduced to network management tools and learn key concepts of software-defined networking, including controller-based architectures and how application programming interfaces (APIs) enable network automation.

Learning Components

- 14 modules
- 12 hands-on labs
- 29 Cisco Packet Tracer activities
- 32 videos
- 13 syntax checkers
- 2 interactive activities
- 53 CYU quizzes
- 14 module exams
- 5 module group exams
- 1 final exam
- 1 practice exam for CCNA certification exam



Features

Target Audience: 2-year and 4-year college students in Networking or Engineering

Prerequisites: None

Instructor Training Required: Yes

Languages: English

Course Delivery: Instructor-led

Course Recognitions: Certificate of Completion, Letter of Merit, Digital Badge

Estimated Time to Complete: 70 hours

Recommended Next Course: CCNP Enterprise Core



Accelerated Path to Job Readiness

Module Objectives

Enterprise Networking, Security, and Automation (ENSA)

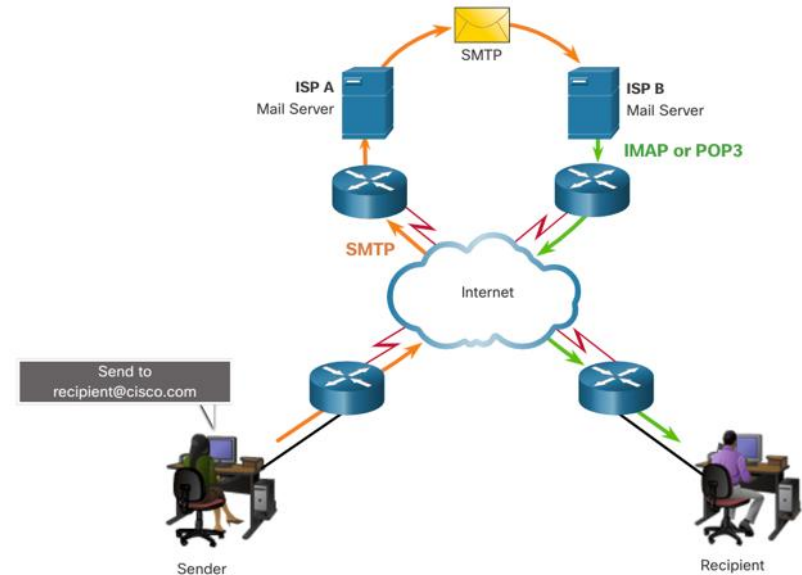
Module		Module Group Assessments
Module 1	Single-Area OSPFv2 Concepts	OSPF Concepts and Configuration
Module 2	Single-Area OSPFv2 Configuration	
Module 3	Network Security Concepts	Network Security
Module 4	ACLs Concepts	
Module 5	ACLs for IPv4 Configuration	
Module 6	NAT for IPv4	
Module 7	WAN Concepts	WAN
Module 8	VPN and IPsec Concepts	
Module 9	QoS Concepts	Optimize, Monitor, and Troubleshoot Networks
Module 10	Network Management	
Module 11	Network Design	
Module 12	Network Troubleshooting	
Module 13	Network Virtualization	Network Virtualization and Automation
Module 14	Network Automation	

Email Protocols

Email is a store-and-forward method of sending, storing, and retrieving electronic messages across a network. Email messages are stored in databases on mail servers. Email clients communicate with mail servers to send and receive email.

The email protocols used for operation are:

- Simple Mail Transfer Protocol (SMTP) – used to send mail.
- Post Office Protocol (POP) & IMAP – used for clients to receive mail.



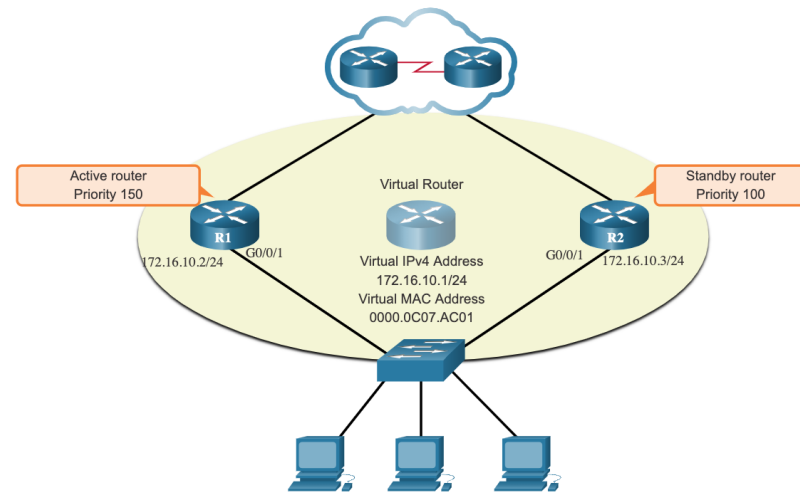
HSRP

HSRP Priority and Preemption (Cont.)

By default, after a router becomes the active router, it will remain the active router even if another router comes online with a higher HSRP priority.

- To force a new HSRP election process to take place when a higher priority router comes online, preemption must be enabled using the **standby preempt** interface command. Preemption is the ability of an HSRP router to trigger the re-election process. With preemption enabled, a router that comes online with a higher HSRP priority will assume the role of the active router.
- Preemption only allows a router to become the active router if it has a higher priority. A router enabled for preemption, with equal priority but a higher IPv4 address will not preempt an active router. Refer to the topology in the figure.

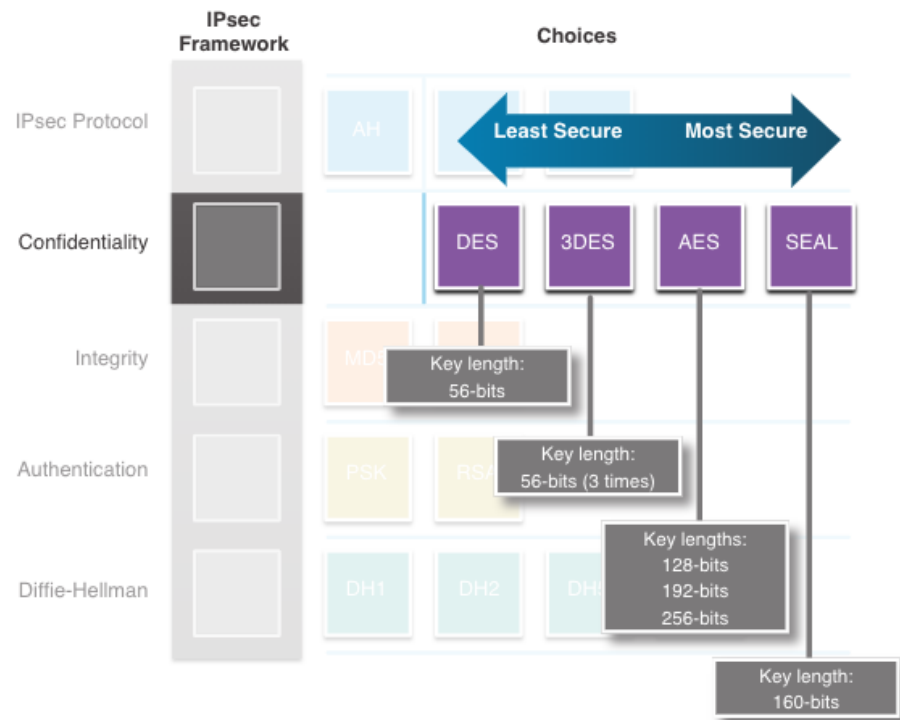
Note: With preemption disabled, the router that boots up first will become the active router if there are no other routers online during the election process.



IPsec Confidentiality (Cont.)

The encryption algorithms highlighted in the figure are all symmetric key cryptosystems:

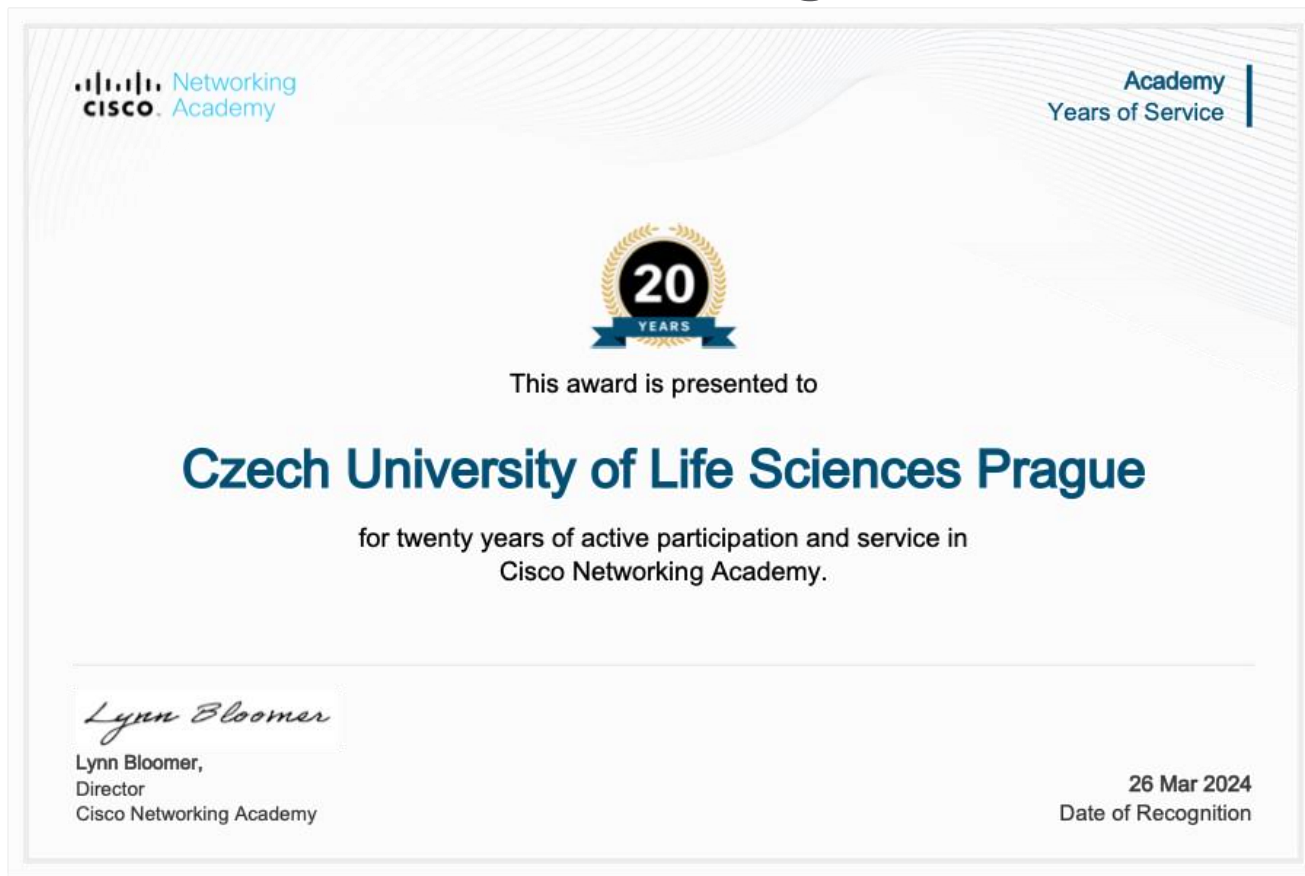
- DES uses a 56-bit key.
- 3DES uses three independent 56-bit encryption keys per 64-bit block.
- AES offers three different key lengths: 128 bits, 192 bits, and 256 bits.
- SEAL is a stream cipher, which means it encrypts data continuously rather than encrypting blocks of data. SEAL uses a 160-bit key.



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- Kurz je určen primárně pro 1. ročník oboru InfoN (začátek v ZS) – prezenční/kombinované studium
- Výuka ZS: **pondělí 19:15 – specializovaná LVT PEF D326**, Packet Tracer, online v MS Teams
*v případě velkého počtu zájemců bude otevřen 2. kurz ve středu 19:15, D326
(viz oficiální rozvrh 1. ročník InfoN)*
- Přihlášky na webu KIT (<https://kit.pef.czu.cz/clanek/kurzy-cisco-v-zs-26-27>) **do 7.10. 2026**
- Předběžný seznam bude zveřejněn **8. 10. 2026** na přednášce Počítačové sítě (lze zde ještě upřesnit)
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- Zahájení kurzu: **pondělí 19. 10. 2026**
- Vyučující Ing. Jaromír Holec (Ing. Alexander Vasilenko, Ph.D., Ing. Jan Pinta)