



Your competence will be assessed as you complete the Cisco Certified Network Associate Exam (CCNA 640-802) for this course of study. This course of study may take up to 12 weeks to complete.

## Introduction

**ALERT: This announcement is only for students currently enrolled in the BGV1 course, preparing for the full CCNA (640-802) exam. The current exam will be retiring as of 9/30. Students unable to meet this deadline will need to be moved to two individual courses, COV1 (ICND1 exam) and CQV1 (ICND2 exam). Please contact your student mentor or course mentor for more information on how this change applies to your specific degree plan.**

### Overview

Welcome to the Network Fundamentals Course of Study. This is the exam needed to earn your CCNA Certification; Cisco calls this the Cisco Certified Network Associate Exam (CCNA 640-802). The concepts are not difficult, but the sheer volume is daunting, and you are asked to know things that you would normally look up.

One risky predisposition, for both the experienced and beginner, is to rely on practice exams. Practice exams may help to build confidence, but real exams phrase questions differently, offer dissimilar choices, and also might use unfamiliar terminology.

Unfortunately, most students who use only practice exams to study do not internalize this caution until their first failure. Practice exams should only be used to discover weak areas for further studying and review.

View the exam comments of other students cautiously. Each version of these exams is different. If others advise you to skip studying a piece of technology because it was not on the exam, what they mean is that it was not on their exam-it might be on yours.

### Outcomes and Evaluation

There are 6 competencies covered by this course of study; they are listed in the "[Competencies for Network Fundamentals \(BGV1\)](#)" page.

You will complete the following assessments as you work through the course of study.

### Outside Vendor Assessment

You will complete the Cisco Certified Network Associate Exam (CCNA 640-802). The following is pertinent exam information:

- 40 - 50 questions (including simulation questions)
- minimum passing score of 849 (scale of 300 - 1000)
- 90 minute time limit



For information regarding important examination information, please access the following Cisco web page:

- [IT Certification and Career Paths 640-802 CCNA](#)

You will need to submit your scores to WGU after completing this exam.

## Preparing for Success

The information in this section is provided to help you become ready to complete this course of study. As you proceed, you will need to be organized in your studies in order to gain competency in the indicated areas and prepare yourself to pass the final assessments.

## Your Learning Resources

The learning resources listed in this section will be required to complete the activities in this course of study. Follow the instructions provided to access these resources as early as possible in order to give yourself time to become familiar with them.

### Automatically Enrolled Learning Resources

You will be automatically enrolled at the activity level for the following learning resources. Simply click on the links provided in the activities to access the learning materials.

#### VitalSource E-Texts

The following textbooks are available to you as e-texts within this course of study. You will be directly linked to the specific readings required within the activities that follow.

- Odom, W. (2011). *CCENT/CCNA ICND1 640-822*(3rd Edition). Indianapolis: Cisco Press. ISBN: 1587204258
- Odom, W. (2011). *CCNA ICND2 640-816*(3rd Edition). Indianapolis: Cisco Press. ISBN: 1587204355

*Note: This e-text is available to you as part of your program tuition and fees, but you may purchase hard copies at your own expense through a retailer of your choice. If you choose to do so, please use the ISBN listed to ensure that you receive the correct edition.*

#### LearnKey

You will access the following LearnKey courses within the activities of this course of study:

- Routing and Switching Fundamentals
- Routing and Switching Fundamentals Part II



These courses include over 30 hours of interactive training comprised of 9 different sessions. This comprehensive training includes pre-assessments, video and simulated lab exercises, and post-assessment activities for each of the 9 different sessions.

## **Enroll in Learning Resources**

You will need to enroll in or subscribe to learning resources as a part of this course of study. You may already have enrolled in these resources for other courses. Please check the "Learning Resources" tab and verify that you have access to the following learning resources. If you do not currently have access, please enroll or renew your enrollment at this time.

*Note: For instructions on how to enroll in or subscribe to learning resources through the "Learning Resources" tab, please see the "[Acquiring Your Learning Resources](#)" page.*

### **Cisco Network Simulator**

The Cisco online network simulator provides hands-on experience in configuring routers and switches. The online environment simulates Cisco hardware, allowing you to practice in the command line interface (CLI). The knowledge of these commands will be necessary to answer the simulation questions found in the exam.

### **Cisco Exam Practice Tests**

The Cisco practice tests allow you to test your subject knowledge after utilizing the other learning resources. The practice tests will pinpoint any subject areas you may have missed during your studies. They also give you a feel for the exam format and terminology.

The practice exams contain questions based on the exam content, including detailed simulation questions to prepare you for what you will see on the exam. These practice exams do not contain the actual exam questions, so avoid memorization of questions and answers, as this will not help you pass the actual exam.

## **Additional Preparation**

There are many different learning tools available to you within your course of study in addition to the learning resources already discussed. Take the time to familiarize yourself with them and determine how best to fit them into your learning process.

### **Message Boards, FAQs, Note-Taking Tool**

Message boards, FAQs, and a note-taking tool are available in every course of study.

Use the "[Additional Learning Tools](#)" page to review these tools.

### **The WGU Central Library**



The [WGU Central Library](#) is available online to WGU students 24 hours a day. The library offers access to a number of resources, including over 60,000 full-text e-books; articles from journals, magazines, and newspapers; course e-reserves; and tutorials on how to use these resources and the library. The library also includes a reference service for help with research questions or navigating the library.

For more information about using the WGU Library, view the "WGU Library: Finding Articles, Books & E-Reserves" video in the Student Resources section of [The WGU Channel](#).

## **Center for Writing Excellence: The WGU Writing Center**

If you need help with any part of the writing or revision process, contact the Center for Writing Excellence (CWE). Whatever your needs-writing anxiety, grammar, general college writing concerns, or even ESL language-related writing issues-the CWE is available to help you. The CWE offers personalized individual sessions and weekly group webinars. For an appointment, please e-mail [writingcenter@wgu.edu](mailto:writingcenter@wgu.edu).

## **Course Mentor Assistance**

Course mentors are available to help you. Their job is to aid understanding in areas where you need to improve and to guide you to learning resources. Request their help as needed when preparing for assessments.

Course mentors cannot provide reviews of entire assessments. If you fail assessment attempts, review the provided feedback first, then ask the course mentor specific questions about what you can do to meet the competency standard. Request course mentor assistance as necessary in preparing for second attempts at objective assessments or performance task revisions. Mentors cannot guarantee you pass as they do not evaluate assessments; however, they can provide the assistance and advice necessary to help you succeed.

## **Cisco Learning Network**

Cisco hosts the Cisco Learning Network <https://learningnetwork.cisco.com/index.jspa>. This network supports individuals working toward Cisco certifications. The Cisco Learning Network provides you access to other individuals currently working on the same certifications as well as exam preparation content. Register for an account on this website; it is free and easy to join.

## **Cisco Networking Devices Content**

The resources provided in this course are separate, independent resources. The best approach to passing the certification exam is reviewing the material from multiple sources over a period of 8 - 12 weeks. This course of study is set up to give you the best approach to preparing for the final assessment.

The most successful students for the course engage in all of the learning resources provided.



While some of the material is duplicated between the videos, books, simulator, and practice exams, it is often helpful to review the material from different types of resources. Individuals have different learning styles and will prefer different formats, but all resources should be reviewed.

The standard order of materials should be videos, books, simulator, and practice exams. Review the practice exams last, as they will reveal any areas missed from the other resources.

## **LearnKey Resources**

The following information pertains to LearnKey and what will be covered in the LearnKey course. Sections referenced correspond directly to the section in LearnKey where the information is covered.

### Routing and Switching Fundamentals

#### Session 1

- Section A: Introduction
- Section B: Computer Networking Concepts
- Section C: Overview of OSI model and TCP/IP
- Section D: TCP/IP Transport and Applications
- Section E: Modern Ethernet LANs
- Section F: Ethernet Frame Structure
- Section G: Conversions

#### Session 2

- Section A: Wide Area Networks
- Section B: WAN Concepts
- Section C: Transmission Protocols
- Section D: WAN Configuration
- Section E: Connecting to a Network
- Section F: Topologies
- Section G: Shared Networking

#### Session 3

- Section A: Communications
- Section B: IP Addressing
- Section C: Subnetting
- Section D: Routers
- Section E: IP Routing Concepts
- Section F: Static IP Routing
- Section G: Dynamic Routing

#### Session 4



- Section A: RIP Protocol
- Section B: Troubleshooting RIP
- Section C: Routers and IOS
- Section D: IOS Access Commands
- Section E: Basic IOS Commands
- Section F: IOS Maintenance Commands
- Section G: ID and Interface Commands
- Section H: Troubleshooting IP Routing

#### Session 5

- Section A: LAN Devices
- Section B: Ethernet Switch Configuration
- Section C: Catalyst Switches
- Section D: Ethernet Switch Troubleshooting
- Section E: Fundamentals of Wireless LAN
- Section F: Wireless LAN Security
- Section G: Wireless LAN Configurations
- Section H: Network Environment Management
- Section I: Network Security

#### Routing and Switching Fundamentals Part II

##### Session 1

- Section A: Introduction
- Section B: VLAN and Trunking
- Section C: VLAN Trunking Protocol
- Section D: Configuring and Verifying VLANs
- Section E: Configuring VLAN Trunking
- Section F: Configuring and Verifying VTP
- Section G: Troubleshooting VTP
- Section H: Implementing Switch Security

##### Session 2

- Section A: Spanning Tree Protocol Enhancements
- Section B: Rapid STP
- Section C: Per-VLAN Spanning Tree Plus
- Section D: VLSM and Route Summarization
- Section E: Manual Route Summarization
- Section F: Auto-summarization
- Section G: Running IPv6
- Section H: Technological Requirements for IPv6
- Section I: Resolving IP Addressing Problems



### Session 3

- Section A: Routing Protocols
- Section B: Open Shortest Path First
- Section C: Enhanced IGRP
- Section D: Verifying Connectivity
- Section E: Troubleshooting Routing
- Section F: Implementing Basic Router Security

### Session 4

- Section A: Access Control Lists
- Section B: Configuring ACLs
- Section C: Monitoring ACL Configuration
- Section D: Access List Troubleshooting
- Section E: Network Address Translation
- Section F: Fundamentals of Frame Relay
- Section G: Point-to-Point Protocol
- Section H: Virtual Private Networks
- Section I: WAN Implementation Issues

The LearnKey videos are an excellent overview to the exam by presenting all of the material in an easy-to-view video format. They are useful as an introduction to the content and general concepts of the exam.

## LearnKey

Each LearnKey session is divided into multiple sections. Because each section is intended to build upon those prior to it, you should complete the sections in sequential order. LearnKey sessions use the components listed below to guide your learning as you work sequentially through the course:

- pre-assessment - a short quiz to test your existing knowledge of the material
- training - videos and slides presenting the information for each section
- labs - hands-on exercises (in a variety of formats) to reinforce the training material
- post-assessment - another quiz to ensure you have learned the material presented in the previous sections

Complete each section in the following LearnKey courses using the links below:

- Routing and Switching Fundamentals
- Routing and Switching Fundamentals Part II

*Note: Please remember to proceed in order.*

## **Routing and Switching Fundamentals**

### **Session 1**



- [Pre-assessment](#)
- [Training](#)
- [Labs](#)
- [Post-test](#)

### **Session 2**

- [Pre-assessment](#)
- [Training](#)
- [Labs](#)
- [Post-test](#)

### **Session 3**

- [Pre-assessment](#)
- [Training](#)
- [Labs](#)
- [Post-test](#)

### **Session 4**

- [Pre-assesment](#)
- [Training](#)
- [Labs](#)
- [Post-test](#)

### **Session 5**

- [Pre-assessment](#)
- [Training](#)
- [Labs](#)
- [Post-test](#)

## **Routing and Switching Fundamentals Part II**

### **Session 1**

- [Pre-assessment](#)
- [Training](#)
- [Labs](#)
- [Post-test](#)

### **Session 2**

- [Pre-assessment](#)
- [Training](#)
- [Labs](#)



- [Post-test](#)

### Session 3

- [Pre-assessment](#)
- [Training](#)
- [Labs](#)
- [Post-test](#)

### Session 4

- [Pre-assesment](#)
- [Training](#)
- [Labs](#)
- [Post-test](#)

## Cisco Press Book

There are two textbooks included with this course. They are broken down as follows:

*CCENT/CCNA ICND1 640-822 (3rd Edition).*

- Part I: Networking Fundamentals
- Part II: LAN Switching
- Part III: IPv4 Addressing and Subnetting
- Part IV: IPv4 Routing
- Part V: Wide-Area Networks
- Part VI: Final Preparation
- Part VII: Appendixes and Additional Information

*CCNA ICND1 640-816 (3rd Edition).*

- Part I: LAN Switching
- Part II: IP Routing
- Part III: Routing Protocols
- Part IV: Wide-Area Networks
- Part V: Scaling the IP Address Space
- Part VI: Final Preparation
- Part VII: Appendixes and Additional Information

## Official Certification Guides

[CCENT/CCNA ICND1 640-822\(3rd Edition\)](#) and [CCNA ICND1 640-816\(3rd Edition\)](#) are the official Cisco guides to the exam. Each book is an 800+ page reference containing all of the in-depth technical details needed to pass the exam. It is most useful for the multiple choice questions you will find on the official certification exam.



Pay close attention to the "Do I Know This Already?" quizzes at the beginning of each chapter and the exam preparation tasks at the end of each chapter as you review the book.

Please read and review the entire text's content as necessary to successfully understand and pass the certification exam.

*Note: Although the book presents the same content as the LearnKey resources, it often helpful to review material from different sources to fully understand and retain a full breadth of the content.*

## Cisco Resources

The network simulator provides hands-on experience for all of the command line interface (CLI) commands of Cisco routers and switches. This allows students to practice what they have learned from both the video and book resources. It will also be needed for the simulation questions found on the exam.

The simulators are an online resource provided by Cisco. The following charts provide an outline of the available labs:

ICND1 Lab 2-2	Performing Switch Startup and Initial Configuration
ICND1 Lab 2-3	Operating and Configuring a Cisco IOS Device
ICND1 Lab 2-4	Enhancing the Security of Initial Switch Configuration
ICND1 Lab 4-5	Performing Initial Router Setup
ICND1 Lab 4-6	Performing Initial Router Configuration
ICND1 Lab 4-7	Enhancing the Security of Initial Router Configuration
ICND1 Lab 4-8	Using Cisco SDM to Configure DHCP Server Function
ICND1 Lab 4-9	Managing Remote Access Sessions
ICND1 Lab 5-1	Connecting to the Internet
ICND1 Lab 5-2	Connecting to the Main Office
ICND1 Lab 5-3	Enabling Dynamic Routing to the Main Office
ICND1 Lab 6-1	Using Cisco Discovery Protocol
ICND1 Lab 6-3	Managing Cisco Devices
ICND1 Lab 6-4	Confirming the Reconfiguration of the Branch Network

ICND2 Lab 1-1	Implementing a Small Network (Review Lab)
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ICND2 Lab 2-1	Configuring Expanded Switched Networks
ICND2 Lab 2-2	Troubleshooting Switched Networks Lab
ICND2 Lab 4-1	Implementing OSPF
ICND2 Lab 4-2	Troubleshooting OSPF
ICND2 Lab 5-1	Implementing EIGRP
ICND2 Lab 5-2	Troubleshooting EIGRP
ICND2 Lab 6-1	Implementing and Troubleshooting ACLs
ICND2 Lab 7-1	Configuring NAT and PAT
ICND2 Lab 7-2	Implementing IPv6 Lab
ICND2 Lab 8-1	Establishing a Frame Relay WAN
ICND2 Lab 8-2	Troubleshooting Frame Relay WANs

## Network Simulator

Work through the provided labs to help you apply the information from the videos and the textbook.

Typing the actual CLI commands will allow you to see the interaction between the different devices. It will also prepare you for the simulation questions found on the exam.

## Practice Exams

This should be the final resource used in preparation for the exam. The practice exams will give you a feel for the question formats and terminology used in the actual exam. It will also reveal any content areas in which you may still be weak. Please review areas in which you are not scoring well before taking the real exam.

Be wary of taking the practice exam too many times and just memorizing the answers. The actual exam questions will be different enough that you will need to fully comprehend the content, not just memorize answers.

## Final Steps

Congratulations on completing the activities in this course of study! This section will guide you through the assessment process.

## Assessment Information



The activities in this course of study have prepared you to complete the Cisco Certified Network Associate Exam (CCNA 640-802). You should schedule and take the exam now.

## Accessing Outside Vendor Assessments

Complete the following outside vendor assessment:

- Cisco Certified Network Associate Exam (CCNA 640-802)

For directions on how to receive access to outside vendor assessments, see the "[Accessing Objective and Outside Vendor Assessments](#)" page.

## Submitting Outside Vendor Assessment Scores

After completing an outside vendor assessment, follow the directions for submitting a score report on the "[Following Outside Vendor Assessments](#)" page.

## Feedback

WGU values your input! If you have comments, concerns, or suggestions for improvement of this course, please submit your feedback using the following form:

- [Course Feedback](#)

## ADA Policy

Western Governors University recognizes and fulfills its obligations under the Americans with Disabilities Act of 1990 (ADA), the Rehabilitation Act of 1973 and similar state laws. Western Governors University is committed to provide reasonable accommodation(s) to qualified disabled learners in University programs and activities as is required by applicable law(s). ADA Support Services serves as the principal point of contact for students seeking accommodations and can be contacted at [ADASupport@wgu.edu](mailto:ADASupport@wgu.edu). Further information on WGU's ADA policy and process can be viewed in the student handbook at the following link:

- [Policies and Procedures for Students with Disabilities](#)