This is an overview to introduce and position the new CCNA curricula: CCNA Discovery and CCNA Exploration.

English versions of each curriculum are now available.
Cisco Networking Academy

New CCNA Curricula

Speaker Name

December 2007
Contents

- Portfolio Evolution
- New CCNA Positioning, Features, and Benefits
- Adoption and Migration
- CCNA Discovery Details and CCNA Discovery Server
- CCNA Exploration Details and CCNA Eagle Server
- Instructor Training
- Curriculum Prerequisites
- Translation
- Equipment
- Cisco Certifications and Certification Exam Vouchers
Portfolio Evolution
How Are We Evolving the Academy?

- Shift focus from Academy growth to student outcomes
- Develop courseware tailored to student goals
- Align skills with specific jobs in networking
Cisco Networking Academy Curriculum Portfolio – 18 Courses

CAREERS

Enterprise Networking

Small and Medium Business Networking

Network Installer Basic IT Support

FUNDAMENTALS
IT Essentials: PC Hardware & Software
IT Essentials II: NOS PNIE

CCNA Discovery
Routing, Switching, WANs, Intro to Adv Tech

CCNA Exploration
Routing, Switching, WANs, Intro to Adv Tech

CCNP
Advanced Routing Remote Access Multilayer Switching Troubleshooting

Security

Wireless

Student Networking Knowledge and Skills
Current CCNA Curriculum
Instructor and Student Feedback

Improve Student Experience

• Promote engagement; align with student interests and capabilities
• Optimize balance of theory, practice, and application
• Accommodate different skill levels

Improve Quality

• Improve accuracy and flow of course content
• Ensure content is relevant and up-to-date
• Address advanced technologies

Increase Flexibility

• Make curricula more efficient to localize
• Facilitate curriculum delivery and class administration
• Provide high and low bandwidth delivery capabilities
New CCNA Positioning, Features, and Benefits
Two New CCNA Curricula
Both Prepare Students for CCNA Certification and Professional Careers

**CCNA Discovery**
- Independent curriculum or integrate into broader course of study
- Students with basic PC usage skills

**CCNA Exploration**
- Integrated technology curriculum or continuing education program
- Students with advanced problem solving and analytical skills
## New CCNA Curricula

- Motivate and engage students
- **Features:**
  - New course GUI
  - Aligned with certification changes
  - More efficient translation
  - Introduction to advanced technologies and converged networks

### CCNA Discovery
- Hands-on approach to networking education
- Step-by-step labs
- Teaches the general theory needed to build networks
- Consider additional education in IT and prepare for entry-level IT careers

### CCNA Exploration
- Learn skills in more rigorous, comprehensive, theoretical, and practical way
- Complex and challenging hands-on labs
- Pursue additional technology or engineering education while preparing for careers in IT
CCNA Discovery

- Networking based on application
- Introduction to career exploration and soft skills

CCNA Exploration

- Networking based on technology
- Deep into protocols and theory (LAN, WAN)

Basics of Routing and Switching

Skills for entry-level professions:
- Network installer
- Network technician
- Help desk technician
- Basic network design

Core Skills for CCNA Certification

Skills for wide range of networking professions:
- Network technician
- Network administrator
- Network engineer

Key Factors in Obtaining Jobs: Education, Experience, and Certification
Compare current GUI
to new GUI...
3.1.1 What is a Network?

What do you think of when you hear the term network? There are many types of networks in existence that you may interact with daily.

Networks provide the ability to connect people and equipment, no matter where they are in the world.

For example, in this airport scene there are multiple types of networks used. How many can you find?

Click on items in the scene to locate the different types of networks.
New GUI Prototype Feedback
Worldwide Feedback from 415 Students and 71 Instructors

“The new curriculum was just so straightforward and the links worked so effectively; everything just seemed a lot easier for the students than the original.”
– High School Instructor, United States

“This curriculum is going to reinforce concepts much more easily. They’ll be able to read, they’ll be able to see it visually, then they’ll handle labs, and then any sort of class discussion is going to be more readily understood. I like it.”
– Secondary School Instructor, Europe

93% of instructors believe students will learn more!

CCNA Discovery Prototype Findings, January 2007
New CCNA Curricula
How Do I Choose?

• What are your students’ academic capabilities?

• What are your students’ goals?

• How will your institution integrate the new CCNA curriculum?

• Which curriculum best aligns with your teaching methodology and your students' interests?

• Is the existing CCNA v3.1 curriculum very difficult for your students in terms of theoretical topics?
# How Do I Choose?

What are your students’ academic capabilities?

## CCNA Discovery
- Designed for students with basic PC usage skills

## CCNA Exploration
- Designed for students with advanced problem solving and analytical skills, such as those who are pursuing degrees in engineering, math, or science
How Do I Choose?

What are your students’ goals?

CCNA Discovery

- Designed to make IT relevant, encourage students to consider further education in IT, and help students prepare for entry-level IT careers
- Prepares students for entry-level IT careers as early as the first two courses

CCNA Exploration

- Designed for students who want to pursue additional technology or engineering educations while preparing for an IT career
- Prepares students for entry-level IT careers after the completion of the four-course curriculum
How Do I Choose?

How will your institution integrate the new CCNA curriculum?

**CCNA Discovery**
- Can be delivered as an independent, standalone curriculum, or integrated into broader courses of study at upper-secondary institutions, career and technical schools, and colleges

**CCNA Exploration**
- Can be part of an integrated curriculum or continuing education program at post-secondary institutions such as career and technical schools, colleges, and universities
How Do I Choose?

Which curriculum best aligns with your teaching methodology and your students' interests?

<table>
<thead>
<tr>
<th>CCNA Discovery</th>
<th>CCNA Exploration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaches networking based on application</td>
<td>Teaches networking based on technology concepts</td>
</tr>
<tr>
<td>Maps more directly to everyday experiences with networks and covers key networking concepts based on the types of network environments students may encounter</td>
<td>Allows students to learn skills in a more rigorous, comprehensive, theoretical, and practical way that is reflective of standard college and university-level educational practices</td>
</tr>
<tr>
<td>Uses easy-to-follow labs</td>
<td>Uses language that allows for integration with engineering concepts</td>
</tr>
<tr>
<td>Provides general theory</td>
<td>Includes complex and challenging hands-on labs</td>
</tr>
<tr>
<td>Offers a career-oriented approach to learning networking</td>
<td></td>
</tr>
</tbody>
</table>

Which curriculum best aligns with your teaching methodology and your students' interests?
How Do I Choose?

Is the existing CCNA v3.1 curriculum very difficult for your students in terms of theoretical topics?

**CCNA Discovery**
- Yes, the current CCNA curriculum is very difficult

**CCNA Exploration**
- No, the current CCNA curriculum is just right or not challenging enough
## Feature Comparison

<table>
<thead>
<tr>
<th></th>
<th>CCNA v3.1</th>
<th>CCNA Discovery</th>
<th>CCNA Exploration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expected Student Capabilities</strong></td>
<td>Basic PC usage skills</td>
<td>Basic PC usage skills</td>
<td>Advanced problem-solving and analytical skills typically associated with students in engineering, math, or science degree programs</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>Four courses – structured by protocols and technology</td>
<td>Four courses – structured by practical network environments</td>
<td>Four courses – structured by protocols and technologies within various topologies</td>
</tr>
<tr>
<td></td>
<td>PLUS:</td>
<td></td>
<td>PLUS:</td>
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<tr>
<td></td>
<td>• E-doing</td>
<td></td>
<td>• E-doing</td>
</tr>
<tr>
<td></td>
<td>• Introduction to advanced technologies</td>
<td></td>
<td>• Introduction to advanced technologies</td>
</tr>
<tr>
<td></td>
<td>• Helps prepare students for entry-level IT careers by teaching applied skills early in the curriculum</td>
<td></td>
<td>• Extra theory and more challenging labs</td>
</tr>
<tr>
<td><strong>Business Rules</strong></td>
<td>Required minimum of six months to complete all four courses</td>
<td>Required minimum of four weeks to complete each course and minimum of four months to complete all four courses</td>
<td>• Required minimum of four weeks to complete each course and minimum of three months to complete all four courses</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Courses structured to increase flexibility and efficiency in course sequence</td>
</tr>
<tr>
<td><strong>Time to Learn</strong></td>
<td></td>
<td>~70 hours per course</td>
<td></td>
</tr>
</tbody>
</table>
# CCNA Discovery Changes Compared to Current CCNA

<table>
<thead>
<tr>
<th>CCNA v3.1</th>
<th>Curriculum Framework</th>
<th>CCNA Discovery</th>
<th>Course Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCNA 1</td>
<td>Networking Basics</td>
<td>No 1-to-1 mapping</td>
<td>Networking for Home and Small Businesses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New courses</td>
<td>Working at a Small-to-Medium Business or ISP</td>
</tr>
<tr>
<td>CCNA 2</td>
<td>Routers and Routing Basics</td>
<td></td>
<td>• Introduction to networking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Basic cabling for Small and Home Office</td>
</tr>
<tr>
<td>CCNA 3</td>
<td>Switching Basics and Intermediate Routing</td>
<td>New order, flow, and format</td>
<td>• LAN addressing and network services</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Basic wireless and security</td>
</tr>
<tr>
<td>CCNA 4</td>
<td>WAN Technologies</td>
<td>Practical application, theory, soft skills and career exploration</td>
<td>Designing and Supporting Computer Networks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Design concepts and equipment selection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• IP addressing on a LAN/WAN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Network design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Cisco device configuration upgrade</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Stronger theoretical notion of converged networks</td>
</tr>
</tbody>
</table>
## CCNA Exploration Changes Compared to Current CCNA

<table>
<thead>
<tr>
<th>CCNA v3.1</th>
<th>CCNA Exploration</th>
<th>Course Changes</th>
</tr>
</thead>
</table>
| CCNA 1    | Networking Basics | **Network Fundamentals** | • Intro to Advanced Technologies and Converged Networks  
• Top-Down Approach to Networking |
| CCNA 2    | Routers and Routing Basics | **Routing Protocols and Concepts** | • Can be taught before, with, or after LAN Switching and Wireless  
• Removed IGRP  
• Added VLSM, OSPF, EIGRP  
• More challenging labs |
| CCNA 3    | Switching Basics and Intermediate Routing | **LAN Switching and Wireless** | • Can be taught before, with, or after Routing Protocols and Concepts  
• Added Rapid Spanning Tree protocol  
• Added wireless concepts  
• More challenging labs |
| CCNA 4    | WAN Technologies | **Accessing the WAN** | • Removed ISDN  
• Added new WAN concepts  
• Added ACLs, VPN concepts |
CCNA Discovery and CCNA Exploration Articulation (Course Credit)

- Generally developed at the institutional level based on existing programs and pathways

- Students who complete all four CCNA Discovery or CCNA Exploration courses will be prepared to begin the CCNP curriculum

- An institution may choose to grant CCNA Exploration credit for students who complete the CCNA Discovery curriculum
Adoption & Migration
# Tools Available to You

## Currently Available

<table>
<thead>
<tr>
<th>Datasheets</th>
<th>At-A-Glance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope and Sequence documents</td>
<td>Job framework information</td>
</tr>
<tr>
<td>Detailed equipment list</td>
<td>Curriculum Selection Guidelines</td>
</tr>
<tr>
<td>Product demos</td>
<td>Presentations</td>
</tr>
<tr>
<td>FAQs</td>
<td>New CCNA Video</td>
</tr>
</tbody>
</table>
New CCNA Curricula Video

Cisco Networking Academy
Preparing tomorrow’s technology leaders
Our global e-learning program offers students an opportunity to pursue IT curricula through online instructor-led training and hands-on lab exercises.

A Complete Learning Program
The Cisco Networking Academy Program provides the skills students need to work in IT fields. The program offers Web-based content and multimedia, online assessment, hands-on labs, instructor training, and preparation for industry certifications. Learn more.

Cisco Networking Academy Enters Its 10th Year
AcademySpace.com Launches: Come Join the Celebration!
As we embark on our 10th year, we are celebrating our successes and designing student-focused programs that will stimulate participation and excitement regarding the Cisco Networking Academy Program. We invite you to participate and “spotlight” your Academy. Visit AcademySpace.com.

Global Partnerships for Social Change
Cisco Networking Academy partners with educational, business, government, and nonprofit organizations to deliver the services needed to grow the global IT workforce and encourage socioeconomic development in communities around the world.
Partnership opportunities
Building the digital divide

Careers in Technology
The Cisco Networking Academy Program provides a range of career programs and resources to link students and alumni with potential employers. Learn More.
CCNA Discovery and CCNA Exploration Migration

- Institutions midway through delivering CCNA v3.1 should continue with the CCNA v3.1 curriculum until completion
- Countries with translated versions of CCNA v3.1 courses can wait until a translated version of the new CCNA curricula is available, or adopt the English version
- CCNA v3.1 curriculum English end of availability
  - Course 1  31 July 2008 *
  - Courses 2-4  31 July 2009

* 31 December 2008 in Asia Pacific region only
New CCNA Curricula and Certification Timeline

- **New CCNA Curricula Announcements**
  - **Nov 2005**: CCNA Discovery – final 2 courses
  - **May 2007**: CCNA Exploration – final 2 courses (English Versions)
  - **June 2007**: CCNA Discovery – 2 courses
  - **July 2007**: CCNA Exploration – 2 courses (English Versions)

- **General Availability**
  - **June 25**: Released on June 25
  - **Aug 2007**: CCNA Discovery – final 2 courses
  - **Sept 2007**: CCNA Exploration – final 2 courses (English Versions)

- **New CCNA & New CCENT Certification Announced**
  - **Aug 15**: New Certification Exams Aug 15
  - **June 25**: Publicly Announced June 25
CCNA Discovery Details
CCNA Discovery Course Sequence

<table>
<thead>
<tr>
<th>CCNA Discovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Networking for Home and Small Businesses</td>
</tr>
<tr>
<td>Working at a Small-to-Medium Business or ISP</td>
</tr>
<tr>
<td>Introducing Routing and Switching in the Enterprise</td>
</tr>
<tr>
<td>Designing and Supporting Computer Networks</td>
</tr>
</tbody>
</table>

- Course Objectives
- Chapter Outlines
CCNA Discovery: Networking for Home and Small Businesses - Course Objectives

- Set up a personal computer system, interface cards, and peripheral devices
- Plan and install a home or small business network and connect it to the Internet
- Verify and troubleshoot network and Internet connectivity
- Share resources (files and printers) among multiple computers
- Recognize and mitigate security threats to the home network
- Configure and verify common Internet applications
- Configure basic IP services through a GUI interface
CCNA Discovery: Working at a Small-to-Medium Business or ISP - Course Objectives

- Describe the structure of the Internet and how communication occurs between hosts
- Install, configure, and troubleshoot Cisco IOS devices for Internet and server connectivity
- Plan a basic wired infrastructure to support network traffic
- Configure a server to share resources and provide common Web services
- Implement basic WAN connectivity using Telco services
- Demonstrate proper disaster recovery procedures and perform server backups
- Monitor network performance and isolate failures
- Troubleshoot problems using an organized, layered procedure
- Describe the OSI model and the process of encapsulation
CCNA Discovery: Introducing Routing and Switching in the Enterprise - Course Objectives

- Implement a LAN for an approved network design
- Configure a switch with VLANs and inter-switch communication
- Implement access lists to permit or deny specified traffic
- Configure a routing protocol on Cisco devices
- Implement WAN links
- Perform LAN, WAN, and VLAN troubleshooting using a structured methodology and the OSI model
CCNA Discovery: Designing and Supporting Computer Networks - Course Objectives

- Gather customer requirements
- Design a simple Internetwork using Cisco technology
- Design an IP addressing scheme to meet LAN requirements
- Create an equipment list to meet LAN design requirements
- Create and present a proposal to a customer
- Install and configure a prototype Internetwork
- Obtain and upgrade IOS in Cisco devices
## CCNA Discovery Course Outline

<table>
<thead>
<tr>
<th>Ch</th>
<th>Networking for Home and Small Businesses</th>
<th>Working at a Small-to-Medium Business or ISP</th>
<th>Introducing Routing and Switching in the Enterprise</th>
<th>Designing and Supporting Computer Networks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Personal Computer Hardware</td>
<td>The Internet and Its Uses</td>
<td>Networking in the Enterprise</td>
<td>Introducing Network Design Concepts</td>
</tr>
<tr>
<td>2</td>
<td>Operating Systems</td>
<td>Help Desk</td>
<td>Exploring the Enterprise Network Infrastructure</td>
<td>Gathering Network Requirements</td>
</tr>
<tr>
<td>3</td>
<td>Connecting to the Network</td>
<td>Planning a Network Upgrade</td>
<td>Switching in an Enterprise Network</td>
<td>Characterizing the Existing Network</td>
</tr>
<tr>
<td>4</td>
<td>Connecting to the Internet Through an ISP</td>
<td>Planning the Addressing Structure</td>
<td>Addressing in an Enterprise Network</td>
<td>Identifying Application Impacts on Network Design</td>
</tr>
<tr>
<td>5</td>
<td>Network Addressing</td>
<td>Configuring Network Devices</td>
<td>Routing with a Distance Vector Protocol</td>
<td>Creating the Network Design</td>
</tr>
<tr>
<td>6</td>
<td>Network Services</td>
<td>Routing</td>
<td>Routing with a Link-State Protocol</td>
<td>Using IP Addressing in the Network Design</td>
</tr>
<tr>
<td>7</td>
<td>Wireless Technologies</td>
<td>ISP Services</td>
<td>Implementing Enterprise WAN Links</td>
<td>Prototyping the Campus Network</td>
</tr>
<tr>
<td>8</td>
<td>Basic Security</td>
<td>ISP Responsibility</td>
<td>Filtering Traffic Using Access Control Lists</td>
<td>Prototyping the WAN</td>
</tr>
<tr>
<td>9</td>
<td>Troubleshooting Your Network</td>
<td>Course Summary: Putting it all together</td>
<td>Troubleshooting an Enterprise Network</td>
<td>Preparing the Proposal</td>
</tr>
<tr>
<td>10</td>
<td>Course Summary: Putting it all together</td>
<td></td>
<td>Course Summary: Putting it all together</td>
<td></td>
</tr>
</tbody>
</table>
# CCNA Discovery Instructional Methodology

<table>
<thead>
<tr>
<th>Skill</th>
<th>Networking for Home or Small Businesses</th>
<th>Working at a Small-to-Medium Business or ISP</th>
<th>Introducing Routing and Switching in the Enterprise</th>
<th>Designing and Supporting Computer Networks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routing</td>
<td>Routing table operation</td>
<td>Introduce protocols; configure routes and routers</td>
<td>Configure VLAN, RIPv2, EIGRP, OSPF</td>
<td>Design, configure, and test EIGRP and OSPF</td>
</tr>
<tr>
<td>Switching</td>
<td>Introduce and practice broadcast domain, switch operation, MAC address table concepts</td>
<td>Configure switch management interface and port security, configure and connect switches</td>
<td>Configure VLAN membership, Spanning Tree, 802.1q trunking operation</td>
<td>Design and prototype access layer switched network, configure and verify switch operations</td>
</tr>
<tr>
<td>Addressing</td>
<td>Implement IP addressing, DHCP configuration, and NAT operation.</td>
<td>Intro and practice subnets, classless IP addressing and routing, VLSM, subnetting methods, IPv6</td>
<td>Reinforce VLSM, Introduce route summarization and aggregation</td>
<td>Review and expand IPv6; IP addressing design and configuration</td>
</tr>
<tr>
<td>ACLs</td>
<td></td>
<td></td>
<td>Verify, implement and troubleshoot ACLs in the Enterprise</td>
<td>Review ACLs and use to incorporate security in a branch office network</td>
</tr>
</tbody>
</table>
CCNA Discovery
Soft Skills Highlighted

Networking for Home and Small Businesses – Chapters 3, 9

- Communications Skills
  - Active listening with customers
  - Describing technical concepts to non-technical users
- Basic Troubleshooting Skills
  - Use of Help Desk
- Documentation Skills

Working at a Small-to-Medium Business or ISP – Chapters 2, 8

- Communications Skills
  - Active listening with customers
  - Effectively handling frustrated users
- Advanced Troubleshooting Skills
  - Problem escalation
- Documentation Skills
  - Provide status and resolution
- Time Management Skills
- Professionalism and Teamwork Skills
CCNA Discovery Server
CCNA Discovery Server

- Software that provides network services in an isolated lab environment, disconnected from the Internet
- Offers great flexibility to enrich the learning experience
- Network services provided:
  - DNS
  - Web Server
  - FTP
  - Telnet
  - SSH
  - DHCP
- CCNA Discovery Server required to complete many of the labs
- No additional hardware or equipment required
- Detailed instructions, FAQs and Discovery Server software can be downloaded from Academy Connection Tools page
Example of Network Services

6.1.1 Client Server Relationship

The key characteristic of client-server systems is that the client sends a request to a server, and the server responds by carrying out a function, such as sending information back to the client. The combination of a web browser and a web server is perhaps the most commonly used instance of a client/server system.

Roll over each server for a brief description of network services provided.
Lab Activities

- The course includes lab activities that allow students to visualize and have hands-on experience with the network services introduced in the course.
How do I get Discovery Server?

- The Discovery Server is available for download from any CCNA Discovery course tools page on Academy Connection.
CCNA Exploration Details
CCNA Exploration

• Course Objectives
• Chapter Outlines
CCNA Exploration: Network Fundamentals
Course Objectives

- Explain the importance of data networks and the Internet as a platform to support business communications and everyday tasks
- Explain how communication occurs in data networks and the Internet
- Describe the devices and services that support communication across an Internetwork
- Use network protocol models to explain the layers of communications that occur in data networks
- Explain the role of protocols in data network communications
- Describe the importance of addressing and naming schemes at various layers of data networks
- Describe the protocols and services provided by the application layer in the OSI model and describe how this layer operates in simple networks
- Analyze the operations and features of the OSI model transport layer protocols and services
CCNA Exploration – Course Objectives (Continued)

- Analyze the operations and feature of the OSI model network layer protocols and services and explain the fundamental concepts of routing
- Design, calculate, and apply an appropriate addressing scheme to fulfill given requirements
- Describe the operation of protocols at the OSI data link layer and how they support communications
- Explain the role of physical layer protocols and services in supporting communications across data networks
- Explain fundamental Ethernet concepts, media, services, and operation
- Employ basic cabling and network designs to connect devices for a given network requirement
- Build a simple Ethernet network using routers and switches
- Use Cisco CLI commands to perform basic router and switch configuration and verification
CCNA Exploration: Routing Protocols and Concepts - Course Objectives

- Describe the purpose, nature, and operations of a router
- Explain the critical role that routers play in enabling communication across multiple networks
- Describe the purpose and nature of routing tables
- Explain how a router determines a path and switches packets
- Configure and verify router interfaces
- Describe the purpose and procedure for configuring static routes
- Describe the role of dynamic routing protocols and place these protocols in the context of modern network design
- Describe how metrics are used by routing protocols and Identify the metric types used by dynamic routing protocols
- Identify the characteristics of distance vector routing protocols
- Describe the network discovery process of distance vector routing protocols using Routing Information Protocol (RIP)
- Describe the functions, characteristics, and operation of RIPv1
CCNA Exploration – Course Objectives (Continued)

- Compare and contrast classful and classless IP addressing
- Describe classful and classless routing behavior in routed networks
- Design and implement a classless IP addressing scheme for a given network
- Demonstrate comprehensive RIPv1 configuration skills
- Apply basic RIPv2 configuration commands and evaluate classless routing updates
- Describe the main features and operation of the Enhanced Interior Gateway Routing Protocol (EIGRP)
- Use advanced configuration commands with routers implementing EIGRP
- Describe the basis features and concepts of link-state routing protocols
- Describe the purpose, nature, and operation of OSPF
CCNA Exploration: LAN Switching and Wireless - Course Objectives

- Identify and correct common network problems at layers 1, 2, 3, and 7 using a layered model approach
- Interpret network diagrams
- Select the appropriate media, cables, ports, and connectors to connect switches to other network devices and hosts
- Explain the technology and media access control method for Ethernet networks
- Explain basic switching concepts and the operation of Cisco switches
- Perform and verify initial switch configuration tasks including remote access management
- Describe enhanced switching technologies such as VLANs, VLAN Trunking Protocol (VTP), Rapid Spanning Tree Protocol (RSTP), Per VLAN Spanning Tree Protocol (PVSTP), and 802.1q
- Describe how VLANs create logically separate networks and how routing occurs between them
- Configure, verify, and troubleshoot VLANs, trunking on Cisco switches, interVLAN routing, VTP, and RSTP
- Interpret the output of various `show` and `debug` commands to verify the operational status of a Cisco switched network
CCNA Exploration – Course Objectives (Continued)

- Verify network status and switch operation using basic utilities such as ping, traceroute, Telnet, Secure Shell (SSH), Address Resolution Protocol (ARP), and ipconfig, as well as the show and debug commands.
- Identify, prescribe, and resolve common switched network media issues, configuration issues, autonegotiation, and switch hardware failures
- Manage Cisco IOS® Software
- Manage Cisco IOS configuration files (save, edit, upgrade, and restore)
- Describe standards associated with wireless media, such as (IEEE WI-FI Alliance, ITU/FCC) standards
- Identify and describe the purpose of the components in a small wireless network, such as Service Set Identification (SSID), Basic Service Set (BSS), and Extended Service Set (ESS)
- Identify basic configuration parameters on a wireless network to ensure that devices connect to the correct access points
- Compare and contrast Wi-Fi Protected Access (WPA) security features and capabilities of open, Wired Equivalent Privacy (WEP), and WPA-1/2 networks
- Describe common wireless-network implementation issues such as interference and misconfiguration
CCNA Exploration: Accessing the WAN - Course Objectives

- Describe the impact of Voice Over IP and Video Over IP applications on a network
- Identify and correct common network problems at layers 1, 2, 3, and 7 using a layered model approach
- Interpret network diagrams
- Describe the components required for network and Internet communications
- Implement basic switch security measures such as port security, trunk access, and management VLANs
- Explain the operation and benefits of using DHCP and DNS
- Configure, verify, and troubleshoot DHCP and DNS operations on a router
- Describe current network security threats and explain how to implement a comprehensive security policy to mitigate common threats to network devices, hosts, and applications
- Describe the functions of common security appliances and applications
- Describe recommended security practices to secure network devices
CCNA Exploration – Course Objectives (Continued)

- Describe the purpose and types of access control lists (ACLs)
- Configure and apply ACLs based on network filtering requirements
- Configure and apply an ACLs to limit Telnet and SSH access to the router using the Security Device Manager command-line interface (SDM/CLI)
- Verify, monitor, and troubleshoot ACLs in a network environment
- Explain the basic operation of Network Address Translation (NAT)
- Configure NAT for given network requirements using SDM/CLI
- Troubleshoot NAT issues
- Describe different methods for connecting to a WAN
- Configure and verify a basic WAN serial connection
- Configure and verify a Point-to-Point Protocol (PPP) connection between Cisco routers
- Configure and verify Frame Relay on Cisco routers
- Troubleshoot WAN implementation issues
- Describe the importance, benefits, role, impact, and components of VPN technology
## CCNA Exploration Course Outline

<table>
<thead>
<tr>
<th>Ch</th>
<th>Network Fundamentals</th>
<th>Routing Protocols and Concepts</th>
<th>LAN Switching and Wireless</th>
<th>Accessing the WAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Living in a Network-Centric World</td>
<td>Introduction to Routing and Packet Forwarding</td>
<td>LAN Design</td>
<td>Introduction to WANS</td>
</tr>
<tr>
<td>2</td>
<td>Communicating over the Network</td>
<td>Static Routing</td>
<td>Basic Switch Concepts and Configuration</td>
<td>PPP</td>
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<td>3</td>
<td>Application Layer Functionality and Protocols</td>
<td>Introduction to Dynamic Routing Protocols</td>
<td>VLANS</td>
<td>Frame Relay</td>
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<td>4</td>
<td>OSI Transport Layer</td>
<td>Distance Vector Routing Protocols</td>
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<td>Network Security</td>
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<td>5</td>
<td>OSI Network Layer</td>
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<td>6</td>
<td>Addressing the Network - IPv4</td>
<td>VLSM and CIDR</td>
<td>Inter-VLAN Routing</td>
<td>Teleworker Services</td>
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<td>7</td>
<td>Data Link Layer</td>
<td>RIv2</td>
<td>Basic Wireless Concepts and Configuration</td>
<td>IP Addressing Services</td>
</tr>
<tr>
<td>8</td>
<td>OSI Physical Layer</td>
<td>The Routing Table: A Closer Look</td>
<td></td>
<td>Network Troubleshooting</td>
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<tr>
<td>9</td>
<td>Ethernet</td>
<td>EIGRP</td>
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<td>10</td>
<td>Planning and Cabling Your Network</td>
<td>Link-State Routing Protocols</td>
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<td>11</td>
<td>Configuring and Testing Your Network</td>
<td>OSPF</td>
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</table>
CCNA Exploration: Flexibility in Course Sequence

1. Network Fundamentals
2. Routing Protocols and Concepts
3. LAN Switching and Wireless
4. Accessing the WAN
Top Down Approach

- Following a top down approach to teaching Networking, CCNA Exploration introduces application and application services very early in the course.

- The course explains the role and nature of the main application protocols and their relation to protocols and services provided to them by the lower layers of the network.
Lab Activities and Packet Tracer Activities

- The course includes an important number of lab and Packet Tracer Activities that allow students to visualize and have hands-on experience with the application protocols and services introduced in the course.
CCNA Eagle Server

- Software that provides network services and applications in an isolated lab environment, disconnected from the Internet
- Offers great flexibility to enrich the learning experience
- Network services are provided:
  - DNS
  - Web Server
  - FTP
  - TFTP
  - SSH
  - Instant Messaging
  - Wiki Server
  - Email
- CCNA Eagle Server is required to complete most of the labs
- No additional hardware or equipment required
- Detailed instructions, FAQs and Eagle Server software can be downloaded from Academy Connection Tools page
Eagle Server

- The graph illustrates the topology used throughout the Network Fundamentals course.
- The Eagle Server is a tool provided by Cisco that includes the set of application services and protocols used in the lab activities.
How do I get Eagle Server?

- Eagle Server images as well as detailed instructions and FAQs on how to install and use the tool are available for download from the Tools page in Academy Connection.
Instructor Training
## Instructor Training

<table>
<thead>
<tr>
<th></th>
<th>CCNA Discovery</th>
<th>CCNA Exploration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Instructor</strong></td>
<td>Not required but strongly recommended</td>
<td>(min. 8-10 hours per course)</td>
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<tr>
<td></td>
<td>Encouraged to read the new CCNA curricula, Interactive Course Guide (ICG), Instructor Reference Guide (IRG) and slide presentations</td>
<td>(min. 4-8 hours per course)</td>
</tr>
<tr>
<td><strong>New Instructor</strong></td>
<td>In person training required. Approximately 40 classroom hours per course; similar to current CCNA v3.1</td>
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</table>
Training Resources for Existing Instructors

Reference Materials

Instructor Reference Guide
- Comparison of New Curriculum with Existing Curriculum
  - New Topics
  - New Skills
  - New Equipment
- Suggestions for Use of Existing Equipment

Interactive Course Guide
- Key Ideas
- Teaching Goals
- Critical Concepts
- How to Teach Concepts
- Discussion Ideas
- Reflection
- Case Studies, Labs, Videos, Tools
Training Resources for Existing Instructors
Training Resources for New Instructors

Traditional Face-to-Face Training

- Academy curriculum and Interactive Course Guide (ICG)
  - Focus on main ideas, strategies for teaching difficult concepts, and connection with real world scenarios
- Interactive sessions for skills-based training
- Content and Skills Exam
### Instruction Time Guidelines*

**CCNA Discovery**

<table>
<thead>
<tr>
<th>Course</th>
<th>Chapter</th>
<th>Chapter Time</th>
<th>Lecture Time</th>
<th>Lab Time</th>
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*These are approximate guidelines for planning purposes. Actual times may vary based on instructional delivery preferences.*
# Instruction Time Guidelines*

## CCNA Discovery

<table>
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<th>Course</th>
<th>Chapter</th>
<th>Chapter Time</th>
<th>Lecture Time</th>
<th>Lab Time</th>
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## Instruction Time Guidelines*

### CCNA Exploration

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<th>Lecture Time</th>
<th>Lab Time</th>
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Instruction Time Guidelines*
CCNA Exploration

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<td>The Routing Table: A Closer Look</td>
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<td></td>
<td>EIGRP: A Distance Vector, Classless Routing Protocol</td>
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<td>Link-State Routing Protocols</td>
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<td>Single Area OSPF: A Link State, Classless Routing Protocol</td>
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</table>

Chapter 100% 51% 49%

*These are approximate guidelines for planning purposes. Actual times may vary based on instructional delivery preferences.
Module 3.1.2 Teaching Goals

Your Challenge As A Teacher In This Section Is To:

- Integrate the definition of a computer network into their construct of communication.
- Differentiate when a host computer is and is not a client.
- Clarify when a peer-to-peer network is used.
- Demonstrate the construction and verification of a client/server network.

Critical Concepts

Misconceptions and Errors

Students may be confused that a host, such as a personal computer, can function as both a server (for example, a print server) and as a client (browsing the Internet). It can be helpful to demonstrate a personal computer serving in both roles so that students clearly understand that it is software that determines this status, not a host/server.

Students who have some prior exposure to networking may be disdainful of peer-to-peer networking as a solution. The challenge is to help these students see that peer-to-peer networks have a place in the SDN/40 networking.

Students are sometimes confused by the differences between the physical layout of the network and the logical path followed by packets.
ICG Structure - Example

Module 5.1

Big Ideas: This module presents an overview of network fundamentals including:
- Benefits of networks to small home (SOHO) offices
- Identification of network components
- Client/server relationships
- Components/construction of a P2P network
- Difference between logical and physical topologies

Your Challenge As A Teacher In This Section Is To:
1. Integrate the definition of a computer network into their construct of communication.
2. Differentiate when a host computer is acting as a client or server.
3. Clarify when a peer-to-peer network is an appropriate networking solution.
4. Demonstrate the construction and verification of a simple P2P network.

What are the Critical Concepts/Processes?
1. Identification, categorization, and role of network components (peripheral, host, network device, media).
2. Servers are computer hosts that handle network resources and provide services to clients. Clients make requests and display information received from the server.
3. Advantages and disadvantages of peer-to-peer networking.
4. Construction and verification of a peer-to-peer network.
5. Difference between logical and physical topologies:
   a. Logical topologies show how devices communicate regardless of location and do not show the devices or media that interconnect them.
   b. Physical topologies show how the devices are actually connected including the devices between them.

Misconceptions and Errors
Students may be confused that a host, such as a personal computer, can function as both a server (for example a print server) and as a client (browsing the Internet). It can be helpful to demonstrate a personal computer serving in both roles so that students clearly understand that it is software that determines the status as a host/server.

Students, who have some prior exposure to networking, may be disdainful of peer-to-peer networking as a solution. The challenge is to help these students see that peer-to-peer networks have a place in the SOHO networking.

Students are sometimes confused by the differences between the physical layout of the network and the logical path followed by packets.

How to Teach It

Introduction (Making the Topic Relevant): Do you know what a network is? A network provides the ability to
ICG Structure – Example (Cont’d)

Reflection/Integration

1. Extend the lecture/discussion on peer-to-peer and client/server networks by asking students to identify other networks they have used. These choices could include many types of networks including video game networks both platform (Xbox Live, PS3, Nintendo Wii, Nintendo DS) or computer based; music distribution networks (Rhapsody, Morpheus, iTunes, Kazza, etc.); radio networks, PDA’s, and other devices that students may have familiarity in using in a networked format. Ask the students to select a network they have used to diagram their “best guess” as to the logical and physical devices (hubs, ISR’s, switches, and so on) for it.

2. After completing the client software of servers file, web, and email.

Lab/Practise

1. Module 3.1.5 – Build a Simple Peer-to-Peer Network

2. File sharing: Instructor demonstrates the creation, saving and retrieval of a file, using both Windows Explorer and My Computer to demonstrate the process for saving and retrieval of a file. Then students should complete the following tasks:
   - Create a one-word file in a text editor.
   - Save the file to the host computer.
   - Save the file to the server.

   If students do not have access to a network server have them assemble a simple peer-to-peer network and utilize one of the hosts as a server, the other as the client.

3. Present photographs/schematics of small home/office networks to groups of students. Ask students what they think the connections look like getting to the server, to network devices, to the Internet. Ask them to prepare both logical and physical topology “maps” of the network, remembering to use the correct terminology of hosts, peripherals, network devices, and media.

   Ask the students to share their maps with the whole class explaining their decision process in drawing and labeling devices.

Version date: January 9, 2007

Editor: K. Munacutter
Training Scenarios for New CCNA Curricula

Existing Instructor

- Log into Academy Connection
- Select Academy Course Materials
- Select ICG for course
- Review Instructor Reference Guide

New Instructor

- Attend scheduled training at Training Center
- Complete course exam and skills exam

- Existing instructors will automatically be enabled to offer the new CCNA courses
Academy Connection – Curriculum Prerequisites
## CCNA Discovery v4.0
### Academy Connection System Prerequisites for Enrollment

<table>
<thead>
<tr>
<th>Instructor Prerequisites (CCNA v3.1)</th>
<th>Student Prerequisites (CCNA v3.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCNA 2 v3.1 AND Orientation OR Networking for Home and Small Businesses AND Orientation OR Accessing the WAN AND Orientation</td>
<td>None but recommend that student have basic PC usage skills*</td>
</tr>
<tr>
<td>CCNA 2 v3.1 AND Orientation OR Working at a Small-to-Medium Business or ISP OR Networking Fundamentals</td>
<td>CCNA 1 v3.1 OR Networking for Home and Small Businesses OR Networking Fundamentals</td>
</tr>
<tr>
<td>CCNA 3 v3.1 AND Orientation OR Introducing Routing and Switching in the Enterprise OR Accessing the WAN AND Orientation</td>
<td>Working at a Small-to-Medium Business or ISP</td>
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<td>CCNA 4 v3.1 AND Orientation OR Designing and Supporting Computer Networks OR Accessing the WAN AND Orientation</td>
<td>Introducing Routing and Switching in the Enterprise</td>
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</tbody>
</table>

* Student is typically attending a secondary school, technical school, or college
## CCNA Exploration v4.0
### Academy Connection System Prerequisites for Enrollment

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<tr>
<th>Networking Fundamentals</th>
<th>Routing Protocols and Concepts</th>
<th>LAN Switching and Wireless</th>
<th>Accessing the WAN</th>
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<tr>
<td>Student (prereqs for enrollment)</td>
<td>None but recommend that students have advanced analytical and problem solving skills*</td>
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* Student is typically attending a postsecondary institution, such as a technical school, college, or university
## CCNA Exploration v4.0
### Academy Connection System Prerequisites for Teaching

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<th>Networking Fundamentals</th>
<th>Routing Protocols and Concepts</th>
<th>LAN Switching and Wireless</th>
<th>Accessing the WAN</th>
</tr>
</thead>
</table>
Translation
CCNA Discovery and CCNA Exploration Translation Strategy

- Deliver cost-effective, timely curricula in prioritized languages
- Partnership model between corporate, field, and partners
  - Share costs
  - Drive prioritization
- Clear quality control process
  - Protect Cisco brand
  - Leverage partnership involvement
CCNA Courses Designed for Translation

- Text expansion allowance
- Language translation toggle
- Graphical and GUI text is stored separately, then automatically pulled into GUI from English and local text files
- Content reviewed globally by instructors with technical and English experience

Old GUI

New GUI
Cisco Networking Academy Translation Framework

<table>
<thead>
<tr>
<th>Category</th>
<th>Globally Strategic</th>
<th>Regionally Strategic</th>
<th>Locally Strategic</th>
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<td>Moderate Networking Academy market potential</td>
<td>Networking Academy country alignment</td>
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<td>Moderate demand for skilled people</td>
<td>Alignment with partner goals</td>
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<td>Alignment with cert priorities</td>
<td>Alignment with certification priorities and partner goals</td>
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<td>NetAcad global alignment</td>
<td>Networking Academy theatre alignment</td>
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<td>6 UN languages: Arabic, English, French, Russian, Simplified Chinese, Spanish</td>
<td>Prioritized installed base + theatre priorities</td>
<td>Examples: Hungarian, Slovak</td>
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<td></td>
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<td>Examples: Br. Portuguese, German, Japanese, Polish</td>
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FY’08 Translation Roadmap
U.N. Languages

Aug ’07 – Oct ’07  Nov ’07 – Jan ’08  Feb ’08 – Apr ’08  May ’08 – Jul ’08

Q1 FY08  Q2 FY08  Q3 FY08  Q4 FY08

Arabic
ITE v3.1

French
Discovery 1 & 2
Exploration 1 & 2
ITE: PC v4.0

S Chinese
Discovery 1
Discovery 2
Exploration 1 & 2

Spanish
Discovery 1 & 2
Exploration 1 & 2
ITE: PC v4.0

Russian
Discovery 1 & 2
ITE: PC v4.0

Discovery 3 & 4
Exploration 3 & 4
Equipment
CCNA Discovery and CCNA Exploration Equipment

- The minimum required equipment bundle is the same for CCNA Discovery and CCNA Exploration.
  
  The equipment list has been reduced from current CCNA requirements due to the enhanced simulation tools and flexibility that are built into the new curricula.

  A best practice guide on utilizing different equipment and classroom management scenarios will be published prior to product availability.

- Equipment required for current Academies migrating to new curricula:
  
  2 Linksys wireless routers (Linksys WRT150N is preferred, but other acceptable models include WRT54G, WRT300N, and WRT350N) or SOHO equivalent.
New Academy Equipment

Adopting CCNA Discovery or CCNA Exploration:

- **Minimum required equipment bundle:**
  - 3 Cisco 1841 routers with Base IP IOS, 128 MB DRAM, 32 MB Flash
  - 3 2960 switches
  - 2 Linksys wireless routers (Linksys WRT150N is preferred, but other acceptable models include WRT54G, WRT300N, and WRT350N) or SOHO equivalent
  - Serial cables

Adopting only CCNA Discovery:

- **Minimum required equipment bundle:**
  - 3 Cisco 1841 routers with Base IP IOS, 128 MB DRAM, 32 MB Flash
  - 3 four-port Ethernet Switch Interface Cards for the 1841 Routers
  - 2 Linksys wireless routers (Linksys WRT150N is preferred, but other acceptable models include WRT54G, WRT300N, and WRT350N) or SOHO equivalent

**Typical lab configuration:**

- 1 local Web server to host curriculum
- 3 desktop PCs
- Ethernet cables
- Cable-making and cable-testing equipment
PC Requirements

- 1 Lab PC with Microsoft Windows 2000 server
- 2 Lab PCs or laptops (Win 2000 or Windows XP)
# PC Requirements - Recommended

<table>
<thead>
<tr>
<th>Current</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU</strong></td>
<td>Intel Pentium III or higher processor</td>
</tr>
<tr>
<td><strong>Operating System</strong>*</td>
<td>Windows 2000 or Windows XP</td>
</tr>
<tr>
<td><strong>RAM</strong></td>
<td>128 MB Installed RAM</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Screen Resolution</strong></td>
<td>1024 x 768 Resolution</td>
</tr>
<tr>
<td><strong>Browsers</strong></td>
<td>Netscape 7.0x and 7.1, Internet Explorer 6.0 or 5.5 SP 2</td>
</tr>
<tr>
<td><strong>Flash</strong></td>
<td>Macromedia Flash Player 7.0 or higher</td>
</tr>
<tr>
<td><strong>Drivers</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Mouse, speakers, headphones, and sound card</td>
</tr>
</tbody>
</table>

*Note: Current version of Packet Tracer does not run in Native mode in MacOS or Linux. Windows Emulators are required*
CCNA Discovery: Networking for Home and Small Businesses - Lab Topology

The 1841 Router simulates only the ISP connectivity, no student configuration of the 1841. Topology represents an ISP, with a small office and a home office customer. Multiple pods will be connected serially using the serial ports on the 1841.

Recommended six students per pod.
CCNA Discovery: Networking at a Small-to-Medium Business or ISP - Lab Topology

Students will configure RIPv2 routing in a three-router topology. There is no specific configuration of the 2960 switches, other than basic setup. Topology will be reconfigured during the course.

Recommended six to eight students per pod
CCNA Discovery: Introducing Routing and Switching in the Enterprise & Designing and Supporting Computer Networks - Lab Topology

This topology could be used for routing protocols RIP, EIGRP, and OSPF—with or without switches.

VLAN 3

VLAN 12

VLAN 14

VLAN 15

VLAN 3 (Server Farm)
VLAN 12 (users)
VLAN 14 (management)
VLAN 15 (wireless)

VLAN 12

VLAN 3 — IP address 192.168.3.x
VLAN 12 — IP address 192.168.12.x
VLAN 14 — IP address 192.168.14.x
VLAN 15 — IP address 192.168.15.x

CCNA Discovery: Introducing Routing and Switching on the Enterprise and
CCNA Discovery: Designing and Supporting Computing Networks
Hands On Lab Topology (Preliminary)
-- 1641 ISRI routers
-- 2360 Switches
-- Linksys Wireless routers
-- Recommend 8 students per pod
CCNA Exploration: Network Fundamentals Lab Topology

- Shared "model" Internet connection and LAN
- Isolated from any production networks
- <= 4 students per pod PCs

Labs include:
- Installing application clients
- Using Web, DNS, email, chat, FTP
- Using Wireshark to sniff traffic
- Network testing

Secondary Lab Pod
- Used in Chapters 10 and 11
- Students use this topology to plan, build, configure, and test
- <=4 students per pod of 1 router, 1 switch, 3 PCs

Labs include:
- Planning
- Building
- Configuring
- Testing
- Basic IOS

Pod 1
Pod 2
Pod N
CCNA Exploration: Routing Protocols and Concepts - Lab Topology

- Model Routing Network
- Isolated from any production networks
- NETLAB "friendly"
- ≤6 students per pod of 3 routers
CCNA Exploration: LAN Switching and Wireless - Lab Topology
CCNA Exploration: Accessing the WAN Lab Topology
Cisco Certifications
Changes to Cisco Career Certification
A Lifecycle of Learning

Updates to CCNA
A Foundation in Networking

- Greater breadth reflects today’s enterprise networks
- Focus on performance-based skills and hands-on practice
- Localization addresses worldwide skills gap

Introduction of CCENT
An Accessible Entry Point

- Cisco CCENT Entry-Level Network Technician certifies skills for entry level network support
- An intermediate step towards CCNA for those with little or no work experience
Growing Role of the Network

Future Converged Apps
- IP Video
- Unified Communications
- Storage
- Enhanced Security
- Wireless
- Voice transport
- Telecommuting/VPN
- Switching
- Routing

Converged Solutions

Networking Skills Increase with the Role of the Network

Broad Training & Experience Required for New Careers
Networking Job Demand Estimated to Grow
~3M in 2012

Right Experts—Right Place—Right Time

Source: IDC White Papers on Networking Skills Gaps for – Europe (Sep 2005), Middle East and Pakistan (May 2006), APAC (Nov 2006), Israel (May 2006), South Africa (May 2006); Bain Analysis
Certification Levels – New Entry Point

- Expert: CCIE®
- Professional: CCNP®, CCIP®, CCSP®, CCVP™, CCDP®
- Associate: CCNA®, CCDA®

General
- Security
- IP Communications
- Wireless
- Storage Networking
- Optical
- Advanced Routing and Switching
- Foundation

Focused

Cisco Certified Entry Network Technician (CCENT™)
Trends at the Entry Level

- CCNA is big step for many new grads, career-changers

- Entry level job analysis shows:
  - On average worldwide, networking job roles require 1-3 years experience
  - Many employers hiring for entry-level IT positions

- Cisco research confirmed interest in lower-level certification among the following employers:
  - VARs focused on SMB
  - Enterprise customers
  - Service providers
  - Technology/retail support organization
  - Networking Academy feedback
Updates to Cisco Certification

- Cisco is expanding certification of entry level skills and knowledge—the foundation of a successful career in networking.

- *New CCNA certification exam* has greater breadth—more security, troubleshooting and basic wireless—and more time devoted to performance-based skills.

- Introduction of *new CCENT entry level certification*
  - Cisco Certified Entry Network Technician
  - Optional certification after the first two courses of CCNA Discovery curriculum
  - Aligns with entry level networking support positions
Paths to CCNA Certification

CCNA Discovery
- Networking for Home and Small Businesses
- Working at a Small-to-Medium Business or ISP
- Introducing Routing and Switching in the Enterprise
- Designing and Supporting Computer Networks

CCNA Exploration
- Networking Fundamentals
- Routing Protocols and Concepts
- LAN Switching and Wireless
- Accessing the WAN

CCNA Discovery
- Networking for Home and Small Businesses
- Working at a Small-to-Medium Business or ISP
- Introducing Routing and Switching in the Enterprise
- Designing and Supporting Computer Networks

CCENT Certification (optional)

CCNA Certification
## Aligning Certifications to Jobs

<table>
<thead>
<tr>
<th>Certification</th>
<th>Skills Certified</th>
<th>Job Roles</th>
<th>Job Titles</th>
</tr>
</thead>
</table>
| Cisco Certified Entry Network Technician (CCENT) | • Install, operate, and troubleshoot small routed and switched networks  
• Basic optimization of network  
• Connect to other networks (LANs and WANs)  
• Install a small wireless network  
• Identify security threats and basic mitigation methods | • Setup, install and maintain PCs, servers, racks and cabling  
• Train users  
• Support senior technicians  
• Staff a help desk, retrieve calls, and isolate problems  
• Use monitoring tools to verify network operations | • Entry Level Help Desk Technician  
• Entry Level Technical Support  
• IT Systems Coordinator  
• Entry Level Operating Center Technician  
• Entry Level IT Technician/ Specialist |
| CCNA                          | • Install, operate and troubleshoot medium sized routed and switched networks  
• Implement and troubleshoot various protocols to manage addressing, perform load balancing and authentication  
• Establish and troubleshoot connection to service provider over WAN | • Assist in design, installation, configuration and maintenance of medium sized routed and switched networks  
• Isolate network problems  
• Support users via helpdesk for hardware, software and network  
• Use monitoring tools to ensure network operations | • Help Desk Support Specialist  
• Network Technician  
• Network Specialist  
• Network Administrator  
• Technical Support Specialist  
• Network Engineering Technician |
Cisco Certification and Training - Value to Employers

Acquire:

- Pre-qualifies applicants

Develop:

- Proficient in the latest advanced technologies

Retain:

- Supports employee career development

Productivity

- Credibility with prospective customers

“Our company's technical footprint is greatly enhanced by our expert staff of Cisco certification holders.”
Carleton Jones, CEO of Multimax
CCENT Makes Entry Level Jobs Accessible

- Students are looking for:
  - Employment with career growth
  - Interesting fields
  - Cultural alignment
  - The ability to learn and make a difference

- Employers with entry-level IT positions
  - Small and medium sized businesses
  - Enterprise customers
  - Service providers
  - Technology/retail organizations
Cisco CCENT Certification

- Certifies skills required to configure, operate and troubleshoot a small enterprise branch network, under supervision
- Aligned to entry level positions in network support, such as help desk representative or technical support assistant
- Requires first of two CCNA exams (ICND 1 640-822)
- An optional, intermediate step towards CCNA certification
- Recipients gain access to Cisco Certification Community and use of CCENT logo

www.cisco.com/go/ccent
Cisco CCNA Certification

- Certifies knowledge and skills to install, operate and troubleshoot a small to medium size enterprise branch network
- Includes connecting to multiple WANs, basic security measures and wireless extension of the network.
- Two options for the exams (2 exam option or one composite exam)
  1. **2 Exam option:**
     - ICND1 640-822 exam
     - ICND2 640-816 exam
  2. **1 Composite Exam option:**
     - CCNA 640-802 exam

www.cisco.com/go/ccna
Cisco Certifications

“Certifications validate your practical experience. You need Cisco certifications for any sort of networking role – it’s what employers demand”

Adrian Cassar
Business Systems Engineer, Budweiser UK

“Holding a Cisco certification enabled me to enter the career of my dreams, and now I have the opportunity to work for one of the most recognized productions studios in the world.”

Chris Cugno, Senior Network Engineer, DreamWorks Animation SKG
Changes to CCNA Exams

- Now certifying ability to install, operate and troubleshoot a secure, medium-size enterprise network
- Includes configuration and verification of basic wireless and voice over IP networks
- Greater emphasis on understanding and mitigating threats to network security
- Troubleshooting extended to network maintenance

<table>
<thead>
<tr>
<th>Retired Exams</th>
<th>Current Exams</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRO 640-821</td>
<td>ICND1 640-822</td>
</tr>
<tr>
<td>ICND 640-811</td>
<td>ICND2 640-816</td>
</tr>
<tr>
<td>CCNA 640-801</td>
<td>CCNA 640-802 (composite)</td>
</tr>
</tbody>
</table>
Certification Exam Options

Interconnecting Cisco Networking Devices Part 1
Simple Networks
Connected Networks
Cisco IOS Devices
Network Management

CCENT Certification

Interconnecting Cisco Networking Devices Part 2
More Complex Networks
LANs and VLANs
IP Routing
Access Lists

CCNA Composite Exam
More Complex Networks
LANs and VLANs
IP Routing
Access Lists
Simple Networks
Connected Networks
Cisco IOS Devices
Network Management

CCNA Certification
## CCNA Exam Revisions

### New Exams and Pricing as of September 7, 2007

<table>
<thead>
<tr>
<th>Exam</th>
<th>Length</th>
<th>Pricing</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICND1 640-822</td>
<td>90 min.</td>
<td>$125 USD</td>
<td>Worldwide</td>
</tr>
<tr>
<td>ICND2 640-816</td>
<td>75 min.</td>
<td>$125 USD</td>
<td>Worldwide</td>
</tr>
<tr>
<td>CCNA 640-802</td>
<td>90 min.</td>
<td>$150 USD</td>
<td>United States, Canada, Puerto Rico</td>
</tr>
<tr>
<td>(composite)</td>
<td></td>
<td>$175 USD</td>
<td>Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Italy,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Luxembourg, Netherlands, Norway, Sweden, Switzerland, United Kingdom</td>
</tr>
</tbody>
</table>

- Local pricing available through worldwide testing partners.
- CCENT certification requires new exam, ICND1 640-822
- Discount vouchers will be offered to eligible students for all of these exams
<table>
<thead>
<tr>
<th>CCNA Discovery</th>
<th>Validated Entry-Level Skills</th>
<th>CCNA Exploration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Networking for Home and Small Businesses</td>
<td>Set up a basic network</td>
<td>Networking Fundamentals</td>
</tr>
<tr>
<td>Working at a Small-to-Medium Business or ISP</td>
<td></td>
<td>Routing Protocols and Concepts</td>
</tr>
<tr>
<td>New ICND1 Exam = CCENT</td>
<td></td>
<td>No Exam Planned</td>
</tr>
<tr>
<td>Introducing Routing and Switching in the Enterprise</td>
<td></td>
<td>LAN Switching and Wireless</td>
</tr>
<tr>
<td>Designing and Supporting Computer Networks</td>
<td></td>
<td>Accessing the WAN</td>
</tr>
<tr>
<td>New ICND2 Exam (ICND1 + ICND2 = CCNA)</td>
<td>Set up a more complex network</td>
<td>ICND1 + ICND2 = CCNA</td>
</tr>
<tr>
<td>or</td>
<td></td>
<td>or</td>
</tr>
<tr>
<td>CCNA Composite Exam = CCNA</td>
<td></td>
<td>CCNA Composite Exam = CCNA</td>
</tr>
</tbody>
</table>
ICND1 Exam

Description and Summary

The ICND1 (640-822) exam is one of the two qualifying exams available to candidates pursuing a two-exam option for CCNA. This exam tests content from the first two courses of CCNA Discovery

- Network types, Network media
- Routing and Switching fundamentals
- TCP/IP and OSI
- IP addressing
- Basic WAN technologies
- Configuring and Operating Cisco IOS devices
- Basic wireless and security concepts
- Configuring simple networks
ICND1 Exam and Course Topics

**Technology**
- Describe the operation of data networks
- Implement a small switched network
- Implement an IP addressing scheme and IP services to meet network requirements for a small branch office
- Implement a small routed network
- Explain and select the appropriate administrative tasks required for a WLAN
- Identify security threats to a network and describe general methods to mitigate those threats
- Implement and verify WAN links
ICND2 Exam

Description and Summary

The ICND2 Exam (640-816) is the 2nd qualifying exam available to candidates pursuing the two-exam option for the Cisco Certified Network Associate CCNA certification.

- Select, connect, configure, and troubleshoot Cisco networking devices
- Extend switched networks with VLANs
- Determine IP routes
- Manage IP traffic with access lists
- Establish point-to-point connections
- Establish Frame Relay connections
- Configure, verify and troubleshoot OSPF and EIGRP
- Configure NAT and DHCP
- Configure, verify and troubleshoot RSTP, VTP, routing between VLANs in a small switched environment.
ICND2 Exam and Course Topics

Technology

- Configure, verify and troubleshoot a switch with VLANs and interswitch communications
- Implement an IP addressing scheme and IP Services to meet network requirements in a medium-size Enterprise branch office network.
- Configure and troubleshoot basic operation and routing on Cisco devices
- Implement, verify, and troubleshoot NAT and ACLs in a medium-size Enterprise branch office network.
- Implement and verify WAN links
CCNA Exam

Description and Summary

The CCNA (640-802) exam qualifies a candidate pursuing the single-exam option for the Cisco Certified Network Associate CCNA Certification. This exam tests content from all four courses of either CCNA Discovery or CCNA Exploration.

- Describe how a network works
- Configure, verify and troubleshoot a switch with VLANs and interswitch communications
- Implement an IP addressing scheme and IP Services to meet network requirements in a medium-size Enterprise branch office network.
- Configure, verify, and troubleshoot basic router operation and routing on Cisco devices
- Explain and select the appropriate administrative tasks required for a WLAN
- Identify security threats to a network and describe general methods to mitigate those threats
- Implement, verify, and troubleshoot NAT and ACLs in a medium-size Enterprise branch office network.
- Implement and verify WAN links
CCNA Certification Prep Center

- Offers informational broadcasts, simulations, remote labs, expert advice, success stories, discounts, forums, and educational games
- Over 100,000 registered users

Ask-the-Tutor
- Personalized assistance
- Online tutor answers content-related questions within one business day

Remote Labs
- Access to Cisco gear online for remote practice
- Hands-on exercises covering advanced technologies

Recommended Reading
- Recommended titles from Cisco Press

Practice Questions
Learning Games

www.cisco.com/go/prepcenter
Certification Exam Vouchers
Nomenclature on Vouchers

Vouchers come in multiple shapes and sizes. Please find definitions below:

**Discount Vouchers:** These vouchers allow a user to take the certification exam at a reduced cost

**Extension Vouchers:** These vouchers allow a user to take an expired CCNP certification exam for an extended period of time and will be phased out by Dec. 31, 2007

**Retired Exam Promotional Code:** These promotional codes allow a user to take versions of the INTRO (640-821), ICND (640-811) and CCNA (640-801) exams that will expire Nov. 6, 2007 until July 31, 2009
CCENT Certification Discount Voucher Process

Student completes CCNA Discovery 1&2 and passes first attempt of final exam with 75% or higher

Instructor inputs “P” in Academy Connection grade book

Link to request ICND1 discount voucher appears on student home page

Students must use their Academy Connection ID & Username when registering with VUE for an exam in conjunction with the voucher code

Student requests VUE voucher for exam & voucher code number will appear in student profile
CCNA Certification Discount Voucher Process: 2 Exam Option (ICND 1 & ICND2)

Student completes all four courses of CCNA Discovery or CCNA Exploration and passes first attempt of final exam in fourth course with a 75% or higher

Instructor inputs “P” in Academy Connection grade book

Links to request voucher for ICND 1, ICND2 & CCNA composite exams appear on student home page; Choose vouchers for ICND1 & ICND2

Students must use their Academy Connection ID & Username when registering with VUE for an exam in conjunction with the voucher code

Student requests VUE voucher for exam & voucher code will appear in student profile
CCNA Certification Discount Voucher Process: Composite Exam Option (640-802)

1. Student completes all four courses of CCNA Discovery or CCNA Exploration and passes first attempt of final exam of the fourth course with 75% or higher.

2. Instructor inputs “P” in Academy Connection grade book.

3. Links to request and ICND1, ICND2 & CCNA composite appears on student home page; Choose link to CCNA composite voucher.

4. Students must use their Academy Connection ID & Username when registering with VUE for an exam in conjunction with the voucher code.

5. Student requests VUE voucher for exam from & voucher code will appear in student profile.
Discount Vouchers for Students

Question

How many discount vouchers will be available and for which exams?

How do students qualify for a vouchers?

How many vouchers can a student receive?

Answer

One for each: ICND1, ICND2, & CCNA composite

ICND1: Complete CCNA Discovery Course 1 and 2 & receive a 75% or higher on first attempt of final exam for course 2

CCNA (ICND1, ICND2 & Composite): Complete four courses of either CCNA Discovery or CCNA Exploration & receive 75% or higher on first attempt of final exam for course 4

A single discount voucher will be issued per qualifying candidate per exam
Discount Vouchers for Students

**Question:** How much is my discount voucher?

**Answer:** Discounts percent varies depending on country market conditions. Discounts are country specific and can not be adjusted.

**Question:** Where is my voucher information?

**Answer:** When you qualify for a voucher, a link will automatically appear on your Student Home page in Academy Connection under the Career Development section.
Discount Vouchers for Students

**Question**

- Can I use the discount voucher a second time?
- How long is my voucher valid?
- Can I extend my voucher?
- I passed a course previously offered. Am I still eligible for a voucher?

**Answer**

- No. Vouchers are for one use only.
- Students will have a minimum of three months to redeem a voucher.
- No, vouchers can not be extended.
- No. Vouchers can not be awarded based on historical pass rates or retroactively.
Expired Exam Promotional Codes

- **Expired Exam Promotional Codes** are available to NetAcad students, instructors & alumni to take retired versions of Cisco certification exams including:
  - Starting November 6, 2007:
    - INTRO (640-821)
    - ICND (640-811)
    - CCNA (640-801)

- Students, instructors and alumni may access retired exam promotional codes through links on:
  - Class home page
  - Tools section of Academy Connection
  - Help feature on Academy Connection
Cisco Certification Exams

- Cisco exams are only offered through Pearson VUE authorized test centers (www.pearsonvue.com)
- Pearson VUE has been a test delivery provider for Cisco’s computer-based certification exams since 2000
- There are three different methods to register for an exam:
  1. Contact a Pearson VUE agent directly (http://www.pearsonvue.com/contact/vuephone/)
  2. Register via the Pearson VUE website (www.pearsonvue.com)
  3. Call or visit a test center directly; to locate a test center visit the Pearson VUE website (www.pearsonvue.com) and use the “Locate a Test Center” option
Interested in becoming a test center?

- Pearson VUE is accepting applications to become a test center
- You will find applications at www.pearsonvue.com/pvtc/join/
- Pearson VUE will assist you in identifying the basic requirements to becoming a test center
Are you far away from a VUE?—mobile testing

- An alias has been created exclusively for Networking Academies to accommodate emerging testing needs, atcrequest@cisco.com, and can used in the following circumstances in priority order:
  - 50 or more students are located at an Academy and the available testing center is more than two hours travel distance from that location
  - 20 or more candidates would like to reserve time at a testing center on a specific date so that students could be transported from an Academy to a particular VUE location.
  - To identify a testing need for students that do not have access to a testing center

- All requests will be reviewed on a quarterly basis and will be accommodated based on the above prioritizations.