Cisco Networking Academy Program
New CCNA Curricula

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

- English versions of the first two courses of each curriculum will be available in the June-August 2007 timeframe. English versions of courses 3 and 4 will be available in the November-December 2007 timeframe.

New CCNA Curricula Presentation – Version 2.0	
Topic:	Cisco Networking Academy Program – New CCNA Curricula
Appropriate for:	☑ Internal teams
	☑ Academy audiences
Content valid:	Valid as of April 2007
Additional info:	1. Please tailor this presentation to effectively address your presentation goals, audience, and time constraints.
	2. Notes are provided in this presentation for key speaking points
	3. Please refer to other curricula materials for additional information
	4. Send any feedback to your theater Networking Academy program contacts

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Mind Wide Open™

Cisco Networking Academy Program
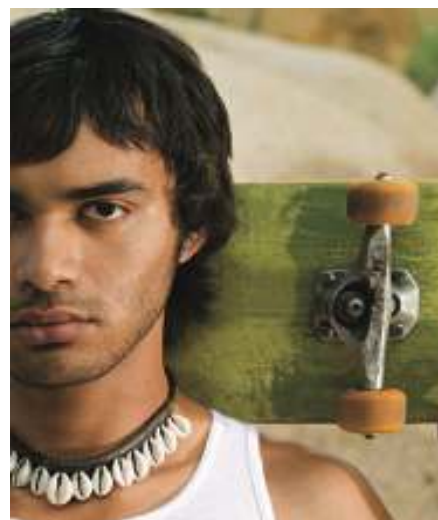
New CCNA Curricula

Speaker Name

March 2007

Contents

- Portfolio Evolution

- New CCNA Positioning, Features, and Benefits

- Instructor Training

- Adoption and Migration
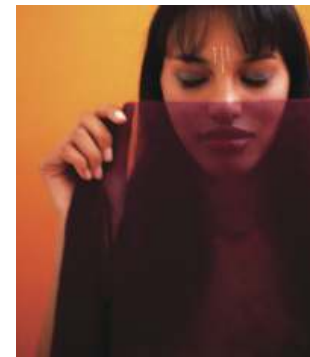
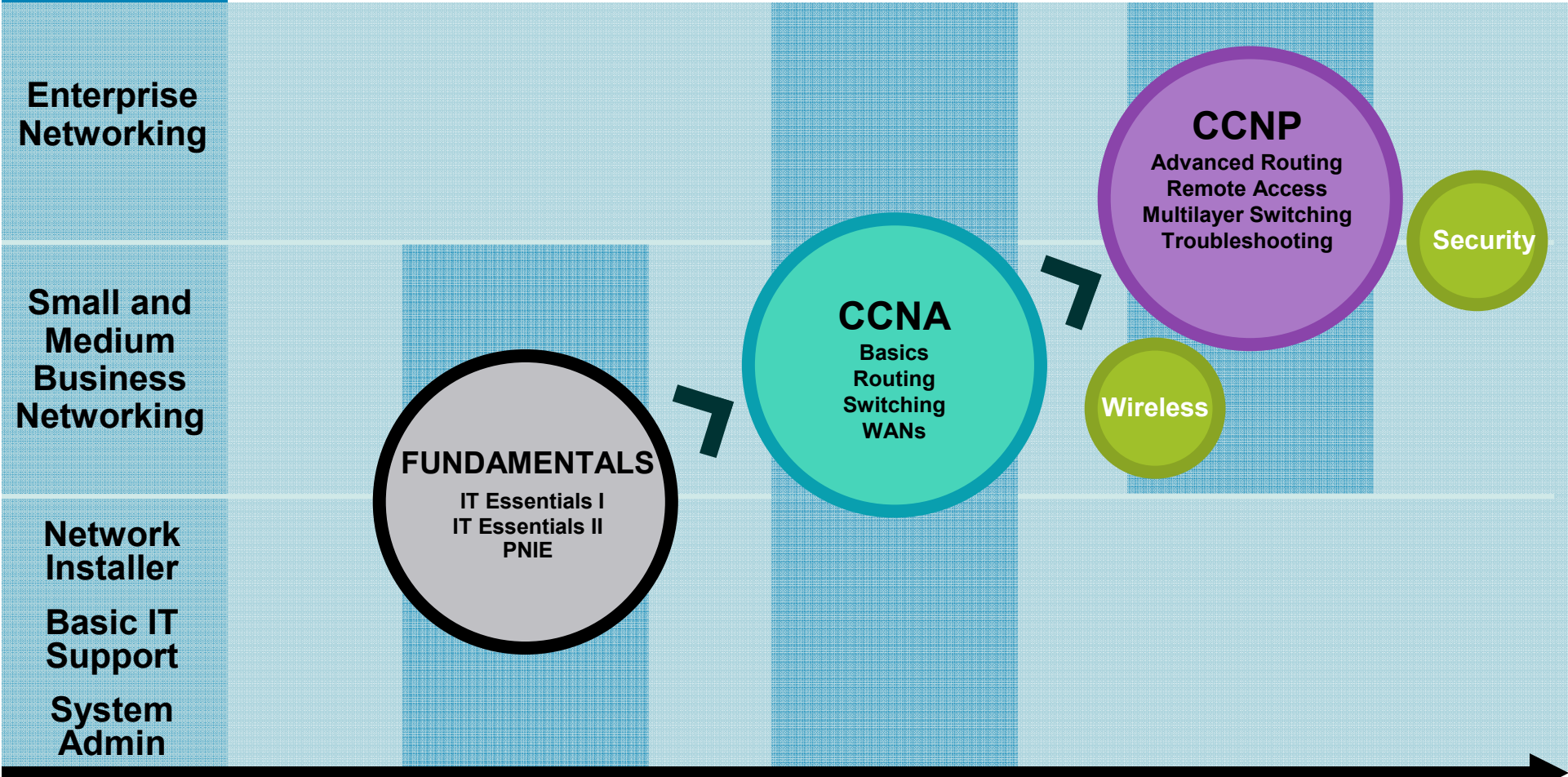- Scope and Sequence

- Equipment

Portfolio Evolution

How Are We Evolving the Program?

- **Shift focus from program growth to student outcomes**

- **Develop courseware tailored to student goals**

- **Align skills with specific jobs in networking**

Networking Academy Program Current Product Portfolio

CAREERS

Enterprise Networking

Small and Medium Business Networking

Network Installer

Basic IT Support

System Admin

FUNDAMENTALS
IT Essentials I
IT Essentials II
PNIE

CCNA
Basics
Routing
Switching
WANs

CCNP
Advanced Routing
Remote Access
Multilayer Switching
Troubleshooting

Security

Wireless

Student Networking Knowledge and Skills

Networking Academy Program "2.0" Portfolio – 18 Courses

Enterprise
Networking

Small and
Medium
Business
Networking

Network
Installer

Basic IT
Support

System
Admin

FUNDAMENTALS
IT Essentials I
IT Essentials II
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 Foundational Learning

- Independent curriculum or possibly integrated into broader course of study at upper-secondary institutions, career and technical schools, and colleges

- Student has basic PC usage skills

CCNA Exploration Advanced Learning

- Part of an integrated technology curriculum or continuing education program at postsecondary institutions; typically at career and technical schools, colleges, and universities

- Student has advanced problem solving and analytical skills typically associated with degrees in math, engineering, or science

New CCNA Curricula Features and Benefits

- **Motivate and engage students by matching content and teaching methodologies with student interests and goals**
- **Features:**
  - ➢ **Learning by doing**
  - ➢ **Updated course GUI**
  - ➢ **More efficient translation**
  - ➢ **Introduction to advanced technologies and converged networks**

CCNA Discovery

- **Provides a hands-on approach to networking education**
- **Uses step-by-step labs and teaches the general theory needed to build networks**
- **Engages students and allows for quick application of learned concepts**
- **Designed to encourage students to consider additional education in IT and help them prepare for entry-level IT careers**

CCNA Exploration

- **Allows students to learn skills in a more rigorous, comprehensive, theoretical, and practical way; reflective of college and university educational practices**
- **Offers complex and challenging hands-on labs to engage advanced learners**
- **Designed for students who want to pursue additional technology or engineering education while preparing for careers in IT**

CCNA Discovery

CCNA Exploration

- Networking based on application
- Introduction to career exploration and soft skills
- Standalone curriculum or integrated into broader course of study

Basics of Routing and Switching

- Networking based on technology
- Deep into protocols and theory (LAN, WAN)
- Reflective of university practices and allows for integration with engineering concepts

- Skills to excel in entry-level professions such as:
  - Network installer
  - Network technician
  - Help desk technician
  - Pre-sales support
  - Basic network design

Core Skills for CCNA Certification

- Skills to succeed in networking-related degree programs
- Skills to prepare students for a wide range of networking professions such as:
  - Network technician
  - Network administrator
  - Network engineer

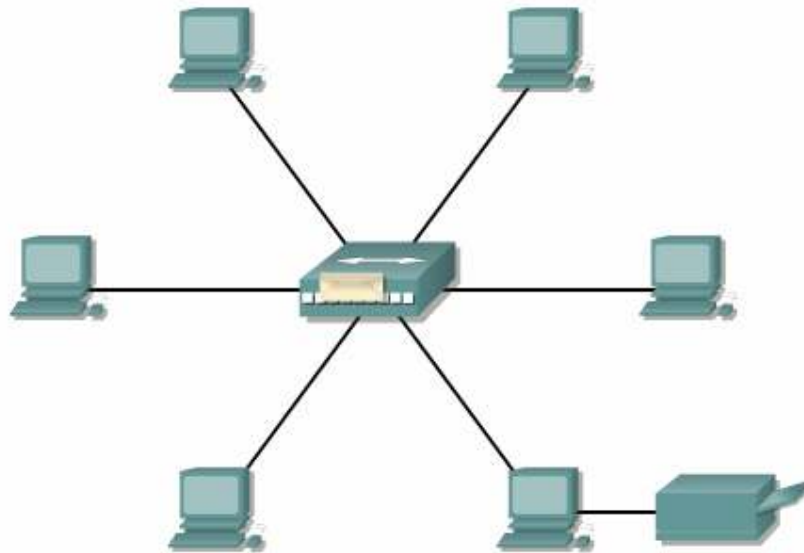## Key Factors in Obtaining Jobs: Education, Experience, and Certification

Compare current GUI

to new GUI…

 Cisco Public

Persistent 2/3 media area

1/3 text area with manual scroll bar

Chapter Menu

Navigation icons

Page #

3 Connecting to the Network

3.1 Introduction to Networking

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.

CISCO

Networking for Home and Small Businesses v1.0

2/3 or full-screen media area

1/3 text area, automatically scrolls, disappears for full-screen media

Language Toggle

Next / Back

Navigation tools

Go To / Location and Topic Navigation Bar

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	CCNA Exploration
▪ Designed for students with basic PC usage skills	▪ 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	CCNA Exploration
■ Designed to make IT relevant, encourage students to consider further education in IT, and help students prepare for entry-level IT careers	■ 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 as early as the first two courses	■ 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	CCNA Exploration
▪ 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	▪ 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?

CCNA Discovery

- Teaches networking based on application
- Maps more directly to everyday experiences with networks and covers key networking concepts based on the types of network environments students may encounter
- Uses easy-to-follow labs
- Provides general theory
- Offers a career-oriented approach to learning networking

CCNA Exploration

- Teaches networking based on technology concepts
- 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
- Uses language that allows for integration with engineering concepts
- Includes complex and challenging hands-on labs

How Do I Choose?

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

CCNA Discovery	CCNA Exploration
▪ Yes, the current CCNA curriculum is very difficult	▪ No, the current CCNA curriculum is just right or not challenging enough

Feature Comparison

	CCNA v3.1	CCNA Discovery	CCNA Exploration
Expected Student Capabilities	Basic PC usage skills	Basic PC usage skills	Advanced problem-solving and analytical skills typically associated with students in engineering, math, or science degree programs
Content	Four courses – structured by protocols and technology	Four courses – structured by practical network environments PLUS: • Learning by doing • Introduction to advanced technologies • Helps prepare students for entry-level IT careers by teaching applied skills early in the curriculum	Four courses – structured by protocols and technologies within various topologies PLUS: • Learning by doing • Introduction to advanced technologies • Extra theory and more challenging labs
Business Rules	Required minimum of six months to complete all four courses	Required minimum of one year to complete all four courses	• Goal is to offer more relaxed business rules to reduce teaching time • Courses structured to increase flexibility and efficiency in course sequence
Time to Learn	70 hours per course		

CCNA Discovery
Changes Compared to Current CCNA

CCNA v3.1	Curriculum Framework	CCNA Discovery	Course Content
CCNA 1 — Networking Basics	No 1-to-1 mapping	Networking for Home and Small Businesses	• Introduction to networking • Basic cabling for SOHO • LAN addressing and network services • Basic wireless and security • Troubleshooting – plan/build home network
CCNA 2 — Routers and Routing Basics	New courses	Working at a Small-to-Medium Business or ISP	• Intro to OSI model/TCP model • SMB routing and switching • WAN technology • IP addressing • Network devices and cabling • Security/disaster recovery
CCNA 3 — Switching Basics and Intermediate Routing	New order, flow, and format	Introducing Routing and Switching in the Enterprise	• Enterprise overview • LAN/WAN performance • IP addressing – VLSM and subnetting • Advanced switching and routing • EIGRP, OSPF, VLANs, VTP, Frame Relay • LAN, WAN, VLAN troubleshooting
CCNA 4 — WAN Technologies	Practical application, theory, soft skills and career exploration	Designing and Supporting Computer Networks	• Design concepts and equipment selection • IP addressing on a LAN/WAN • Network design • Cisco device configuration upgrade • Stronger theoretical notion of converged networks

CCNA Exploration
Changes Compared to Current CCNA

CCNA v3.1	CCNA Exploration	Course Changes	
		% content change	
CCNA 1 — Networking Basics	Network Fundamentals	53%	• Intro to Advanced Technologies and Converged Networks • Top-Down Approach to Networking
CCNA 2 — Routers and Routing Basics	Routing Protocols and Concepts	9%	• 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	22%	• 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	23%	• De-emphasize ISDN • Added new WAN concepts • Added ACLs, VPN concepts

CCNA Discovery and CCNA Exploration Articulation (Course Credit)

- Articulation (course credit) agreements are generally developed at the institutional level based on existing programs and pathways
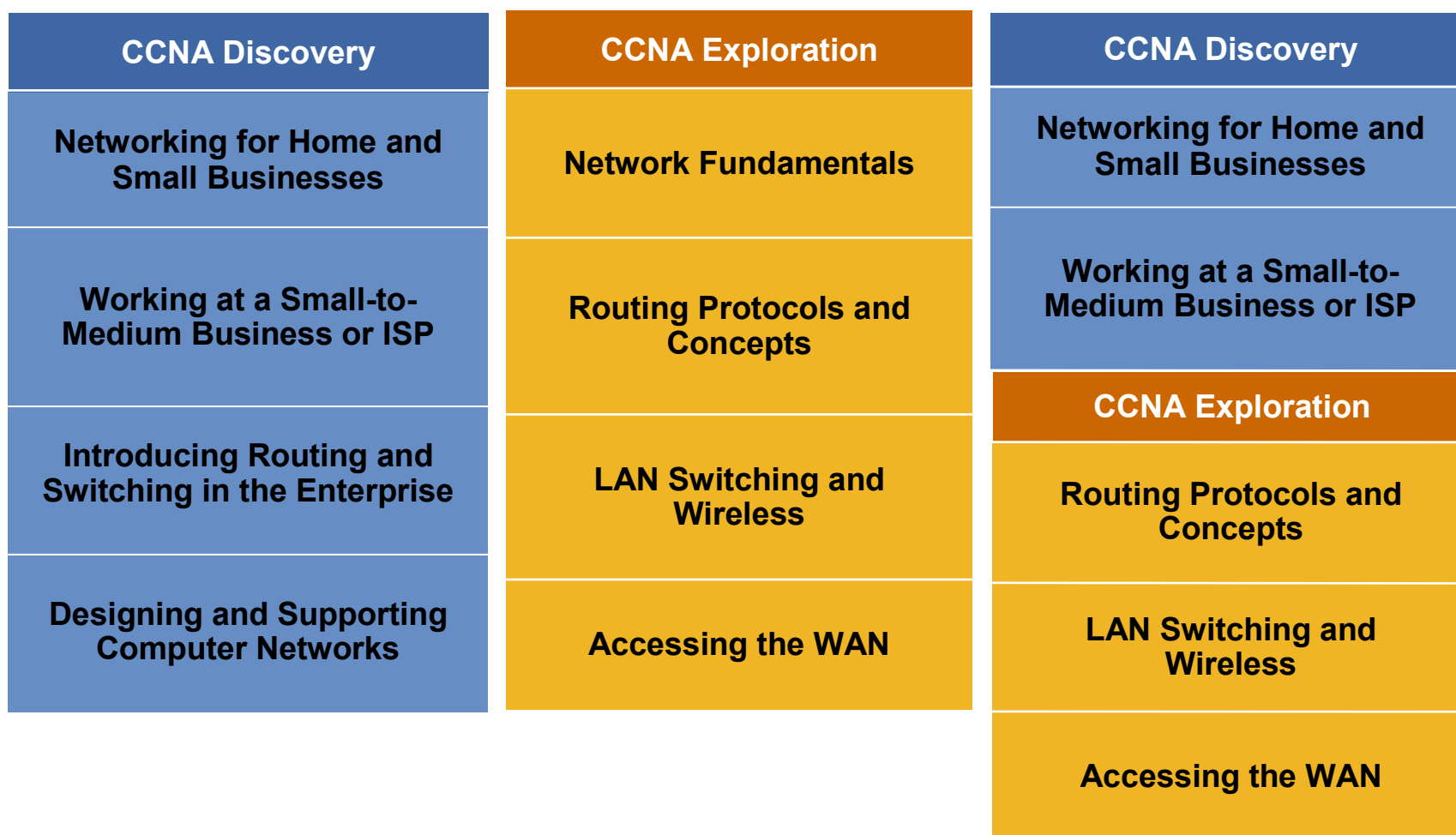
    CCNA Discovery courses 1 and 2 should enable students to earn CCNA Exploration course 1 equivalent credit

    Students who complete the following will be prepared to begin the CCNP curriculum:

    CCNA Discovery courses 1-4 or CCNA Exploration courses 1-4

    An institution may choose to grant CCNA Exploration credit for students who complete the CCNA Discovery curriculum

Paths to Certifications and Entry-Level Careers

CCNA Discovery	CCNA Exploration	CCNA Discovery
Networking for Home and Small Businesses	Network Fundamentals	Networking for Home and Small Businesses
Working at a Small-to-Medium Business or ISP	Routing Protocols and Concepts	Working at a Small-to-Medium Business or ISP
Introducing Routing and Switching in the Enterprise	LAN Switching and Wireless	**CCNA Exploration**
Designing and Supporting Computer Networks	Accessing the WAN	Routing Protocols and Concepts
		LAN Switching and Wireless
		Accessing the WAN

Instructor Training

Instructor Training

	CCNA Discovery	CCNA Exploration
Current Instructor	▪ **Optional but strongly recommended** ▪ **Our goal is to offer a distance learning solution for current CCNA instructors at no extra cost***	
	(min. 8-10 hours per course)	**(min. 4-8 hours per course)**
New Instructor	▪ **In person training required. Approximately 60-80 hours per course; similar to current CCNA v3.1** ▪ **Costs generally range from US$50 to US$150 per day, depending on location**	

NOTE:
- **Training Academies may offer additional training opportunities to instructors. There may be fees associated with these learning events, as determined by the training Academies. Please refer to your training Academy for exact costs.**

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 New Instructors
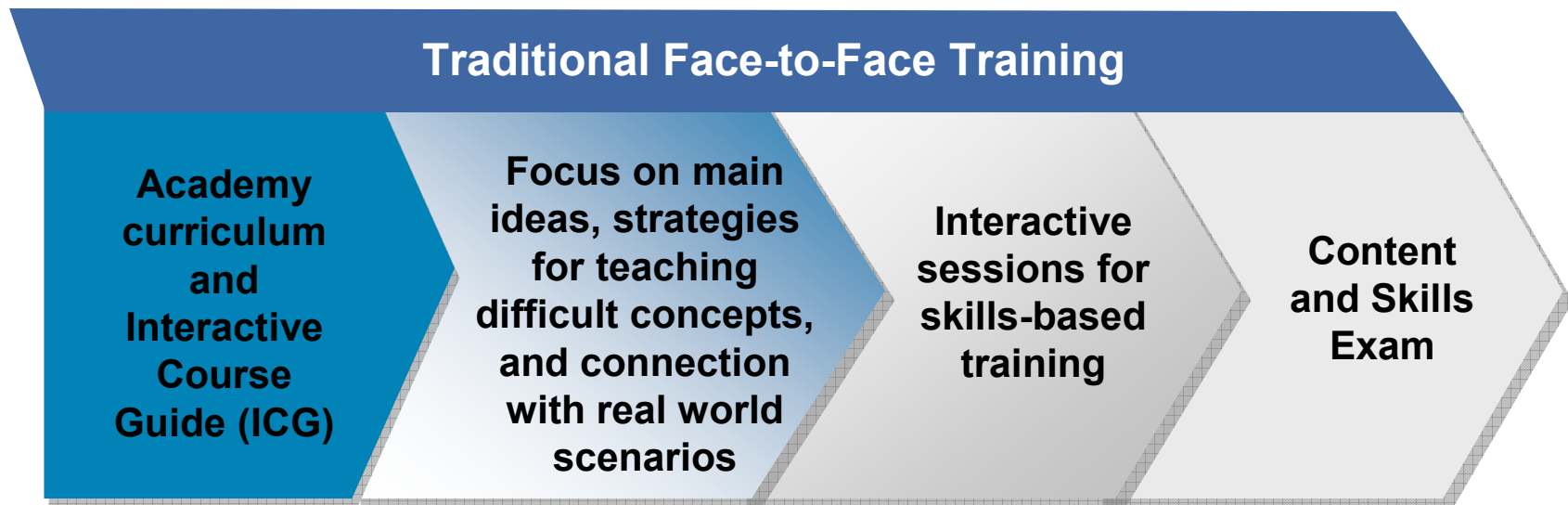
Traditional Face-to-Face Training

| 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 |

CLI Interactive Course Guide (ICG)

ICG Structure - Example

Module 3.1

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)

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**
- **Current plan is to make optional training available for current instructors in early June**
- **Current plan is for new instructor training to be available in late June**

Adoption & Migration

   Cisco Public

Tools to Drive Adoption

Currently Available	Planned
▪ At-a-Glance	▪ Product demos
▪ FAQs	▪ Scope and sequence documents (final)
▪ External presentation	▪ Datasheets
▪ Qualification guidelines	▪ Testimonials
▪ Scope and sequence documents (drafts)	▪ Job framework information
▪ Detailed equipment list	

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

- There are no immediate plans to retire the CCNA v3.1 curriculum, it will remain available to existing and new Academies for as long as it aligns with customer needs and certification requirements

CCNA Discovery and CCNA Exploration Translation

- Goals

    Reduced cost and time-to-market
    Increased quality and scalability

- Strategy

    Design course GUIs for translation

    Create processes to implement translations

    Execute trials to optimize processes

- Timeline

    FY'08 translations that Cisco will manage, including roadmap for selected languages, to be announced in the June-August 2007 timeframe

Product Launch Timeline

New Product Announcements

General Availability
CCNA Discovery 3 and 4
CCNA Exploration 3 and 4
(English Versions)

Nov 2006	Dec 2006	Jan 2007	Feb 2007	Mar 2007	May 2007	Jun/July/Aug 2007	Nov/Dec 2007

New CCNA Prototype Tests

New CCNA Small Market Trials

General Availability
CCNA Discovery 1 and 2
CCNA Exploration 1 and 2
IT Essentials v4.0
CCNP 2 and 4
(English Versions)

Early Adopter Feedback

Scope & Sequence

 Cisco Public

CCNA Discovery Course Sequence

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

- **Course Objectives**

- **Chapter Outlines**

CCNA Discovery 1 – 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 2 – 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 3 – 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 4 – 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

Ch	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
1	Introduction to Computers and Applications	The Internet and Its Uses	Networking in the Enterprise	Concepts of Network Design
2	Personal Computer Software	ISP Support	Enterprise Network Infrastructure	Gathering Information from Clients
3	Connecting to the Network	Planning a Network Upgrade	Addressing in an Enterprise Network	Impact of Various Applications on a Network Design
4	Connecting to the Internet Using an Internet Service Provider	Planning the Address Structure	Routing in an Enterprise Network	IP Address Design Considerations
5	Network Addressing	Configuring the ISR	Implementing WAN Links	Creating the Network Design
6	Network Services	Routing	Switching in an Enterprise Network	Building and Testing a Prototype Network
7	Wireless Technology	ISP Services	Filtering Traffic Using Access Control Lists	Selecting Equipment and Planning for Installation
8	Basic Security	ISP Responsibility	Troubleshooting an Enterprise Network	Upgrading and Integrating an Existing Network
9	Troubleshooting Your Network			

CCNA Exploration

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

- **Course Objectives**

- **Chapter Outlines**

CCNA Exploration 1 – 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 1 – 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 2 – 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 2 – 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 Course Outline

Ch	Network Fundamentals	Routing Protocols and Concepts	LAN Switching and Wireless	Accessing the WAN
1	Living, Learning, Working, and Playing in a Network-Centric World	Introduction to Routing and Packet Forwarding	Ethernet Revisited	Managing Traffic: Access Control Lists (ACLs)
2	Communications with Computer Networks and the Internet	Static Routes	Switching Concepts: IOS and CDP	Addressing Hosts: NAT, DHCP, and IPv6 Basics
3	OSI Application Layer	Introduction to Dynamic Routing Protocols	Inside the Switch	Security
4	OSI Transport Layer	Distance Vector Routing Protocols	Campus Network Design	Introduction to WAN Technologies
5	OSI Network Layer and Routing	RIP v1: A Distance Vector, Classful Routing Protocol	Basic Switch Configuration	WAN Devices and Connections: CSU, Cable Modem, and DSL Modem
6	Addressing the Network - IPv4	Classless Routing: VLSM and CIDR	VLANs & IP Telephony Basics	Connecting to the WAN: Leased Lines, Cable, and DSL
7	OSI Data Link Layer	Classless Routing Using RIPv2	Rapid Spanning Tree Protocol	PPP, PPPoE
8	OSI Physical Layer	The Routing Table: A Closer Look	Trunking and VTP	Frame Relay
9	Ethernet	EIGRP: A Distance Vector, Classless Routing Protocol	Inter-VLAN Routing	QoS Considerations
10	Planning and Cabling Your Network	Link-State Routing Protocols	Wireless Networks and Mobility	Tunneling Concepts & VPN Basics
11	Configuring and Testing Your Network	Single Area OSPF: A Link State, Classless Routing Protocol	Campus LANs	Capstone: Converged Networks

CCNA Exploration: Flexibility in Course Sequence

Network Fundamentals

↓

Routing Protocols and Concepts

↓

LAN Switching and Wireless

↓

Accessing the WAN

Network Fundamentals

↓

LAN Switching and Wireless

↓

Routing Protocols and Concepts

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Accessing the WAN

Network Fundamentals

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Routing Protocols and Concepts   **LAN Switching and Wireless**

↓

Accessing the WAN

Network Fundamentals

↓

Routing Protocols and Concepts

↓

LAN Switching and Wireless   **Accessing the WAN**

Equipment

 Cisco Public

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 300N is preferred; 54G is an alternative) or SOHO equivalent

New Academy Equipment

New Academy adopting CCNA Discovery 1-4 or CCNA Exploration 1-4:

- 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 300N is preferred,
    but 54G is an alternative) or SOHO equivalent
  - Serial cables

New Academy adopting only CCNA Discovery 1 and 2:

- 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 300N is preferred,
    but 54G is an alternative) or SOHO equivalent

In addition, a typical lab configuration includes the following:

  - 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

	Current	New
CPU	Intel Pentium III or higher processor	Intel Pentium III 500 MHz or equivalent/higher processor
Operating System*	Windows 2000 or Windows XP	Microsoft Windows XP
RAM	128 MB Installed RAM	256 MB or better
Storage		100 MB of free disk space
Screen Resolution	1024 x 768 Resolution	1024x768
Browsers	Netscape 7.0x and 7.1, Internet Explorer 6.0 or 5.5 SP 2	
Flash	Macromedia Flash Player 7.0 or higher	Macromedia Flash Player 7.0 or higher
Drivers		Language fonts supporting Unicode encoding (for languages other than English)
Other	Mouse, speakers, headphones, and sound card	Latest video card drivers and operating system updates Sound Card and Speakers Wireless Network Adapters

Note: Current version of Packet Tracer does not run in Native mode in MacOS or Linux. Windows Emulators are required

CCNA Discovery 1 – Networking for Home and Small Businesses: Lab Topology (Preliminary)

CCNA Discovery 1 Pod

1 - 1841 ISR router
2 - Linksys Wireless Routers (300N or W54G
minimum 1 USB Wireless Adapter

Support 3 Students per Linksys Device - 6 students total

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.
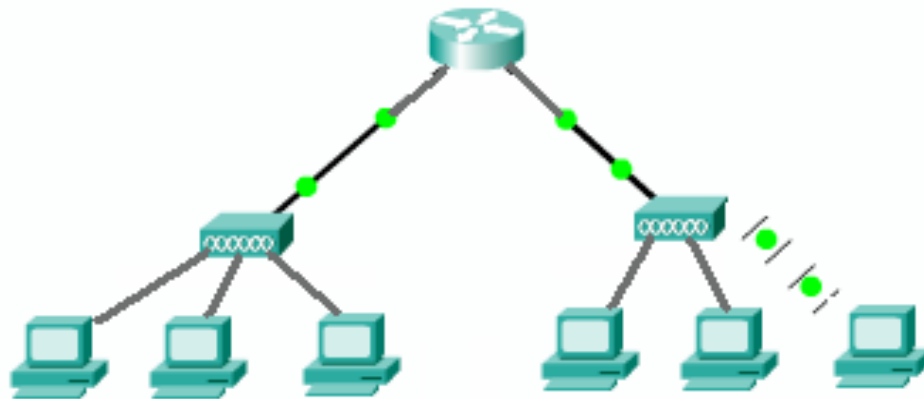
CCNA Discovery 2 – Networking at a Small-to-Medium Business or ISP: Lab Topology (Preliminary)

CCNA Discovery 2 Pod

3 1841 ISR routers
2 2960 Switches
minimum 1 Linksys Wireless Router
minimum 1 Wireless USB adapter (prefer 2)
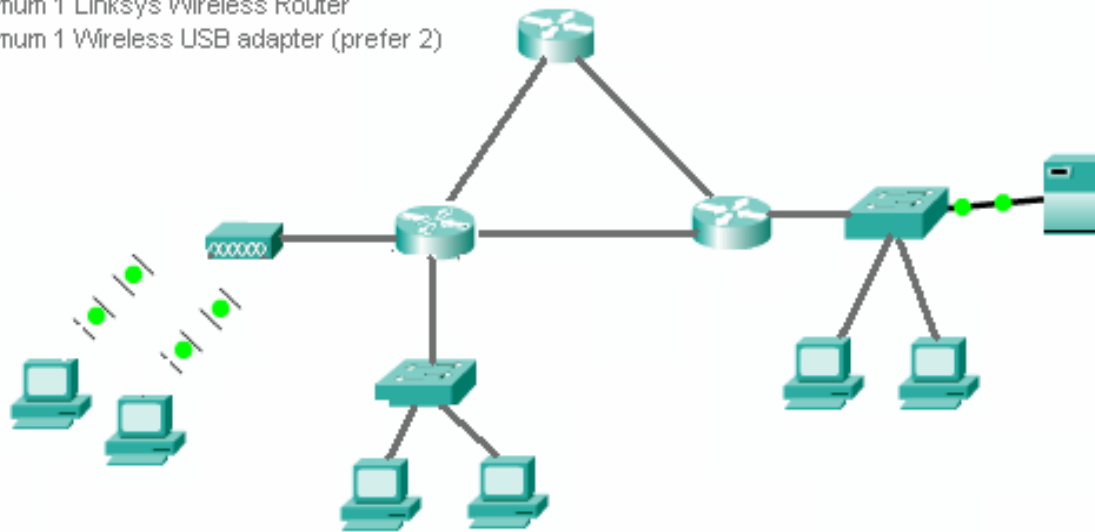
Students will configure RIPv2 routing in a three-router topology. There is no specific configuration of the 2960 switches, other than basic setup. Topology will be reconfigured during the course.

Recommended six to eight students per pod

CCNA Discovery 3 and 4: Lab Topology (Preliminary)

CCNA Discovery 3 and 4 Pod

3 - 1841 ISR routers
3 - 2960 Switches
2 - Linksys Wireless Routers

Recommended 8 students per pod.
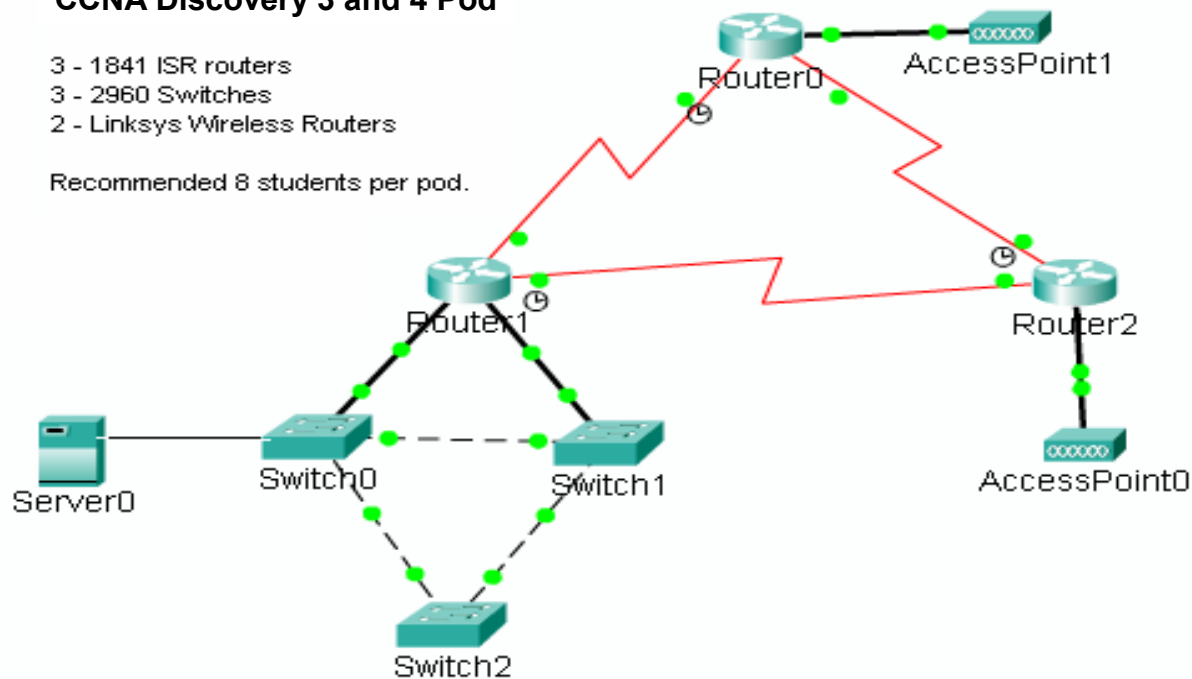
CCNA Discovery 3: Introducing Routing and Switching in the Enterprise and CCNA Discovery 4: Designing and Supporting Computer Networks, will use the same pod.

It represents a main enterprise site and two branch offices.

Recommended eight students per pod

CCNA Exploration 1 – Network Fundamentals Lab Topology (Preliminary)

Network Fundamentals
CCNA Exploration 1: Primary Hands-On Lab Pod

-- Shared "Model" Internet Connection and LAN
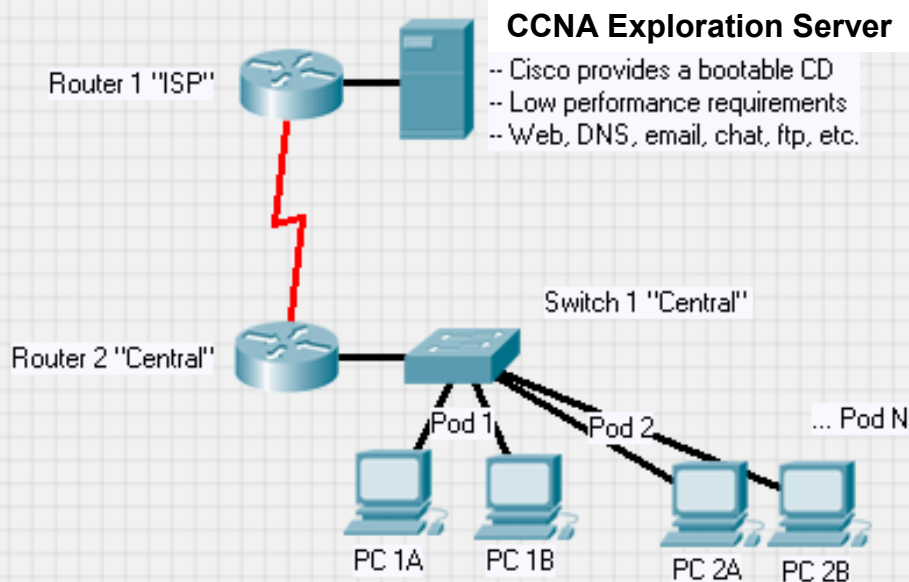-- Isolated from Any Production Networks
-- <= 4 students per pod of 2 PCs

CCNA Exploration Server

-- Cisco provides a bootable CD
-- Low performance requirements
-- Web, DNS, email, chat, ftp, etc.

CCNA Exploration 1
Secondary Lab Pod

-- used in chapters 10 & 11
-- students use this topology to plan, build, configure, and test
-- <= 4 students per pod of 1 router, 1 switch, PCs

Router 1 "ISP"

Router 2 "Central"

Switch 1 "Central"

Pod 1

Pod 2

... Pod N

PC 1A   PC 1B   PC 2A   PC 2B

Pod 1

... Pod N

PC 2A   PC 1A   PC 1B

Labs include:
-- installing application clients
-- using Web, DNS, email, chat, ftp, etc.
-- using Wireshark to sniff traffic
-- network testing
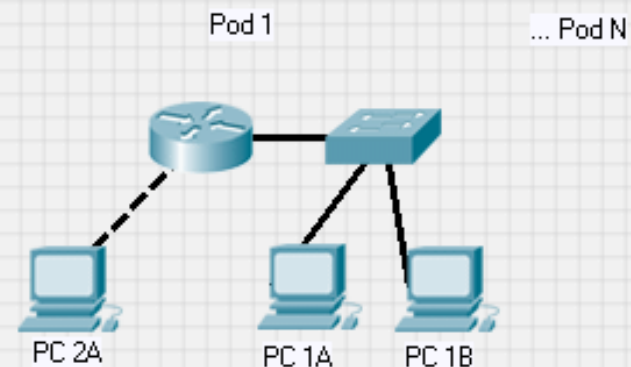
Labs Include:
-- planning
-- building
-- configuring
-- testing
-- basic IOS

CCNA Exploration 2 – Routing Protocols and Concepts: Lab Topology (Preliminary)

**Routing Protocols and Concepts
CCNA Exploration 2 : Hands-On Lab Pod**

-- "Model" Routing Network
-- Isolated from Any Production Networks
-- NETLAB "friendly"
-- <= 6 students per pod of 3 routers

Pod 1   ... Pod N

PC 2

S2

R2

DCE

DCE

DCE   R3

R1

S1   S3

PC 1A   PC 1B   PC 3
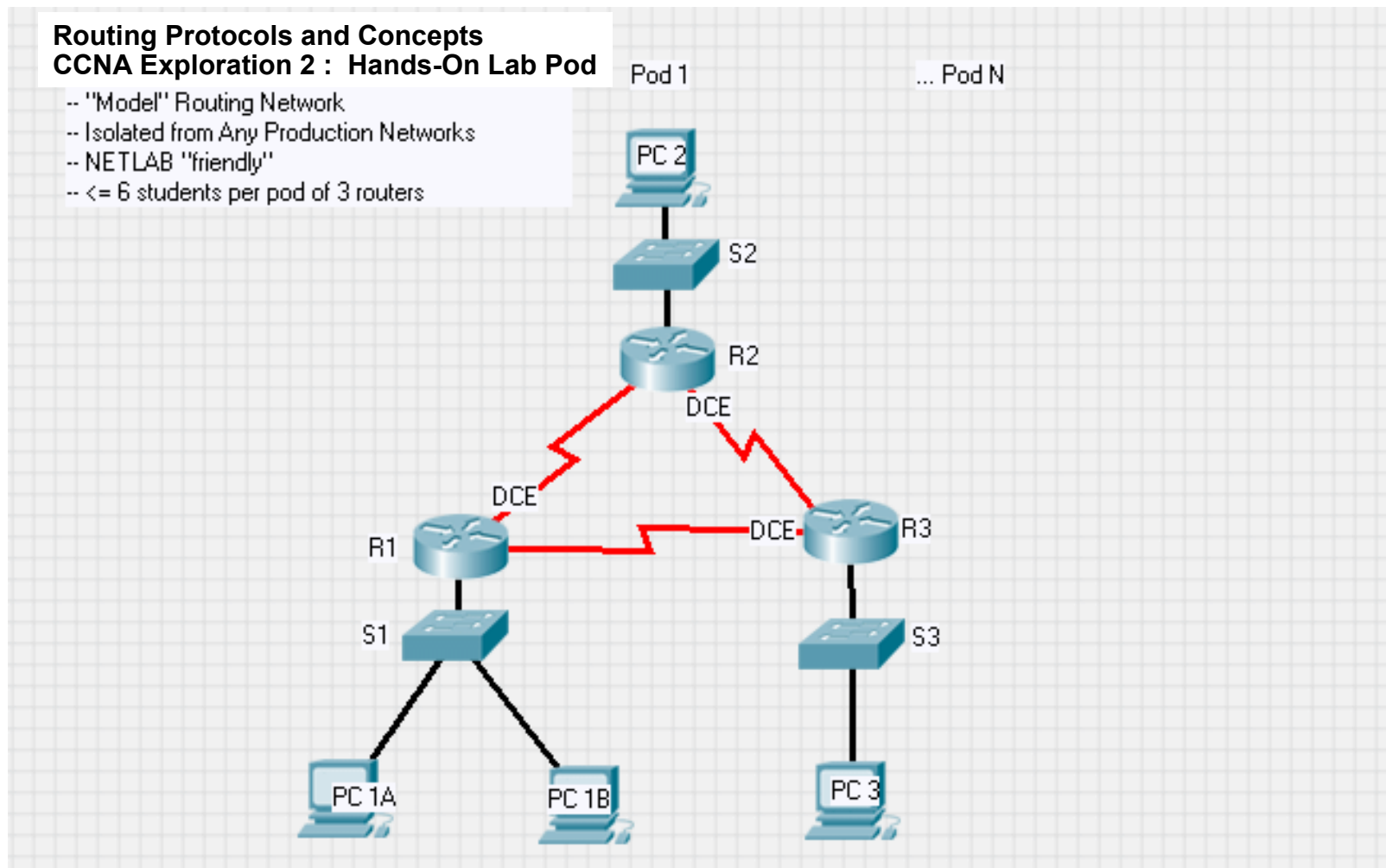
CCNA Exploration 3 – LAN Switching and Wireless: Lab Topology (Preliminary)
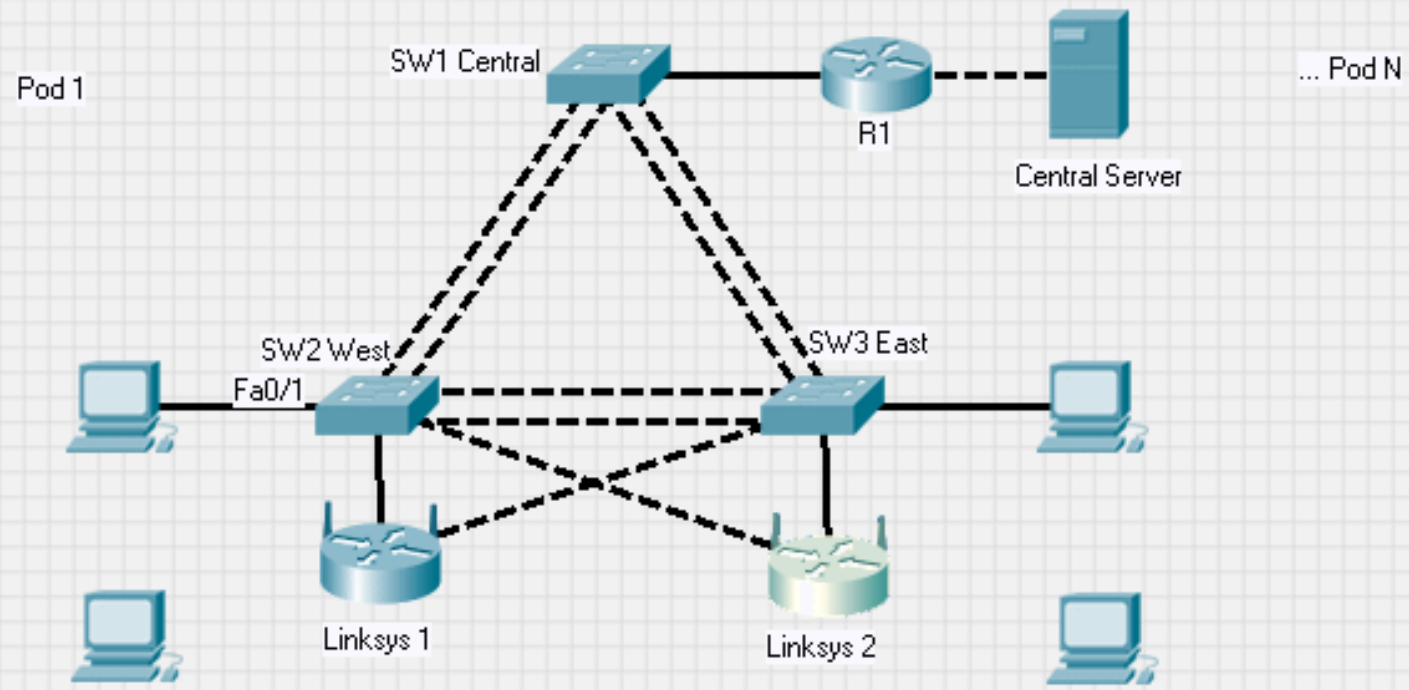
LAN Switching and Wireless
CCNA Exploration 3 : Hands-On Lab Topology

-- 3 IOS switch, 1 IOS router, 1 Linksys router core
<= 10 students per pod of 3 IOS switches, 2 Linksys router

Pod 1

SW1 Central

R1

Central Server

... Pod N

SW2 West
Fa0/1

SW3 East

Linksys 1

Linksys 2

CCNA Exploration 4 – Accessing the WAN Lab Topology (Preliminary)

Accessing the WAN
CCNA Exploration 4: Hands-On Lab Topology
-- Core is 3 1841 Routers/WIC-2Ts
-- Server from Cisco-provided bootable CD
-- link with CSU's, extra WIC will be optional
-- perhaps an alternate, optional, Adtran-based topology
-- <= 8 students per pod of 3 IOS routers, 1 Linksys router

Pod 1   ... Pod N

Linksys 1   Server

R1-Hub

R2-Spoke   R3-Spoke

CSU   CSU

Cisco Public