

## Skill Set Alignment CCNA 1 through CCNA 4

The following skill set for CCNA1 through CCNA4 lists the competencies that students learn during these four courses. This curriculum is good preparation for the CCNA certification exam. Employers, Academies and students may use this document to communicate current knowledge, or to identify skills demonstrated at a work setting. This document might also be used to create a list of proficiencies expected in future work experience.

Name of Business/Employer	Name of Student
Street Address	Street Address
City                      State                      Zip	City                      State                      Zip
Phone	Phone
Employment Supervisor's Name and Position	

### Skill Set – CCNA

#### Networking

- ÿ Explain common networking concepts and terminology.
- ÿ Install and troubleshoot basic hardware and software required to communicate in a simple network and test for connectivity.
- ÿ Describe major network media and media testing techniques.
- ÿ Explain the fundamental concepts associated with media access techniques.
- ÿ Optimize network design in regard to segmentation, collision and broadcast domains.
- ÿ Implement and troubleshoot basic IP addressing and subnetting schemes.
- ÿ Describe the concepts associated with switching in a LAN environment.
- ÿ Describe the concepts associated with route selection and packet switching and the different methods and protocols used to achieve it.
- ÿ Describe the fundamental concepts associated with transport layer protocols.
- ÿ Explain the OSI model and its functionality in computer networking.
- ÿ Explain the basic components of a LAN and WAN.
- ÿ Identify the key characteristics of common WAN configurations and technologies.
- ÿ Describe the operation of the major transport layer protocols.
- ÿ Create and maintain detailed documentation of a network.
- ÿ Define and explain LAN design.

#### Switching

- ÿ Install, configure and troubleshoot Cisco switches.
- ÿ Perform, verify and troubleshoot initial switch configuration tasks including remote access management.
- ÿ Explain the concepts of switching and the benefits of using switches in a network (frame forwarding, VLANs, STP, VTP, trunking, inter-vlan routing).
- ÿ Compare and contrast hubs and switches and their affects on (1) broadcast domains and (2) collision domains.
- ÿ Perform upgrades or restore Cisco switch IOS and configuration files.
- ÿ Verify the operational status of a Cisco switched network.
- ÿ Explain the concept of VLANs in a Cisco network.

- ÿ Explain VLANs and the benefits of using VTP and trunking to manage traffic.
- ÿ Create VLANs and assign ports to VLANs to meet given user requirements.
- ÿ Implement trunking on a switch.
- ÿ Configure and test routing between VLANs.
- ÿ Configure VTP between multiple switches.
- ÿ Use VTP to manage VLANs for given switched network requirements.
- ÿ Troubleshoot switching problems in Cisco switched networks.
- ÿ Evaluate and recommend Layer 2 security measures.
- ÿ Explain and configure Spanning-Tree Protocol (STP) on a Cisco router.
- ÿ Explain how STP prevents switching loops on a LAN.
- ÿ Explain the process of selecting a root bridge and root port on a Cisco switch.
- ÿ Explain the concept of Rapid Spanning-Tree Protocol.
- ÿ Configure STP and Rapid Spanning-Tree on a Cisco Switch.
- ÿ Verify the operation of STP and modify STP parameters for given user requirements.

### **Routers**

- ÿ Manage Cisco router IOS and configuration files.
- ÿ Identify the major internal and external components of a router and describe their associated functionality.
- ÿ Identify the stages of the router boot-up sequence and show how the configuration register and boot system commands modify that sequence.
- ÿ Connect the router FastEthernet, Serial WAN, and console ports to devices and interconnect routers, hubs, and switches using serial and Ethernet interfaces.
- ÿ Perform, save and test an initial configuration on a router or modify an existing configuration.
- ÿ Evaluate, configure and troubleshoot routing protocols, static routes and default routes.
- ÿ Analyze, configure, implement and verify access control lists.
- ÿ Plan an IP addressing scheme using VLSM on a Cisco router.
- ÿ Configure, troubleshoot, verify and explain the operation of routing protocols on a Cisco Router (RIP, RIPv2, IGRP, EIGRP, and OSPF).
- ÿ Design, configure, troubleshoot and verify the operation of NAT in a LAN configuration.
- ÿ Evaluate the need for DHCP in LANs and identify the steps for configuring DHCP on Cisco routers.
- ÿ Configure, troubleshoot and verify PPP in simple WAN networks.
- ÿ Configure, troubleshoot, and verify implementations of ISDN and DDR in simple WAN networks.
- ÿ Configure, troubleshoot, and verify implementations of Frame Relay.
- ÿ Analyze the various issues presented when using routing protocols over a specific WAN topology.
- ÿ Configure, troubleshoot, and verify implementations of point-to-point lease lines.

Copyright © 2004 Cisco Systems, Inc. All rights reserved. Cisco, Cisco IOS, Cisco Systems, and the Cisco Systems logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries. All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0108R)