Description
This course of study outlines the sequence of learning activities to help you develop competence in the subject area of Network Systems II. Your competence will be assessed as you complete Microsoft Exam 70-291 (I291). This course of study may take up to eight weeks to complete depending on your educational background, work experience, and the time that you are able to dedicate to your studies. Consult with your mentor if you wish to accelerate your progress through this course of study. It is important that you follow the activities sequentially as you prepare for your assessment. This tool is also designed to help you become an independent learner by providing multiple learning methods.

Introduction
WELCOME!
My name is Jason Jia, the Course of Study Mentor for I291 Network Systems II. As one of the primary supporting resources that help you learn and pass the MCSE Server 2003 Exam 70-291, I will do my best to provide assistance in your studies whenever needed. My contact information and office hours are listed here for your reference:

Course of Study Mentor:  Jason Jia  E-mail:  jjia@wgu.edu  Telephone:  866-895-9660 ext. 5148  Office Hours:  Monday, 8:30am – 5:00pm, Eastern Time  Tuesday, 8:30am – 5:00pm, Eastern Time  Wednesday, 8:30am – 5:00pm, Eastern Time

I will use different communication methods, including telephone, emails, instant messengers (IMs), and Adobe Connect to provide training and supporting services to you. Please feel free to let me know whenever you need technical support from me. Thank you.

Are you currently an information technology professional? Are you planning to become an information professional in the future? Or perhaps you simply want to become an expert in the Windows Server 2003 operating system? The I291 Implementing Network Infrastructure course of study provides you the opportunity to learn and master the Windows Server 2003 Professional.

Indeed, Microsoft Windows Server 2003 is one of the most widely used Windows server operating systems in different industries today. This operating system provides robust functions of computing that no other previous Windows Server operating systems (e.g., Windows NT Server 4.0 or Windows 2000 Server/Advance Server) have ever provided. Successfully mastering Windows Server 2003 provides a number of benefits, including the opportunity to become an expert in the field of information technology and the ability to improve productivity through installing, configuring, and troubleshooting computers running the server operating system, as well as planning, implementing, troubleshooting, and maintaining a Microsoft Windows Server 2003 network environment.

If you have prior experience with previous Microsoft server operating systems, including Windows NT Server 4.0 or Windows 2000 Servers/Advance Servers, it will be relatively easy for you to command Windows Server 2003 as it inherits a lot of attributes from those previous operating systems. According to this course of study, the total estimated time needed for studying and becoming
prepared for the MCSE Server 2003 Exam 70-291 (I291 Implementing Network Infrastructure) is about 8 weeks. Confidence, dedication, diligence, and perseverance are the key ingredients for you to successfully pass your assessment.

Once you successfully pass your assessment, you will become a Microsoft Certified Professional (MCP)—a recipient of a highly reputable professional certification in the field of information technology. This certificate not only represents your achievement in successfully mastering Windows Server 2003 operating system, but it also serves as stepping stone for you to enter the IT industry if you are not currently an IT professional. If you are currently an IT professional, this certificate may potentially help you obtain a promotion by your current employer or even an increase in your salary. Most important of all, it will help you become more successful in your lifelong career in one way or another.

This course of study will serve as an effective tool in helping you successfully command Windows Server 2003 operating system. It will also help you to pass your MCSE Server 2003 Exam 70-291 the first time you take it at an IBT Prometric testing center. Please follow the weekly activities as guidelines in your studies of implementing network infrastructure so that you can maximize your learning outcomes.

Different chapters of the textbook designated for studying I291 - Implementing Network Infrastructure are allocated to each of the seven competencies accordingly. You can see detailed information on those competencies and their associated chapters while working on them as arranged.

Competence is measured by the Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure (Exam 70-291) exam. Exam 70-291 includes a random selection of 55 questions that must be completed in 1 hour to 3 hours (depending on the actual confirmation of the time allowed when you schedule for the exam at a Prometric testing center). To achieve a passing score on the exam, candidates must achieve at least 700 out of 1000 total points. Once you have submitted your passing score, you will pass your AAP for the Client Systems Assessment.

As with any learning activity, one may complete steps more quickly or slowly than noted below. The provided pacing is a rough guide to the amount of time one may need to develop the competency necessary, and prepare to complete the required assessment on time. Completing your assessments within the required timeline keeps you on pace for Satisfactory Academic Progress and Graduation.

**Competencies**

There are several academic competencies associated with this course of study:

**Competency 410.3.1: IP Addressing**
The graduate can implement, manage and maintain IP addressing.

**Competency 410.3.4: Name Resolution**
The graduate can implement, manage, and maintain name resolution.

**Competency 410.3.7: Network Infrastructure Maintenance**
The graduate can plan, implement, and maintain a network infrastructure.

**Competency 410.3.9: Network Security**
The graduate can plan and maintain network security.
Learning Resources


IT Academy e-Learning content for I291 ([http://itacademy.microsofttelearning.com](http://itacademy.microsofttelearning.com))
- vLabs and Course 2276: Implementing a Microsoft Windows Server 2003 Network Infrastructure: Network Hosts
- vLabs and Course 2277: Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure: Network Services

Week 1
Preparing for Success
To successfully complete I291, you need the appropriate resources to aid your learning. You should also prepare a calendar to schedule time devoted to your studies. Share your calendar with family and friends so they are aware of your obligations.

Acquire Learning Resources
Arrange to obtain the learning resources listed below so there will be no delays in your studies. These items are essential for you, as this document will guide you week-by-week in the use of these materials. Some of these items must be shipped to you, so be sure that your mailing address information is current. If you click your name on your AAP, you can check your contact information.

☑ Obtain Your Textbook
The textbook used for I291 is *MCSA/MCSE Self-Paced Study Kit (Exam 70-291): Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure* (see the “Learning Resources” section above).

All required readings for I291, including the textbook, are available online at SkillSoft ([http://wgu.skillport.com/SkillPortFE/login/login.cfm](http://wgu.skillport.com/SkillPortFE/login/login.cfm)) free for you to access 24 hours a day, 7 days a week. Please follow this course of study and complete the required readings, hands-on practices, and questions and answers accordingly.

If you wish to purchase a hardcopy of this textbook, you may also choose to buy a hard copy from the WGU Bookstore (EdMap) or another bookstore at your own cost. Please use the ISBN to make sure that you order the correct edition. The hardcopy comes with two CDs: a 180-day trial version of Windows Server 2003 CD and a practice test CD. To access the learning resource online, please enroll through the learning resource tab of your AAP.

Please note that you will need to pay for the textbook out of your pocket as WGU will not automatically provide you the textbook when you sign up for I291. You can order this textbook via Books24x7, or you can order it from some other sources (e.g. online or bookstore).
Access IT Academy
URL: http://itacademy.microsoftelearning.com

Access the Microsoft e-learning content for I291 through the IT Academy website.

Enter the access code in the text field and confirm that you have read the license agreement. The access code for the I291 e-learning content:

**6708-WADV1-8570**

You will need to sign in with a Windows Live ID. If you have a MSN Hotmail, MSN Messenger or Passport account, this is your Windows Live ID. If you do not already have one of these types of accounts, follow the instructions to sign up with a free Windows Live ID.

When you get logged in you will see your e-learning content; which you will begin in an upcoming activity:

- vLabs and Course 2276: Implementing a Microsoft Windows Server 2003 Network Infrastructure: Network Hosts
- vLabs and Course 2277: Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure: Network Services

Access SkillSoft Modules
Make sure that you can access your SkillSoft account, since there is a Windows XP installation review that you will need to work through in Week 2 of this course of study. This requires the same log-on procedure into WGU’s SkillPort portal as that of accessing your textbook (see above). If you have any difficulty with your account or signing on, please contact the Learning Resources Department at learning@wgu.edu or 801-993-1334 for assistance.

Prepare for Your Studies
You need to also make sure that you have the right set-up of computer equipment and software to get started. You need to be able to access the online learning community that supports this course of study, and need to know where to go to get help should you need additional support with your learning.

Hands-on Labs
It is highly recommended that you have a spare computer with Windows Server 2003 installed for hands-on practice purposes. The hands-on labs are incorporated throughout the *MCSA/MCSE Self-Paced Study Kit (Exam 70-291)*. Each chapter of the book provides a troubleshooting lab. These labs are designed to help you roll up your sleeves and dive into the content. Many of these labs will have you looking at settings on your home computer, and often times making changes to them. Be sure you are careful to backup your settings before making any changes to your system.

You can conduct hands-on practice in the following ways:

1. You can use your current PC or laptop that runs Windows Server 2003 and do the hands-on practices based on the instructions of the practices associated with each of the activities in chapters in this course of study. It is highly recommended that you back up your data on a daily basis in case your PC or laptop malfunctions due to configurations resulting from those hands-on
practices. You should also have your CD of Windows Server 2003 (not the 180-day trial version) handy in case you need to reinstall the Windows Server 2003 on your PC or laptop whenever necessary.

Note: Did you know that as a student at WGU you qualify for free Microsoft Software related to your degree program? You can download free software through MSDN AA. All students are enrolled in this program and you should have received an email with access instructions. If you have not received this email or cannot remember you login information, please contact your mentor.

2. Another alternative is to have a spare PC or laptop ready, if applicable, so that you can conduct the hands-on practices after installing Windows Server 2003. This option is most favorable as you don’t have to worry about losing your data and time.

3. Finally, you can consider partitioning your current PC if your current PC/laptop is running Windows NT/2000/XP/Vista and if you have the software to help you partition your current hard drive on your PC/laptop. This option allows you avoid buying additional hardware (e.g., PC/laptop and/or hard drives) in order to conduct hands-on practices in this course of study. Please note that you still need to back up your data on a daily basis.

4. IT Academy includes resources and virtual labs that will provide you with hands on activities.

- **Participate and Contribute to the Online Learning Community**
  The Client/Server Networking: Design, Implementation, and Administration Learning Community provides the advantage of sharing knowledge associated with Windows Server 2003 operating systems (I291) while also allowing everyone in the learning community the opportunity to freely exchange their learning experiences associated with Windows Server 2003. You are strongly encouraged to be an active participant in the Client/Server Networking: Design, Implementation, and Administration Learning Community by viewing and/or contributing to the discussions in discussion threads or blogs.

- **Getting Help with Your Learning**
  As you are moving through the textbook, you are strongly encouraged to complete the questions at the end of each chapter. If you have difficulty in answering questions or completing any of the tasks in each activity with confidence, it is recommended that try one or more of the following:
  - Look in the learning community to see if you can find similar questions posed by others.
  - Reach out to your peers for assistance, if possible.
  - Contact your course of study mentor directly for help (please see the introduction of this course of study for contact information).

**Implementing, Managing, and Maintaining IP Addressing**
An overview of how to implement, manage, and maintain IP addressing within a Windows Server 2003 network.
By understanding the concepts behind IP addressing, you will be able to assign configuration to TCP/IP hosts, and then troubleshoot the configuration errors. An understanding of these concepts will also enable you to diagnose problems related to the incorrect configuration of IP subnets, default gateways, subnet masks, or addresses. Finally, it will also enable you to verify an address space configuration by determining the number of bits to reserve for a subnet ID and host ID.

**Competency 410.3.1: IP Addressing**
The graduate can implement, manage and maintain IP addressing

**Understanding TCP/IP (Chapter 2)**
This topic focuses on how to implement, manage, and maintain IP addresses within a Windows Server 2003 network environment.

- **Understanding TCP/IP**
  Read Lesson 1 (pp. 2–5), and then complete the associated hands-on practice and lesson review at the end of Lesson 1. Consider the following questions as you work through the lesson:
  - A coworker asks you about TCP/IP addressing. How would you explain this in a few sentences?
  - If a client’s computer has issues with connecting to a network, what are the procedures for diagnosing and resolving issues related to an incorrect configuration?

  Complete the lesson review on page 2-5 before moving to the next lesson.

- **Working with IP Address Blocks**
  Read Lesson 2 (pp. 7–30), and then complete the associated hands-on practice and lesson review at the end of Lesson 2. Consider the following questions as you work through the lesson:
  - If someone asks you about the component parts of an IP address, how will you respond?
  - Will you be able to describe the function of subnet masks to your client?
  - What are the relationships between address blocks, subnets, default gateways, and broadcast domains?
  - If someone is having difficulty in distinguishing the differences between public addresses and private addresses can you explain the concepts to them clearly?
  - IT professionals in the IT industry use the slash notion rather than dotted-decimals. Do you know how to convert a subnet mask between slash notation and dotted-decimal notation?
  - If your boss asks you about subnetting your company’s network, can you determine the host capacity of an address block configured as a single subnet, given the block’s subnet mask expressed in slash notation or dotted-decimal notation?
  - If required, can you determine an appropriately sized address block, given a requirement for a number of hosts?

  Complete the following lesson review and hands-on practices before moving to the next lesson:
  - Hands-on Exercise 1: Learning to Work with Address Blocks—Choosing an Appropriate Subnet Mask (p. 2-24)
• Hands-on Exercise 3: Learning to Work with Address Blocks—Mastering Subnet Mask Octet Values (p. 2-25)
• Hands-on Exercise 4: Learning to Work with Address Blocks—Converting Subnet Masks to Dotted-Decimal Notation (p. 2-26)
• Hands-on Exercise 5: Learning to Work with Address Blocks—Converting Subnet Masks to Slash Notation (p. 2-27)
• Hands-on Exercise 6: Learning to Work with Address Blocks—Determining the Host Capacity of Networks (p. 2-27)
• Hands-on Exercise 7: Learning to Work with Address Blocks—Determining Networks Size Requirements in Slash Notation Terms (p. 2-28)
• Hands-on Exercise 8: Learning to Work with Address Blocks—Determining Networks Size Requirements in Terms of a Dotted-Decimal Subnet Mask (p. 2-29)
• Lesson Review (p. 2-30)

Subnetting IP Networks
Read Lesson 3 (pp. 32–51), and then complete the associated hands-on practice and lesson review at the end of Lesson 3. Consider the following questions as you work through the lesson:
• How will you manipulate subnet masks to configure subnets for a variety of network restrictions and needs based on your clients’ circumstances?
• What is an optimized approach in determining the number of subnets and hosts available given any network address and subnet masks?
• What is the best way to determine an appropriate subnet masks given a requirement for a number of subnets or a number of subnets and hosts?
• How can you determine whether two addresses are on the same subnet?
• If asked, can you explain to your boss the features and benefits of using variable-length subnet masks?

Complete the following lesson review and hands-on practices before moving to the next lesson:
• Hands-on Exercise 1: Working with Subnet Masks and Subnets—Calculate Subnet Masks (p. 2-49)
• Hands-on Exercise 2: Working with Subnet Masks and Subnets—Calculate Various Subnet Information (p. 2-50)
• Lesson review (p. 2-51)

IT Academy e-Learning
URL: http://itacademy.microsofttelearning.com

Access the Microsoft e-learning content for I291 through the IT Academy website. Begin working with the vLabs and Course 2276: Implementing a Microsoft Windows Server 2003 Network Infrastructure: Network Hosts.

This resource is created by Microsoft and will help you prepare for your Microsoft certification exam.

Monitoring and Troubleshooting TCP/IP Connections (Chapter 3)
This topic focuses on monitoring and troubleshooting issues associated with TCP/IP connections within a Windows Server 2003 network environment using the range of tools most
popular in troubleshooting IP networks. The skills to be acquired after studying this chapter include troubleshooting TCP/IP addressing, diagnosing and resolving issues related to incorrect TCP/IP configuration, monitoring network traffic, and troubleshooting connectivity to the Internet.

☐ Analyzing Traffic Using Network Monitor
Read Lesson 1 (pp. 3–20), and then complete the associated hands-on practice and lesson review at the end of Lesson 1. Consider the following questions as you work through the lesson:
• Can you demonstrate your skills in using Network Monitor to capture, view, and save data in front your trainees?

Complete the following lesson review and hands-on practices before moving to the next lesson:
• Hands-on Exercise 1: Using Network Monitor—Installing Network Monitor (p. 3-16)
• Hands-on Exercise 2: Using Network Monitor—Creating a Network Capture in Network Monitor (p. 3-16)
• Hands-on Exercise 3: Using Network Monitor—Saving a Frame to a Text File (p. 3-19)
• Lesson Review (p. 3-20)

☐ Troubleshooting TCP/IP Connections
Read Lesson 2 (pp. 22–32), and then complete the associated hands-on practice and lesson review at the end of Lesson 2. Consider the following questions as you work through the lesson:
• If a newly installed server running Server 2003 fails in communicating with other servers or workstations, can you use the Ipconfig, Network Diagnostics, and Netdiag utilities to troubleshoot a network configuration?
• If an existing server no longer has connections with the network, can you use the Ping, PathPing, Tracert, and Arp utilities to troubleshoot faulty connections?

Complete the following lesson review and hands-on practices before moving to the next lesson:
• Hands-on Exercise 1: Running Network Diagnostics and Netdiag—Running Network Diagnostics (p. 3-29)
• Hands-on Exercise 2: Running Network Diagnostics and Netdiag—Installing Windows Support Tools (p. 3-30)
• Hands-on Exercise 3: Running Network Diagnostics and Netdiag—Running Netdiag from Across the Network (p. 3-31)
• Lesson Review (p. 3-32)

☐ Review
• Complete: Case Scenario Exercise (p. 3-34)
• Complete: Questions and Answers (p. 3-38)

Before moving to chapter 4 of MCSE Self-Paced Study Kit (Exam 70-291), you should be able to complete Activity 3—Case Scenarios as well as the Questions and Answers section of chapter 2. In addition, you should be able to answer questions and complete the tasks listed above with confidence. If you cannot, you should consider one or more solutions as listed below:
• Look in the Learning Community to see if you can find similar questions that you still have difficulty to answer.
• Reach out to your peers for assistance, if possible.
• Contact your course of study mentor directly for help (please see the introduction of this course of study for contact information).

Week 2
Implementing, Managing, and Maintaining Name Resolution, Part I
An overview of how to implement, manage, and maintain name resolution within a Microsoft Server 2003 network environment.

By understanding the functional concepts related to name resolution in Windows Server 2003 networks, you will learn the process of configuring DNS server and DNS clients in a Windows Server 2003 Network in addition to resolving name resolution problems using essential troubleshooting tools such as Nbstat and Ipconfig /flushdns.

Competency 410.3.4: Name Resolution
The graduate can implement, manage, and maintain name resolution.

Configuring DNS Servers and Clients (Chapter 4)
This topic focuses on the skills in configuring DNS servers and clients within a Microsoft Windows Server 2003 network.

☐ Understanding Name Resolution in Windows Server 2003
Read Lesson 1 (pp. 3–10), and then complete the associated hands-on practice and lesson review at the end of Lesson 1. Consider the following questions as you work through the lesson:
• What are recommended name resolution methods in Windows Server 2003 networks?
• How do you compare and contrast NetBIOS names and DNS names?
• What are the name resolution procedures for NetBIOS and DNS respectively?
• If required, can you demonstrate how to use the Nbstat command to view and flush the NetBIOS name cache?
• If users complain about slow network performance in your company, how will you disable NetBIOS on the network?

Complete the following lesson review and hands-on practices before moving to the next lesson:
• Hands-on Exercise 1: Capturing Name Resolution Traffic—Capturing Name Resolution Traffic (p. 4-9)
• Lesson Review (p. 4-10)

☐ Understanding DNS in Windows Server 2003 Networks
Read Lesson 2 (pp. 12–23), and then complete the associated hands-on practice and lesson review at the end of Lesson 2. Consider the following questions as you work through the lesson:
• How do you define the structure of DNS namespace?
• Will you be able to explain to your coworker how the Internet namespace is organized and governed?
How are name queries handled by DNS clients and servers?
What is the root hints file and how does it work?

Complete the lesson review on page 4-23 before moving to the next lesson.

Deploying DNS Servers
Read Lesson 3 (pp. 26–46), and then complete the associated hands-on practice and lesson review at the end of Lesson 3. Consider the following questions as you work through the lesson:

- If necessary, can you install and configure a DNS server alone?
- What are the correct procedures of creating DNS zones and resource records?
- If required, can you tell the difference between primary, secondary, caching-only, and stub servers?
- What are the steps necessary for creating a caching-only server?
- What is the most common type of resource records?

Complete the following lesson review and hands-on practices before moving to the next lesson:

- Hands-on Exercise 1: Installing a DNS Server—Installing the DNS Windows Component (p. 4-42)
- Hands-on Exercise 2: Installing a DNS Server—Creating a Dial-Up Connection (p. 4-43)
- Hands-on Exercise 3: Installing a DNS Server—Configuring the New DNS Server (p. 4-44)
- Hands-on Exercise 4: Installing a DNS Server—Testing the DNS Server (p. 4-45)
- Lesson Review (p. 4-46)

Configuring DNS Clients
Read Lesson 4 (pp. 48–62), and then complete the associated hands-on practice and lesson review at the end of Lesson 4. Consider the following questions as you work through the lesson:

- Is there a way for you to configure computer names that conform to DNS standards?
- What are the steps necessary for configuring a primary DNS suffix for a computer?
- How can you configure a connection-specific suffix for an adapter?
- How can you configure a DNS server list for network connections?
- What does it take to configure a DNS suffix search list for network connections?
- Are there any shortcuts in configuring a DNS client to request dynamic DNS updates?
- What is required to view and clear the DNS client cache?

Complete the following lesson review and hands-on practices before moving to the next lesson:

- Hands-on Exercise 1: Configuring a Primary DNS Suffix—Adding Suffix Names to Computers (p. 4-59)
- Hands-on Exercise 2: Configuring a Primary DNS Suffix—Verifying Changes in DNS (p. 4-59)
- Hands-on Exercise 3: Configuring a DNS Server to Perform Recursion—Enabling ICS (p. 4-60)
- Hands-on Exercise 4: Configuring a DNS Server to Perform Recursion—Performing Recursive Queries (p. 4-61)
• Lesson Review (p. 4-62)

☐ Review
  • Complete: Case Scenario Exercise (p. 4-64)
  • Complete: Troubleshooting Lab (p. 4-65)
  • Complete: Questions and Answers (p. 4-69)

Before moving to chapter 5 of *MCSE Self-Paced Study Kit (Exam 70-291)*, you should be able to complete Activity 5—Questions and Answers of chapter 4. You should also be able to answer questions and complete the tasks listed above with confidence. If you cannot, you should consider one or more solutions as listed below:
  • Look in the learning community to see if you can find similar questions that you still have difficulty to answer.
  • Reach out to your peers for assistance, if possible.
  • Contact your course of study mentor directly for help (please see the introduction of this course of study for contact information).

☐ IT Academy e-Learning
URL: [http://itacademy.microsofttelearning.com](http://itacademy.microsofttelearning.com)

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This resource is created by Microsoft and will help you prepare for your Microsoft certification exam.

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**Week 3**

**Implementing, Managing, and Maintaining Name Resolution, Part II**

An overview of how to implement, manage, and maintain name resolution within a Microsoft Server 2003 network environment

By understanding the functional concepts related to name resolution in Windows Server 2003 networks, you will learn the process of configuring DNS server and DNS clients in a Windows Server 2003 Network in addition to resolving name resolution problems using essential troubleshooting tools such as Nbstat and Ipconfig /flushdns.

**Competency 410.3.4: Name Resolution**
The graduate can implement, manage, and maintain name resolution.

**Configuring a DNS Infrastructure (Chapter 5)**
This topic introduces the concepts of domain configuration options available for DNS servers and zones. It also introduces how and why to implement delegations and stub zones in a Windows Server 2003 network. It focuses on the skills in configuring a DNS infrastructure within a Windows Server 2003 network environment.
**Configuring a DNS Server Properties**
Read Lesson 1 (pp. 1–18), and then complete the associated hands-on practice and lesson review at the end of Lesson 1. Consider the following questions as you work through the lesson:

- How do you configure a DNS server to listen for queries on selected network adapters?
- Is there a good way to configure a DNS server to forward all or select DNS queries to an upstream DNS server?
- How can you tell when it is necessary to modify root hints?

Complete the following lesson review and hands-on practices before moving to the next lesson:

- Hands-on Exercise 1: Comparing NetBIOS and DNS Name Resolution Traffic—Capturing Name Resolution Traffic (p. 5-13)
- Hands-on Exercise 2: Verifying SRV Resource for Active Directory in DNS—Installing Active Directory (p. 5-15)
- Hands-on Exercise 3: Verifying SRV Resource for Active Directory in DNS—Verifying SRV Resource Records in DNS (p. 5-17)
- Hands-on Exercise 4: Verifying SRV Resource for Active Directory in DNS—Joining a Computer to the New Domain (p. 5-18)
- Lesson Review (p. 3-18)

**Configuring Zone Properties and Transfers**
Read Lesson 2 (pp. 21–43), and then complete the associated hands-on practice and lesson review at the end of Lesson 2. Consider the following questions as you work through the lesson:

- If necessary, will you be able to configure a DNS zone for dynamic updates?
- How should you change the DNS zone type?
- If requested, can you store data in the Active Directory database?
- What is the best way to add name server (NS) resource records to a zone?
- To balance the workload on DNS servers, how should you configure zone transfers from secondary zones?
- If DNS servers suffer from performance issues, how can you distinguish the events that can trigger a zone transfer?
- What is exactly the process of a zone transfer?

Complete the following lesson review and hands-on practices before moving to the next lesson:

- Hands-on Exercise 1: Deploying a Secondary DNS Server—Configuring a Secondary Zone (p. 5-39)
- Hands-on Exercise 2: Deploying a Secondary DNS Server—Reviewing Notification Settings (p. 5-41)
- Lesson Review (p. 5-43)

**Configuring Advanced DNS Server Properties**
Read Lesson 3 (pp. 45–53), and then complete the associated hands-on practice and lesson review at the end of Lesson 3. Consider the following questions as work through the lesson:

- Do you describe the functions and purpose of all the options available for configuration on the Advanced tab of the DNS server properties dialog box?
- Can you reset all advanced server settings to defaults?
Complete the lesson review on page 5-53 before moving to the next lesson.

☐ Creating Zone Delegations
Read Lesson 4 (pp. 57-64), and then complete the associated hands-on practice and lesson review at the end of Lesson 4. Consider the following questions as work through the lesson:

- What does it take to create a delegated zone within a DNS namespace?
- What the benefits of zone delegation?

Complete the following lesson review and hands-on practices before moving to the next lesson:
- Hands-on Exercise 1: Creating a Zone Delegation—Creating a Zone to Be Delegated (p. 5-62)
- Hands-on Exercise 2: Creating a Zone Delegation—Adding Host (a) Resource Records to the Zone (p. 5-62)
- Hands-on Exercise 3: Creating a Zone Delegation—Creating a Delegation (p. 5-63)
- Hands-on Exercise 4: Creating a Zone Delegation—Testing the Configuration (p. 5-64)
- Lesson Review (p. 5-64)

☐ Creating Zone Delegations
Read Lesson 5 (pp. 67–74), and then complete the associated hands-on practice and lesson review at the end of Lesson 5. Consider the following questions as you work through the lesson:

- What are the best practices of creating a stub zone?
- What are the benefits and limitations of stub zones?

Complete the following lesson review and hands-on practice before moving to the next lesson:
- Hands-on Exercise 1: Deploying a Stub Zone—Creating a Stub Zone (p. 5-73)
- Lesson Review (p. 5-74)

☐ Review
- Complete: Case Scenario Exercise (p. 5-75)
- Complete: Troubleshooting Lab (p. 5-78)
- Complete: Questions and Answers (p. 5-81)

Monitoring and Troubleshooting DNS (Chapter 6)
This topic introduces the tools and procedures necessary to monitor and troubleshoot DNS name resolution and focuses on the skills in monitoring and troubleshooting DNS within a Windows Server 2003 network.

☐ Using DNS Troubleshooting Tools
Read Lesson 1 (pp. 1–18), and then complete the associated hands-on practice and lesson review at the end of Lesson 1. Consider the following questions as you work through the lesson:

- Do you know the step-by-step procedures in using the Nslookup utility to perform queries, to set and view options, and to view zone data?
• Why do you need to use the DNS Events log to review DNS errors and events?
• What is the best approach in configuring the DNS server to capture all packets to
  the Dns.log file?
• Is there a way to locate and open the Dns.log file?

Complete the following lesson review and hands-on practices before moving to the
next lesson:
• Hands-on Exercise 1: Using DNS Troubleshooting Tools—Using Nslookup in
  Non-interactive Mode (p. 6-13)
• Hands-on Exercise 2: Using DNS Troubleshooting Tools—Using Nslookup in
  Interactive Mode (p. 6-14)
• Hands-on Exercise 3: Using DNS Troubleshooting Tools—Using the DNS Log for
  Debugging (p. 6-17)
• Lesson Review (p. 6-18)

☐ Using DNS Monitoring Tools
Read Lesson 2 (pp. 20-28), and then complete the associated hands-on practice and
lesson review at the end of Lesson 2. Consider the following questions as you work
through the lesson:
• Do you know how to use Replication Monitor to monitor replication or DNS zone
  data?
• How can I use the System Monitor counters to monitor DNS performance?

Complete the lesson review on page 6-28 before moving to the next lesson.

☐ Review
• Complete: Case Scenario Exercise (p. 6-29)
• Complete: Troubleshooting Lab (p. 6-31)
• Complete: Questions and Answers (p. 6-34)

Before moving to chapter 11 of MCSE Self-Paced Study Kit (Exam 70-291), you should
be able to complete Activity 3—Questions and Answers of chapter 6. You should also
be able to answer questions and complete the tasks listed above with confidence. If
you cannot, you should consider one or more solutions as listed below:
• Look in the learning community to see if you can find similar questions that you
  still have difficulty to answer.
• Reach out to your peers for assistance, if possible.
• Contact your course of study mentor directly for help (please see the introduction
  of this course of study for contact information).

Week 4
Implementing, Managing, and Maintaining Network Security
An overview of how to implement, manage, and maintain network security within a Windows Server
2003 network environment.

By understanding the fundamental principles of network security that can be applied on servers
running Microsoft Windows Server 2003, you will be able to prevent security compromises by
planning, implementing, and monitoring system security to prevent data loss as a result of data being
stolen, modified, deleted, or corrupted. To accomplish this goal, tools and techniques for increasing security on the Windows Server 2003 network can be achieved through fulfilling an organization’s security policy, monitoring and troubleshooting network security protocols, as well as controlling data that travels from one computer to another.

**Competency 410.3.9: Network Security**
The graduate can plan and maintain network security.

**Managing Network Security (Chapter 11)**
This topic focuses on the skills in managing network security within a Windows Server 2003 network environment.

- **Implementing Secure Network Administration Procedures**
  Read Lesson 1 (pp. 1–37), and then complete the associated hands-on practice and lesson review at the end of Lesson 1. Consider the following questions as you work through the lesson:

  - What are the functions of all the subnodes in the Security Settings node of a Group Policy Object (GPO)?
  - Why do you need to apply the principle of least privilege?
  - What is the proper way to implement baseline security for multiple security roles?
  - Whenever required, can you use the Security Configuration and Analysis snap-in to test a server for compliance with security policy?
  - What is the best way to select provided templates for use in administering security?
  - If a server fails, can you recover default security settings?

  Complete the following lesson review and hands-on practices before moving to the next lesson:

  - Hands-on Practice 1: Creating and Using the Security Configuration And Analysis Console—Create the Console: Apply Default Templates (p. 11-29)
  - Hands-on Practice 2: Creating and Using the Security Configuration And Analysis Console—Create Custom Templates (p. 11-32)
  - Hands-on Practice 3: Creating and Using the Security Configuration And Analysis Console—Recover from the Application of a Bad Template (p. 11-35)
  - Hands-on Practice 4: Creating and Using the Security Configuration And Analysis Console—Monitor Security Compliance (p. 11-36)
  - Lesson Review (p. 11-37)

- **Monitoring Network Protocol Security**
  Read Lesson 2 (pp. 40–76), and then complete the associated hands-on practice and lesson review at the end of Lesson 2. Consider the following questions as you work through the lesson:

  - What are the functions of IPSec policies?
  - Why should an IP Security Monitor be used to monitor IPSec traffic?
  - Do you know how to use Netcap to capture network traffic?
  - Are there any benefits of encrypting connections to Web folders with Security Sockets Layer (SSL)?
  - What are Kerberos?
  - What is the proper way to use Network Monitor to understand Kerberos?
Complete the following lesson review and hands-on practices before moving to the next lesson:

- Hands-on Practice 1: Using Network Security Protocols—Use the IP Security Management Snap-In to Create a Blocking Policy (p. 11-60)
- Hands-on Practice 2: Using Network Security Protocols—Create a Negotiation Policy (p. 11-64)
- Hands-on Practice 4: Using Network Security Protocols—Use Netsh to Monitor IPSec (p. 11-72)
- Hands-on Practice 7: Using Network Security Protocols—Use Kerbtray to View the Kerberos Ticket Cache (p. 11-75)
- Hands-on Practice 8: Using Network Security Protocols—Use Klist to Purge and View the Kerberos Ticket Cache (p. 11-76)
- Lesson Review (p. 11-76)

Troubleshooting Network Protocol Security

Complete Problems 1–3

- Problem 1: Making Your IPSec Policy work (p. 11-80)
- Problem 2: Determining Whether Your IPSec Blocking Rules Are Working (p. 11-81)
- Problem 3: Determining Whether Kerberos Is Being Used for Authentication (p. 11-81)

Complete Practices 1–3

- Practice 1: Troubleshoot IPSec with IPSec Monitor (p. 11-85)
- Practice 2: Troubleshoot Logon Issues with Network Monitor (p. 11-85)
- Practice 3: Use Event Logs for Troubleshooting (p. 11-86)

Complete the Troubleshooting Lab on page 11-90.

Complete the Questions and Answers on page 11-96.

Before moving to chapter 9 of *MCSE Self-Paced Study Kit (Exam 70-291)*, you should be able to complete Activity 3—Questions and Answers of chapter 11. You should also be able to answer questions and complete the tasks listed above with confidence. If you cannot, you should consider one or more solutions as listed below:

- Look in the learning community to see if you can find similar questions that you still have difficulty to answer.
- Reach out to your peers for assistance if possible.
- Contact your course of study mentor directly for help (please see the introduction of this course of study for contact information).
Week 5
Implementing, Managing, and Maintaining Routing and Remote Access, Part I
An overview of how to implement, manage, and maintain routing and remote access within a Windows Server 2003 network environment.

By understanding the functions a Windows Server 2003, including the role as a network router, you will acquire the knowledge about authentication, static routers, and address assignment that is specific to routing scenarios. Such knowledge will enable you to manage many complex elements of routed network that require support and configuration, such as routing protocols and routing tables.

Competency 410.3.7: Network Infrastructure Maintenance
The graduate can plan, implement, and maintain a network infrastructure.

Routing with Windows Server 2003 (Chapter 9)
This topic focuses on the skills in routing with Windows Server 2003 within a Windows Server 2003 network, including management of routing and remote access interfaces, packet filters, TCP/IP routing, and DHCP. In addition, you will learn how to troubleshoot demand-dial routing, connectivity to the Internet, as well as to verify the proper functions of DHCP relays.

☐ Configuring Windows Server 2003 for LAN Routing
Read Lesson 1 (pp. 1–27), and then complete the associated hands-on practice and lesson review at the end of Lesson 1. Consider the following questions as you work through the lesson:
  • How will you configure Windows Server 2003 as a network router?
  • What are the correct procedures of configuring and managing routing features in Routing and Remote Access?
  • Is there a way for you to view and maintain routing tables?
  • How will you configure and maintain static routes?

Complete the following lesson review and hands-on practice before moving to the next lesson:
  • Lesson Review (p. 9-28)

☐ Configuring Demand-Dial Routing
Read Lesson 2 (pp. 30–45), and then complete the associated hands-on practice and lesson review at the end of Lesson 2. Consider the following questions as you work through the lesson:
  • What are the steps necessary for configuring demand-dial routing?
  • How will you manage demand-dial interfaces?
  • Is there a way to troubleshoot demand-dial routing?

Complete the following lesson review and hands-on practices before moving to the next lesson:
  • Hands-on Practice 1: Configuring Demand-Dial Routing—Installing Internet Information Services on Computer2 (p. 9-41)
- Hands-on Practice 2: Configuring Demand-Dial Routing—Configuring Routing and Remote Access for Demand-Dial Routing (p. 9-42)
- Hands-on Practice 3: Configuring Demand-Dial Routing—Testing the Configuration (p. 9-44)
- Lesson Review (p. 9-45)

☐ Configuring NAT
Read Lesson 3 (pp. 41–57), and then complete the associated hands-on practice and lesson review at the end of Lesson 3. Consider the following questions as you work through the lesson:

- What is the most effective way to configure NAT on a Windows Server 2003 network?
- Can you use a few sentences to tell the difference between Internet Connection Sharing (ICS) and NAT?
- What is needed to troubleshoot NAT-related problems?

Complete the following lesson review and hands-on practices before moving to the next lesson:

- Hands-on Practice 1: Installing and Configuring NAT—Configuring NAT Through a Demand-Dial Interface (p. 9-51)
- Hands-on Practice 2: Installing and Configuring NAT—Viewing and Configuring NAT Features (p. 9-53)
- Lesson Review (p. 9-57)

☐ Configuring and Managing Routing Protocols
Read Lesson 4 (pp. 59–68), and then complete the associated hands-on practice and lesson review at the end of Lesson 4. Consider the following questions as you work through the lesson:

- How do you deploy RIP routing?
- Is there a way for you to determine whether RIP or OSPF is best for your network?
- Why and how will you deploy DHCP Relay Agent?

Complete the lesson review on page 9-68 before moving to the next lesson.

☐ Configuring Packet Filters
Read Lesson 5 (pp. 70–74), and then complete the associated hands-on practice and lesson review at the end of Lesson 5. Consider the following questions as you work through the lesson:

- Can I configure packet filters to allow access to internal services?

Complete the lesson review on page 9-74 before moving to the next lesson.

☐ Review
- Complete: Case Scenario Exercise (p. 9-57)
- Complete: Troubleshooting Lab (p. 9-77)
- Complete: Questions and Answers (p. 9-80)

Before moving to chapter 10 of *MCSE Self-Paced Study Kit (Exam 70-291)*, you should be able to complete Activity 6—Questions and Answers of chapter 9. You should also
be able to answer questions and complete the tasks listed above with confidence. If you cannot, you should consider one or more solutions as listed below:

• Look in the learning community to see if you can find similar questions that you still have difficulty to answer.
• Reach out to your peers for assistance, if possible.
• Contact your course of study mentor directly for help (please see the introduction of this course of study for contact information).

Week 6
Implementing, Managing, and Maintaining Routing and Remote Access, Part II
An overview of how to implement, manage, and maintain routing and remote access within a Windows Server 2003 network environment.

By understanding the functions a Windows Server 2003, including the role as a network router, you will acquire the knowledge about authentication, static routers, and address assignment that is specific to routing scenarios. Such knowledge will enable you to manage many complex elements of routed network that require support and configuration, such as routing protocols and routing tables.

Competency 410.3.7: Network Infrastructure Maintenance
The graduate can plan, implement, and maintain a network infrastructure.

Configuring and Managing Remote Access (Chapter 10)
This topic focuses on the skills in configuring and managing remote access within a Microsoft Windows Server 2003 network, including configuring routing and remote access user authentication, managing remote access, implementing secure access between private networks, and troubleshooting user access to remote access servers as well as troubleshooting routing and remote access routing.

Configuring Remote Access Connections
Read Lesson 1 (pp. 1–21), and then complete the associated hands-on practice and lesson review at the end of Lesson 1. Consider the following questions as you work through the lesson:

• Can you configure remote access addressing?
• What does it take to configure a dial-up remote access server?
• How will you configure a dial-up remote access client?
• Is there a way to configure routing and remote access user authentication?
• What are the necessary steps for configuring remote access authentication protocols?

Complete the following lesson review and hands-on practices before moving to the next lesson:

• Hands-on Practice 1: Creating a Dial-Up Access Server—Creating a Dial-Up Server by Using the Routing And Remote Access Server Setup Wizard (p. 10-18)
• Hands-on Practice 2: Creating a Dial-Up Access Server—Configuring a Connection to a Dial-Up Server (p. 10-18)
• Lesson Review (p. 10-21)
Authorizing Remote Access Connections

Read Lesson 2 (pp. 23–45), and then complete the associated hands-on practice and lesson review at the end of Lesson 2. Consider the following questions as you work through the lesson:

- Do you know the procedures of configuring Routing and Remote Access policies to permit or deny access?
- How will you manage Routing and Remote Access clients?
- In a real work environment, how will you diagnose and resolve issues related to establishing a remote access connection?
- Given that you are working in a real work environment, how will you diagnose and resolve client access to resources beyond the remote access server?

Complete the following lesson review and hands-on practices before moving to the next lesson:

- Hands-on Practice 1: Deploying Remote Access—Creating a Telecommuter Group and User Account (p. 10-41)
- Lesson Review (p. 10-45)

Implementing VPNs

Read Lesson 3 (pp. 47–66), and then complete the associated hands-on practice and lesson review at the end of Lesson 3. Consider the following questions as you work through the lesson:

- When implementing VPN solutions for business, do you know how to configure a remote access VPN?
- Is there a way to effectively diagnose and resolve issues related to remote access VPNs?
- What does it take to secure access between private networks through a router-to-router VPN?
- Is there a proper procedure in troubleshooting router-to-router VPNs?
- When clients’ computers are involved, do you know the best approach in troubleshooting client access to remote access services?

Complete the following lesson review and hands-on practices before moving to the next lesson:

- Hands-on Practice 1: Configuring a VPN—Adding VPN Access as a Remote Access Policy Condition (p. 10-59)
- Hands-on Practice 2: Configuring a VPN—Creating a PPTP-Type VPN Connection (p. 10-60)
- Hands-on Practice 3: Configuring a VPN—Logging on to a Domain Through a VPN Connection (p. 10-62)
- Hands-on Practice 4: Configuring a VPN—Creating a VPN Connection Through L2TP/IPSec (p. 10-63)
- Hands-on Practice 5: Configuring a VPN—Testing the L2TP/IPSec Configuration (p. 10-65)
- Lesson Review (p. 10-66)
- Deploying the Internet Authentication Service
  Read Lesson 4 (pp. 67–81), and then complete the associated hands-on practice and lesson review at the end of Lesson 4. Consider the following questions as you work through the lesson:
  - What is the best way to configure IAS to provide authentication for Routing and Remote Access clients?
  Complete the following lesson review and hands-on practices before moving to the next lesson:
    - Hands-on Practice 1: Using Deploying a RADIUS—Configuring the RADIUS Client (p. 10-78)
    - Hands-on Practice 2: Using Deploying a RADIUS—Configuring the RADIUS Server (p. 10-79)
    - Hands-on Practice 3: Using Deploying a RADIUS—Testing the RADIUS Configuration (p. 10-80)
    - Lesson Review (p. 10-81)

- Review
  Complete: Case Scenario Exercise (p. 10-82)
  Complete: Troubleshooting Lab (p. 10-83)
  Complete: Questions and Answers (p. 10-86)

Before moving to chapter 12 of *MCSE Self-Paced Study Kit (Exam 70-291)*, you should be able to complete Activity 5—Questions and Answers of chapter 10. You should also be able to answer questions and complete the tasks listed above with confidence. If you cannot, you should consider one or more solutions as listed below:
  - Look in the learning community to see if you can find similar questions that you still have difficulty to answer.
  - Reach out to your peers for assistance, if possible.
  - Contact your course of study mentor directly for help (please see the introduction of this course of study for contact information).

Week 7

Maintaining a Network Infrastructure
An overview of the processes and procedures in maintaining a network infrastructure within a Microsoft Windows Server 2003 network environment.

By understanding the critical elements that are necessary for maintaining a Windows Server 2003 network infrastructure, you will be able to ensure that the servers on your network are getting the resources necessary for serving the population. In addition, you will be able to ensure that users set up and maintain their connection to the Internet. Finally, you will be able to adjust and maintain the services that your server runs.

Competency 410.3.7: Network Infrastructure Maintenance
The graduate can plan, implement, and maintain a network infrastructure.

**Maintaining a Network Infrastructure (Chapter 12)**
This topic focuses on the skills in maintaining a network infrastructure within a Windows Server 2003 network to ensure that the servers on the network are getting the resources
necessary for the population, that users set up and maintain their connection to the Internet, and to adjust and maintain the services that servers run.

☐ Monitoring Network Performance
Read Lesson 1 (pp. 1–20), and then complete the associated hands-on practice and lesson review at the end of Lesson 1. Consider the following questions as you work through the lesson:
• Do you know how to find and use the Networking tab in Tasks Manager?
• What are the steps necessary for finding and setting alerts using the Performance console?
• Is there a way to capture specific data using the version of Network Monitor included with Windows Server 2003?

Complete the following lesson review and hands-on practices before moving to the next lesson:
• Hands-on Practice 1: Sampling Performance—Monitor Network Traffic with Task Manager (p. 12-19)
• Hands-on Practice 1: Sampling Performance—Create a Network Alert Using the Performance Console (p. 12-19)
• Lesson Review (p. 12-20)

☐ Troubleshooting Internet Connectivity
Read Lesson 2 (pp. 22–30) and then complete the associated hands-on practice and lesson review at the end of Lesson 2. Consider the following questions as you work through the lesson:
• How will you troubleshoot, diagnose, and repair faculty Internet connections?

Complete the following lesson review and hands-on practices before moving to the next lesson:
• Hands-on Practice 1: Troubleshooting an Internet Connection—Troubleshooting Internet Connection (p. 12-28)
• Lesson Review (p. 12-30)

☐ Troubleshooting Server Services
Read Lesson 3 (pp. 32–40) and then complete the associated hands-on practice and lesson review at the end of Lesson 3. Consider the following questions as you work through the lesson:
• What are the recommended approaches in diagnosing and resolving issues related to service dependency?
• What are the service recovery options to diagnose and resolve service-related issues?

Complete the following lesson review and hands-on practices before moving to the next lesson:
• Hands-on Practice 1: Configuring Services—Configure Service Dependency (p. 12-38)
• Hands-on Practice 2: Configuring Services—Configure Service Recovery Options (p. 12-39)
• Lesson Review (p. 12-40)
☐ Configuring an Update Infrastructure
Read Lesson 4 (pp. 42–56) and then complete the associated hands-on practice and lesson review at the end of Lesson 3. Consider the following questions as you work through the lesson:

• What are the skills necessary for you to configure Automatic Updates for use with WSUS?
• What are the main features of WSUS?
• How will you configure the Shadow Copies feature in Windows Server 2003 in a real work environment?

Complete the lesson review on page 12-56 before moving to the next lesson.

☐ Review

• Complete: Case Scenario Exercise (p. 12-57)
• Complete: Questions and Answers (p. 12-60)

Before moving to Practice Test Review, you should be able to complete Activity 5—Questions and Answers of Chapter 12. You should also be able to answer questions and complete the tasks listed above with confidence. If you cannot, you should consider one or more solutions as listed below:

• Look in the learning community to see if you can find similar questions that you still have difficulty to answer.
• Reach out to your peers for assistance, if possible.
• Contact your course of study mentor directly for help (please see the introduction of this course of study for contact information).

Week 8
Practice Test Review
Review all material using a practice exam format. The practice tests are supplied by ExamForce and SkillSoft TestPrep.

SkillSoft TestPrep
Review all material using the practice exam format. The practice tests are supplied by SkillSoft TestPrep. The goal of using the Test Prep available through Skillsoft is NOT as the end-all-be-all judge of whether or not you can pass the actual certification exam. You should use this test prep to help you determine where the holes in your learning are. This tool, along with ExamForce (described in the next activity) are solely to help you identify which areas within this course of study you may need to spend more time with. This is a review of the competencies you learned and your readiness to take the Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure exam (Exam 70-291).

ExamForce
ExamForce has two parts: a testing engine and a database. It is a powerful tool because it is adaptive; i.e., it chooses questions from its database based on user weaknesses, while still providing enough questions from strong areas to maintain strength. It divides what is presented into Passes. Once you have completed three Passes, you are ready to sit for the actual exam.
Enroll in ExamForce
Go to the I291 Learning Resources tab to enroll on your AAP. You may not enroll until you have completed this COS. Shortly after enrolling, usually within 1-2 business days, you will receive an email from ExamForce with your license key and instructions. Follow them carefully to download both the test engine and the database. **NOTE:** ExamForce databases are quite large, possibly over 100 MB. After installation, you will occasionally receive the opportunity to download and install updates. **Download and install major updates with caution because they erase your History!** Minor updates do not do this. Check with your mentor before accepting a major update.

Take the Pretest.
This is not the same as the pre-assessment that you took at the beginning of your studies. The Pretest Mode sets up initial conditions for the next Activity, Adaptive Drill Mode. Before moving on, though, take a look at the report produced from your Pretest. It will show you which exam objectives represent weaknesses for you. Additionally, it refers you to sections of its built-in review text for additional explanation.

Adaptive Drill Mode
**Once you have reached the Adaptive Drill Mode, do not install major updates from ExamForce as this will erase your history.** This warning will mention the fact that you have chosen to download a major database update. Please do not select the option to update.

You will be given a series of questions to respond to. **Passes are units of progress through the ExamForce database that systematically work on your weak areas while maintaining your strengths.** The ExamForce learning resource allows you to take notes as you work through the questions. If you get a question incorrect, you will be referenced to the appropriate section and chapter in the included textbook. There is a built-in historical analysis system to track and monitor your activities. In order for your assessment referral to be approved, you MUST successfully complete all three phases of assessment readiness within the historical analysis system. Your results must be emailed to your mentor for confirmation.

Email the Historical Analysis to Your Mentor
When all three Passes are complete, email the report to your mentor. It is required as part of your record prior to approving a referral for the certification exam. The Historical Analysis report is always available either from the History button at the top of the ExamForce application, or from the Historical Analysis button in the Adaptive Drill tab. You may choose to email it using several formats, but WGU requires a pdf version, so select that option.

Congratulations
Upon completion of the practice exams, you have already successfully accomplished the goals of mastering the competencies set forth by WGU. By studying the chapters, lesson reviews, and the hands-on practice associated with each competency, you have acquired the knowledge and skills necessary for passing your I291 Implementing Network Infrastructure assessment in addition to your
competency in mastering Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure. If you feel that you are still not confident with the I291 Implementing Network Infrastructure assessment, please go over the competencies and their associated chapters before taking your I291 Implementing Network Infrastructure assessment.

Review of Major Points
The following are a brief summary of the skill sets and their associated chapters for our review. Please use the information below as guidance if you feel necessary to go over again the learning materials associated with I291.

Competency 410.3.1: IP Addressing
The graduate can implement, manage and maintain IP addressing
- Chapter 2 (“Understanding TCP/IP”)
- Chapter 3 (“Monitoring and Troubleshooting TCP/IP Connections”)

Competency 410.3.4: Name Resolution
The graduate can implement, manage, and maintain name resolution.
- Chapter 4 (“Configuring DNS Servers and Clients”)
- Chapter 5 (“Configuring a DNS Infrastructure”)
- Chapter 6 (“Monitoring and Troubleshooting DNS”)

Competency 410.3.7: Network Infrastructure Maintenance
The graduate can plan, implement, and maintain a network infrastructure.
- Chapter 9 (“Routing with Windows Server 2003”)
- Chapter 10 (“Configuring and Managing Remote Access”)
- Chapter 12 (“Maintaining a Network Infrastructure”)

Competency 410.3.9: Network Security
The graduate can plan and maintain network security.
- Chapter 11 (“Managing Network Security”)

Transfer/Application to Work
Acquiring knowledge from textbooks is only part of the learning process. The ultimate goal of learning is to turn knowledge into skills that can be readily applied in the practical field. The following are some recommendations for transferring knowledge acquired through textbooks into practical skills real work environment:

Emphasis on hands-on practices:
- Practice makes perfect. Hands-on practices help turn short-term memory into long-term memory. Finally, personal experiences also help reinforce learning outcomes.

Research on solutions through various channels:
- There are many ways to research on solutions on issues associated with Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure. Since new issues may appear in the real work environment, textbooks are not good enough to cover all issues. Learning through research helps explore new solutions to new problems.

Collaborate and cooperate with peers or other students:
- There are different ways of learning, including the use of cooperation and collaboration to facilitate learning processes. Working with your coworkers, fellow
Participate and contribute to online learning community:

- Finally, it is a good practice to participate and/or contribute to the discussion threads in the Network Principle Learning Community. Many students, besides the learning community facilitator, are good partners for helping you to master Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure.

Next Steps: Take the Assessment

Once you have completed all the tasks associated with the competencies, chapters, activities, lesson reviews, hands-on practices, and preassessment(s), you can start scheduling for the actual assessment at a Prometric testing center. The following are the steps necessary for making arrangements for the actual assessment:

1. Refer for your I291 assessment by logging into your AAP. Click on the I291 link, and then the “Assessment Referral” tab.
2. Follow the step-by-step procedures necessary for referring for your assessment and submit the referral as needed.
3. Once your mentor has approved the referral, you will receive a voucher number by e-mail from the Vendor Assessment Department. **Hold onto this email; you will need it for step 5.**
4. With the voucher number, you will need to contact Prometric Testing Center (http://www.prometric.com/TestTakers/default.htm) to arrange the actual date for the real assessment.
5. After the exam, submit your test results according to the instructions received in the voucher e-mail received in step 3, above.
6. Please contact your mentor if your AAP does not reflect the status of your assessment results after 3 business days.

Our best wishes for you for taking the I291 Implementing Network Infrastructure assessment.

Feedback

If you wish to provide feedback on this Course of Study, please contact Cheryl Bagshaw at cbagshaw@wgu.edu.