

UEENED016A Develop network services

Study Guide

- **2.4.30 Network infrastructure**

Evidence shall show an understanding of network infrastructure to an extent indicated by the following aspects:

Instruction

Download the notes from the following URL

<http://esipowersystem4.zoomshare.com/files/D016TheoryNotesPart1.zip>

Study the file : D016TheoryNotes(2.4.30-Network infrastructure)

Required software and hardware

The following software & hardware are needed to complete the practical tasks and they should be acquired and installed in your laptop

- Microsoft Windows Server 2003
- Microsoft Windows Server 2000
- Wireshark
- Windows XP
- Windows XP Professional
- Windows Server 2008
- Windows NT 4.0
- Microsoft® Windows® 2000 Server Router
- Cisco MDS 9000 Family switches

a. Domain Name Service (DNS) encompassing

- **DNS Server Service**
- **Root name server**
- **Configuring zones**
- a. Note: Examples include configuring for dynamic updates and delegating zone for DNS**
 - **Caching – only server**
 - **DNS client**

- **Testing DNS Server service**
- **Manually creating DNS source**
- **Managing and monitoring DNS**

For the above topics, the following pages of D016TheoryNotes(2.4.30-Network infrastructure) are to be studied
Page 1 to 58

What to do

Theory Study

Study the following topics

Overview, DNS lookup client, The effects of running the DNS Client service, Dynamic DNS Update client, DNS server, Function of Dynamic DNS, Root name server, Root domain, Root server addresses, Root server supervision, Root zone file, Installing and Configuring Zones, Solaris Zones Partitioning Technology (Overview), Solaris Zones (Planning), Platform Names and Groups, SPARC: 64-bit Packaging Changes, Windows 7 Default Description, Windows Vista Default Description, Windows XP Pro x64 Default Description, Troubleshooting DNS servers

Microsoft DNS (Page 36)

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (1)

Explain your understanding of

(1)Overview, (2)DNS lookup client, (3)The effects of running the DNS Client service,(4) Dynamic DNS Update client, (5)DNS server,(6) Function of Dynamic DNS, (7)Root name server,(8) Root domain, (9)Root server addresses, (10)Root server supervision,(11) Root zone file, (12)Installing and Configuring Zones, (13)Solaris Zones Partitioning Technology (Overview), (14)Solaris Zones (Planning), (15)Platform Names and Groups, (16)SPARC: 64-bit Packaging Changes, (17)Windows 7 Default Description, (18)Windows Vista Default Description, (19)Windows XP Pro x64 Default Description, (20)Troubleshooting DNS servers

Practical Activity (1)

(Optional)

(1)Install Solaris Operating System & perform the following tasks

Booting, Solaris 10 Installation Guide: Basic

Installations., Modify the BIOS setting. menu.lst file, Locating the GRUB Menu's menu.lst file
Page 27 to 29,

OR

(Compulsory)

(2)How to Disable Client-Side DNS Caching in Windows XP and Windows Server 2003 (Page 40)

(3) Windows Server 2003, Windows Server 2003 R2, Windows Server 2003 with SP1, Windows Server 2003 with SP2
Troubleshooting DNS servers (The tasks outlined in Page 47 to 51)

(4) Manually create a DNS entry for Server 2003
Create a DNS entry, Enabling and Disabling IP Addresses for a DNS Server, (Page 53 to 58)

Software needed

The students need to acquire Microsoft Windows Server 2003 , install it in laptop and perform the above task 2 to 4

Presentation

(1)Submit the answers of tutorial (1)

**(2) Take the photographs of the images appear on laptop when the tasks in above step 2 to 4 are performed.
Submit those images in CD.**

b. Dynamic Host Configuration Protocol (DHCP)

- **Installation of DHCP Server Service**
- **DHCP scopes, superscopes and multicast scopes**
- **DHCP – DNS integration**
- **Active DirectoryTM**
- **Managing and monitoring DHCP**

For the above topics, the following pages of D016TheoryNotes(2.4.30-Network infrastructure)are to be studied

Page 59 to 78

What to do

Theory Study

Study the following topics

Configuring Full Integration with NetBIOS Scopes, DHCP, Using multicast scopes, Global scoping, MADCAP and DHCP, Integrating DNS with DHCP, Active Directory, Structure, Sites,

Forests, trees, and domains, Flat-filed, simulated hierarchy, Structural divisions to improve performance, Flexible Single Master Operations, Active Directory Application Mode (ADAM), Integrating Unix into Active Directory, Managing DHCP, Windows Internet Name Service, and Internet, Authentication Service

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (2)

Explain your understanding of

(1)Configuring Full Integration with NetBIOS Scopes, (2)DHCP, Using multicast scopes, (3)Global scoping, (4)MADCAP and DHCP,(5) Integrating DNS with DHCP, (6)Active Directory, (7)Structure, Sites, Forests, trees, and domains, (8)Flat-filed, simulated hierarchy, (9)Structural divisions to improve performance,(10) Flexible Single Master Operations, (11)Active Directory Application Mode (ADAM), (12)Integrating Unix into Active Directory, (13)Managing DHCP,(14) Windows Internet Name Service, and Internet, (15)Authentication Service

Practical Activity (2)

(1)install and configure a DHCP server in an Active Directory domain in Windows 2000 (Page 60)
 (2)To install the DHCP Service on an existing Windows 2000 Server (Page 61)
 (3) To authorize a DHCP server

Software needed

The students need to acquire Microsoft Windows Server 2000 , install it in laptop and perform the above task 2 to 3

Presentation

(1)Submit the answers of tutorial (2)

(2) Take the photographs of the images appear on laptop when the tasks in above step 2 to 3 are performed.

Submit those images in CD

Software needed

Microsoft Windows Server 2000

c. **Network Infrastructure encompassing**

- **Configuring and troubleshooting remote access**
- a. **Note: Examples include remote access policy, configuration of remote access profile, Virtual Private Network (VPN), multi link connection, routing and remote access for DHCP**
- **Managing and monitoring remote access**
- **Remote access security**
- **Note. Examples include authentication protocols, encryption protocols and access policy**

For the above topics, the following pages of D016TheoryNotes(2.4.30-Network infrastructure)are to be studied

Page 79 to 141

What to do

Theory Study

Study the following topics

Unable to establish a remote access connection. The properties of the remote access policy profile, The remote access server, The Windows Fax service, Call back, Link control protocol (LCP) extensions , Remote Access Policy, Remote Access VPN Business, Configuring a Cisco IOS VPN Gateway for Use with Cisco Secure VPN Client Software, Configuring a Cisco IOS VPN Gateway for Use with Microsoft Dial-Up Networking, Configuring PPTP/MPPE, Configuring a Virtual Template for Dial-In Sessions, Verifying PPTP/MPPE, Configuring L2TP/IPSec, Configuring Cisco IOS Firewall Authentication Proxy, Configuring Authentication, Authorization, and Accounting, Configuring the HTTP Server, Configuring the Authentication Proxy, PPTP/MPPE Configuration, L2TP/IPSec Configuration, Virtual private network, Security Mechanisms, Authentication, Routing, PPVPN Building blocks, User-visible PPVPN services, Virtual private wire and private line services (VPWS and VPLS), OSI Layer 2 services, OSI Layer 3 PPVPN architectures, Trusted delivery networks, VPNs in mobile environments, Broadband Routers with VPN Servers, Using Routing and Remote Access servers with DHCP, Managing and Monitoring Remote Access, Logging User Authentication and Accounting Requests, Log File Records, Netsh Command-Line Tool, Network Monitor, Assessing Remote Connectivity Needs, Windows Remote Access Security Policies, Using Encryption to Secure Dialup Remote Access Connections, Network Protocols encompassing Troubleshooting the Cisco 200, DOS and NetWare ODI Drivers (NETX), Wireshark, Running Wireshark on Windows,

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (3)

Explain your understanding of

(1)Unable to establish a remote access connection. (2)The properties of the remote access policy profile, (3)The remote access server, (4)The Windows Fax service, (5)Call back, Link

control protocol (LCP) extensions , (6)Remote Access Policy, (7)Remote Access VPN Business, (8)Configuring a Cisco IOS VPN Gateway for Use with Cisco Secure VPN Client Software, (9)Configuring a Cisco IOS VPN Gateway for Use with Microsoft Dial-Up Networking, (10)Configuring PPTP/MPPE, Configuring a Virtual Template for Dial-In Sessions, (11)Verifying PPTP/MPPE, (12)Configuring L2TP/IPSec, (13)Configuring Cisco IOS Firewall Authentication Proxy, (14)Configuring Authentication,(15) Authorization, and Accounting, (16)Configuring the HTTP Server, (17)Configuring the Authentication Proxy, (18)PPTP/MPPE Configuration, (19)L2TP/IPSec Configuration,(20) Virtual private network, (21)Security Mechanisms, (22)Authentication, (23)Routing,(24) PPVPN Building blocks, (25)User-visible PPVPN services, (26)Virtual private wire and private line services (VPWS and VPLS), (27)OSI Layer 2 services,(28) OSI Layer 3 PPVPN architectures, (29)Trusted delivery networks, (30)VPNs in mobile environments, (31)Broadband Routers with VPN Servers, (32)Using Routing and Remote Access servers with DHCP, (33)Managing and Monitoring Remote Access,(34) Logging User Authentication and Accounting Requests, (35) Log File Records, (36)Netsh Command-Line Tool, (37)Network Monitor, (38)Assessing Remote Connectivity Needs, (39)Windows Remote Access Security Policies, (40)Using Encryption to Secure Dialup Remote Access Connections, (41)Network Protocols encompassing (42)Troubleshooting the Cisco 200, DOS and (43)NetWare ODI Drivers (NETX), (44)Wireshark, (45)Running Wireshark on Windows,

Practical Activity (3)

- (1)Set Up Multiple-Device (Multilink) Dialing in Windows XP (Page 115/ 116)
- (2) Windows 2000 domain, set user properties to allow or deny remote access, or control access through remote access policies (Page 123)
- (3) Set policies on the remote access server Windows 2000 server (Page 125)

(Option)

- (1)Install the Cisco 200 software. Set up DOS and NetWare ODI Drivers (Page 134)
- (2) Installing Wireshark (Page 138)

Presentation

(1)Submit the answers of tutorial (3)

(2) Take the photographs of the images appear on laptop when the tasks in above step 1 to 3 are performed.

Submit those images in CD.

Software needed

Microsoft Windows Server 2000
Wireshark

d. Network Protocols encompassing

- **Installation, configuration and troubleshooting of network protocols**
- a. **Note: Examples include Transmission Control Protocol / Internet Protocol (TCP/IP), NWLink and network bindings**
- **Configure TCP/IP packets**
- **Configuring and troubleshooting network protocol security and IP Security (IPSec)**
- **Managing and monitoring network traffic**

For the above topics, the following pages of D016TheoryNotes(2.4.30-Network infrastructure) are to be studied

Page 141 to 195

What to do

Theory Study

Study the following topics

Transmission Control Protocol (TCP) (Page 143), Network function, TCP segment structure, Protocol operation, Connection establishment, Resource usage, Data transfer, Reliable transmission, Error detection, Flow control, Congestion control, Window scaling, TCP Timestamps, Out of band data, Forcing data delivery, Connection termination, Denial of service, Connection hijacking, TCP ports, TCP over wireless networks, Hardware implementations, Debugging, Checksum computation, TCP/IP - Transmission Control Protocol / Internet Protocol, Configure or Change IP Address Information, IPX/SPX (Internet work Packet Exchange/Sequenced Packet Exchange). NetBEUI. The Network Bindings Dialog Box(es), IPsec troubleshooting tools, Disabling TCP/IP and IPsec hardware acceleration, Windows XP Professional tools
Windows XP Professional contains the following additional tools: Event viewer, Computer Management

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (4)

Explain your understanding of

(1)Transmission Control Protocol (TCP) (Page 143), (2)Network function, (3)TCP segment structure, (4)Protocol operation, (5)Connection establishment,(6) Resource usage, (7)Data transfer, (8)Reliable transmission, (9)Error detection, (10)Flow control, (11)Congestion control, (12)Window scaling, (13)TCP Timestamps, (14)Out of band data, (15)Forcing data delivery,(16) Connection termination, (17)Denial of service, (18)Connection hijacking, (19)TCP ports, (20)TCP over wireless networks, (21)Hardware implementations, (22)Debugging, (23)Checksum computation, (24)TCP/IP - Transmission Control Protocol / Internet Protocol,(25) Configure or Change IP Address Information, (26)IPX/SPX (Internet work Packet Exchange/Sequenced Packet Exchange). (27)NetBEUI. (28)The Network Bindings Dialog Box(es),(29) IPsec troubleshooting tools, (30)Disabling TCP/IP and IPsec hardware acceleration,(31) Windows XP Professional tools

(32) Windows XP Professional contains: Event viewer, Computer Management

Practical Activity (4)

(1) How to configure TCP/IP to use DNS in Windows XP (Page 167)

(2) How to configure the advanced DNS properties

(3) How to configure an additional DNS server IP address

(4) Windows XP Professional tools (Page 185

 ☐ Event viewer

 ☐ Computer Management

 (Page 186 to 194)

(5) Do manually troubleshoot TCP/IP connectivity

Method 1: Use the IPConfig tool to verify the configuration

Method 2: Use the Ping tool to test your connectivity

Method 3: Use the PathPing tool to verify a route

Method 4: Use the Arp tool to clear the ARP cache

Method 5: Verify the default gateway

Method 6: Use the Tracert tool or the Route tool to verify communications

Method 7: Verify Internet Protocol security (Ipsec)

Method 8: Verify packet filtering

Method 9: Verify the connection to a specific server

Method 10: Verify remote connections

Method 11: Use the Route tool to examine the routing table

Method 12: Use the Tracert tool to examine paths

Method 13: Troubleshoot gateways

Software needed

Windows XP

Presentation

(1) Submit the answers of tutorial (4)

(2) Take the photographs of the images appear on laptop when the tasks in above step 1 to 5 are performed.

Submit those images in CD.

e. Internet Naming Services in a network encompassing

- **Installation, configuring and troubleshooting**
- **Configuring Internet Naming Services replication**
- **Configuring an application networking interface**
- **Managing and monitoring Internet Naming Services**

For the above topics, the following pages of D016TheoryNotes(2.4.30-Network infrastructure) are to be studied

Page 196 to 263

What to do

Theory Study

Study the following topics

Windows Internet Name Service, Domain Name System (DNS), Microsoft Windows Internet Name Service (WINS), WINS Functional Description, Features Of Windows 2000 WINS, Configuring and Troubleshooting TCP/IP, Understanding TCP/IP Computer Addresses, Configuring TCP/IP, Troubleshooting TCP/IP, *Using APIPA*, Configuring WINS replication, Replication across local area networks, WINS (Windows Internet Name Service), Setting up WINS servers, NetBIOS for TCP/IP Name Service and Windows Internet Name Service, Name Resolution Under Windows, NetBIOS Names, NetBT Name Service Operations, Name registration, Name refresh, Name resolution, Name release, Conflict management, WINS Server-Server Communication, The WINS Manager, Packet Filtering Characteristics of NetBT Name Service, Configuring Network Interfaces and the Boot Device, Configuring and using a tuntap network interface, TRIP Tutorial

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (5)

Explain your understanding of

(1)Windows Internet Name Service,(2) Domain Name System (DNS), (3)Microsoft Windows Internet Name Service (WINS), (4)WINS Functional Description, (5)Features Of Windows 2000 WINS, (6)Configuring and Troubleshooting TCP/IP, (7)Understanding TCP/IP Computer Addresses,(8) Configuring TCP/IP, (9)Troubleshooting TCP/IP, (10)Using APIPA, (11)Configuring WINS replication,(12) Replication across local area networks, (13) WINS (Windows Internet Name Service), (14)Setting up WINS servers, (15)NetBIOS for TCP/IP Name Service and Windows Internet Name Service, (16)Name Resolution Under Windows, (17)NetBIOS Names, (18)NetBT Name Service Operations, (19)Name registration,(20) Name refresh, Name resolution, (21)Name release,(22) Conflict management, (23)WINS Server-Server Communication,(24) The WINS Manager, (25)Packet Filtering Characteristics of NetBT Name Service, (26)Configuring Network Interfaces and the Boot Device, (27)Configuring and using a tuntap network interface,(28) TRIP Tutorial

Practical Activity (5)

(Option)

- (1)The manual tombstoning option of Windows 2000 WINS (Page 200)
 - (2) Manual tombstoning function in the WINS Manager (Page 201)
 - (3) Enhanced Filtering and Record Searching(Page 202)
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(4) Running the ipconfig command with the /all option (Page 208)

(5) To manually set up a Windows XP Professional computer with a static IP address for the TCP/IP network protocol (Page 210)

(6) Troubleshooting TCP/IP Configuration and Connectivity (Page 212)

(7) Windows Server 2008 Configure Windows Server Computers as Members of a NLB Cluster (Page 241)

(8) To configure Network Load Balancing for Configuration Manager site system (Page 242)

(9) To configure the IIS application pool service account for management point site systems configured in Network Load Balancing clusters (Page 243)

(10) Configure the Primary Network Interface (Page 245)

(11) Configure Additional Network Interfaces (Page 247)

(12) How to Select the Boot Device (Page 250)

Software needed

Windows XP Professional

Windows Server 2008

Presentation

(1) Submit the answers of tutorial (5)

(2) Take the photographs of the images appear on laptop when the tasks in above step 1 to 12 are performed.

Submit those images in CD.

f. IP Routing encompassing

- **Installation, configuring and troubleshooting of IP routing protocols**
- a. **Note: This includes updating routing tables, and implementing demand-dial routing**
- **Managing and monitoring IP routing**
- a. **Note: This includes border routing, internal routing and IP routing protocols**

For the above topics, the following pages of D016TheoryNotes(2.4.30-Network infrastructure) are to be studied

Page 264 to 348

What to do

Theory Study**Study the following topics**

Implementing IP Routing, IP Routing Process, Dynamic vs. Static IP Routing, Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Static IP Routing, Using the Default Gateway Address on a Static Router, Using Additional Default Gateways, Default Routing Table Entries, Adding Static Entries, Integrating Static and Dynamic Routing, The TRACERT Utility, IPv6 (IPng), Expanded Addressing Capabilities, Supernetting, Configuring and Troubleshooting DDR Backup, Async Modem Call Pickup, TCP/IP Routing Table, Dynamic vs. Static Routing, Introduction to Demand-Dial Routing, Demand-Dial Routing and Remote Access, Internetwork Routing, Addressing in an Internetwork, Routing Concepts, Foundations of Routing Protocols, Routing Infrastructure, Routers and Broadcast Traffic, Tunneling, Router Routing, Routing Problems, Routing Loops, Static and Dynamic Routers, Host Routing, Routing Tables, Locality of the Routing Table, Foundations of Routing Protocols, Internetwork Routing, Addressing in an Internetwork, Demand-Dial Routing, IPX Routing, Controlling In-Band Management Connectivity, Configuring IP Routing for Management Traffic, Configuring an IP Route, Configuring IP Routing for Management Traffic, Viewing IP Statistics, Monitoring SNMP Traffic

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (6)

Explain your understanding of

(1)Implementing IP Routing, (2) IP Routing Process, (3)Dynamic vs. Static IP Routing, (4)Routing Information Protocol (RIP), (5)Open Shortest Path First (OSPF), (6)Static IP Routing, (7)Using the Default Gateway Address on a Static Router, (8)Using Additional Default Gateways,(9) Default Routing Table Entries,(10)Adding Static Entries, (11)Integrating Static and Dynamic Routing, (12)The TRACERT Utility, (13)IPv6 (IPng), Expanded Addressing Capabilities, Supernetting, (14)Configuring and Troubleshooting DDR Backup, (15)Async Modem Call Pickup, (16)TCP/IP Routing Table, (17)Dynamic vs. Static Routing, (18)Introduction to Demand-Dial Routing, (19)Demand-Dial Routing and Remote Access, (20)Internetwork Routing, (21)Addressing in an Internetwork, (22)Routing Concepts, (23)Foundations of Routing Protocols,(24) Routing Infrastructure, (25)Routers and Broadcast Traffic,(26) Tunneling, (27)Router Routing,(28) Routing Problems, (29)Routing Loops, (30)Static and Dynamic Routers, (31)Host Routing,(32) Routing Tables, (33)Locality of the Routing Table, (34)Foundations of Routing Protocols,(35) Internetwork Routing, (36)Addressing in an Internetwork, (37)Demand-Dial Routing, (38)IPX Routing, (39)Controlling In-Band Management Connectivity, (40)Configuring IP Routing for Management Traffic, (41)Configuring an IP Route, (42)Configuring IP Routing for Management Traffic,(43) Viewing IP Statistics,(44) Monitoring SNMP Traffic

Practical Activity (6)

- (1) Windows NT 4.0, 3.51, and Windows for Workgroups 3.11 Viewing and Configuring the Routing Table (Page 274)
- (2) Windows NT 4.0, Implement a Windows NT Router (Page 275),
- (3) Adding and Configuring VSANs by using Cisco MDS 9000 Family switches (Virtual System Network Architecture) (VSAN) (Page 344)
- (4) Configuring an IP Route by using Cisco MDS 9000 Family switches (Virtual System Network Architecture) (VSAN) (Page 345)

Software+Hardware needed

Windows NT 4.0
 Microsoft® Windows® 2000 Server Router
 Cisco MDS 9000 Family switches

Presentation

(1) Submit the answers of tutorial (6)

(2) Take the photographs of the images appear on laptop when the tasks in above step 1 to 4 are performed.

Submit those images in CD.

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- g. **Network Address Translation (NAT) encompassing**
 - **Installing Internet connection sharing**
 - **Installing NAT**
 - **Configure NAT properties and interfaces**

For the above topics, the following pages of D016TheoryNotes(2.4.30-Network infrastructure) are to be studied

Page 349 to 388

What to do**Theory Study**

Study the following topics

Network address translation, Basic NAT and PAT, NAT and TCP/UDP, Destination network address translation (DNAT), SNAT, Dynamic network address translation, Applications affected by NAT, [How Network Address Translation Works](#), Local address, Global address, Internet Connection Sharing with Windows XP

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (7)

Explain your understanding of

(1)Network address translation, (2)Basic NAT and PAT, (3)NAT and TCP/UDP, (4)Destination network address translation (DNAT), (5)SNAT, Dynamic network address translation, (6)Applications affected by NAT,(7) How Network Address Translation Works, (8)Local address,(9) Global address, (10)Internet Connection Sharing with Windows XP

Practical Activity (7)

- (1)Setting Up Internet Connection Sharing with Windows XP (Page 371)
- (2) Troubleshooting ICS (Page 373)
- (3) Computers on the Network (Page 374)
- (4) Install Internet Connection Sharing (Page 375)

Software needed

Windows XP

Presentation

(1)Submit the answers of tutorial (7)

(2) Take the photographs of the images appear on laptop when the tasks in above step 1 to 4 are performed.

Submit those images in CD.

h. Certificate Services encompassing

- Installing and configuring Certificate Authority
- Issuing and revoking certificates
- Removing the Encrypted File System recovery keys

For the above topics, the following pages of D016TheoryNotes(2.4.30-Network infrastructure)are to be studied

Page 389 to 430

What to do**Theory Study**

Study the following topics

Installing and configuring a certification authority, Installing Web enrollment support, Public and private key pair: ,Publishing Revocation Lists, Problems with CRLs, Microsoft, VeriSign, and Certificate Revocation, Issuing and Revoking Certificates, Revocation Infrastructure, Publishing CRLs, The Encrypting File System, Planning for and Recovering Encrypted Files Recovery Policy, Disaster Recovery,

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (8)

Explain your understanding of

(1)Installing and configuring a certification authority, (2)Installing Web enrollment support, Public and private key pair: (3)Publishing Revocation Lists, (4)Problems with CRLs, (5)Microsoft, VeriSign, and Certificate Revocation, (6)Issuing and Revoking Certificates, (7)Revocation Infrastructure, (8)Publishing CRLs, (9)The Encrypting File System, (10)Planning for and Recovering Encrypted Files (11)Recovery Policy, (12)Disaster Recovery,

Practical Activity (8)

(1)Install certificate service on a server (Page 390)

Software needed

Windows Server 2003

- **2.4.31 Directory services**

Evidence shall show an understanding of directory services to an extent indicated by the following aspects:

Instruction

Download the notes from the following URL

<http://esipowersystem4.zoomshare.com/files/D016TheoryNotesPart1.zip>

Study the file : D016TheoryNotes(2.4.31Directory services Part 1)

Required software and hardware

The following software & hardware are needed to complete the practical tasks and they should be acquired and installed in your laptop

- Windows Server 2003
- VBScript programs
- Windows Server 2008 Standard
- Windows 2000 Resource Kits Dumpfsmos.cmd: W2K version of netdom
- Java Enterprise System Software
- Microsoft Visual Studio 2010
- Windows 2000 Operating System Remote OS Installation
-

- a. **Installing and configuring directory services encompassing**
- **Installing forests, trees and domains including automatic domain controller**
 - **Creating sites, subnets, site links and connection objects**
 - **Configuring server objects including site membership and global catalogue designation**
 - **Transferring of operations master roles**
 - **Verification and troubleshooting of directory services installation**
 - **Implementation of and organisational unit structure**

For the above topics, the following pages of D016TheoryNotes(2.4.31Directory services Part 1)are to be studied

Page 1 to 481

What to do

Theory Study

Study the following topics

Active Directory, Installing a domain controller, Planning Active Directory domains, forests, andTruats, Planning your domain structure, Placing your domains, Implement an Active Directory Forestand Domain Structure, Active Directory, Subnets, Servers, NTDS Settings, Site links, Global Catalog Servers, Global Catalog and Domain Logon Support, SolutionBase: A look at Windows Server2003's Active Directory Sites And Services, *Contiguous and Disjointed Namespaces*, Windows Server 2008 Standard-(Page 68)

Monitoring and Troubleshooting Active Directory Replication (Page 81) Verifying Network Connectivity (Page 84), Examining the Event Logs:, Verifying Site Links,

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (9)

Explain your understanding of

(1)Active Directory, Installing a domain controller, (2)Planning Active Directory domains, forests, andTruats, (3)Planning your domain structure, (4)Placing your domains, (5)Implement an Active Directory Forest and Domain Structure, (6)Active Directory, (7)Subnets,(8)Servers,(9) NTDS Settings,(10) Site links, (11)Global Catalog Servers,(12) Global Catalog and Domain Logon Support, (13)SolutionBase: A look at Windows Server2003's Active Directory Sites And Services,(14) Contiguous and Disjointed Namespaces, (15) Windows Server 2008 Standard (16)Monitoring and Troubleshooting Active Directory Replication (17)Verifying Network Connectivity ,(18) Examining the Event Logs:, Verifying Site Links,

Practical Activity (9)

- (1) Windows Server 2003 - *Installing a domain controller, To create a new domain in a new forest (Page 1)*
- (2) Windows Server 2003 - *To create a new child domain in an existing domain tree (Page 3)*
- (3) Windows Server 2003 - *To create a new domain tree in an existing forest (Page 4)*
- (4) Windows Server 2003 - *To install an additional domain controller in an existing domain (Page 5)*
- (5) SolutionBase: A look at Windows Server 2003's Active Directory Sites And Services (Page 41 to 52)
- (6) Transfer the Schema Master Role (Page 58)
- (7) Transfer the Schema Master Role (Page 59)
- (8) Transfer the Domain Naming Master Role (Page 59)
- (9) Transfer the RID Master, PDC Emulator, and Infrastructure Master Roles (Page 60)
- (10) Transfer FSMO roles (Page 64)
- (11) Seize FSMO roles (Page 65)
- (12) Windows Server 2008 Standard-
- (13) Windows 2000 Resource kits. Dumpfsmos.cmd:
Dump FSMO Roles is available for free download, W2K version of netdom use the dcdiag utility (Page 75 to 79) Domain Naming Master, Infrastructure Master, PDC emulator, Relative Identifier Master, Schema Master,
- (14) Verify domain configuration (Page 87 to 91)

Programming Activity

Active Directory Sites and Subnets Scripting (Page 29 to 36)

VB Script Programs

Perform the following tasks

- Create an Active Directory Site
- Create an Active Directory Site Link
- Create an Active Directory Subnet
- Delete an Active Directory Subnet
- List Active Directory Connections
- List All Domain Controllers
- List Active Directory Sites
- List Your Domain Controller
- List the Protocols Over Which a Bridgehead Server Replicates
- List the Subnets in an Active Directory Site
- List the Subnets in all Active Directory Sites
- List the Site Name for a Domain Controller
- List the Site Name for the Local Computer
- Move a Domain Controller to a New Active Directory Site
- Rename an Active Directory Site
- Verify that a Domain Controller is in a Site

Software needed

Windows Server 2003

VBScript programs

Windows Server 2008 Standard

Windows 2000 Resource Kits Dumpfsmos.cmd: W2K version of netdom

Java Enterprise System Software

JAVA SOFTWARE APPLICATION PRACTICE (Optional)

Take Java software application practice by reading through the Java lessons from 107 to 359 (Lesson 1 to 13 + Appendix A to F Page 360 to 481)

Presentation

(1) Submit the answers of tutorial (9)

(2) Take the photographs of the images appear on laptop when the tasks in above step 1 to 14 are performed.

Submit those images in CD.

(3) Perform optional programming & Java software application tasks

- b. Domain Name Service (DNS) for directory services encompassing
 - Installation and configuration of DNS for directory services
 - a. *Note:* Examples are integration with existing DNS infrastructure, configuration of zones for dynamic and secure dynamic updates and creation and configuration of DNS records
 - Management, monitoring and troubleshooting of DNS

For the above topics, the following pages of D016TheoryNotes(2.4.31Directory services Part 1) are to be studied

Page 482 to 596

What to do

Theory Study

Study the following topics

Basic Concepts of DNS and Active Directory, Troubleshooting DNS, (Page 482 to 495)
 Checklists of Group Policy Troubleshooting (Page 500) *Recommended Process for Troubleshooting* (Page 514), *Asynchronous Processing and Logon Optimization in Windows XP* (Page 516), Step-by-Step Guide to Remote OS Installation (Page 519), Remote Operating System Installation (Page 541) , RIS Server (Page 549), Using Remote OS Installation in an Organization (Page 555)

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (10)

Explain your understanding of

(1)Basic Concepts of DNS and Active Directory, Troubleshooting DNS,(2)Checklists of Group Policy Troubleshooting (3)Recommended Process for Troubleshooting, (4)Asynchronous Processing and Logon Optimization in Windows XP , (5)Step-by-Step Guide to Remote OS Installation , (6)Remote Operating System Installation , (7)RIS Server , (8)Using Remote OS Installation in an Organization

Practical Activity (10)

- (1)Visual Studio 2010 (Page 502 to 508)—Set default for account lock out
- (2)Windows® 2000 operating system Remote OS Installation-- Installing the Windows 2000 Remote Installation Services (Page 520 to 534)
- (3) How do I know if the client computer has received an IP Address and has contacted the Remote Installation Server (Page 537 to 539)
- (4) Remote Operating System Installation (Page 541 to 547)
- (5)Installing RIS (Windows 2000 Server) (Page 569 to 592)

Software Needed

Microsoft Visual Studio 2010

Windows 2000 Operating System Remote OS Installation

Presentation

(1)Submit the answers of tutorial (10)

**(2) Take the photographs of the images appear on laptop when the tasks in above step 1 to 5 are performed.
Submit those images in CD.**

Instruction

Download the notes from the following URL

<http://esipowersystem4.zoomshare.com/files/D016TheoryNotesPart2.zip>

Study the file : D016TheoryNotes(2.4.31Directory services Part 2)

- c. **Change and Configuration Management encompassing**
 - **Implementing and troubleshooting Group Policy**
 - a. **Note: Examples are Group Policy Object (GPO), linking to an existing GPO, delegation of administrative control of Group Policy, filtering of Group Policy settings by using security groups and modification of Group Policy prioritisation**
 - **Managing and troubleshooting user environments using Group Policy**
 - **Configuring directory services to support Remote Installation Services (RIS) including configuration of RIS options and security.**

For the above topics, the following pages of D016TheoryNotes(2.4.31Directory services Part 2)are to be studied

Page 1 to 123

What to do

Theory Study

Study the following topics

Software configuration management, Automation & Control,(Page 1 to 4) Troubleshooting Group Policy Problems (Page 6) Asynchronous Processing and Logon Optimization in Windows XP, Fixing Administrative Template policy setting problems, Fixing Security Settings Problems, Fixing Scripts policy settings problems, Fixing Software Installation policy setting problems, Fixing Folder Redirection policy settings problems, Fixing Disk Quota extension problems, Group Policy, GPO application, Local Group Policy, Processing order for policy settings, Group Policy sections, Tools used to configure GPO, GPMC utility - Creating a GPO, Group Policy and the Active Directory (Page 33), Prerequisites and Initial Configuration (Page 35), Delegating Administrative Control of Group Policy (Page 60), Understanding Security Filtering (Page 70)

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial (11)

Explain your understanding of

(1)Software configuration management, (2)Automation & Control, (3)Troubleshooting Group Policy Problems (Page 6) (4)Asynchronous Processing and Logon Optimization in Windows XP,(5) Fixing Administrative Template policy setting problems, (6)Fixing Security Settings Problems, (7)Fixing Scripts policy settings problems, (8)Fixing Software Installation policy setting problems,(9) Fixing Folder Redirection policy settings problems, (10)Fixing Disk Quota extension problems, (11)Group Policy, GPO application, (12)Local Group Policy, (13)Processing order for policy settings, (14)Group Policy sections, (15)Tools used to configure GPO, (16)GPMC utility - Creating a GPO, (17)Group Policy and the Active Directory (Page 33), (18)Prerequisites and Initial Configuration , (19)Delegating Administrative Control of Group Policy ,(20) Understanding Security Filtering

Practical Activity (11)

- (1) Windows server 2003: How to Start the Group Policy Editor (Page 21 to 24)
- (2) Windows server 2003: To configure a custom console (Page 36 to 57)
- (3) Windows server 2003: Perform delegated control for

User account, Group accounts, Organizational Account, Computer Accounts (Page 64 to 67)

Presentation

(1)Submit the answers of tutorial (11)

(2) Take the photographs of the images appear on laptop when the tasks in above step 1 to 3 are performed.
Submit those images in CD.

- d. Components of a directory service infrastructure encompassing
 - Management of directory objects
 - a. *Note:* Examples are moving objects, publishing resources in the directory service infrastructure, location of objects in the directory service infrastructure, creation and management of objects manually and by scripting, access control of objects and delegation of administrative control
 - Monitoring, optimisation and troubleshooting of the directory services infrastructure performance and replication
 - Backup and restoring directory services infrastructure
 - a. *Note:* Examples are authoritative and non authoritative restoration of directory services, restoration from systems failure and the seizing of operations master roles

For the above topics, the following pages of D016TheoryNotes(2.4.31Directory services Part 2)are to be studied

Page 124 to 217

What to do

Theory Study

Study the following topics

Active Directory Objects(Page 125 to 130), Object Types, Object Characteristics, Organizational Units, Pre-installed Container Objects, Permission Combinations, Active Directory Object Administration Delegation, Object Identifiers,
[Windows 2000 Server :Active Directory User and Computer Accounts \(Page 145 to 161\)](#)
 Active Directory Groups
 User Authentication
 User Authorization

[Built-in, Predefined, and Special Groups \(Page 163 to 165\)](#)
[User Rights](#)

Recovering Deleted Objects in Active Directory (Page 168), Installing and Configuring Active Directory (Page 171 to 175), The Backup and Restore Utility (Page 175), Introduction to Directory Services and Directory Server (Page 176 to 183), Backing Up and Restoring Data (Page 188) , Active Directory Backup and Restore (Page 191), Non-Authoritative Restore (Page 209),
Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial Question (12)

Explain your understanding of

(1)Active Directory Objects, (2)Object Types, (3)Object Characteristics, (4)Organizational Units, (5)Pre-installed Container Objects, (6)Permission Combinations, (7)Active Directory Object Administration Delegation,(8) Object Identifiers,
 (9)Windows 2000 Server :Active Directory User and Computer Accounts
 Active Directory Groups
 User Authentication
 User Authorization

Built-in, Predefined, and Special Groups
 User Rights

(11)Recovering Deleted Objects in Active Directory , (12)Installing and Configuring Active Directory , (13)The Backup and Restore Utility , (14)Introduction to Directory Services and DirectoryServer , (15)Backing Up and Restoring Data ,(16) Active Directory Backup and Restore , (17)Non-Authoritative Restore

Practical Activity (12)

(1) Windows 2000 Server:_Performing an authoritative restore (Page 204 to 205)
 (2)_To Restore the Local System State (Windows 2000) on a Non-Domain Controller(Page 210 to 214)

Presentation

(1)Submit the answers of tutorial (12)

(2) Take the photographs of the images appear on laptop when the tasks in above step 1 to 2 are performed.
 Submit those images in CD.

e. Security encompassing

- Applying security policies using Group Policy
- Creating, analysing and security modification by using Security Configuration and Analysis snap-in and the Security Templates snap-in
- Implementation of an audit policy

For the above topics, the following pages of D016TheoryNotes(2.4.31Directory services Part 2)are to be studied

Page 218 to 306

What to do

Theory Study

Study the following topics

Apply security templates in Windows 2000, Server using Group Policy (Page 218), Understanding Security Filtering (Page 220), Using Security Filtering (Page 222), The Power of Security Filtering (Page 225), Understanding the Roles of Server 2003 Security Policies (Page 227), Policy-based Security (Page 228), Security Policy Interfaces and Tools (Page 228), Server 2003 Security Policies (Page 229), Group Policy Objects (Page 229), , Applying security settings (Page 233), Persistence in security settings (Page 234), Filtering security settings based on group membership, Performing a Security Analysis (Page 245), Command-line Configuration and Analysis (Page 252), Pre-defined Security Templates (Page 254) Server Security Policy Management in Windows Server 2008 (Page 255), Security Configuration and Analysis (Page 275), Analyzing System Security (Page 278), Configuring System Security (Page 279), Windows Server 2003 Security Features (Page 282 to 291), Configuring Audit Policies (Page 295),

Tutorial (13)

Explain your understanding of

(1)Apply security templates in Windows 2000, (2)Server using Group Policy , (3)Understanding Security Filtering , (4)Using Security Filtering , (5)The Power of Security Filtering , (6) Understanding the Roles of Server 2003 Security Policies , (7)Policy-based Security , (8)Security Policy Interfaces and Tools , (9)Server 2003 Security Policies , (10)Group Policy Objects , (11) Applying security settings , (12)Persistence in security settings , (13)Filtering security settings based on group membership, Performing a Security Analysis , (14)Command-line Configuration and Analysis , (15)Pre-defined Security Templates , (16)Server Security Policy Management in Windows Server 2008 (17)Security Configuration and Analysis , (18)Analyzing System Security , (19)Configuring System Security , (20)Windows Server 2003 Security Features , (21)Configuring Audit Policies ,

Practical Activity (13)

(1) Windows 2000 Server :_Viewing and Modifying Local Security Policy (Page 238 to 244)
(2) Windows 2000 Server :Create the database (Page 246 to 252)

Presentation

(1)Submit the answers of tutorial (13)

(2) Take the photographs of the images appear on laptop when the tasks in above step 1 to 2 are performed.

Submit those images in CD

f. [Monitoring and analysing security events](#)

For the above topics, the following pages of D016TheoryNotes(2.4.31Directory services Part 2)are to be studied

Page 307to 313

What to do

Theory Study

Study the following topics

Security event manager (Page 307), Event Log Analyzer (Page 309), Analyzing Traffic (Page 311)

Do the written exercises for following tutorial questions and practical exercises for given practical activities

Tutorial Question (14)

Explain your understanding of

(1)Security event manager ,(2) Event Log Analyzer , Analyzing Traffic

Presentation

(1)Submit the answers of tutorial (14)
