

Detail Table of Contents

Lab 1: Lab Manual Procedures and Tips.....	2
Topic A: Windows for Business and Industry Lab or Chapter Configuration	3
Topic B: Component 1: Each lab introduction has three topics.....	3
Topic C: Component 2: Each lab will have multiple topics in order	3
Topic D: Component 3: Each lab summary has three topics.....	4
Topic E: Troubleshooting steps.....	4
Topic F: Troubleshooting worksheet	5
Topic G: Extra Items: Comments, examples, issues, and Quick Steps	6
Topic H: Windows for Business and Industry concepts.....	6
 Lab 2: vSphere 6.0.....	 8
Topic A: Lab Objectives	9
Topic B: Technology in Business	9
Topic C: Lab Definitions.....	9
Topic D: Install a vSphere Client.....	10
Topic E: Log on with vSphere Client.....	12
Topic F: Power on a virtual machine (workstation or server)	14
Topic G: Open a virtual machine console window	14
Topic H: Crouter Network Adapters in vSphere	15
Topic I: Assign a subnet to a Network Adapter Crouter	15
Topic J: Attaching an ISO or CD Rom to a virtual machine.....	18
Topic K: Access the BIOS on a virtual machine to change the Boot Sequence	21
Topic L: Load VMware vSphere Tools.....	25
Topic M: Locate vSphere MAC Address	26
Topic N: Lab Project.....	28
Topic O: Troubleshooting Scenario	28
Topic P: Business Scenario	28
 Lab 3: Windows Server Router	 30
Topic A: Lab Objectives	31
Topic B: Technology in Business	31
Topic C: Lab Definitions.....	31
Topic D: Install Windows Server sysprepped Image for Crouter	32
Topic E: Crouter VSphere Configuration.....	34
Topic F: Configure Windows Server Sysprepped Image for Crouter	34
Topic G: Configure Crouter's computer name in Dashboard and Local Server	35
Topic H: Configure Crouter's Firewall.....	36
Topic I: Crouter's Remote Desktop.....	37
Topic J: Configure Crouter's Ethernet0 through Ethernet5 connections.....	38
Topic K: Configure Crouter's Time Zone	45
Topic L: Restart Crouter to Confirm Settings.....	46
Topic M: Windows Server Install Routing and Remote Access.....	47
Topic N: Configure Windows Server Routing and Remote Access.....	52
Topic O: Windows Server Install RIP2 (Routing Interface Protocol).....	55

Topic P:	What is NAT (Network Address Translation).....	59
Topic Q:	Configure NAT	59
Topic R:	Trouble Shooting: NAT (Network Address Translation)	61
Topic S:	Assign additional Public IPs to your Public NIC:	61
Topic T:	Configure NAT address pool.....	66
Topic U:	Configure Reservations for NAT	68
Topic V:	Configure Service and Ports for NAT reservations.....	70
Topic W:	Summary settings Crouter.....	73
Topic X:	List of industry standard TCP/IP and UDP socket ports	75
Topic Y:	Lab Project.....	78
Topic Z:	Troubleshooting Scenario	78
Topic AA:	Business Scenario	78

Lab 4: Installing and configuring DNS for DNS180

Topic A:	Lab Objectives	81
Topic B:	Technology in Business	81
Topic C:	Lab Definitions.....	81
Topic D:	Structural Build Diagram for Labs 4, 5, 6, 7, 8.....	82
Topic E:	DNS1 Sysprepped Windows Server Image.....	83
Topic F:	DNS1 Adapter Assignment	85
Topic G:	Configure DNS1	86
Topic H:	Quick Step – Server setup	87
Topic I:	Configure Computer Name	88
Topic J:	Configure Firewall	90
Topic K:	Configure Remote Management.....	91
Topic L:	Configure Network	92
Topic M:	Configure Internet Explorer Enhanced Security.....	93
Topic N:	Configure Time and Time Zone	94
Topic O:	Restart DNS1 for your configuration changes to take effect	95
Topic P:	Installing DNS Service on DNS1	96
Topic Q:	Configure a Forward Lookup Zone for DNS1.....	99
Topic R:	Configure a Reverse Lookup Zone for DNS1	102
Topic S:	Editing the DNS1 host record to support Public Request/Queries	105
Topic T:	Create a Host record	106
Topic U:	DNS2 Forward and Reverse Zone Transfer Records.....	108
Topic V:	Lab Project.....	112
Topic W:	Troubleshooting Scenario	112
Topic X:	Business Scenario	112

Lab 5: Installing and configuring DNS for DNS2114

Topic A:	Lab Objectives	115
Topic B:	Technology in Business	115
Topic C:	Lab Definitions.....	115
Topic D:	DNS2 Sysprepped Windows Server Image.....	116
Topic E:	DNS2 Adapter Assignment	117
Topic F:	Configure DNS2	117
Topic G:	Quick Step – Server setup	118
Topic H:	Computer Name Configuration	119

Topic I:	Installing DNS Service on DNS2	120
Topic J:	Configure Secondary Forward Lookup Zone for DNS2.....	121
Topic K:	DNS2 Secondary Reverse Lookup Zone.....	123
Topic L:	Lab Project.....	128
Topic M:	Troubleshooting Scenario	128
Topic N:	Business Scenario	128
Lab 6:	Configure Root Hints and Sub Domains	130
Topic A:	Lab Objectives	131
Topic B:	Technology in Business	131
Topic C:	Lab Definitions.....	131
Topic D:	Root Hints for DNS1 and DNS2.....	132
Topic E:	What is a Sub Domain	135
Topic F:	Set up a Sub Domain	136
Topic G:	Create a Host record for the Sub Domain	137
Topic H:	Lab Project.....	140
Topic I:	Troubleshooting Scenario	140
Topic J:	Business Scenario	140
Lab 7:	Configure DNS Records	142
Topic A:	Lab Objectives	143
Topic B:	Technology in Business	143
Topic C:	Lab Definitions.....	143
Topic D:	Purpose of DNS Host and Alias Records.....	144
Topic E:	Create DNS Host Records for IIS and IIS2	144
Topic F:	Create a Host Record for the IIS Cluster.....	147
Topic G:	Create a www Alias Record	148
Topic H:	Future Configuration on IIS servers:.....	151
Topic I:	DMZ and Domain Member Servers.....	152
Topic J:	Create a DNS Host Records for VPN.....	152
Topic K:	VPN Alias Record	154
Topic L:	Create a DNS Host Record DA Server	154
Topic M:	Create a DA Alias Record.....	157
Topic N:	Create a DNS Host Record RDS Server	160
Topic O:	Create a RDS Alias Record	161
Topic P:	Lab Project.....	165
Topic Q:	Troubleshooting Scenario	165
Topic R:	Business Scenario	165
Lab 8:	Installing Active Directory	167
Topic A:	Lab Objectives:	168
Topic B:	Technology in Business	168
Topic C:	Lab Definitions.....	168
Topic D:	Sysprepped Windows Server Image.....	169
Topic E:	srv1 Server Adapter Assignment.....	171
Topic F:	Configure srv1 Windows Server Sysprepped Image	172
Topic G:	Configure Computer Name	173
Topic H:	Configure Firewall	174

Topic I:	Configure Remote Management.....	176
Topic J:	Configure Network	177
Topic K:	Configure Internet Explorer Enhanced Security Configuration.....	178
Topic L:	Configure Time and Time Zone	179
Topic M:	Restart SRV1 to Confirm Settings.....	180
Topic N:	Summary settings srv1	181
Topic O:	Install AD files with Server Manager/Roles.....	182
Topic P:	Configure a Root Domain in Active Directory	186
Topic Q:	Active Directory Forward Lookup Zones	191
Topic R:	Configure a Forward Lookup Zone for Srv1	192
Topic S:	Configure Reverse lookup Zone on srv1.....	195
Topic T:	Forward your srv1 AD Domain's DNS Zone to DNS1.....	197
Topic U:	Confirm DNS forward and reverse lookup zones are functioning on srv1.....	199
Topic V:	Set up Global Users	201
Topic W:	Set up a Global Group	204
Topic X:	Add users to a global group.....	204
Topic Y:	Configure Domain User VPN Access.....	205
Topic Z:	Lab Project.....	207
Topic AA:	Troubleshooting Scenario	207
Topic BB:	Business Scenario	207

Lab 9: Installing IIS Standalone Servers.....209

Topic A:	Lab Objectives	210
Topic B:	Technology in Business	210
Topic C:	Lab Definitions.....	210
Topic D:	IIS1 Sysprepped Windows Server Image	211
Topic E:	Configure IIS1	211
Topic F:	Quick Step – Server setup	212
Topic G:	Configure Network	213
Topic H:	Configure Internet Explorer Enhanced Security.....	213
Topic I:	Restart IIS1 for your configuration changes to take effect	214
Topic J:	IIS2 Sysprepped Windows Server Image	214
Topic K:	Configure IIS2	214
Topic L:	Quick Step – Server setup	215
Topic M:	Configure Network	216
Topic N:	Configure Internet Explorer Enhanced Security.....	216
Topic O:	Restart IIS2 for your configuration changes to take effect	216
Topic P:	Lab Project.....	217
Topic Q:	Troubleshooting Scenario	217
Topic R:	Business Scenario	217

Lab 10: Install and Configure IIS Network Load Balancing219

Topic A:	Lab Objectives	220
Topic B:	Technology in Business	220
Topic C:	Lab Definitions.....	220
Topic D:	Install IIS Web Services on IIS1	221
Topic E:	Edit your Default IIS1 Web Site	224
Topic F:	Install IIS Web Services on IIS2	226

Topic G:	Edit your Default IIS2 Web Site	227
Topic H:	IP Conflicts during Load Balancing Configuration	229
Topic I:	Loading Network Load Balancing on IIS1	230
Topic J:	Install NLB on IIS2	232
Topic K:	Configure the cluster on IIS1	233
Topic L:	Adding a Node IIS2 to the cluster	237
Topic M:	NLB Nodes Open Web Pages IIS1 and IIS2	239
Topic N:	Lab Project	241
Topic O:	Troubleshooting Scenario	241
Topic P:	Business Scenario	241

Lab 11: Installing Member Servers 243

Topic A:	Lab Objectives	244
Topic B:	Technology in Business	244
Topic C:	Lab Definitions	244
Topic D:	VPN Sysprepped Windows Server Image	245
Topic E:	Configure VPN	245
Topic F:	Quick Step – Server setup	246
Topic G:	Configure Network	247
Topic H:	Configure Internet Explorer Enhanced Security	247
Topic I:	Adding a member server to an AD Domain	248
Topic J:	DA Sysprepped Windows Server Image	250
Topic K:	Configure DA	250
Topic L:	Quick Step – Server setup	251
Topic M:	Configure Network	252
Topic N:	Configure Internet Explorer Enhanced Security	252
Topic O:	Adding a member server to an AD Domain	253
Topic P:	NPS Sysprepped Windows Server Image	255
Topic Q:	Configure NPS	255
Topic R:	Quick Step – Server setup	256
Topic S:	Configure Network	257
Topic T:	Configure Internet Explorer Enhanced Security	257
Topic U:	Adding a member server to an AD Domain	258
Topic V:	RDS Sysprepped Windows Server Image	260
Topic W:	Configure Remote Desktop Services (RDS)	260
Topic X:	Quick Step – Server setup	261
Topic Y:	Configure Network	262
Topic Z:	Configure Internet Explorer Enhanced Security	262
Topic AA:	Adding a member server to an AD Domain	263
Topic BB:	Lab Project	265
Topic CC:	Troubleshooting Scenario	265
Topic DD:	Business Scenario	265

Lab 12: VPN	267
Topic A: Lab Objectives	268
Topic B: Technology in Business	268
Topic C: Lab Definitions.....	268
Topic D: What is a VPN	269
Topic E: The steps to setup a VPN Tunnel Process	269
Topic F: VPN Protocols and the ports required for a VPN Tunnel	269
Topic G: Install Routing and Remote on VPN Server.....	270
Topic H: Configure Routing and Remote Access	272
Topic I: Configure Routing and Remote VPN Access	273
Topic J: Configure Access Service Network Policies Server (NPS).....	276
Topic K: Configure IP Security Policy Manager	279
Topic L: Configure Services	283
Topic M: Quick Step – Attach an ISO to a Vsphere machine.....	284
Topic N: Configure Regedit.....	284
Topic O: WS1W10 Sysprepped	286
Topic P: Quick Step – Workstation setup.....	287
Topic Q: Configure Windows Client Home Network	288
Topic R: Configure Windows Client IP Security Policy Manager	289
Topic S: Configure Windows Client Services.....	292
Topic T: Quick Step – Attach an ISO to a Vsphere machine.....	294
Topic U: Configure Windows Client Regedit	294
Topic V: Configure Windows Client Network for VPN Access.....	296
Topic W: Configure Windows Client VPN Connection	298
Topic X: Client Windows Client VPN Log on.....	300
Topic Y: Verifying and Confirming Client VPN Connection	301
Topic Z: Lab Project.....	303
Topic AA: Troubleshooting Scenario	303
Topic BB: Business Scenario	303
 Lab 13: NPS for RADIUS VPN	 305
Topic A: Lab Objectives	306
Topic B: Technology in Business	306
Topic C: Lab Definitions.....	306
Topic D: Install Network Policy Server (NPS) on NPS Server	307
Topic E: Register NPS with Active Directory	310
Topic F: Configure NPS RADIUS for VPN Access	310
Topic G: Configure VPN Server for NPS	316
Topic H: Configure Windows Client Network for NPS VPN Access	319
Topic I: Configure Windows Client VPN Connection	321
Topic J: Client Windows Client VPN Log on.....	323
Topic K: Verifying and Confirming Client VPN Connection	324
Topic L: Lab Project.....	327
Topic M: Troubleshooting Scenario	327
Topic N: Business Scenario	327

Lab 14: Direct Access	329
Topic A: Lab Objectives	330
Topic B: Technology in Business	330
Topic C: Lab Definitions.....	330
Topic D: Structural build requirements	331
Topic E: WS3W10 Sysprepped	331
Topic F: Quick Step – Workstation setup.....	332
Topic G: Joining a workstation to a domain	333
Topic H: Set up a Direct Access (DA) Global Group.....	335
Topic I: Add a Computer to a global group	336
Topic J: Install Direct Access (DA) on DA Server.....	337
Topic K: Configure Direct Access.....	340
Topic L: Move WS3W10 to Home Network Adapter	343
Topic M: Reconfigure Windows Client Home Network	343
Topic N: Review WS3W10 GPO Settings	344
Topic O: Verifying and Confirming Client DirectAccess Connection	346
Topic P: Lab Project.....	349
Topic Q: Troubleshooting Scenario	349
Topic R: Business Scenario	349
 Lab 15: Remote Desktop Services (RDS)	 351
Topic A: Lab Objectives	352
Topic B: Technology in Business	352
Topic C: Lab Definitions.....	352
Topic D: Install Remote Desktop Services on RDS.....	353
Topic E: Allow Users RDS Connections	356
Topic F: Configure Remote Desktop (RD) Licensing	360
Topic G: WS1W10 Home Network Adapter	363
Topic H: Reconfigure Windows Client Home Network	364
Topic I: RDS Remote Desktop Connection	364
Topic J: RDS RD Web Access.....	366
Topic K: Configure RD Web Desktop Collections	369
Topic L: Publish RD Web Desktop Collections	373
Topic M: RDS RD Web Access.....	375
Topic N: Configure Service and Ports for NAT reservations.....	377
Topic O: Reconfigure the RDS Listening Port.....	378
Topic P: Configure the RDS Firewall.....	380
Topic Q: RDS Remote Desktop Connection	383
Topic R: Edit RDS Deployment Properties.....	385
Topic S: Configure an RDS License Server	387
Topic T: Lab Project.....	392
Topic U: Troubleshooting Scenario	392
Topic V: Business Scenario	392

Lab 16: Windows Server BitLocker	394
Topic A: Lab Objectives	395
Topic B: Technology in Business	395
Topic C: Lab Definitions.....	395
Topic D: SRV1 Current Disks configuration	396
Topic E: What are Group Policies.....	397
Topic F: Local Group Policy	397
Topic G: Install Local LPT printer on srv1	398
Topic H: Configure Printer	401
Topic I: Installing BitLocker	402
Topic J: Configure BitLocker	405
Topic K: BitLocker Settings.....	408
Topic L: Lab Project.....	412
Topic M: Troubleshooting Scenario	412
Topic N: Business Scenario	412