

Contents

Chapter 1 Introduction to Microsoft Virtual Server	1
Introduction	2
Microsoft Virtual Server 2005 R2 and Dynamics System Initiative	2
What Is Virtualization, and When Should You Use It?	3
Advantages of Virtualization	3
Production Data Centers	4
Test and Development Data Centers	5
Disaster Recovery	6
What Virtualization Tools Are Available?	7
Third-Party Virtualization Tools	7
How Does Virtualization Work?	9
Virtual PC versus Virtual Server 2005	10
Features That Are Found in Both Virtual PC and Virtual Server 2005 R2	10
Differences between Virtual PC and Virtual Server 2005 R2	11
Supported Features in Virtual PC	11
Supported Features in Virtual Server 2005 R2	12
Scenarios for the Use of Virtual PC	13
Help Desk	13
Training	13
Testing	14
Legacy Applications	14
Virtual Server 2005 versus Virtual Server 2005 R2	14
Summary	15
Solutions Fast Track	15
Frequently Asked Questions	17

Chapter 2 Installing and Configuring a Virtual Server.	19
Introduction	20
Determining the Physical Size of the Server	20
Physical Server Sizing	20
Evaluating Existing Physical Servers	21
Planning for New Virtual Servers	21
Installing Virtual Server 2005 R2	22
Preinstallation Tasks	22
Installation Tasks	23
Setting Up a Virtual Server	
Administration Web Site	28
Virtual Server Administration	
Web Site Installation	29
Installing in a Multiserver Environment	29
Virtual Machine Remote Console	35
Setting Access Permissions for	
the Virtual Machine Remote Console	35
Setting Default Location and Search Paths	37
Setting Resource Allocation	39
Summary	42
Solutions Fast Track	42
Frequently Asked Questions	44

Chapter 3 Virtual Machines	45
Introduction	46
Creating the Virtual Server	47
Using the Administration Web Page	49
Virtual Machine Configuration	53
Adding Hardware to the Server	75
Building the Host Server	75
Processors	75
Memory	76
Storage Systems	76
Network Cards	77
COM and LPT Ports	77
USB Ports	77
Installing a Windows OS	78
Loading the Operating System	79
Booting from the Virtual Floppy Disk Drive	81
Starting the Virtual Machine	83
Installing the Operating System	87
Installing Virtual Machine Additions	89
Removing Virtual Machine Additions	91
Installing a Non-Windows OS	92
Creating the Virtual Machine	93
Virtual Machine Additions for Linux	96
Summary	105
Solutions Fast Track	106
Frequently Asked Questions	109

- Chapter 4 Virtual Networks 111**
 - Introduction112
 - Introduction to Virtual Networks112
 - Virtual Networks113
 - Viewing the Virtual Networks114
 - Using the “Internal Network”122
 - Using the Loopback Adapter124
 - Installing the Loopback Adapter124
 - Configuring Host-to-Guest Networking and File Sharing128
 - Using the ICS133
 - Creating a Virtual Network139
 - Binding a Physical Network Adapter to a Virtual Network141
 - Changing the Binding of a Virtual Network . .142
 - Changing the Virtual Network for a Virtual Machine145
 - Using the Virtual Server Network Services147
 - Summary152
 - Solutions Fast Track153
 - Frequently Asked Questions155

Chapter 5 Virtual Disks	157
Introduction	158
Removable Virtual Disks	158
CD/DVD Drive	159
Floppy Disk Drive	161
Virtual Hard Disks	166
Dynamically Expanding Virtual Hard Disk	168
Compacting	170
Converting	177
Fixed-Size Virtual Hard Disk	178
Converting	179
Differencing Virtual Hard Disk	180
Chaining	186
Merging	187
Summary	192
Solutions Fast Track	192
Frequently Asked Questions	194

Chapter 6 Introduction to ADS and Virtual Server Migration Tool 197

Automated Deployment Services	198
Rapid Deployment Using ADS	198
What Components Does ADS Use?	200
ADS Controller Service	200
ADS Network Boot Service	200
ADS Image Distribution Service	201
ADS Host Server Requirements	202
ADS Client-Server Requirements	202
ADS Network and Management Requirements	203
Installing ADS	204
Installation Options	204
Installation Process	205
Post-Installation: Configuring ADS	214
Automatically Accepting New Clients	214
Enabling Multicast	218
Administration Agent Installing	219
Adding Hardware Drivers in the Boot OS	223
Editing Using the Sequence Editor	223
Installing Virtual Server Migration Toolkit onto the Virtualization Server	227
Summary	231
Solutions Fast Track	231
Frequently Asked Questions	233

Chapter 7 Managing Virtual Server	235
Introduction	236
The Management Interface	236
Configuring a Central	
Virtual Server Management Site	237
Using the Virtual Server COM API	247
Using the Virtual Server Programmer's Guide	248
Connecting to the	
Virtual Server COM Object	254
Accessing a Virtual Server Using Script	256
Listing Virtual Server Properties	256
Setting Virtual Server Properties	259
Creating a Virtual Machine Using Script	261
Creating a Virtual Hard Disk	263
Putting It All Together	264
Creating a Virtual Network Using Script	267
Retrieving Guest OS Information Using Script	268
Changing a Virtual Machine State Using Script	271
The Virtual Machine State Model	272
Attaching Scripts to Virtual Server Events	275
Attaching Scripts to Virtual Machine Events	277
Scripts in Action	278
Summary	283
Solutions Fast Track	283
Frequently Asked Questions	285

Chapter 8 Migrating Physical Machines. 287

- Introduction288
- Getting the Virtualization Environment Ready for Usage288
 - Setting Up the Virtualization Tools288
 - Installing VSMT and ADS Agent on the Virtual Server Host289
 - Creating the Virtual Network292
- Capturing the Physical Machine293
 - Hardware Inventory297
 - Creating the Scripts299
 - Validating Hardware299
 - Creating Migration Scripts301
 - Data Capture305
- Creating the Virtual Machine on the Virtual Server Host310
- Deploying the Virtual Machine on the Host OS . .313
- Summary316
- Solutions Fast Track316
- Frequently Asked Questions318

Chapter 9 Troubleshooting	319
Introduction	320
Troubleshooting Virtual Server 2005 R2	320
Troubleshooting Virtual	
Server Administration Web Site	320
Troubleshooting LsaLogonUser() failed!	320
Troubleshooting Internal Server Error 500	327
Troubleshooting Access Denied Errors	329
Troubleshooting VMRC	
Server Disabled Errors	329
Troubleshooting Virtual Server Settings	331
Troubleshooting	
Disappearing Server Settings	331
Troubleshooting Virtual Network Changes	332
Troubleshooting Virtual	
Machine Performance Issues	336
Disabling TCP Segmentation Offload	336
Don't Use Network	
Adapter Auto-Configuration	337
Use ISOs instead of	
CDs Whenever Possible	337
Don't Overallocate Memory	337
Use a Separate Disk	
Controller for Guest Machines	338
Troubleshooting Automated Deployment Services	338
Troubleshooting PXE	338
Check the DHCP Configuration	339
DHCP Relay Agent	339
Check for Other PXE Servers	341
Check Your Network Drivers	341
Check Your Storage Drivers	342
Check Your BIOS Clock	342

- Troubleshooting the ADS Services342
 - Check That the ADS Services Are Running 342
 - Confirm the ADS Controller’s IP Address . .343
 - Check the ADS Certificates343
- Troubleshooting the Virtual Server Migration Tool 343
 - Troubleshooting the Virtual Network Setup . .344
 - Troubleshooting Script Creation344
 - Troubleshooting ADS Integration345
 - Troubleshooting Migration
 - from VMware to Virtual Server345
- Troubleshooting the Migration Process345
 - Imaging Problems346
 - IDE Disks Cannot Exceed 127 GB347
 - Converted SCSI Disks Fail to Boot347
- Summary351
- Solutions Fast Track351
- Frequently Asked Questions353

Appendix A The Pros and Cons of Running Virtual Server	355
Introduction	.356
Why Is Virtual Server Beneficial?	.356
Performance Issues	.357
Licensing Issues	.358
Security Issues	.359
Conclusion	.359
About Brien M. Posey	.360
Note	.360
Appendix B Solutions Fast Track.	361
Chapter 1	.362
Chapter 2	.364
Chapter 3	.366
Chapter 4	.369
Chapter 5	.371
Chapter 6	.372
Chapter 7	.374
Chapter 8	.376
Chapter 9	.378
Appendix C Windows Script Files for Virtual Server 2005 R2	381
Code Listings for Virtual Server 2005 R2	.382
Appendix D Integrating Non-Windows Systems with MOM 2005 Using Virtual Agents.	401
Index	451