

# Contents at a Glance

---

Preface . . . . .	ix
Acknowledgments . . . . .	xiii

<b>Part I: Planning an Active Directory Deployment . . . . .</b>	<b>1</b>
Chapter 1: Introduction to Active Directory Technology and Deployment Planning . . . . .	3
Chapter 2: The Active Directory Namespace . . . . .	19
Chapter 3: Planning an Active Directory Structure . . . . .	35
Chapter 4: Upgrading and Migrating to the Active Directory . . . . .	61
Chapter 5: Planning Active Directory Sites . . . . .	79
<b>Part II: Implementing the Active Directory . . . . .</b>	<b>97</b>
Chapter 6: Installing the Root Domain . . . . .	99
Chapter 7: Setting Up Resources . . . . .	117
Chapter 8: Configuring Active Directory Domains and Sites . . . . .	145
Chapter 9: Setting Up Users, Groups, and Computers . . . . .	167
Chapter 10: Publishing Resources . . . . .	191
Chapter 11: Implementing Active Directory Security Features . . . . .	211
<b>Part III: Active Directory Management . . . . .</b>	<b>233</b>
Chapter 12: Maintaining the Active Directory . . . . .	235
Chapter 13: Managing Active Directory Replication . . . . .	259
Chapter 14: Active Directory Schema . . . . .	285
<b>Part IV: Integrating Supporting Technologies . . . . .</b>	<b>301</b>
Chapter 15: Implementing IntelliMirror and Group Policy . . . . .	303
Chapter 16: Implementing Distributed File System and Indexing Service . . . . .	331
Chapter 17: Connecting Exchange Server and the Active Directory . . . . .	349
Chapter 18: Implementing Microsoft DNS . . . . .	369
Appendix A: What's on the CD-ROM . . . . .	399
Appendix B: Microsoft Management Console Tutorial . . . . .	401
Appendix C: Additional Administrative Tools . . . . .	417
Appendix D: PDC and BDC Upgrade Reference . . . . .	449
Appendix E: Windows 2000 Deployment Strategies . . . . .	459
Appendix F: Schema Class and Attribute Reference . . . . .	491

# Contents

---

Preface . . . . .	ix
Acknowledgments . . . . .	xiii

## Part I: Planning an Active Directory Deployment 1

<b>Chapter 1: Introduction to Active Directory Technology and Deployment Planning . . . . .</b>	<b>3</b>
What Is a Directory? . . . . .	3
What Is a Directory Service? . . . . .	4
What Does the Active Directory Do? . . . . .	4
Active Directory Logical Structure . . . . .	6
DNS and LDAP . . . . .	9
Windows 2000 Domain Controllers . . . . .	11
Global catalog servers . . . . .	12
Multimaster roles . . . . .	13
The Active Directory Schema . . . . .	14
Planning an Active Directory Deployment . . . . .	15
Gather business data . . . . .	16
Consider IT management structure . . . . .	17
Examine your physical locations . . . . .	17
Examine employee distribution . . . . .	17
Gather network topology data . . . . .	17
Study network services . . . . .	17
Explore protocol usage . . . . .	18
Consider computer hardware . . . . .	18
<b>Chapter 2: The Active Directory Namespace . . . . .</b>	<b>19</b>
What Is a Namespace? . . . . .	19
Exploring the DNS Namespace . . . . .	20
Issues with DNS Planning . . . . .	24
Service Location Records . . . . .	24
Dynamic Update Protocol . . . . .	25
DHCP updates . . . . .	25
Incremental zone transfers . . . . .	25
The Active Directory Domain Hierarchy . . . . .	26
Designing the Root Domain . . . . .	26
Permanent considerations with the root domain . . . . .	27
Options and considerations with the Internet . . . . .	29
Planning Summary . . . . .	34

**Chapter 3: Planning an Active Directory Structure . . . . .** 35

Active Directory Domains . . . . .	35
Domains under Windows NT . . . . .	35
Building domain trees . . . . .	36
Using multiple domain trees . . . . .	41
Using multiple forests . . . . .	43
Understanding transitive trusts . . . . .	43
Revisiting domain controllers . . . . .	48
Planning Your Domain Structure . . . . .	52
Understanding Organizational Unit Structure . . . . .	55
Understanding the OU hierarchy . . . . .	55
OU administrative functions . . . . .	57
Problems with nested OUs . . . . .	57
Planning Your Organizational Unit Structure . . . . .	58

**Chapter 4: Upgrading and Migrating to the Active Directory . . . . .** 61

Upgrading to the Active Directory . . . . .	61
Upgrading NT to 2000 . . . . .	62
Getting ready to upgrade the PDC to 2000 . . . . .	63
Using the Active Directory Sizer . . . . .	64
Considering domain consolidation . . . . .	65
Migrating to the Active Directory . . . . .	77

**Chapter 5: Planning Active Directory Sites . . . . .** 79

What Is a Site? . . . . .	79
Sites and Domains . . . . .	80
Why Are Sites Necessary? . . . . .	82
User traffic . . . . .	83
Replication traffic . . . . .	84
Understanding Site Links . . . . .	88
Cost . . . . .	89
Frequency . . . . .	90
Schedule . . . . .	91
Understanding the Bridgehead Server . . . . .	91
Understanding Site Link Bridges . . . . .	93
Sites and Server Placement . . . . .	94
Final Planning Considerations . . . . .	95

**Part II: Implementing the Active Directory** 97**Chapter 6: Installing the Root Domain . . . . .** 99

Examining Domain Controllers . . . . .	99
How Do I Install the Root Domain? . . . . .	101
Installation Requirements . . . . .	102
Installing the Root Domain . . . . .	106

<b>Chapter 7: Setting Up Resources . . . . .</b>	<b>117</b>
Installing Additional Domain Controllers . . . . .	117
Creating Child Domains . . . . .	120
Creating Grandchild Domains . . . . .	124
Creating a New Tree in an Existing Forest . . . . .	125
Operations Master Placement . . . . .	128
Global catalog server . . . . .	129
Domain naming master . . . . .	131
Infrastructure master . . . . .	133
RID master . . . . .	135
PDC Emulator . . . . .	136
Uninstalling the Active Directory . . . . .	138
<b>Chapter 8: Configuring Active Directory Domains and Sites . . . . .</b>	<b>145</b>
Configuring Domains and Trusts . . . . .	145
Managing a domain . . . . .	146
Changing from mixed to native mode . . . . .	146
Trust relationships . . . . .	149
Adding UPN suffixes . . . . .	152
Configuring Active Directory Sites and Services . . . . .	152
Creating a new site . . . . .	153
Defining a site subnet . . . . .	155
Moving domain controllers into a site . . . . .	156
Selecting a licensing computer for a site . . . . .	157
Configuring site links . . . . .	158
Assigning a bridgehead server . . . . .	163
Configuring site link bridges . . . . .	164
<b>Chapter 9: Setting Up Users, Groups, and Computers . . . . .</b>	<b>167</b>
Creating and Managing User Accounts . . . . .	167
Creating user accounts . . . . .	170
Configuring user account properties . . . . .	173
Other user account management options . . . . .	183
Creating and Managing Group Accounts . . . . .	184
Creating a new group account . . . . .	186
Configuring group account properties . . . . .	187
Other management tasks . . . . .	189
Examining Computer Accounts . . . . .	189
<b>Chapter 10: Publishing Resources . . . . .</b>	<b>191</b>
Setting Up Organizational Units . . . . .	191
Creating a new OU . . . . .	192
Configuring OU properties . . . . .	194
Publishing Contact Objects . . . . .	196
Creating a contact . . . . .	197
Configuring contact properties . . . . .	198

<b>P</b> ublisher Printer Objects . . . . .	<b>201</b>
Publishing printers connected to Windows 2000 computers . . . . .	202
Publishing printers from downlevel computers . . . . .	203
<b>P</b> ublishing Shared Folders . . . . .	<b>206</b>
Publishing a shared folder . . . . .	206
Configuring shared folder properties . . . . .	207
<b>P</b> apter 11: Implementing Active Directory Security Features . . . . .	<b>211</b>
Security Overview . . . . .	211
Windows Security . . . . .	212
Advanced permissions . . . . .	215
Auditing . . . . .	218
Owner . . . . .	219
Delegation of Control . . . . .	220
Configuring Class and Attribute Security . . . . .	227
Installing the AdminPak . . . . .	228
Opening the Schema Manager . . . . .	229
Setting class security . . . . .	230
<b>III:</b> Active Directory Management	<b>233</b>
<b>P</b> apter 12: Maintaining the Active Directory . . . . .	<b>235</b>
Backing Up the Active Directory . . . . .	235
Windows disk fault-tolerant solutions . . . . .	236
Windows backup strategies . . . . .	238
Understanding System State Data . . . . .	239
Performing a Backup . . . . .	240
Restoring Active Directory Data . . . . .	246
Performing an Authoritative Restore . . . . .	249
Using the Recovery Console . . . . .	251
Common Maintenance Issues . . . . .	253
Checking the LostAndFound container . . . . .	255
Online and offline defragmentation . . . . .	256
Removing ghost objects . . . . .	256
<b>P</b> apter 13: Managing Active Directory Replication . . . . .	<b>259</b>
How Replication Works . . . . .	259
Replication concepts . . . . .	260
The Replication process . . . . .	265
Solving replication problems . . . . .	265
Examining Intrasite Replication . . . . .	267
Examining Intersite Replication . . . . .	268
Forcing replication . . . . .	270
Manual connection creation . . . . .	271

Using Replication Monitor . . . . .	274
Adding a monitored server . . . . .	275
Domain controller replication errors . . . . .	277
Server monitoring . . . . .	277
Server properties . . . . .	279
Replication Monitor options . . . . .	282

## Chapter 14: Active Directory Schema . . . . . 285

Schema Overview . . . . .	285
Planning for Schema Modification . . . . .	288
Protection process . . . . .	289
Issues with inheritance . . . . .	290
Schema Modification Tools . . . . .	290
Using the Schema Manager . . . . .	290
Using ADSI . . . . .	298

## Part IV: Integrating Supporting Technologies 301

### Chapter 15: Implementing IntelliMirror and Group Policy . . . . . 303

Understanding IntelliMirror . . . . .	303
Offline files . . . . .	305
Synchronization Manager . . . . .	306
Windows Installer . . . . .	308
Disk quotas . . . . .	308
Remote Installation Services . . . . .	311
Installing RIS . . . . .	312
Setting up RIS . . . . .	312
RIS server properties . . . . .	314
Prestaging RIS clients . . . . .	316
Creating a client boot floppy . . . . .	317
Group Policy . . . . .	318
Group Policy basics . . . . .	318
Group Policy objects . . . . .	320
Accessing a Group Policy . . . . .	320
Configuring a Group Policy . . . . .	324
Computer Configuration . . . . .	324
User Configuration . . . . .	329

### Chapter 16: Implementing Distributed File System and Indexing Service . . . . . 331

Understanding Distributed File System (Dfs) . . . . .	331
Standalone Dfs . . . . .	335
Adding Dfs links . . . . .	338
Creating a replica . . . . .	339

Active Directory Integrated Dfs . . . . .	340
Indexing Service . . . . .	341
Installing Indexing Service . . . . .	342
Indexing Service catalogs . . . . .	343
Managing the Indexing Service . . . . .	346
<b>Chapter 17: Connecting Exchange Server and the Active Directory</b> . . . . .	<b>349</b>
Exchange and the Active Directory . . . . .	349
Exchange 5.5 and the Active Directory . . . . .	350
Exchange 2000 and the Active Directory . . . . .	351
Installing the Active Directory Connector . . . . .	353
Configuring Connector Management Properties . . . . .	356
Creating and Configuring Connection Agreements . . . . .	357
ADC Properties . . . . .	364
Using Multiple ADC Servers . . . . .	365
Synchronizaton with the ADC . . . . .	366
<b>Chapter 18: Implementing Microsoft DNS</b> . . . . .	<b>369</b>
Understanding DNS . . . . .	369
The DNS namespace . . . . .	370
How name resolution works . . . . .	372
Understanding DNS zones . . . . .	376
Understanding Dynamic DNS . . . . .	377
Installing DNS . . . . .	378
Creating Forward and Reverse Lookup Zones . . . . .	379
Creating a new forward lookup zone . . . . .	379
Creating a reverse lookup zone . . . . .	381
Managing the DNS Server . . . . .	382
Interfaces tab . . . . .	383
Forwarders tab . . . . .	384
Advanced tab . . . . .	384
Root Hints tab . . . . .	386
Logging tab . . . . .	386
Monitoring tab . . . . .	386
Managing DNS Zones . . . . .	388
Host records . . . . .	388
Alias records . . . . .	389
Mail Exchanger records . . . . .	389
Other records . . . . .	390
Zone properties . . . . .	392
Final DNS Tips . . . . .	396

<b>Appendix A: What's on the CD-ROM . . . . .</b>	<b>399</b>
<b>Appendix B: Microsoft Management Console Tutorial . . . . .</b>	<b>401</b>
<b>Appendix C: Additional Administrative Tools . . . . .</b>	<b>417</b>
<b>Appendix D: PDC and BDC Upgrade Reference . . . . .</b>	<b>449</b>
<b>Appendix E: Windows 2000 Deployment Strategies . . . . .</b>	<b>459</b>
<b>Appendix F: Schema Class and Attribute Reference . . . . .</b>	<b>491</b>
<b>Index . . . . .</b>	<b>549</b>
<b>End-User License Agreement . . . . .</b>	<b>574</b>
<b>CD-ROM Installation Instructions . . . . .</b>	<b>578</b>