

# Table of Contents

<b>Deploying Solutions with .NET Enterprise Servers.....</b>	<b>1</b>
<b>Introduction.....</b>	<b>4</b>
Overview of the Book and Technology.....	4
How This Book Is Organized.....	4
Who Should Read This Book.....	7
Tools That Will Be Needed.....	8
Summary.....	8
<b>Part I: .NET Overview.....</b>	<b>9</b>
Chapter List.....	9
.....	9
<b>Chapter 1: Introduction to the .NET Framework.....</b>	<b>10</b>
Highlights.....	10
.NET Framework Overview.....	10
Features of the Common Language Runtime.....	12
.NET Framework Class Library.....	13
Client Application Development.....	13
Server Application Development.....	14
Windows Forms.....	15
Web Forms.....	16
New Programming Languages.....	16
Visual Basic .NET.....	17
Visual C++.....	18
C#.....	18
ASP.NET.....	19
What .NET Means to Developers.....	20
Review Questions.....	21
<b>Chapter 2: .NET Business Solutions.....</b>	<b>22</b>
Overview.....	22
.NET Enterprise Server Purpose.....	22
Low Maintenance.....	23
Security.....	23
Scalability.....	24
Stability.....	24
Integration.....	25
Enterprise Application Integration.....	25
Presentation Layer Integration.....	27
Business Layer Integration.....	27
Data Source Layer Integration.....	28
Summary.....	28
Business-to-Business Solutions.....	28
Business-to-Consumer Solutions.....	30
Summary.....	30
Review Questions.....	30

# Table of Contents

<b>Chapter 3: Role of .NET Enterprise Servers.....</b>	<b>32</b>
Overview.....	32
Common Features.....	32
Common Protocols and Standards.....	32
Application Scaling.....	33
Interoperability.....	33
.NET Server.....	34
Exchange Server.....	35
Design Goals.....	35
Features.....	35
SQL Server.....	36
Design Goals.....	36
Features.....	36
Application Center 2000.....	37
Design Goals.....	38
Features.....	38
Commerce Server.....	39
Design Goals.....	39
Features.....	39
Content Management Server.....	40
Design Goals.....	41
Features.....	41
SharePoint Portal Server.....	42
Design Goals.....	42
Features.....	42
BizTalk Server 2000.....	43
Design Goals.....	43
Features.....	43
Internet Security and Acceleration Server.....	44
Design Goals.....	44
Features.....	45
Review Questions.....	45
<b>Chapter 4: .NET Services for the Development Environment.....</b>	<b>46</b>
Overview.....	46
Common Language Runtime Services.....	47
Multiple Language Support.....	47
Metadata and Versioning.....	48
Garbage Collection.....	49
Base Class Services.....	50
Accessing Data with ADO.NET.....	50
.NET Security.....	52
Remoting Services.....	55
Program and User Interfaces.....	58
Introduction to ASP.NET.....	58
Review Questions.....	61
<b>Chapter 5: XML Integration with .NET Servers.....</b>	<b>62</b>
Why XML?.....	62
Exchanging Data.....	63

# Table of Contents

<b>Chapter 5: XML Integration with .NET Servers</b>	
Managing Data Content.....	64
Piercing the Firewall.....	65
Calling Remote Components.....	65
Web Integration.....	66
Configuration Management.....	66
An XML Overview.....	66
XML Basics.....	67
XML Namespaces.....	68
XML Core Technologies.....	69
Summary.....	74
Review Questions.....	75
<b>Chapter 6: Building .NET Components.....</b>	<b>76</b>
Highlights.....	76
Overview of Distributed Applications.....	77
Presentation Services.....	77
Business Services.....	77
Data Services.....	78
Components and Assemblies.....	78
Component Architecture.....	78
Assemblies.....	80
Working with Unmanaged COM Components.....	84
Calling COM Components from .NET Clients.....	84
Calling a .NET Component from a COM Component.....	85
Enterprise Services in .NET.....	87
Associating Components with Enterprise Services.....	87
Memory Management with COM+ Resources.....	88
Summary.....	88
Review Questions.....	88
<b>Part II: .NET Enterprise Servers.....</b>	<b>89</b>
Chapter List.....	89
.....	89
<b>Chapter 7: Exchange Server.....</b>	<b>90</b>
Overview.....	90
Editions of Exchange Server.....	91
Standard Edition.....	91
Enterprise Edition.....	91
Configuration Modes.....	92
.NET Services.....	94
Storage Groups.....	94
Web Storage System.....	96
Integration with .NET Enterprise Servers.....	102
Enterprise Application Integration.....	102
Business-to-Business Applications.....	103
Business-to-Consumer Solutions.....	104
Review Questions.....	104

# Table of Contents

<b>Chapter 8: SQL Server 2000.....</b>	<b>105</b>
Overview.....	105
SQL Server Editions.....	105
.NET Enterprise Features.....	106
Data Retrieval and Storage.....	107
Data Protection.....	112
Enterprise Solutions with SQL Server 2000.....	119
Enterprise Application Integration.....	119
Business-to-Business Model.....	120
Review Questions.....	121
<b>Chapter 9: Application Center 2000.....</b>	<b>122</b>
Overview.....	122
Application Center Installation Components.....	122
Server Installation.....	124
Application Center .NET Services.....	125
Cluster Services.....	125
Load Balancing.....	128
Synchronization.....	128
.NET Business Solutions.....	130
Deploying an Application.....	130
Integration with .NET Enterprise Servers.....	131
Review Questions.....	133
<b>Chapter 10: Commerce Server.....</b>	<b>134</b>
Overview.....	134
Commerce Server Editions.....	134
Software Requirements.....	134
Commerce Server Editions.....	136
Commerce Server and .NET.....	137
Commerce Server Basics.....	137
Commerce Server and OLE DB.....	140
Commerce Server and XML.....	140
Commerce Server Security.....	141
The Role of Commerce Server in Business-to-Consumer Applications.....	150
Review Questions.....	151
<b>Chapter 11: Content Management Server.....</b>	<b>152</b>
Overview.....	152
Content Management Server Components.....	152
Content Management Server.....	153
Microsoft Content Management Server Site Builder.....	155
Purpose of Content Management Server.....	155
Managing Web Content.....	156
Delivering Dynamic Data.....	156
Fast Deployment of Web Sites.....	156
.NET Development Features.....	157
Interaction with ASP and ASP.NET.....	157
Integration with XML.....	158
Workflow.....	159

# Table of Contents

<b>Chapter 11: Content Management Server</b>	
Integration with .NET Enterprise Servers.....	162
Internet Solutions.....	162
Intranet Solutions.....	163
SharePoint Portal Server 2001.....	164
Using SharePoint Portal Server 2001 and Content Management Server 2001 Together.....	164
Review Questions.....	166
<b>Chapter 12: BizTalk Server.....</b>	<b>167</b>
Overview.....	167
BizTalk Features for .NET Services.....	168
BizTalk Tools.....	168
BizTalk Server Group.....	169
BizTalk Server Databases.....	169
XML Integration with BizTalk Server.....	170
SOAP and BizTalk Server.....	170
Features of BizTalk Server for .NET Development.....	171
Document Specifications.....	171
Maps.....	174
Security Considerations.....	179
Enterprise Application Integration.....	181
Business-to-Business Solutions.....	182
Review Questions.....	182
<b>Chapter 13: SharePoint Portal Server.....</b>	<b>183</b>
Overview.....	183
SharePoint Technologies.....	183
SharePoint Team Services.....	184
Microsoft SharePoint Portal Server 2001.....	184
SharePoint Solutions.....	184
Digital Dashboard Services for the SharePoint Portal Server.....	185
Client Extensions.....	186
Microsoft Office Integration.....	186
SharePoint Security.....	186
.NET Applications with SharePoint Portal Server.....	189
Workspaces.....	190
Collaborative Solutions with Public Folders.....	191
Collaborative Solutions with External Applications.....	191
Summary.....	192
Review Questions.....	192
<b>Chapter 14: Internet Security and Acceleration Server.....</b>	<b>194</b>
Overview.....	194
Comparison of Editions.....	195
Standard Edition.....	195
Enterprise Edition.....	195
Decision.....	196
ISA Configurations.....	196
Firewall Mode.....	197

# Table of Contents

<b>Chapter 14: Internet Security and Acceleration Server</b>	
Cache Mode.....	200
Integrated Configuration.....	200
Role of ISA Server with .NET Services.....	201
Packet Filtering.....	201
Secure Server Publishing.....	203
Enterprise Policies.....	205
Integration with Other .NET Enterprise Servers.....	206
Review Questions.....	207
<b>Part III: Enterprise Solutions with .NET Servers.....</b>	<b>208</b>
Chapter List.....	208
.....	208
<b>Chapter 15: Web Services with .NET.....</b>	<b>209</b>
Highlights.....	209
Overview of Web Services.....	209
Web Service Usage.....	210
Web Services and .NET.....	211
Web Services Application Architecture.....	211
Development Environments.....	213
Microsoft Web Service Solution.....	215
Web Service Standards.....	215
SOAP.....	215
WSDL.....	217
UDDI.....	218
Web Services and .NET Business Solutions.....	219
Application Center 2000 and Web Services.....	219
SQL Server and Web Services.....	219
Summary.....	227
Review Questions.....	227
<b>Chapter 16: Building Enterprise Web Farms.....</b>	<b>228</b>
Overview.....	228
Presentation Layer.....	229
Presentation Layer Security.....	229
Presentation Layer Availability.....	231
Presentation Layer Responsiveness.....	231
Business Layer.....	231
Business Layer Security.....	232
Business Layer Availability.....	234
Business Layer Responsiveness.....	235
Data Layer.....	235
Data Layer Security.....	236
Data Layer Availability.....	236
Data Layer Responsiveness.....	238
Summary.....	238
Review Questions.....	239

# Table of Contents

<b>Chapter 17: Data Warehousing.....</b>	<b>240</b>
Overview.....	240
Data Warehouse Framework.....	241
SQL Server Databases.....	242
Data Transformation Services.....	242
Analysis Services.....	242
PivotTable Service.....	242
Analysis Server.....	243
OLAP Databases.....	243
Data Mining.....	243
Data Warehousing and OLAP.....	244
Data Warehouse Design.....	244
Star Schema.....	245
Introduction to the OLAP Database.....	247
Data Retrieval from a Cube.....	249
Data Analysis Concepts.....	249
PivotTable Service.....	250
Options for Accessing Data.....	250
Interaction with .NET.....	251
.NET Services.....	251
.NET Enterprise Solutions.....	253
Review Questions.....	255
<b>Chapter 18: Clustering .NET Servers.....</b>	<b>257</b>
Highlights.....	257
Overview of Clustering.....	257
Types of Clustering.....	257
New Cluster Features in .NET Server.....	259
Cluster Architecture.....	260
Key Terms.....	260
Configuration Options.....	260
Cluster Service Components.....	263
Implementing the Cluster Solution.....	263
Creating a Cluster.....	264
Administration of the Cluster.....	265
.NET Enterprise Servers in a Cluster Environment.....	266
Review Questions.....	271
<b>Part IV: Appendixes.....</b>	<b>272</b>
Appendix List.....	272
.....	272
<b>Appendix A: Visual Basic .NET Reference Guide.....</b>	<b>273</b>
Overview.....	273
Variables.....	273
Declaration Levels.....	273
Declaring Data Types.....	274
Declaring Scope.....	274
Declaring Lifetime.....	274
Declaring Accessibility.....	274

# Table of Contents

## Appendix A: Visual Basic .NET Reference Guide

Object Variable Declaration.....	274
Variable Assignment.....	275
Data Types.....	275
Operators and Order of Precedence.....	276
Control Flow.....	277
If...Then...Else Statements.....	277
Select...Case Statements.....	278
Loop Structures.....	278
Object-Oriented Programming.....	280
Encapsulation, Inheritance, and Polymorphism.....	280
Overloading, Overriding, and Shadowing.....	280
What Is an Object?.....	281
Delegates and Events.....	282
Events and Event Handlers.....	282
Delegates and the AddressOf Operator.....	283
Error Handling.....	283
Introduction to Exception Handling.....	283
Structured Exception Handling.....	284
Unstructured Exception Handling.....	286

## Appendix B: The Role of Visual Studio .NET..... **288**

Overview.....	288
Visual Studio .NET Professional Edition.....	288
Applications.....	288
Languages.....	289
Development Tools and Environments.....	289
Database Applications.....	290
Visual Studio .NET Enterprise Developer Edition.....	290
Database Applications.....	290
Enterprise Tools.....	291
Server Technologies.....	291
Visual Studio .NET Enterprise Architect Edition.....	291
Database Applications.....	291
Enterprise Tools.....	292
Summary.....	292

## List of Figures..... **293**

Chapter 1: Introduction to the .NET Framework.....	293
Chapter 2: .NET Business Solutions.....	293
Chapter 3: Role of .NET Enterprise Servers.....	293
Chapter 4: .NET Services for the Development Environment.....	293
Chapter 5: XML Integration with .NET Servers.....	293
Chapter 6: Building .NET Components.....	293
Chapter 7: Exchange Server.....	294
Chapter 8: SQL Server 2000.....	294
Chapter 9: Application Center 2000.....	294
Chapter 10: Commerce Server.....	294
Chapter 11: Content Management Server.....	295
Chapter 12: BizTalk Server.....	295

# Table of Contents

## List of Figures

Chapter 13: SharePoint Portal Server.....	295
Chapter 14: Internet Security and Acceleration Server.....	295
Chapter 15: Web Services with .NET.....	296
Chapter 16: Building Enterprise Web Farms.....	296
Chapter 17: Data Warehousing.....	296
Chapter 18: Clustering .NET Servers.....	296

## List of Tables.....**297**

Chapter 3: Role of .NET Enterprise Servers.....	297
Chapter 8: SQL Server 2000.....	297
Chapter 10: Commerce Server.....	297
Chapter 13: SharePoint Portal Server.....	297
Chapter 14: Internet Security and Acceleration Server.....	297
Chapter 18: Clustering .NET Servers.....	297
Appendix A: Visual Basic .NET Reference Guide.....	297