

# Contents

<b>Introduction</b>	<b>1</b>
Virtualization for a Smarter Planet	1
The Organization of this Book	4
<b>1 : How Virtualization Will Save IT</b>	<b>5</b>
The Current IT Crisis	7
The Power of Virtualization	11
Progressive Advances in IT Virtualization	14
New Challenges Introduced by Virtualization	26
Server Virtualization Products	31
Cloud Computing: The Next Phase in IT	40
Summary	44
<b>2 : Why Virtualization Matters for Green Data Centers</b>	<b>45</b>
Opportunities Abound for the Greening of IT	47
IBM Data Center Expertise and “Big Green”	49
New Models for Efficient IT Delivery	50
The Five Building Blocks of Green Data Centers	55
Data Center Transformation: A Global Case Study	59
Why Virtualization Is Key for Green IT and Data Center Transformations	61
Summary	63
<b>3 : The Lean Transformation System</b>	<b>65</b>
Lean History: The Toyota Production System	66

How Lean Methodologies Fit into the Field of IT	68
The Elements of a Sustainable Lean Transformation	69
Value Streams and Waste	72
Lean Levers	78
Summary	84
<b>4 : A Template for Virtualization Patterns</b>	<b>85</b>
Elements of a Well-Documented Pattern	86
The Pattern Specification	86
A Sample Pattern	89
Classifying Patterns Along the Lean Levers	94
Example of Lean Levers in an IT Pattern	97
Summary	99
<b>5 : Segmenting Complexity</b>	<b>101</b>
Barriers to Cost-Effective Virtualization	101
Scenario	103
The Segmenting Complexity Pattern	106
Determining Individual Transformations	110
Grouping Transformations	120
Cost Analysis	125
Summary	129
<b>6 : Redistributing Activities</b>	<b>131</b>
The Client Scenario	131
The Redistribute Activities Pattern	133
Summary	147
<b>7 : Pooled Resources</b>	<b>149</b>
The Value of Pooled Resources	149
The Client Scenario	150
The Pooled Resources Pattern	151
Summary	163
<b>8 : Flexible Resource Balancing</b>	<b>165</b>
Client Scenario	165
The Flexible Resource Balancing Pattern	165
Summary	179

<b>9 : Reducing Incoming Hardware Infrastructure and Work</b>	<b>181</b>
The Client Scenario	182
The Reducing Incoming Hardware Infrastructure and Work Pattern	182
HRM for Processing a Hardware Request	194
Summary	196
<b>10 : Reducing Non-Value-Added Work</b>	<b>197</b>
Client Scenario	198
The Reduce Non-Value-Added Work Pattern	198
VMware Study Findings	208
Summary	214
<b>11 : Standard Operations</b>	<b>215</b>
Objectives Addressed by This Pattern	216
The Standard Operations Pattern	216
Summary	229
<b>12 : Virtualization Transformation Deployment</b>	<b>231</b>
The Planning Phase	231
The Diagnostic Phase	236
The Future State Design Phase	237
The Implementation Phase	237
Summary	240
<b>13 : Developing the Business Case for Virtualization</b>	<b>241</b>
Business Case Fundamentals	242
Business Cases for Virtualization	251
Summary	255
<b>A : IBM’s Integrated Virtualization Management Toolset</b>	<b>257</b>
IBM Systems Director	257
Tivoli Solutions	260
<b>B : VMware’s Virtualization Management Toolset</b>	<b>265</b>
Virtualization Management Solutions from VMware	265
<b>Index</b>	<b>267</b>