

Contents

ix	List of figures
xvii	Foreword
xix	Preface
xxiii	Acknowledgments

Part I: Understanding the GIS software technology

3	Chapter 1	System design process
	6	System architecture design for GIS
	8	Why we do planning
	9	Why system architecture design is important
	11	What is the system design process?
	15	Success with GIS
	23	Why use capacity planning tools?
	23	Planning for success
25	Chapter 2	GIS software technology
	27	Esri software evolution
	30	GIS technology alternatives
	30	GIS configuration alternatives
	32	Expanding GIS technology trends
	38	Esri product family
	50	GIS technology today
	50	GIS software selection
	52	Selecting the right technical solution
53	Chapter 3	Software performance
	54	Programming and performance
	55	Technology is changing GIS user productivity
	58	Capacity planning workflow recipe
	59	Map display performance
	66	Selecting the right image resolution
	67	Selecting the right image output format
	71	ArcGIS Server cache: The performance edge
	72	Providing the right data source
	73	Data source performance parameters
	73	ArcGIS Server terminology and tuning
	80	Selecting the right physical memory
	81	Building the data cache
	84	Selecting the right technology: A case study

91	Chapter 4	GIS data administration
	93	GIS spatial data architecture patterns
	94	Ways to manage and access spatial data
	97	Ways to move spatial data
	104	Distributed data architecture strategies
	106	GIS raster imagery data architecture
	107	ArcGIS imagery access patterns
	109	Enterprise GIS data management
	110	Storage architecture strategies
	112	Ways to protect spatial data
	114	Ways to back up spatial data
	115	Data management overview
Part II: Understanding the IT infrastructure		
119	Chapter 5	Network communications
	121	Network components and GIS operations
	124	GIS communication protocols
	126	Network communications performance
	130	Shared network capacity
	131	Network configuration guidelines
	134	Enterprise system architecture
141	Chapter 6	GIS product architecture
	142	ArcGIS system software architecture
	144	ArcSDE geodatabase
	150	ArcGIS Desktop client/server configurations
	156	Web services architecture
	160	Web platform configuration strategies
	170	Selecting the right architecture
171	Chapter 7	Platform performance
	172	Platform performance baselines
	173	User productivity
	176	Measuring platform performance
	180	Impact of platform performance
	187	ArcGIS Desktop platform selection
	189	Server platform sizing models
	190	Windows Terminal Server platform sizing
	190	GIS data server platform sizing
	194	Web mapping server platform sizing
	199	Platform selection criteria
201	Chapter 8	Information security
	203	Selecting the right security solution
	204	Security and control
	206	Enterprise security strategies
	207	Web firewall configuration alternatives

Part III: Putting it all together

- 215 **Chapter 9 Performance fundamentals**
- 217 Learning from experience
 - 218 What is capacity planning?
 - 219 What is system performance?
 - 221 System performance fundamentals
 - 226 Platform capacity
 - 227 Computing platform service times
 - 228 Display response time
 - 228 Transaction queue time
 - 231 Workflow Performance Summary
 - 232 Capacity Planning Test tab
 - 235 Capacity planning models
- 237 **Chapter 10 Capacity Planning Tool**
- 240 System design process
 - 246 GIS software technology
 - 250 Software performance
 - 251 Network communications
 - 256 GIS product architecture
 - 258 Platform performance
 - 262 Performance fundamentals
 - 264 City of Portland demos
 - 265 Concluding remarks
- 267 **Chapter 11 City of Rome case study**
- 268 GIS business needs assessment
 - 270 City of Rome user requirements analysis
 - 274 Build on existing IT investments
 - 275 Project workflow performance targets
 - 278 Hardware platform candidates
 - 280 Year 1 capacity planning
 - 287 Year 2 capacity planning
 - 292 Choosing a system configuration
- 293 **Chapter 12 System implementation**
- 294 GIS staffing
 - 296 System architecture deployment strategy
 - 298 Data center architecture
 - 299 Virtual desktop and server technology
 - 300 Technology product life cycle
 - 301 System testing
 - 302 Systems integration management
 - 302 Performance monitoring
 - 303 Performance validation
 - 303 System tuning
 - 304 Managing technology change

Appendixes

- 307 Appendix A: Organizational GIS evolution
- 313 Appendix B: ArcSDE geodatabase performance
- 315 Appendix C: GIS file data source performance characteristics
- 319 Appendix D: Building high-performance web applications
- 323 Appendix E: Software performance history
- 329 Appendix F: Definitions of security terms
- 331 Acronyms and glossary
- 345 Index
- 357 About the DVD