Introduction

IT organizations face a number of increasing pressures to increase productivity, improve application performance, provide infrastructure conducive to global collaboration, improve posture toward data protection and compliance, and minimize costs across the board. These pressures come largely as a result of initiatives to increase availability and resiliency in times of an "always on" business driven by the Internet, natural disasters, acts of war, and increasing competition. The challenge is that the corporate workforce continues to become more global, and the characteristics of WANs are dramatically different from those of LANs. Simply consolidating infrastructure provides better support for global collaboration, cost reduction, and better posture toward data protection and compliance, but does so at the cost of performance and productivity. Adding servers to the infrastructure potentially can improve performance but does so at the cost of capital and operational expenditure, data protection, and complexity.

Application acceleration and WAN optimization are powerful technologies incorporated into accelerator solutions that are designed to help IT professionals intelligently deploy, in central managed facilities, an infrastructure that provides performance metrics for remote users that foster productivity, job satisfaction, and global collaboration. Accelerator solutions enable high-performance access to remote information such as files, content, video, rich media, applications, and more. These solutions can help IT organizations satisfy requirements from users, management, and regulatory bodies simultaneously.

Goals and Methods

The application acceleration and WAN optimization market is becoming increasingly relevant in today's IT climate because of the immediate and tangible benefits that such solutions provide to IT organizations. With such a dynamic market being born before our eyes, the authors realize that a book dedicated to defining the underlying and foundational technologies found in these solutions is necessary to better equip corporations with the information needed to not only understand product capabilities but also make informed decisions. *Application Acceleration and WAN Optimization Fundamentals* outlines the use cases and foundational technologies that are so vital to application acceleration and WAN optimization solutions.

After reading this book, you will understand why application acceleration and WAN optimization solutions are relevant and what business value they provide. You will also understand what techniques are employed by the majority of the solutions available today, and have insight into how many of these solutions are designed. While each vendor's implementation is unique, and this book simply cannot scale to discuss all of the implementations, the concept discussed in this book and purpose discussed of each implementation remains constant, as an example of how the foundational components are designed and interact with other components within the solution.

Who Should Read This Book?

This book is intended for anyone who is interested in learning about the foundational components of application acceleration and WAN optimization, including IT directors, network managers, application infrastructure engineers, and systems engineers. It is assumed that you have a high-level understanding of the end-to-end application architectures and protocols found within many enterprise and commercial companies. It is also assumed that you understand basic networking principals, including routing, switching, quality of service (QoS), and network monitoring. Unlike other books that dive into the abyss of device- and version-specific implementation guidelines and configurations, this book focuses on the technologies at large, looking at the numerous components that comprise a WAN optimization and application acceleration solution at a technology architecture level.

How This Book Is Organized

Although this book could be read cover to cover, it is designed to be flexible and allow you to easily move between chapters and sections of chapters to cover just the material that you are most interested in.

This book has seven chapters covering the following topics:

■ Chapter 1, "Strategic Information Technology Initiatives," introduces the challenges faced by IT organizations and business at large, setting the tone for the relevance and importance of WAN optimization and application acceleration solutions.

■ Chapter 2, "Barriers to Application Performance," builds upon the first chapter and examines what are the fundamental barriers to application performance in WAN environments and the need for a holistic solution to application performance.

■ Chapter 3, "Aligning Network Resources with Business Priority," discusses how the network is the platform that touches all aspects of an organization and why it serves as the foundation for an infrastructure conducive to application performance.

■ Chapter 4, "Overcoming Application-Specific Barriers," discusses how accelerators can work within the context of specific application protocols to improve user performance and efficiency over the WAN while minimizing bandwidth consumption. These topics, along with those presented in Chapter 5, are commonly viewed together as application acceleration.

■ Chapter 5, "Content Delivery Networks," examines how accelerators can be leveraged to ensure that the right information is available in the right location at the right time through intelligent acquisition and distribution of information among accelerators throughout the network.

■ Chapter 6, "Overcoming Transport and Link Capacity Limitations," examines application-agnostic techniques for improving application performance and efficiency over the WAN through integration at the transport layer. These topics include compression, data suppression, and transport protocol optimization and are commonly referred to as WAN optimization.

■ Chapter 7, "Examining Accelerator Technology Scenarios," shows four scenarios of how WAN optimization and application acceleration solutions have provided benefit to four customer environments.

The book concludes with two appendixes:

■ Appendix A, "Common Ports and Assigned Applications," serves as a quick reference guide for ports that are commonly used in today's diverse network environment.

■ Appendix B, "Ten Places for More Information," provides links to external locations on the Internet to help you further your knowledge on the topics discussed in this work.