- I've heard that SNMP is insecure. Is this true?
- Do any of my devices support SNMP? If so, how can I tell if they are configured properly?
- How do I go about gathering SNMP information from a device?
- I have a limited budget for purchasing network-management software. What sort of free/open source software is available?
- Is there an SNMP Perl module that I can use to write cool scripts?

This book answers all these questions and more. Our goal is to demystify SNMP and make it more accessible to a wider range of users.

Audience for This Book

This book is intended for system and network administrators who could benefit from using SNMP to manage their equipment but who have little or no experience with SNMP or SNMP applications. In our experience almost any network, no matter how small, can benefit from using SNMP. If you're a Perl programmer, this book will give you some ideas about how to write scripts that use SNMP to help manage your network. If you're not a Perl user you can use many of the other tools we present, ranging from Net-SNMP (an open source collection of command-line tools) to Hewlett Packard's OpenView (a high-end, high-priced network-management platform).

Organization

Chapter 1 provides a nontechnical overview of network management with SNMP. We introduce the different versions of SNMP as well as the concepts of managers and agents.

Chapter 2 discusses the technical details of SNMP. We look at the Structure of Management Information (SMI) and the Management Information Base (MIB) and discuss how SNMP actually works; i.e., how management information is sent and received over the network.

Chapter 3 helps you to think about strategies for deploying SNMP.

Chapter 4 discusses what it means when a vendor says that its equipment is "SNMP-compatible."

Chapter 5 introduces some of the available network-management software. We discuss the pros and cons of each package and provide pointers to vendors' web sites. We include both commercial and open source packages in the discussion.

Chapter 6 provides a basic understanding of what to expect when installing NMS software by looking at two NMS packages, HP's OpenView and Castle Rock's SNMPc.

Chapter 7 describes how to configure the Windows SNMP agent and several SNMP agents for Unix, including the Net-SNMP agent. To round the chapter out, we discuss how to configure the embedded agents on two network devices: the Cisco SNMP agent and the APC Symetra SNMP agent.

Chapter 8 shows how you can use command-line tools and Perl to gather (poll) SNMP information and change (set) the state of a managed device.

Chapter 9 discusses how to configure OpenView and SNMPc to gather SNMP information via polling. This chapter also discusses RMON configuration on a Cisco router.

Chapter 10 examines how to send and receive traps using command-line tools, Perl, OpenView, and other management applications.

Chapter 11 shows how several popular SNMP agents can be extended. Extensible agents provide end users with a means to extend the operation of an agent without having access to the agent's source code.

Chapter 12 is geared toward Perl-savvy system administrators. We provide Perl scripts that demonstrate how to perform some common system-administration tasks with SNMP.

Chapter 13 introduces one of the most widely used open source SNMP applications, the Multi Router Traffic Grapher (MRTG). MRTG provides network administrators with web-based usage graphs of router interfaces and can be configured to graph many other kinds of data.

Appendix A discusses how to use OpenView to graph input and output octets.

Appendix B discusses how to graph external data with Network Node Manager (NNM), add menu items to NNM, configure user profiles, and use NNM as a centralized communication interface.

Appendix C summarizes the usage of the Net-SNMP command-line tools.

Appendix D provides an authoritative list of the various RFC numbers that pertain to SNMP.

Appendix E is a good summary of the SNMP Perl module used throughout the book.

Appendix F provides a brief introduction to SNMPv3. Two configuration examples are provided: configuring SNMPv3 on a Cisco router and configuring SNMPv3 for Net-SNMP.

Example Programs

All the example programs in this book are available at http://www.oreilly.com/catalog/esnmp/.

Conventions Used in This Book

The following typographical conventions are used in this book:

Italic

Used for commands, object IDs, URLs, filenames, and directory names. It is also used for emphasis and for the first use of technical terms.

Constant width

Used for examples, object definitions, literal values, and datatypes. It is also used to show source code, the contents of files, and the output of commands.

Constant width bold

Used in interactive examples to show commands or text that would be typed literally by the user. It is also used to emphasize when something, usually in source code or file-contents examples, has been added to or changed from a previous example.

Constant width italic

Used for replaceable parameter names in command syntax.

Indicates a tip, suggestion, or general note.

Indicates a warning or caution.

Comments and Questions

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There is a web page for this book, which lists errata, the text of several helpful technical papers, and any additional information. You can access this page at:

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