Chapter 8 – Network Management

Why network management?

- To deal with the administration of large, complex, multiple users, multiple applications and multiple vendors networks!

What is network management?

- Ability to monitor and change the state of network elements (routers, switches, (web) servers, printers, power supplies, modems, databases) and the network itself (traffic)
- Getters (e.g., data rate) and setters (e.g., interface shutdown shutdown)
- Data model of managed information
- Aims at scalability (large number of network elements), automation (alarms) and uniformity (across vendors)

Solutions (not exhaustive)

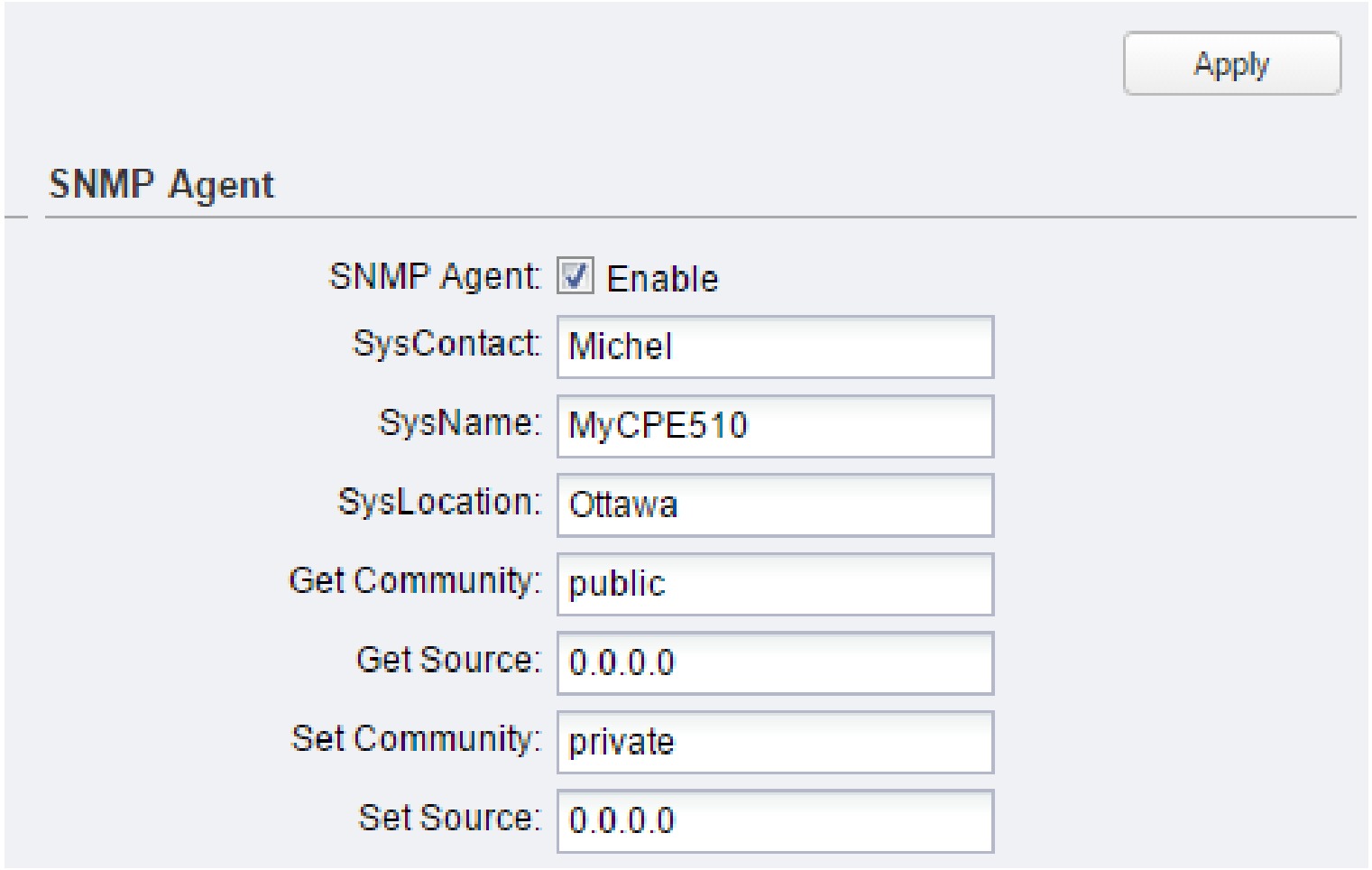
1. Manual : (remote) login
2. Web client and server
3. Simple Network Management Protocol (SNMP v1, 2 and 3)
4. Software Defined Network (SDN)

Simple Network Management Protocol (SNMP)

Key concepts

1. Manager
2. Agent
3. Management information base
4. Network management protocol

Enabling the SNMP Agent

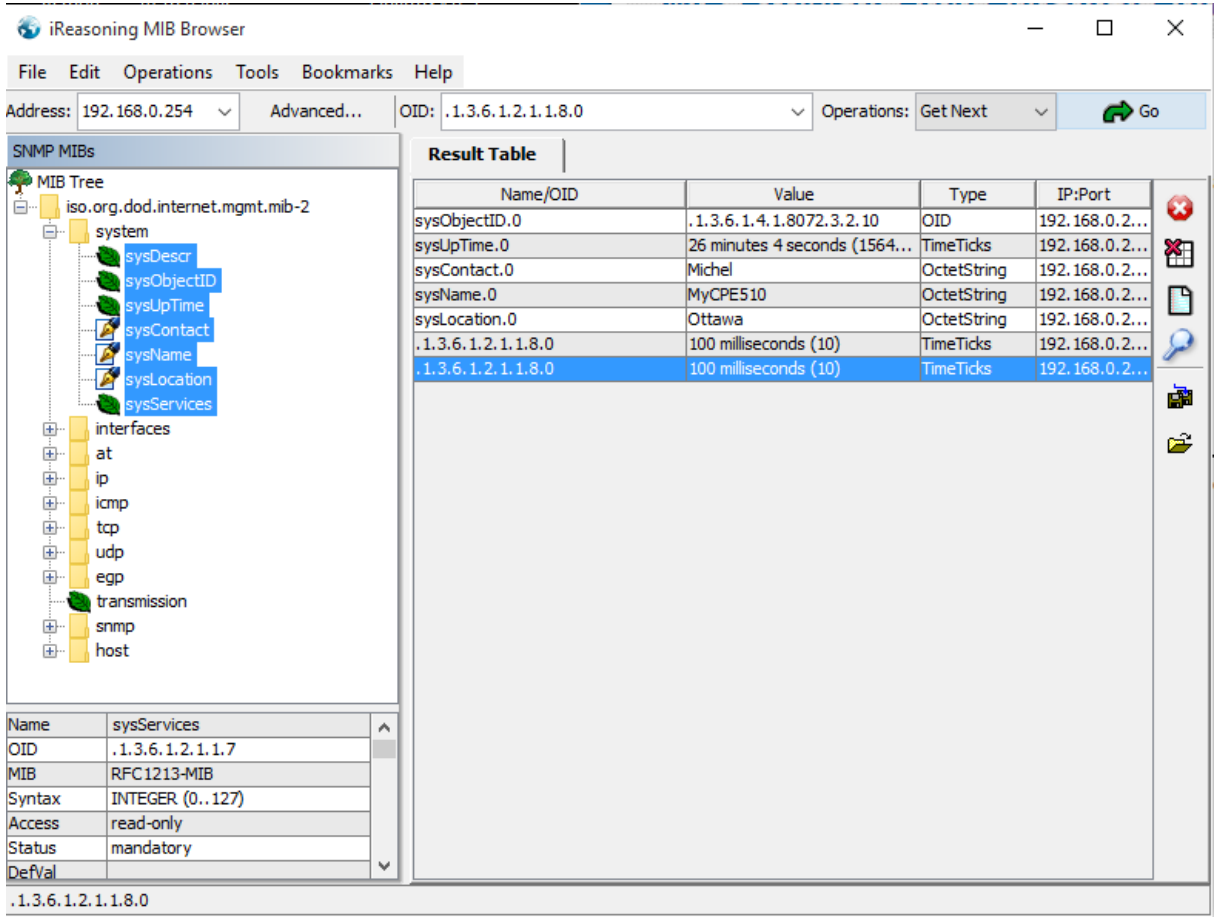


Manager - Command-line interface

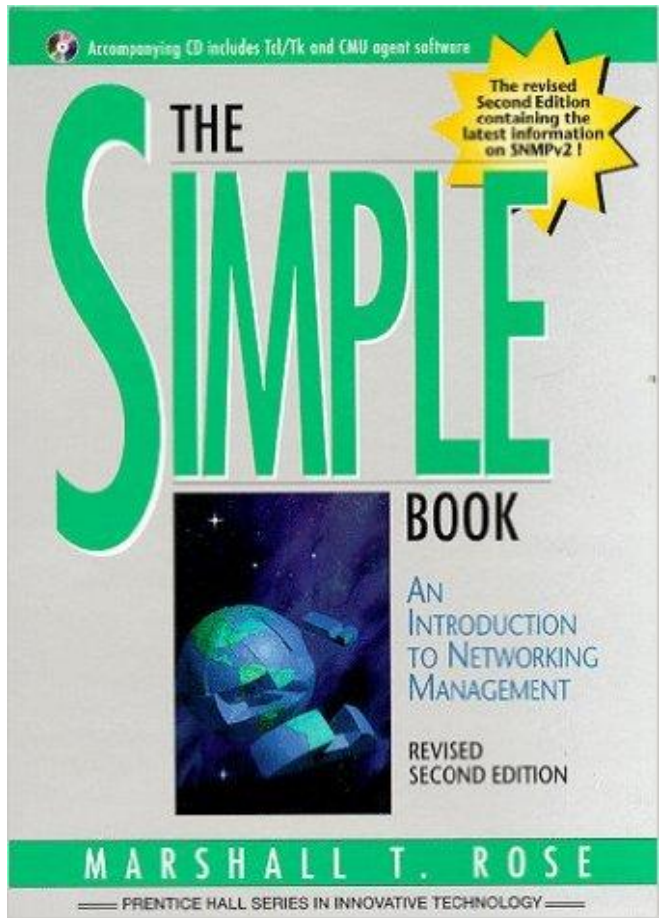
snmpwalk -c public -v 1 192.168.0.254

```
iso.3.6.1.2.1.1.1.0 = STRING: "Linux CPE510 2.6.31 #1 PREEMPT Mon
Dec 14 13:06:33 CST 2015 mips"
iso.3.6.1.2.1.1.2.0 = OID: iso.3.6.1.4.1.8072.3.2.10
iso.3.6.1.2.1.1.3.0 = Timeticks: (66857) 0:11:08.57
iso.3.6.1.2.1.1.4.0 = STRING: "Michel"
iso.3.6.1.2.1.1.5.0 = STRING: "MyCPE510"
iso.3.6.1.2.1.1.6.0 = STRING: "Ottawa"
iso.3.6.1.2.1.1.8.0 = Timeticks: (10) 0:00:00.1
…
```

Manager - MIB Browser

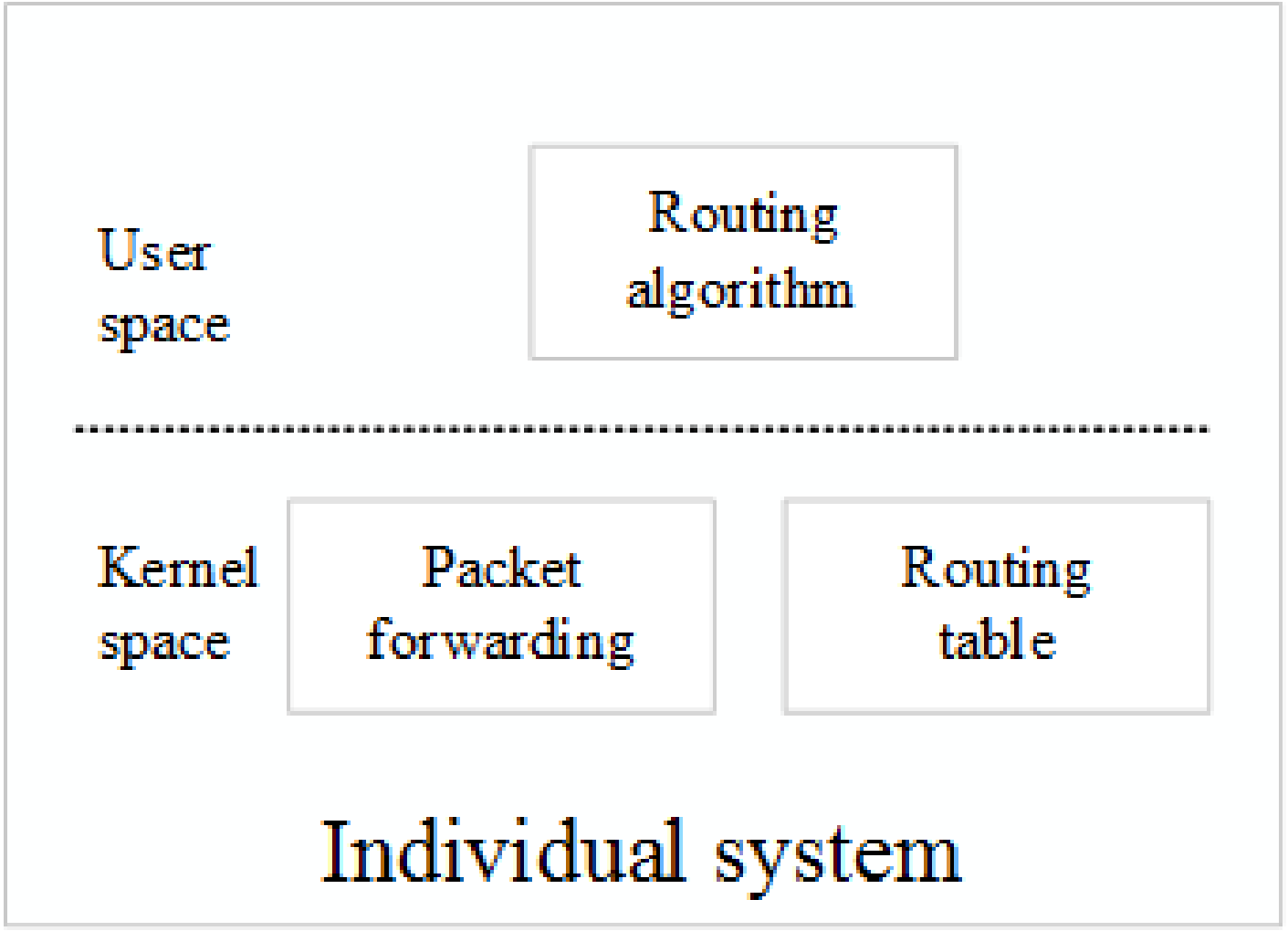



Help for System and Network Administrators
2nd Edition
Essential
SNMP
O'REILLY®
Douglas R. Mauro & Kevin J. Schmidt


Accompanying CD includes Tcl/Tk and CMU agent software
The revised Second Edition containing the latest information on SNMPv2 !
THE
SIMPLE
BOOK
AN INTRODUCTION TO NETWORKING MANAGEMENT
REVISED SECOND EDITION
MARSHALL T. ROSE
PRENTICE HALL SERIES IN INNOVATIVE TECHNOLOGY

Software Defined Network (SDN)

Traditional network architecture



SDN architecture