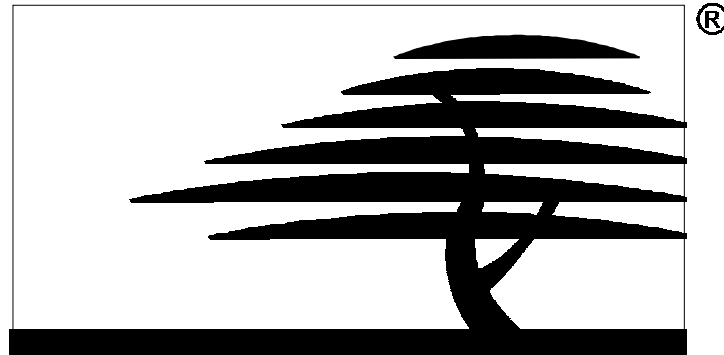




SCO

UnixWare® 7 Network Administration

Transparency Masters

Course Release: 2.0

For Software: UnixWare® 7.1

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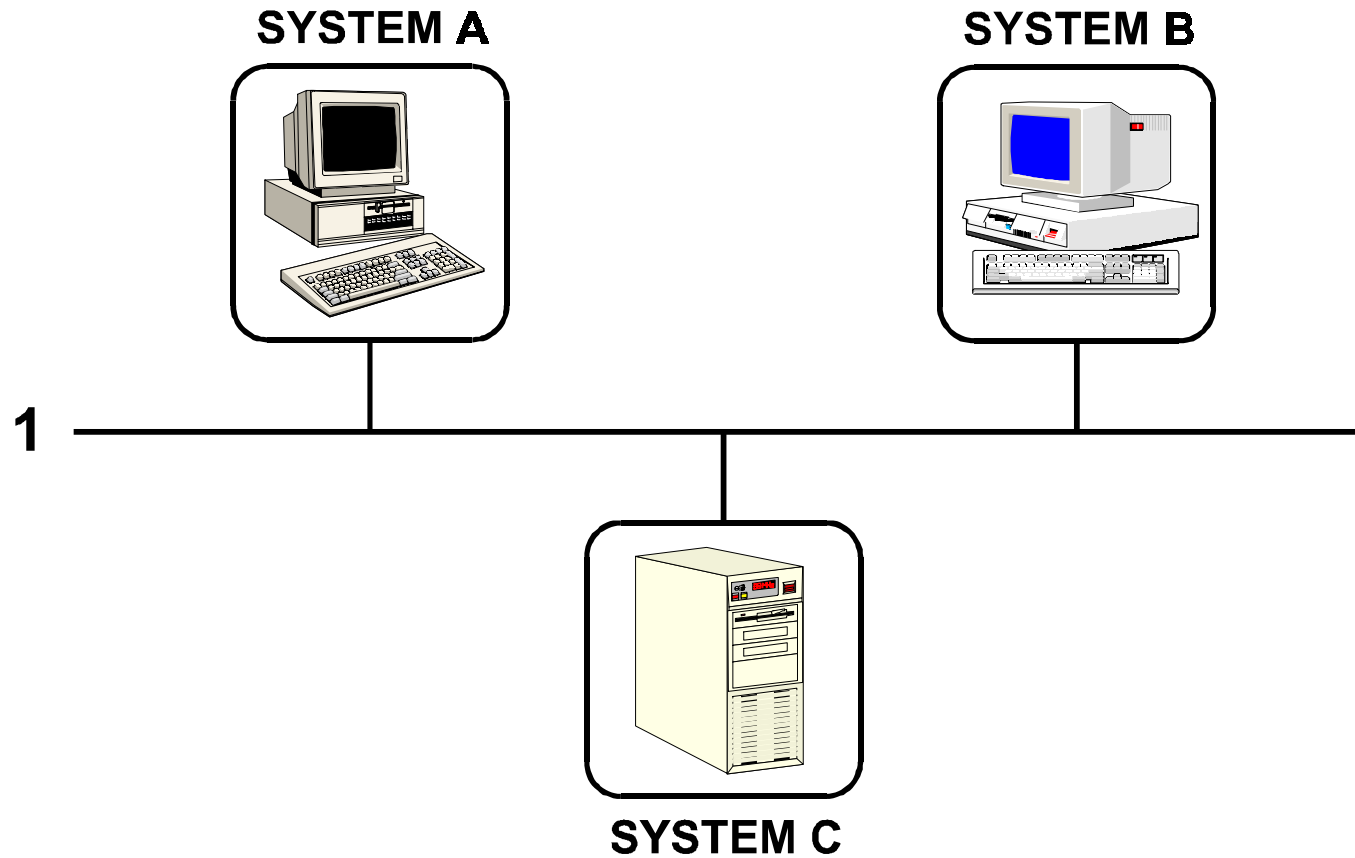
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30 January 1998

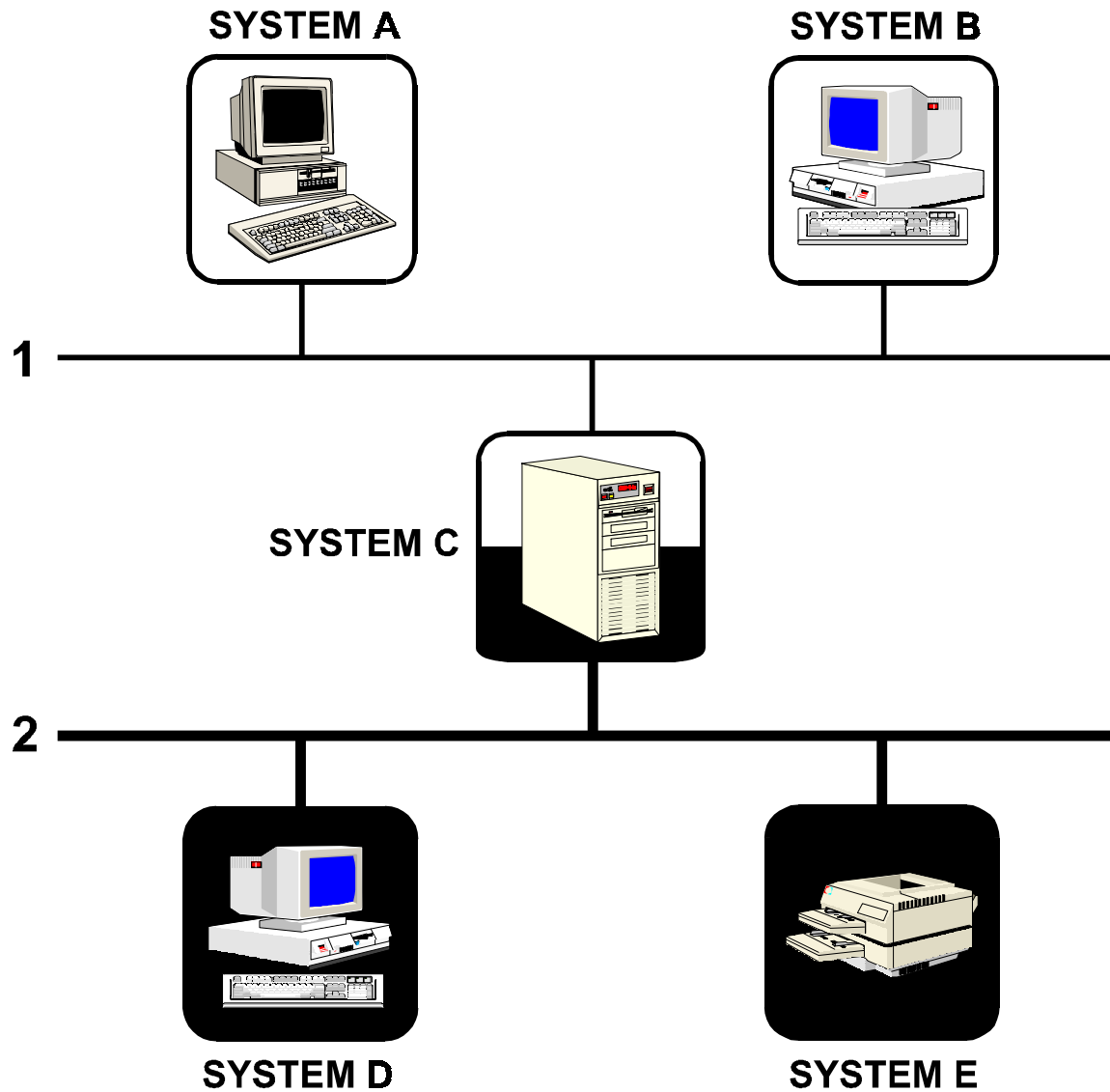
TCP/IP Concepts

- Ethernet hardware addresses
- Software addresses
- Host names and IP addresses
- Routers, bridges, and gateways overview
- Translating IP addresses to hardware addresses
- Protocols and ports
- The TCP/IP protocol stack
- Other LAN hardware addresses

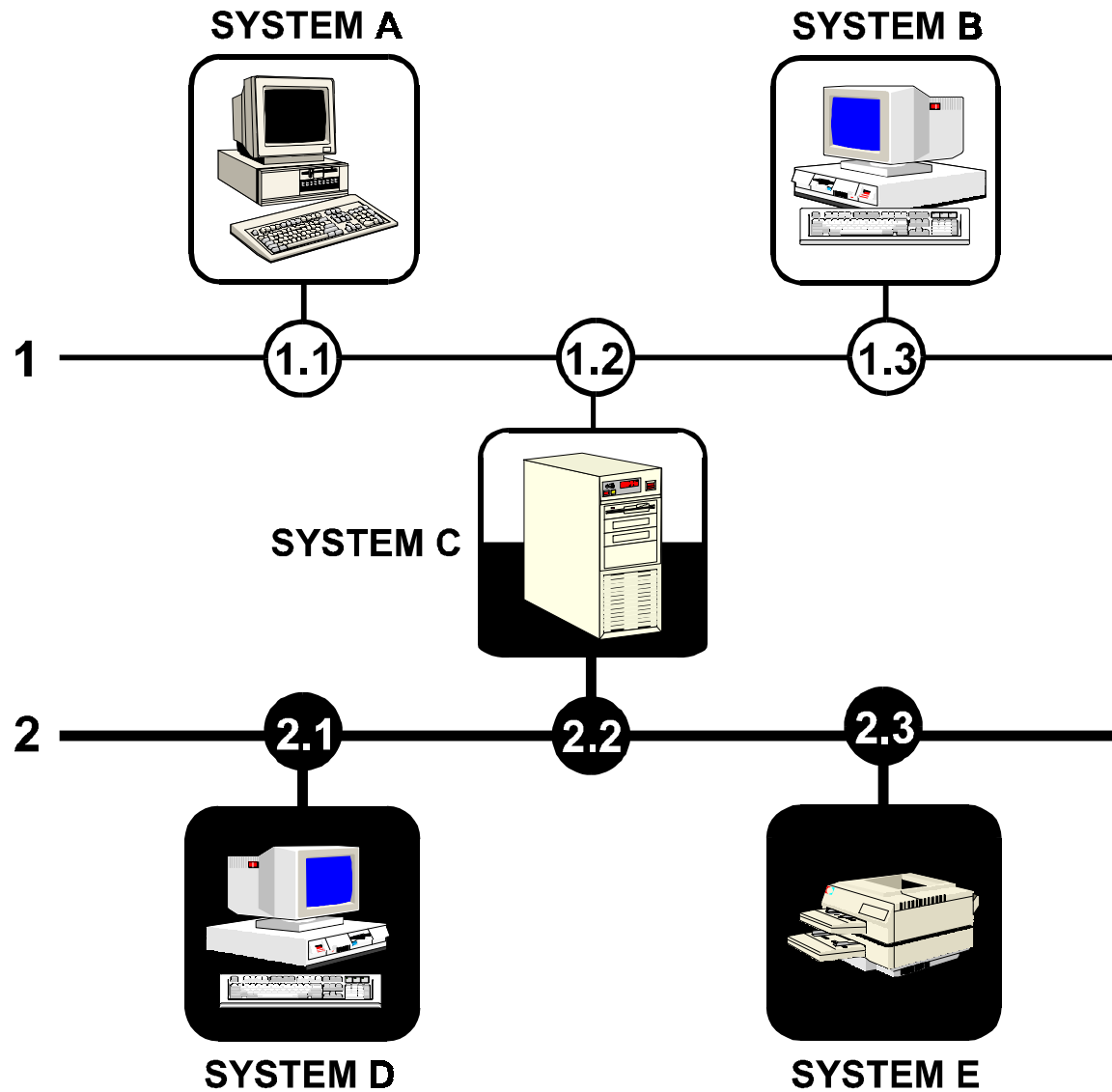
A Simple Single Segment Network



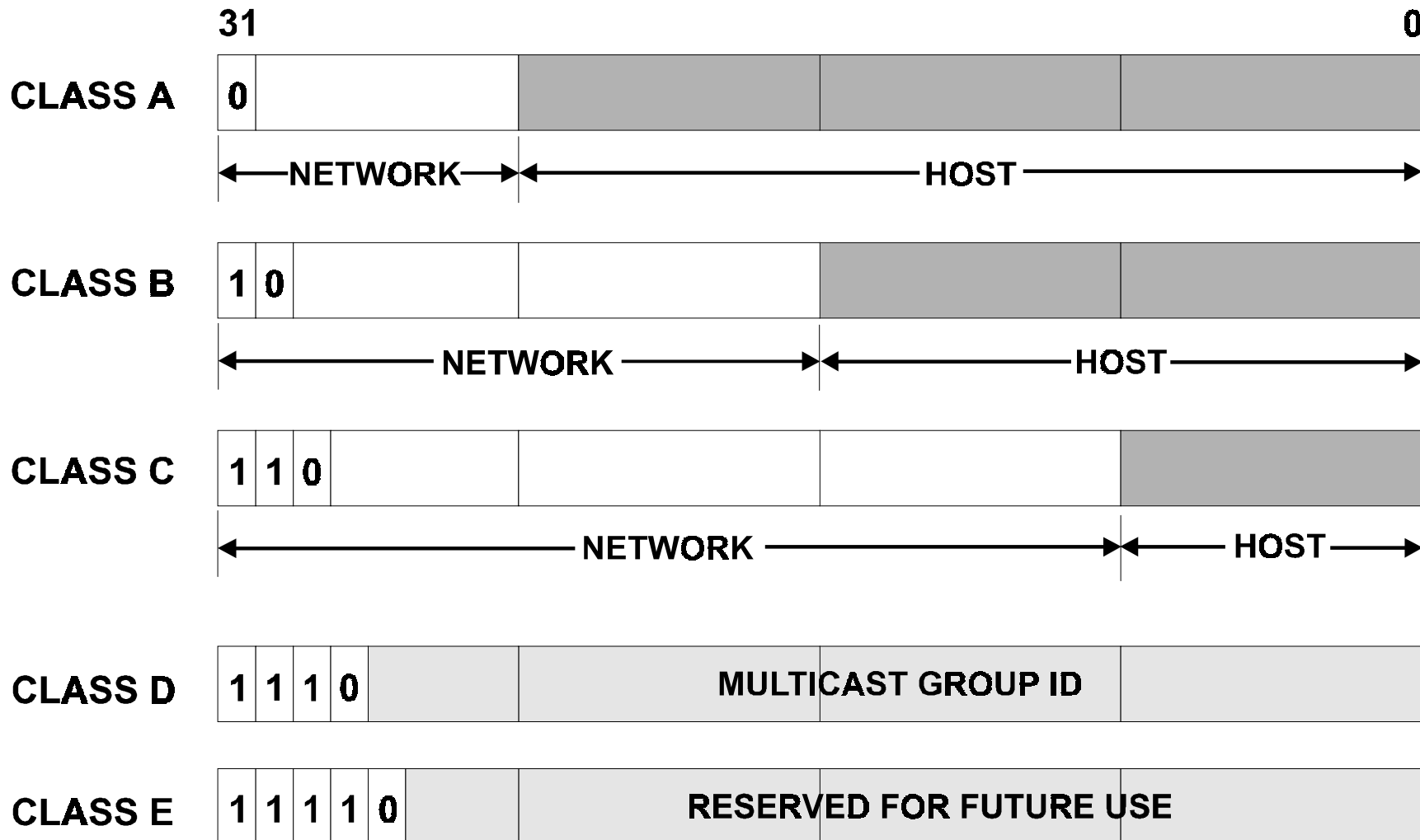
A Multi-segment Network



Network and Host Numbers



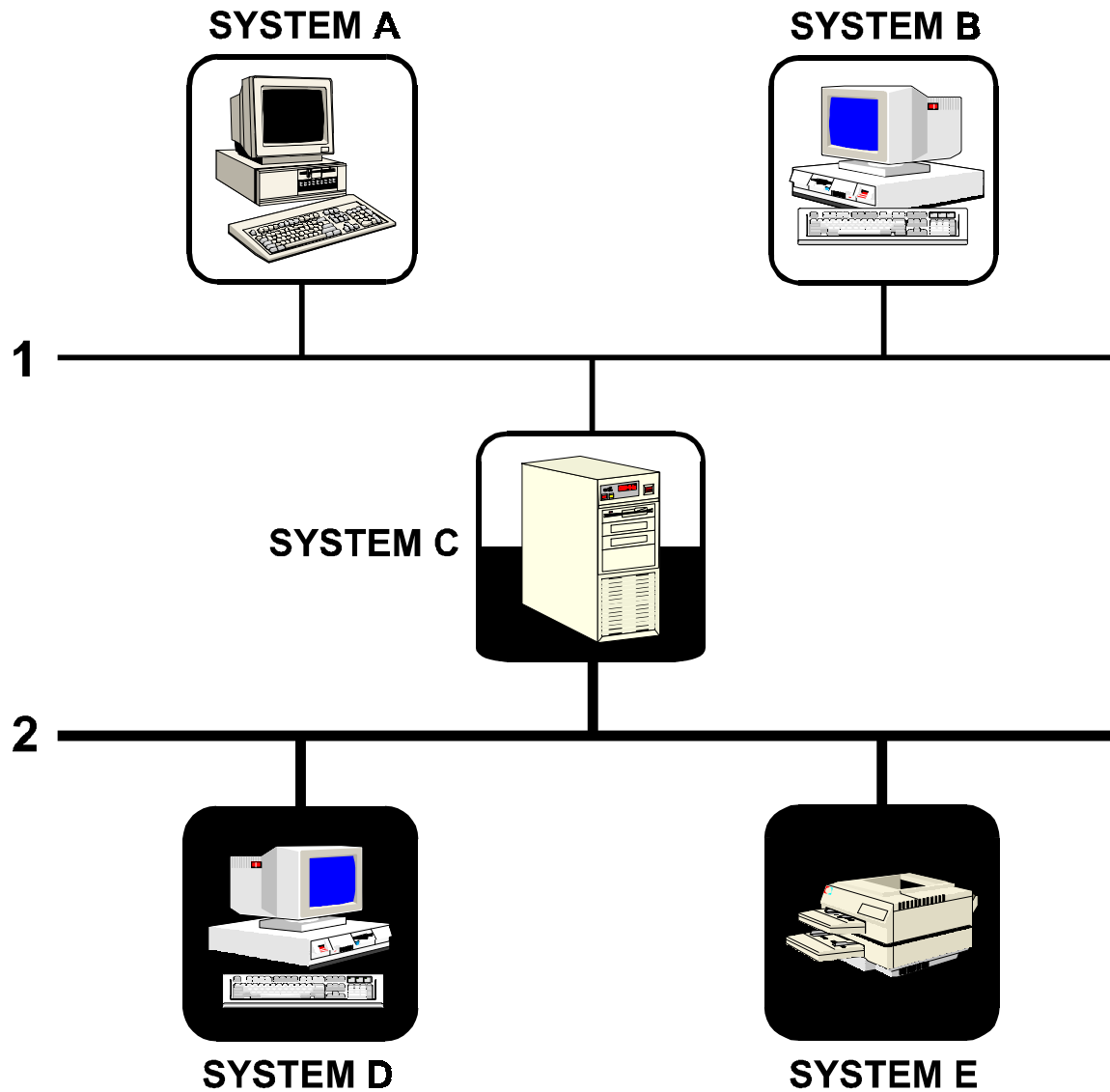
IP Address Classes



Netmasks

	← NETWORK →															← HOST →																
EXAMPLE ADDRESS	1	0	0	1	0	1	1	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1
	150								200								64								7							
NETMASK	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NETWORK ADDRESS	1	0	0	1	0	1	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	150								200								0								0							

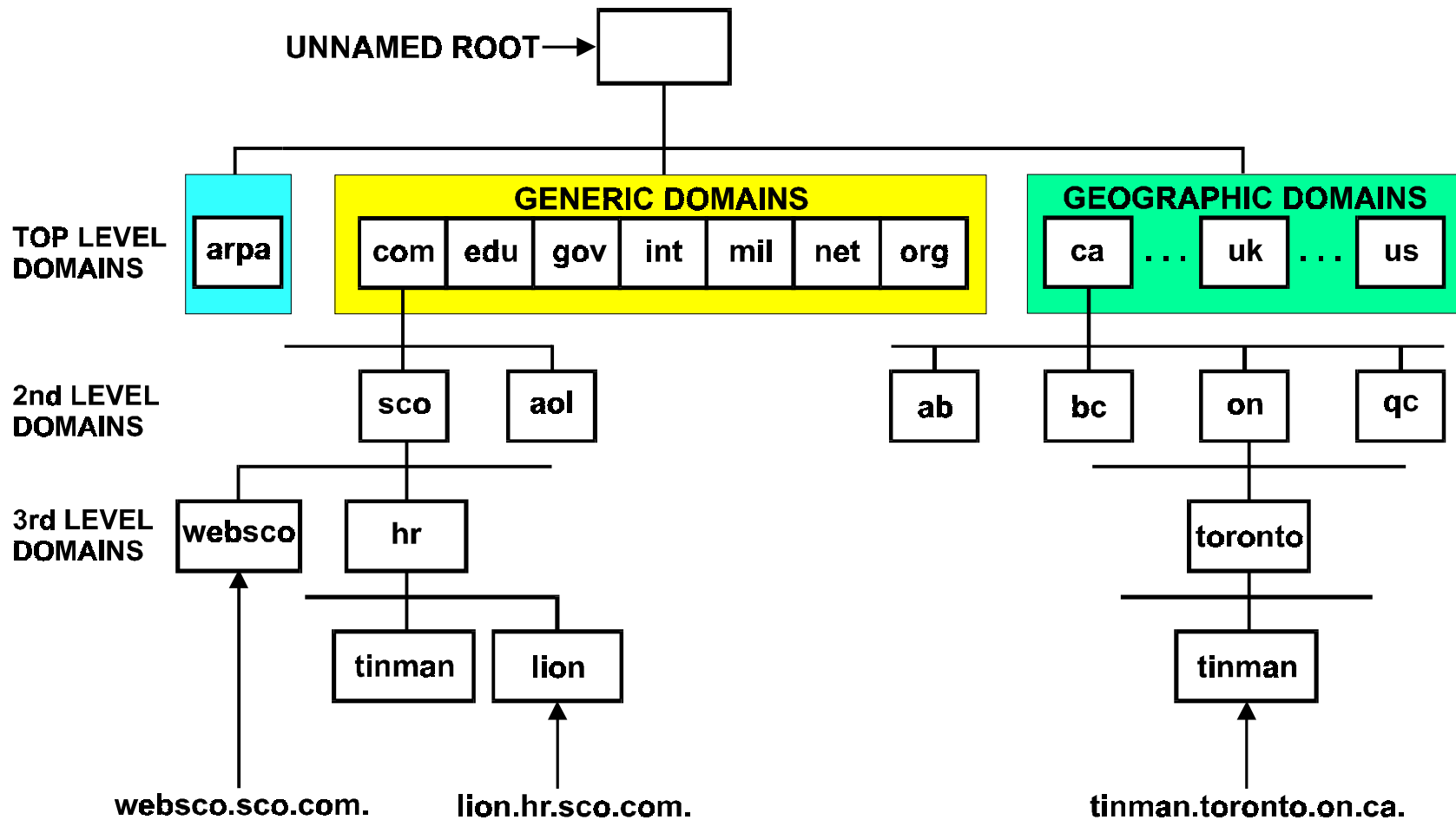
Networks and Routers



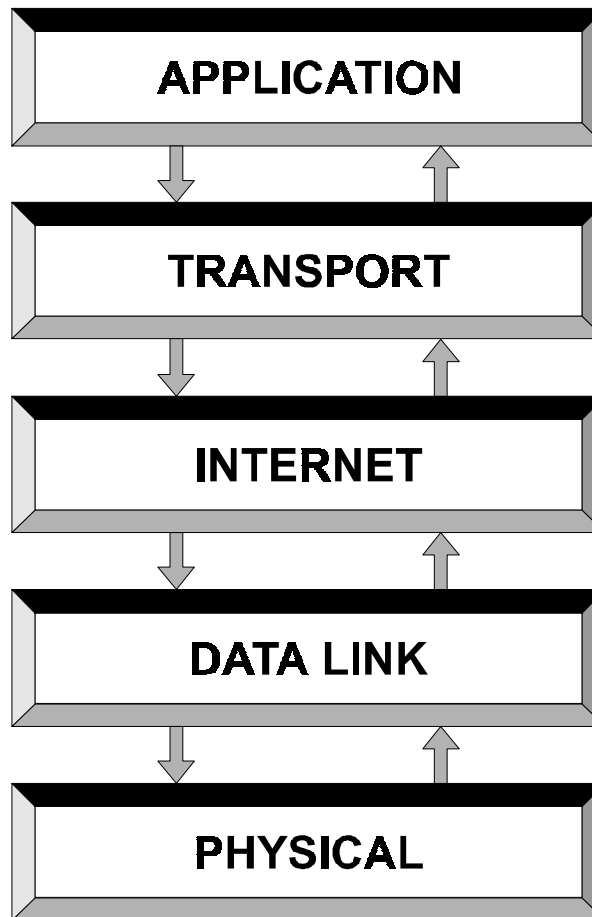
The `/etc/hosts` File

```
$ cat /etc/hosts
#       @(#)hosts          6.1 8/21/93 - STREAMware TCP/IP  source
#       SCCS IDENTIFICATION
127.0.0.1      localhost
132.147.193.67 cousin.pdev.sco.com cousin
132.147.65.216 cheydev.pdev.sco.com cheydev
132.147.210.9  websco.sco.com websco www.sco.com
```

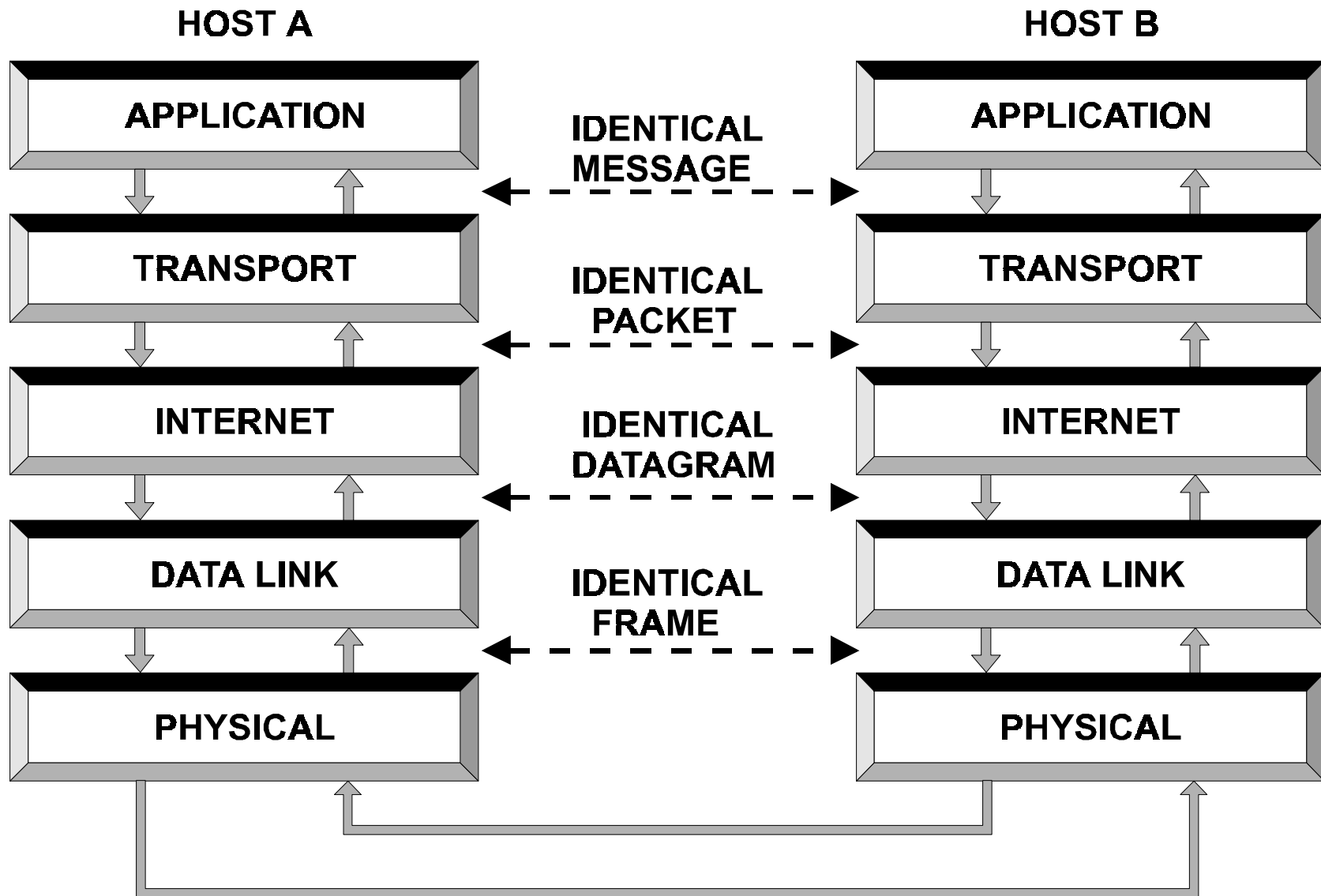
Domain Name Space



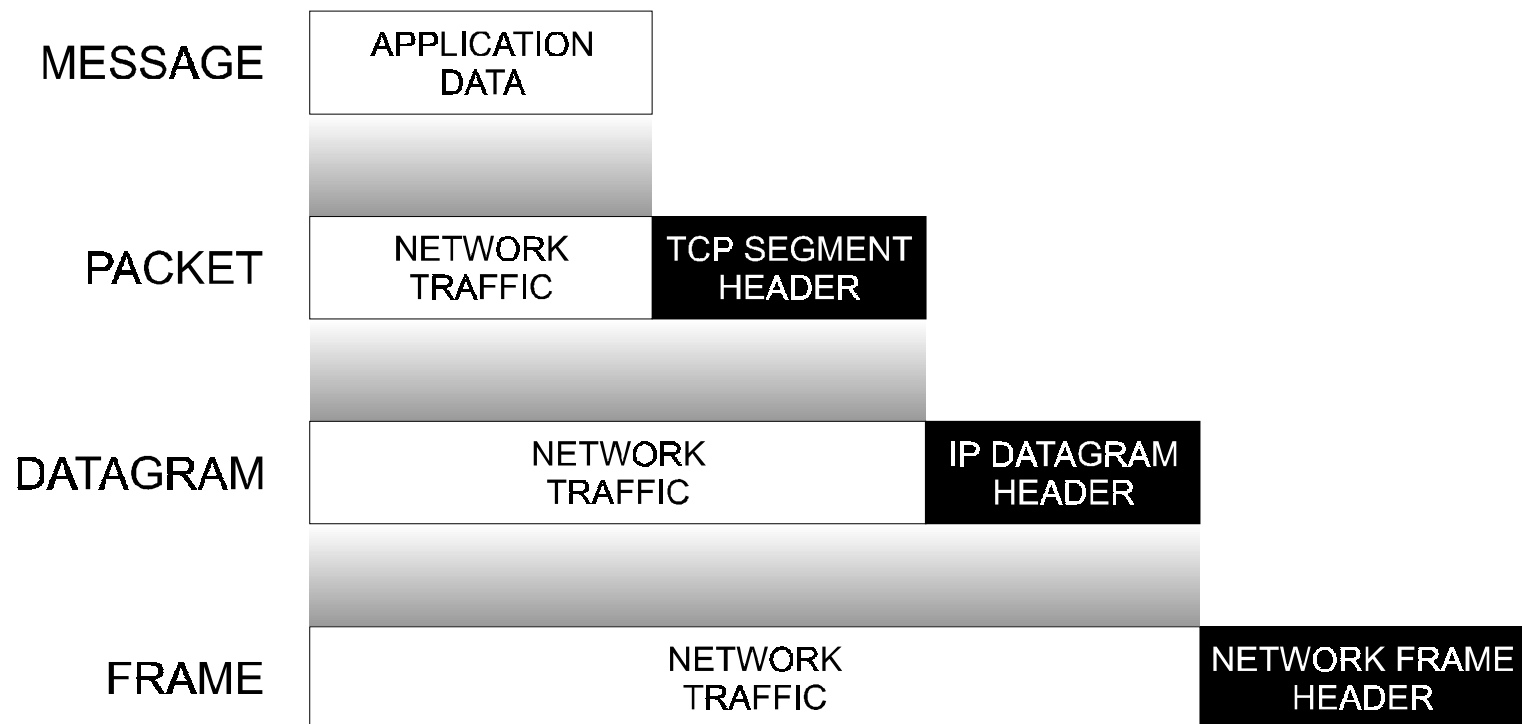
TCP/IP Model Layers



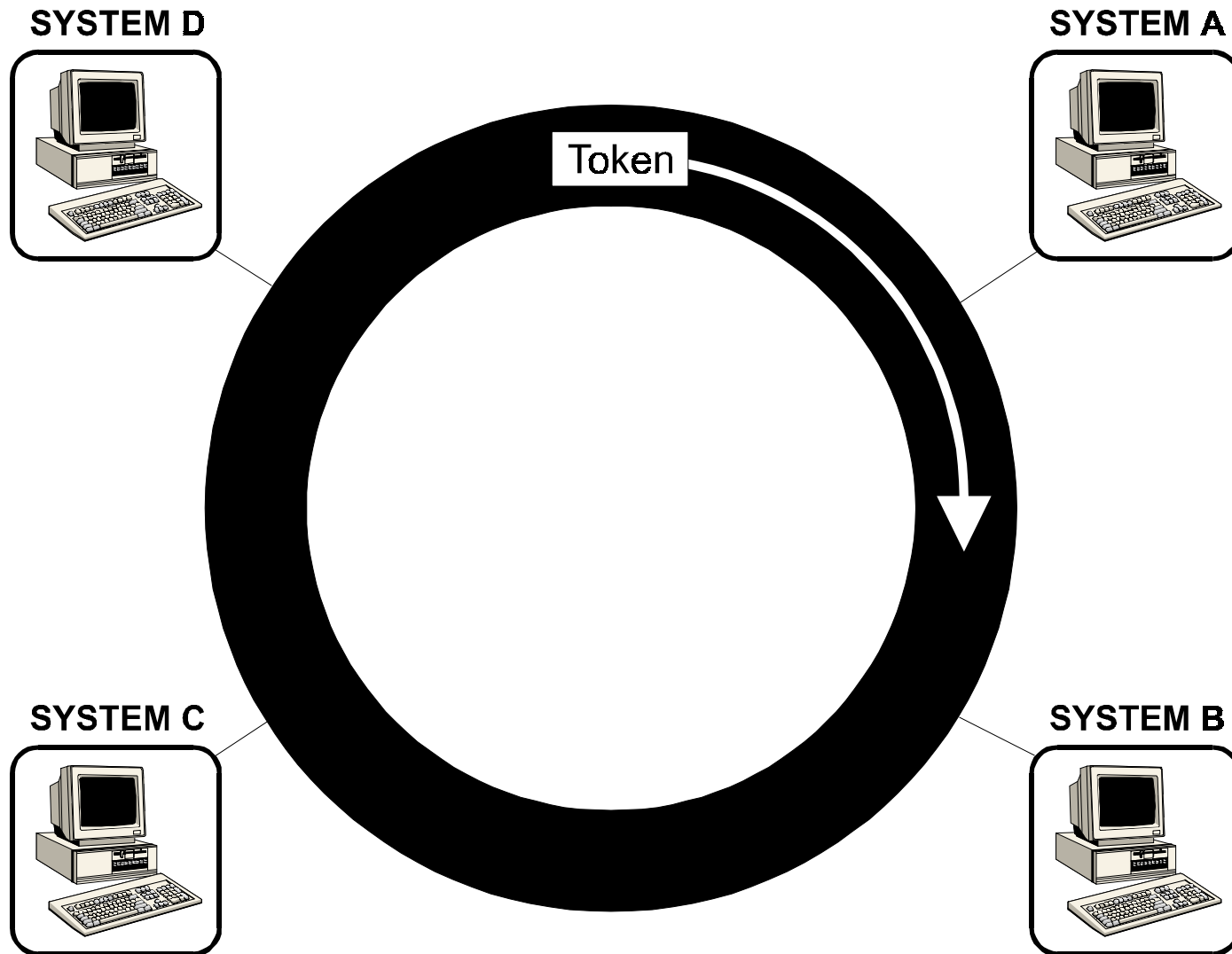
Transmission Between the Layers



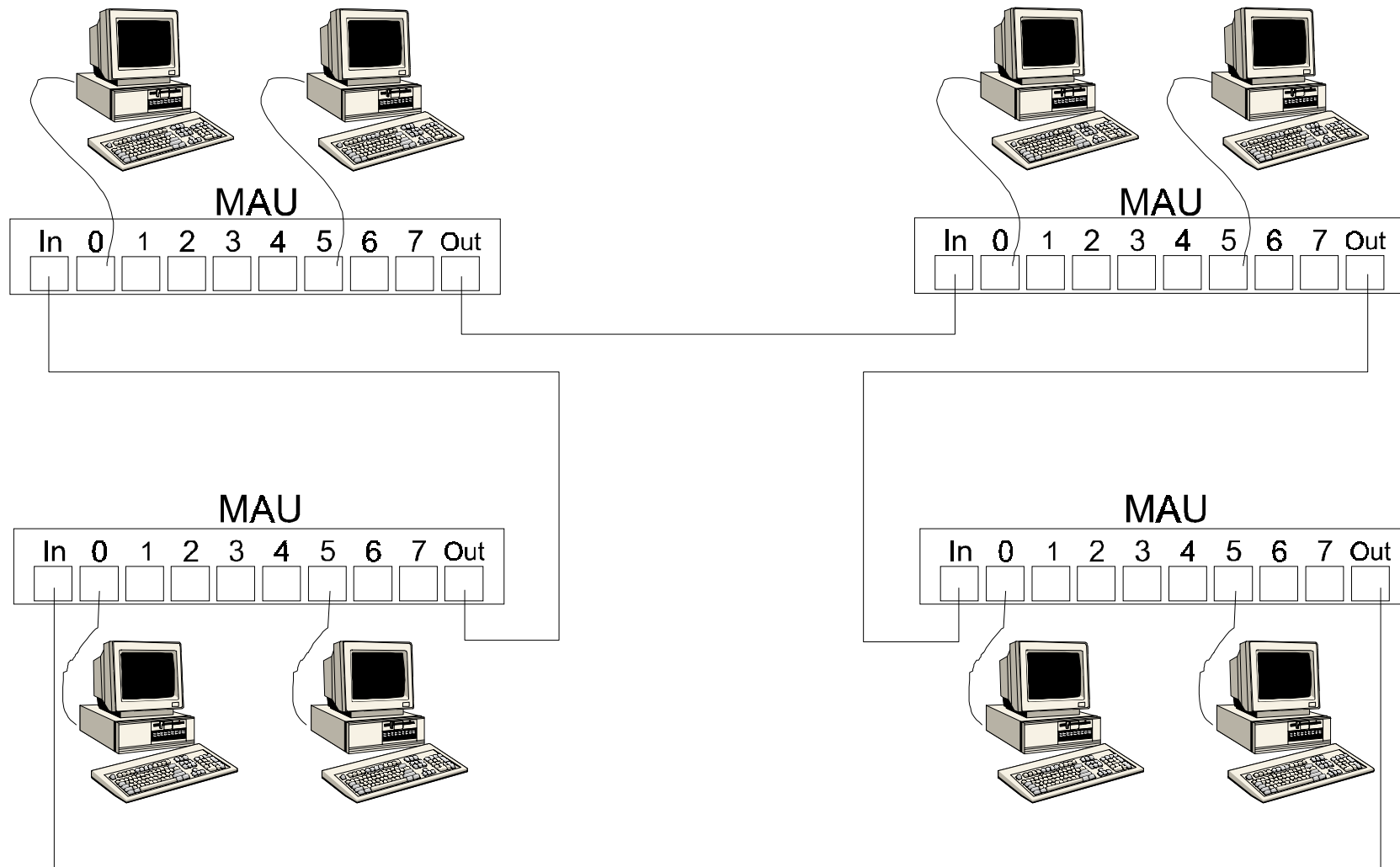
Data Encapsulation



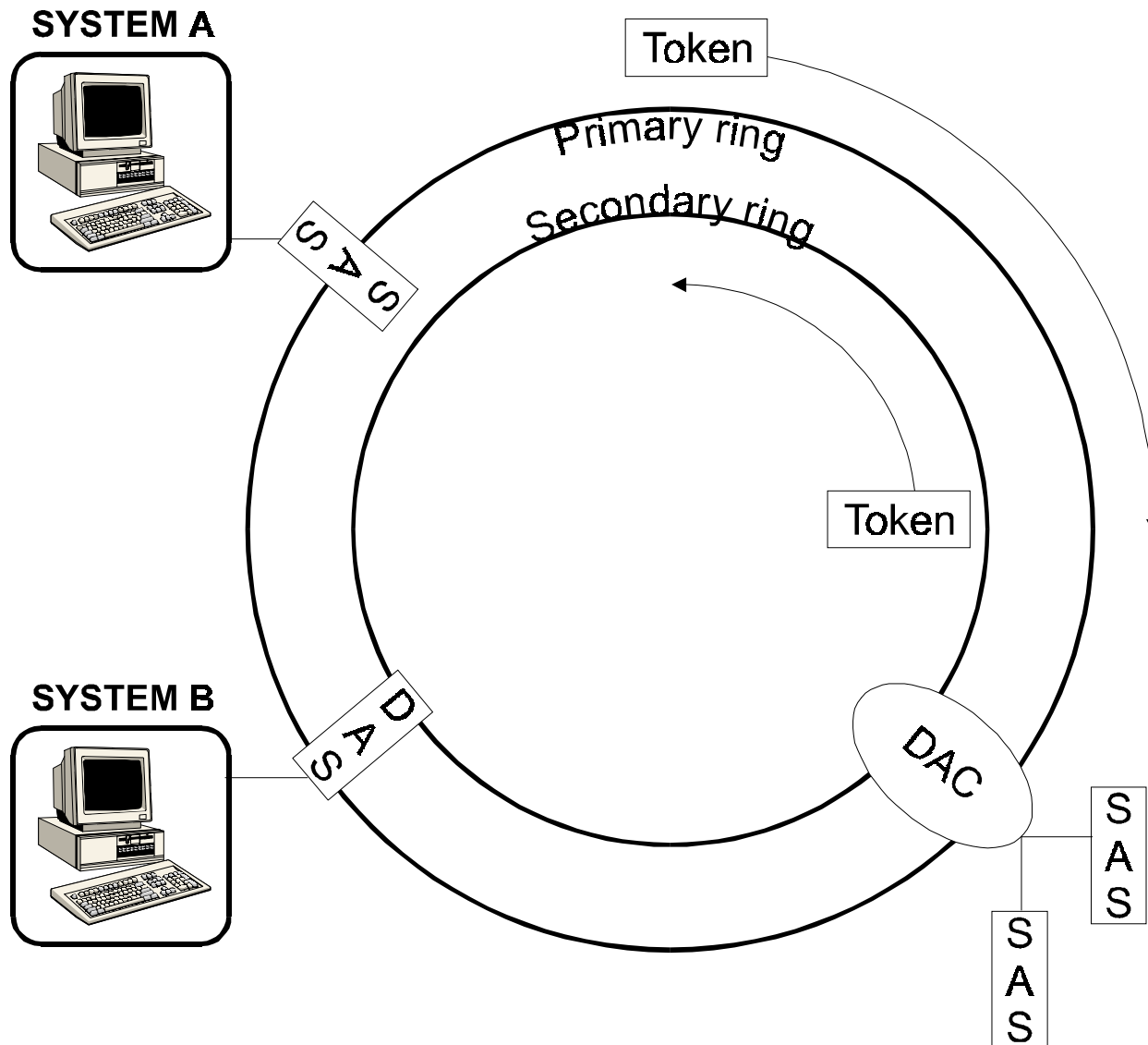
Token Ring Logical Topology



IBM Token Ring Physical Topology



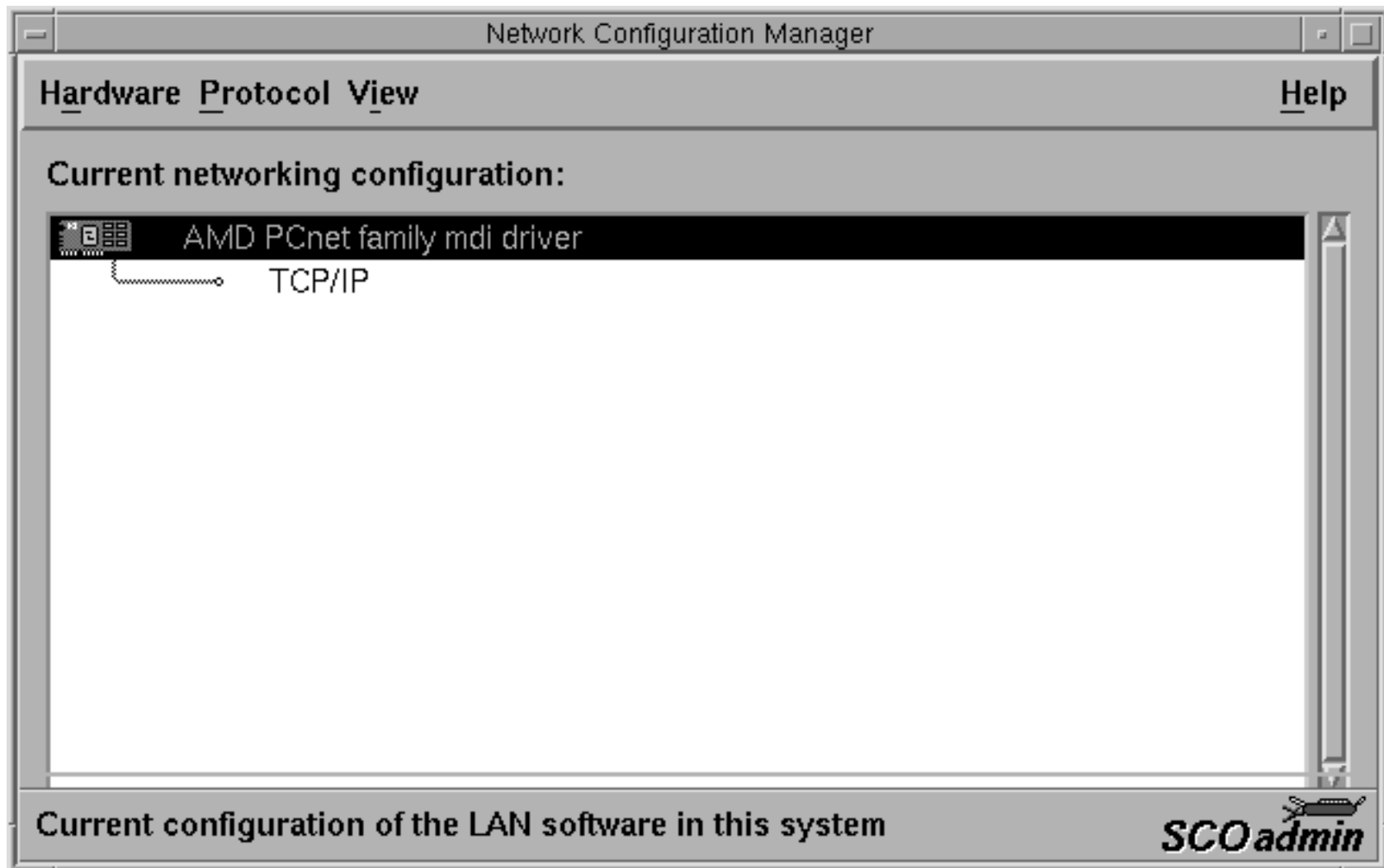
FDDI Topology and Components



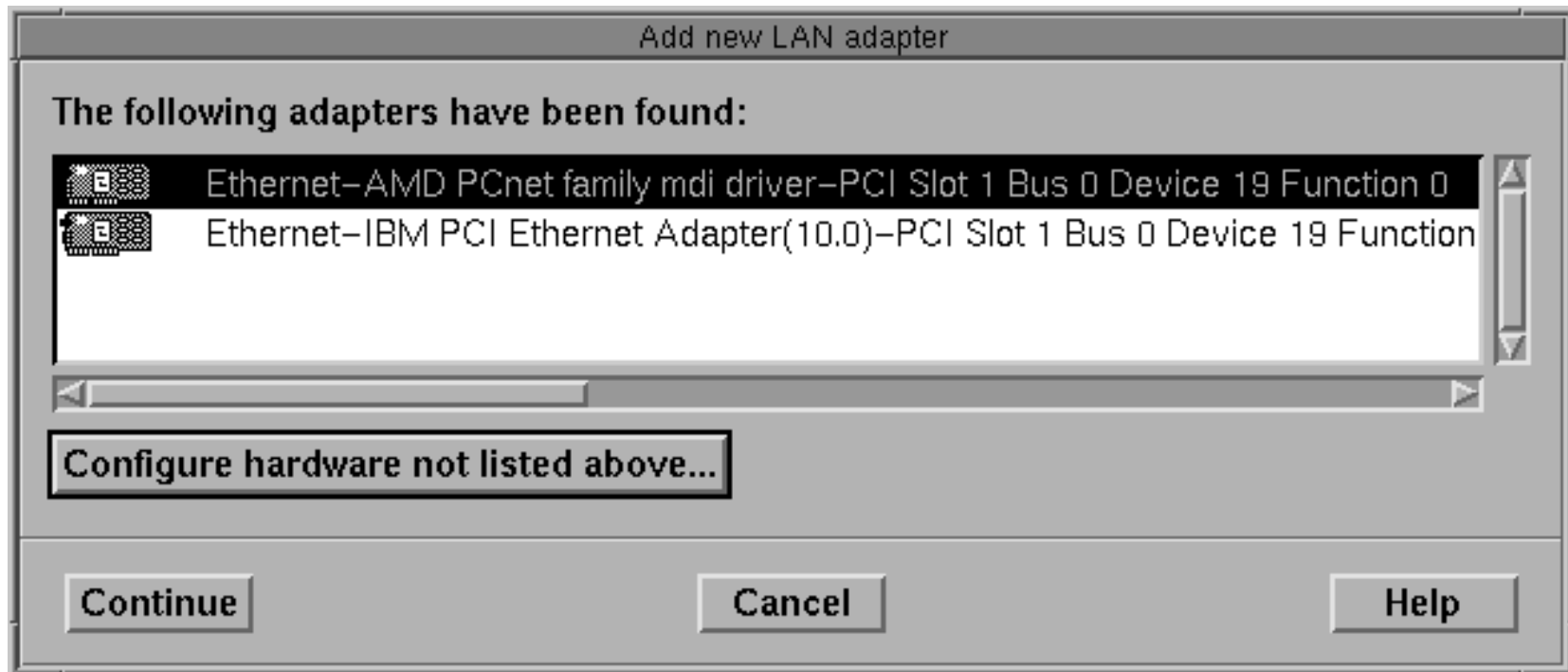
Configuring a Network Interface

- Using the **Network Configuration Manager**
- Testing the network configuration
- Configuring */etc/hosts*
- Configuring network adapter failover

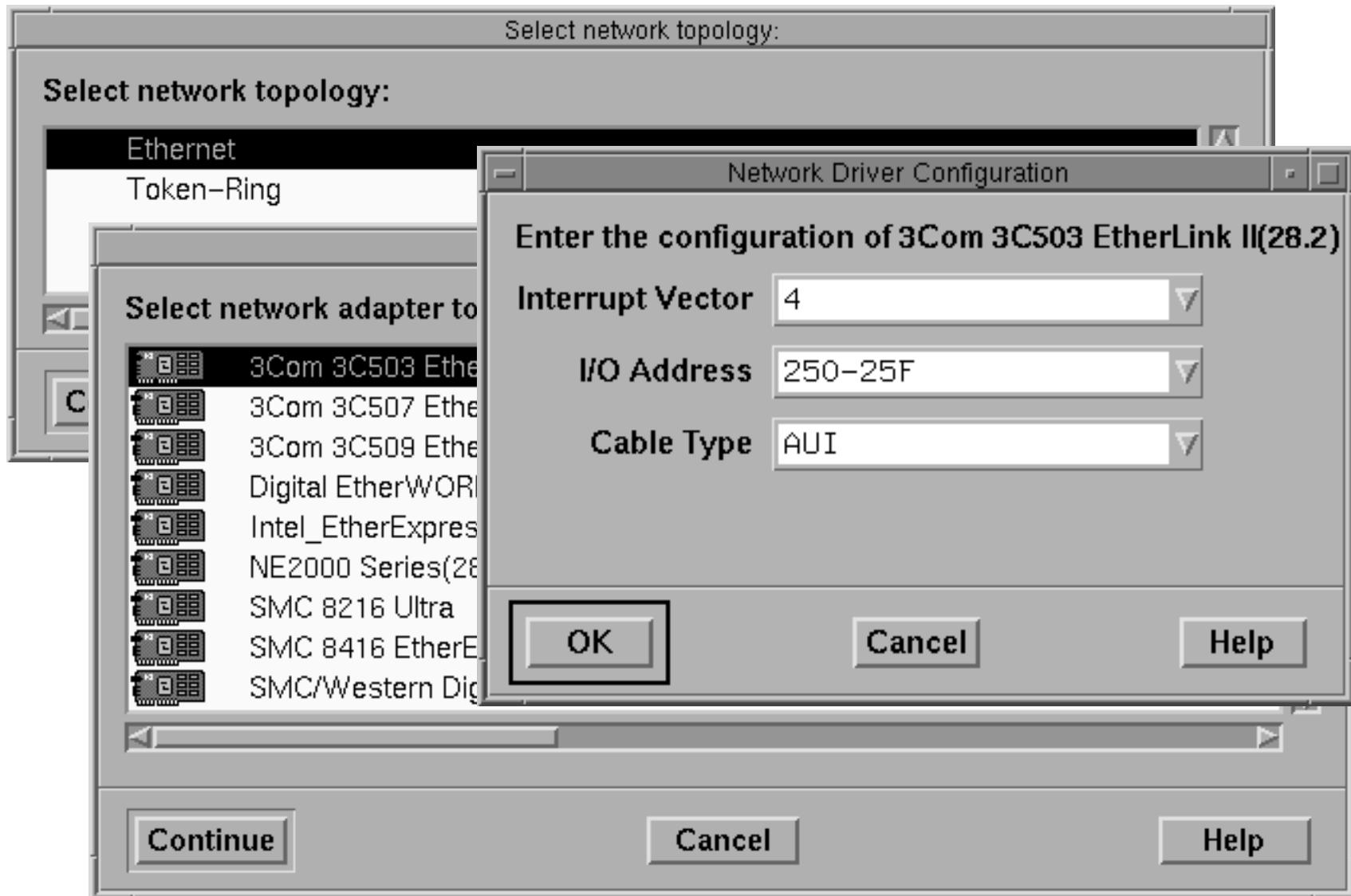
Network Configuration Manager



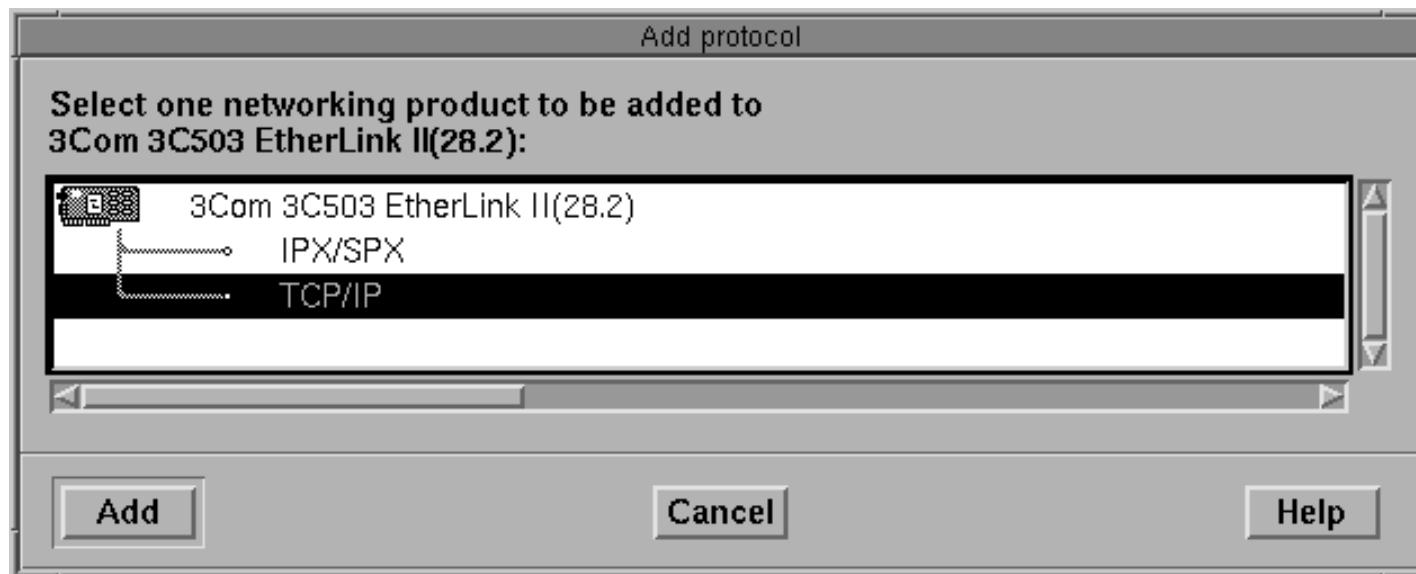
Adding an Autoconfigured Network Adapter



Manually Configuring a Network Adapter



Add Protocol



TCP/IP Configuration

Internet Protocol Configuration

Host name

DHCP client ☒ Yes ☐ No

Domain name

IP address · · ·

Netmask · · ·

Broadcast address · · ·

Default router · · ·

Device Configuration Utility

dcu

UnixWare Device Configuration Utility

Hardware Device Configuration

	Device Name	IRQ	IOStart	IOEnd	MemStart	MemEnd	DMA
=	=====	===	=====	=====	=====	=====	=====
Y	UNKNOWN	11	6500	651f	-	-	-
Y	UNKNOWN	5	-	-	c0000	c7fff	-
Y	AHA-2940AU	10	6000	60ff	c8000	c87ff	-
Y	AMD_PCnet_PCI	2	6400	641f	-	-	-
Y	UNKNOWN						
Y	UNKNOWN						
Y	UNKNOWN						
Y	UNKNOWN						
Y	UNKNOWN						
Y	UNKNOWN						
Y	UNKNOWN						
Y	PnP						
Y	UNKNOWN						
Y	UNKNOWN						
Y	UNKNOWN						

(Page Up/Page Down for more)

TAB/arrow=Move, F1=Help, F2=Choices, F4=Verify, F6=Info, F7=Adv, F10=Return

Hosts File Configuration

— /etc/hosts Configuration

IP Address	Host name(s)	Com

◀ ▶

▲ ▼

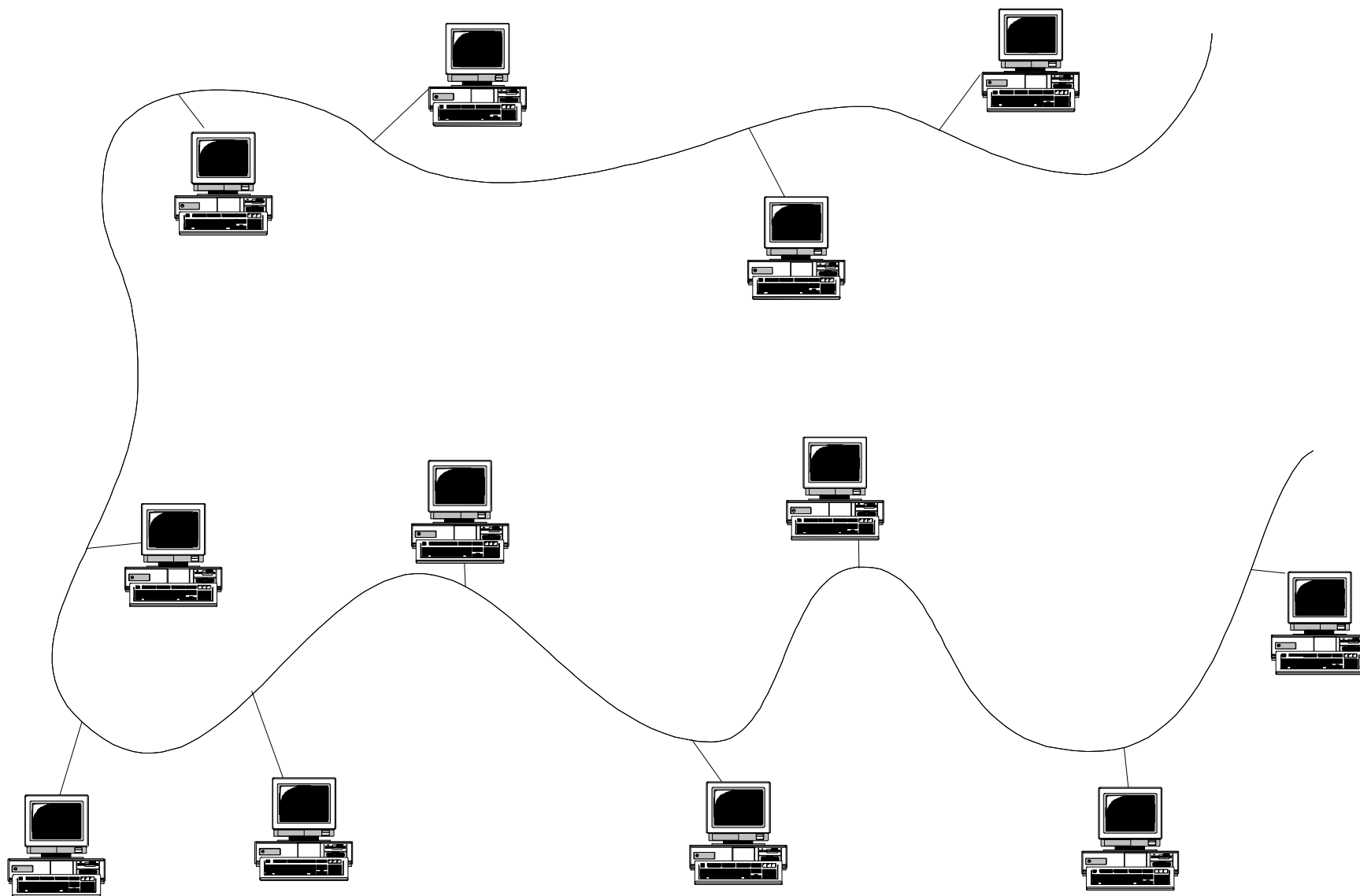
Add...
Modify...
Delete

OK Cancel Help

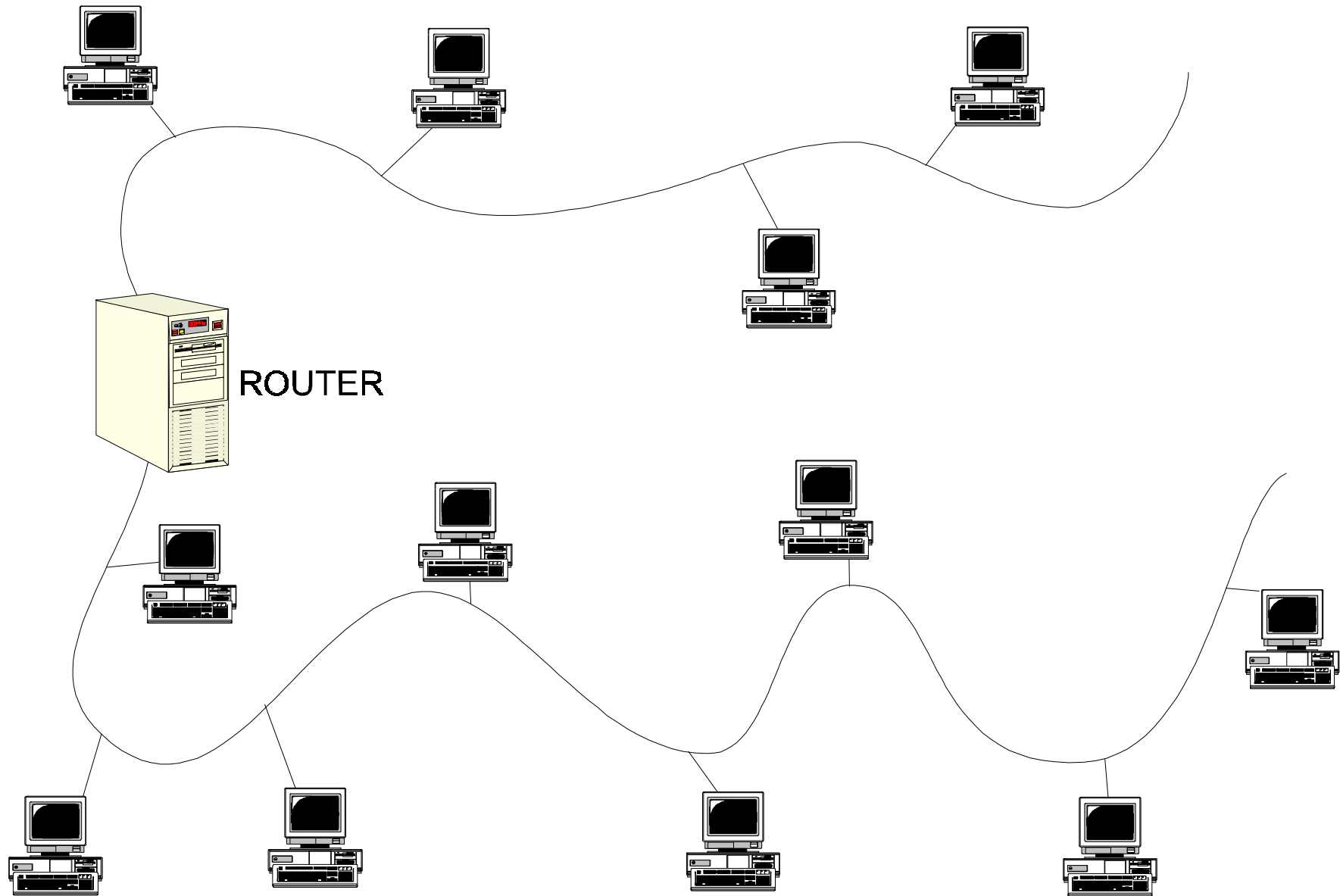
Subnetworks

- Planning the subnet topology
- Defining subnet IP addresses, netmasks, and broadcast addresses

A Single Overloaded Segment



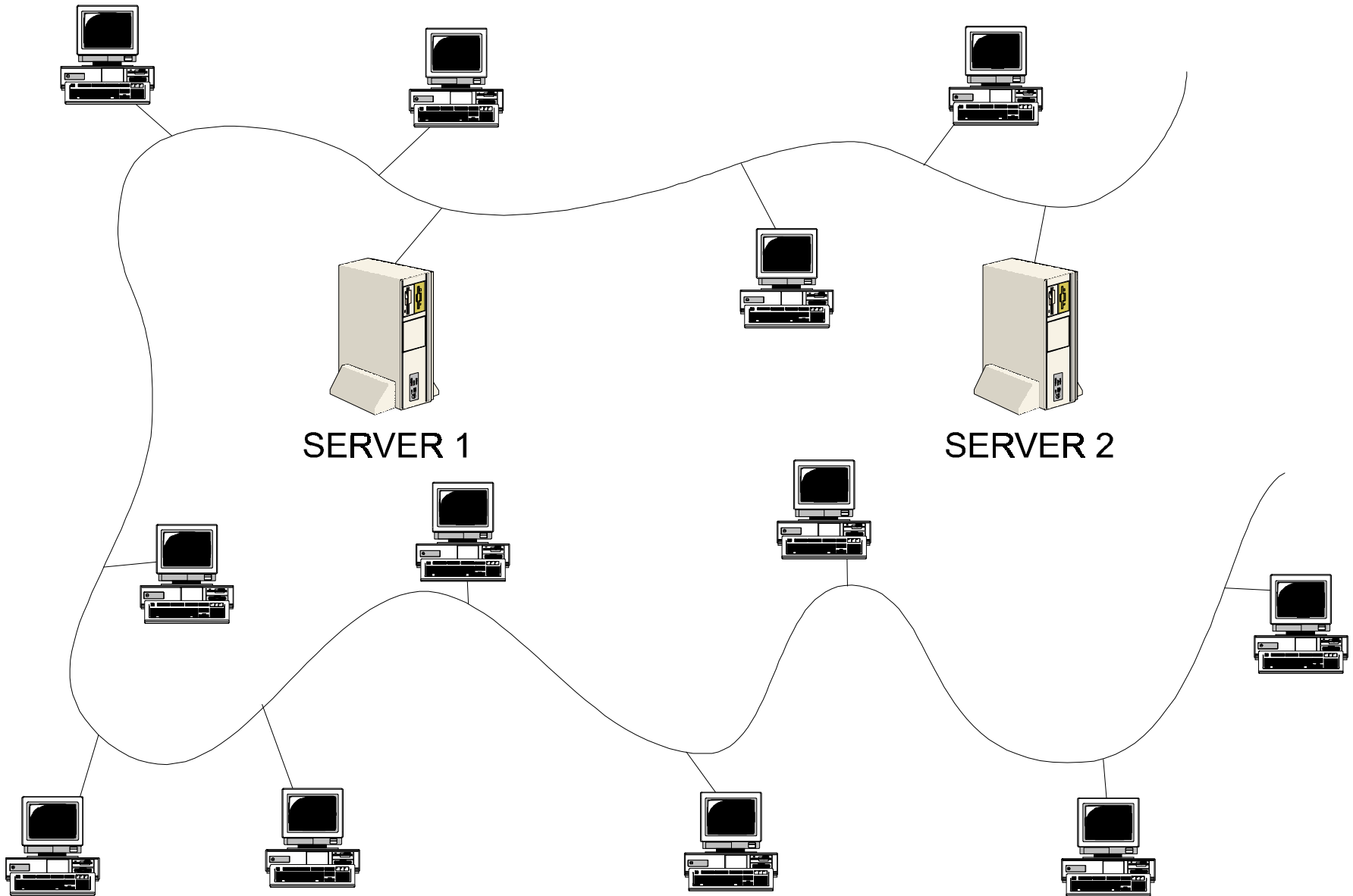
Reorganized Network



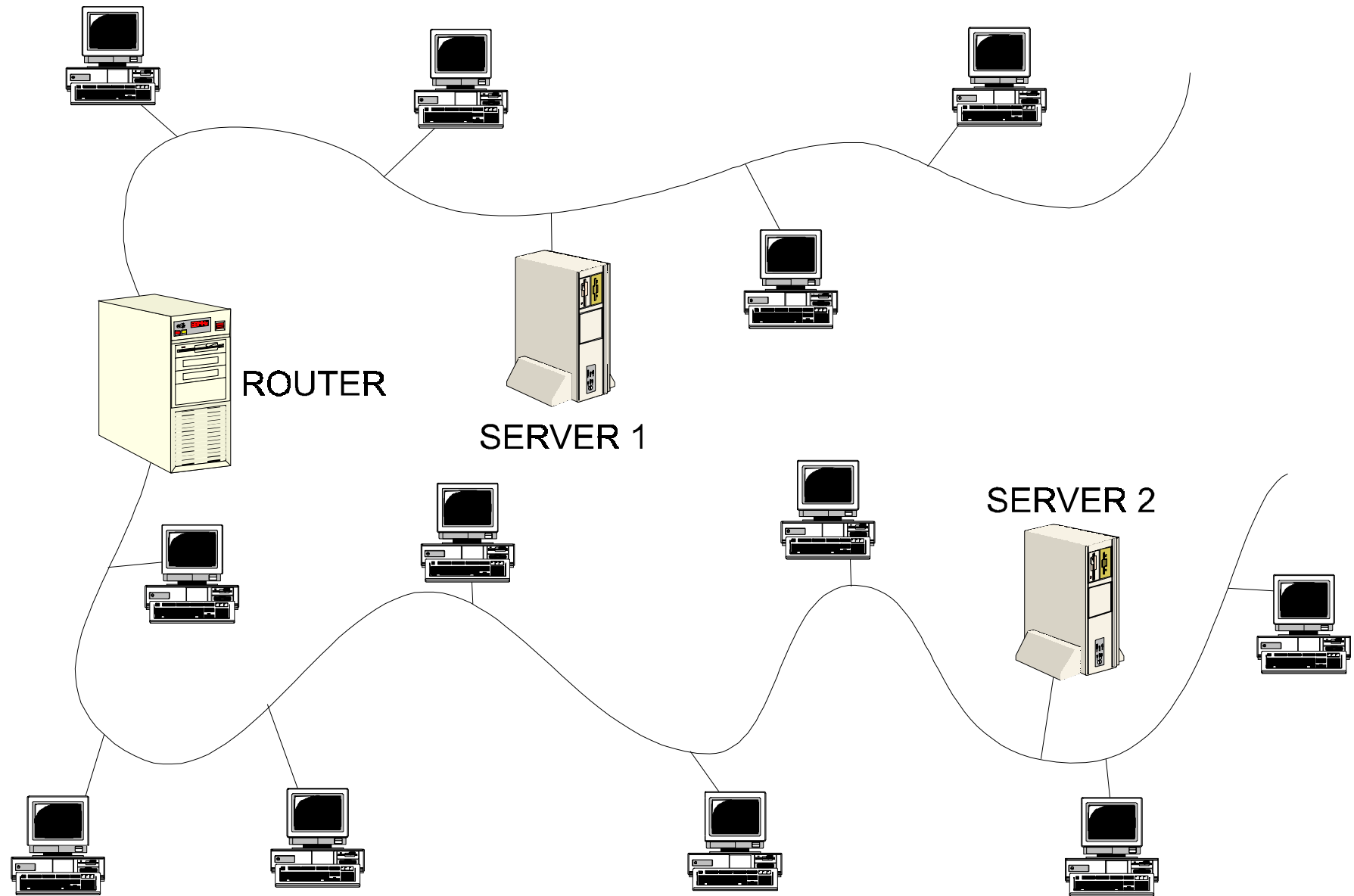
GNAD0403

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A Single Overloaded Segment



Reorganized Network

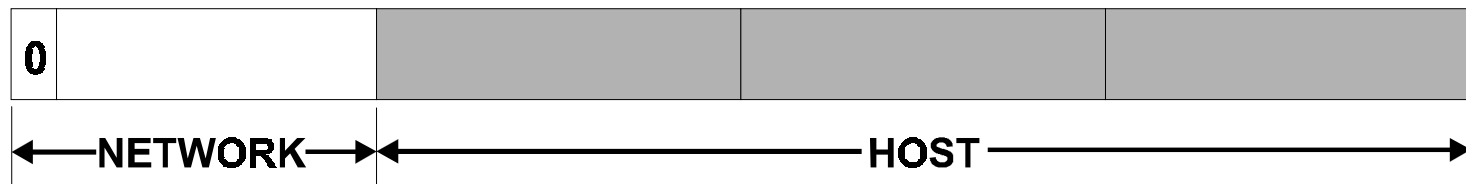


GNAD0405

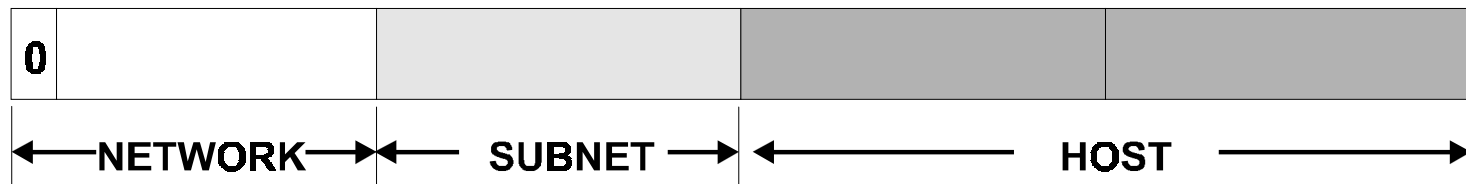
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Class A Network with 8-bit Subnet

CLASS A

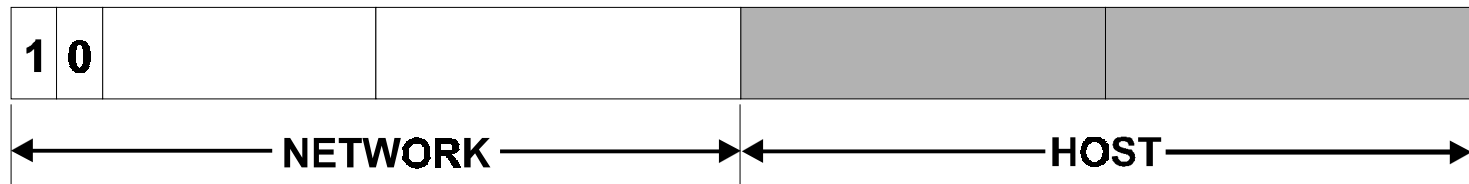


**CLASS A
with 8-bit
subnet**

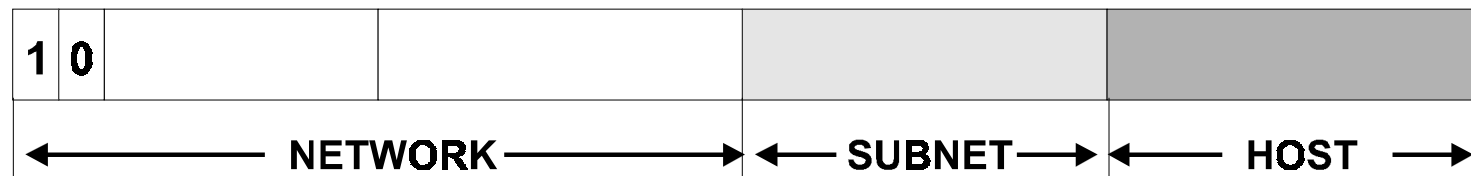


Class B Network with 8-bit Subnet

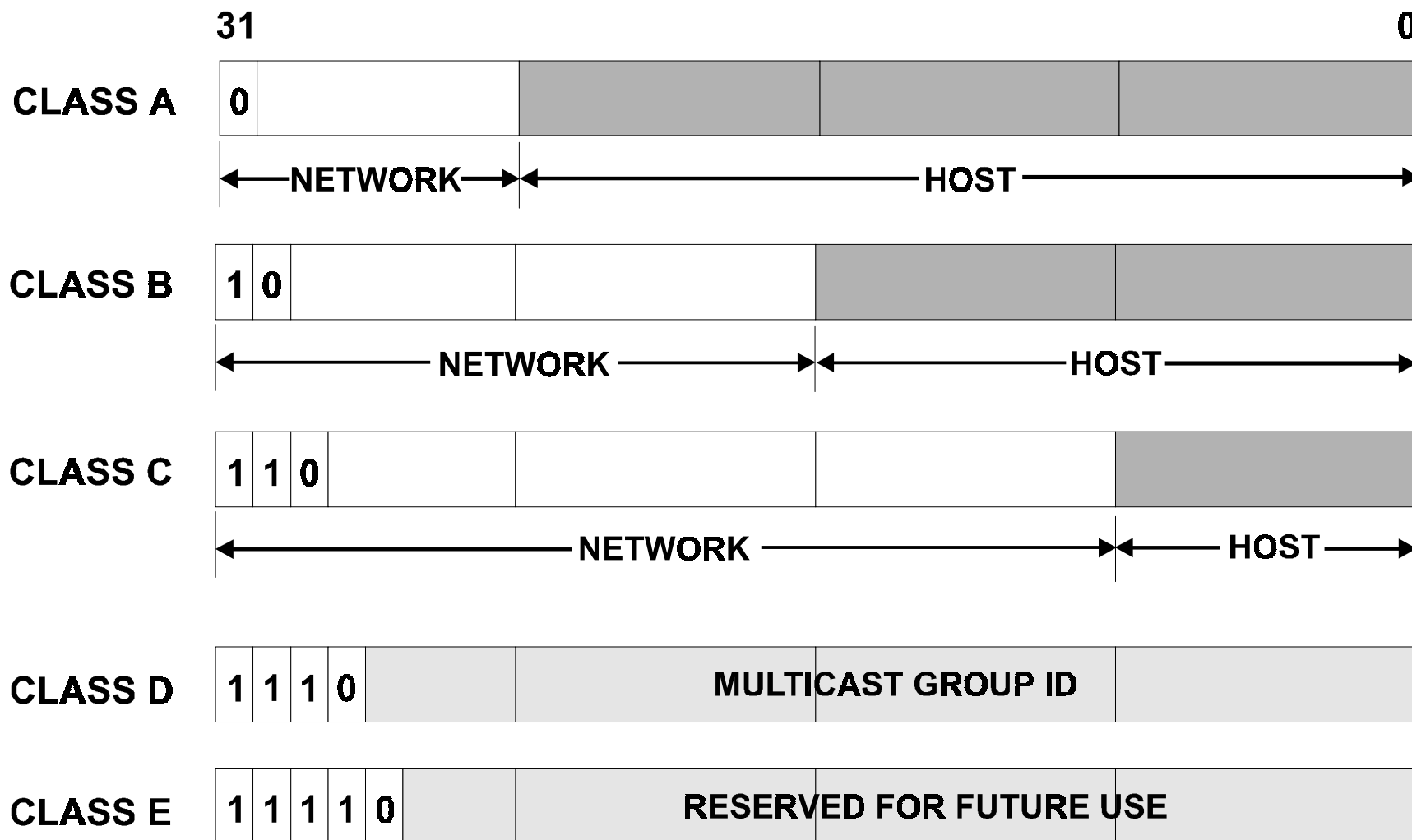
CLASS B



**CLASS B
with 8-bit
subnet**



IP Address Classes



Class A Network with an 8-bit Subnet

← NETWORK → ← SUBNET → ← HOST →

CLASS A
8-bit subnet



EXAMPLE
ADDRESS

0	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	1	0	0	1	0	0	1	0	1	0	1	1
120								3								25								43									

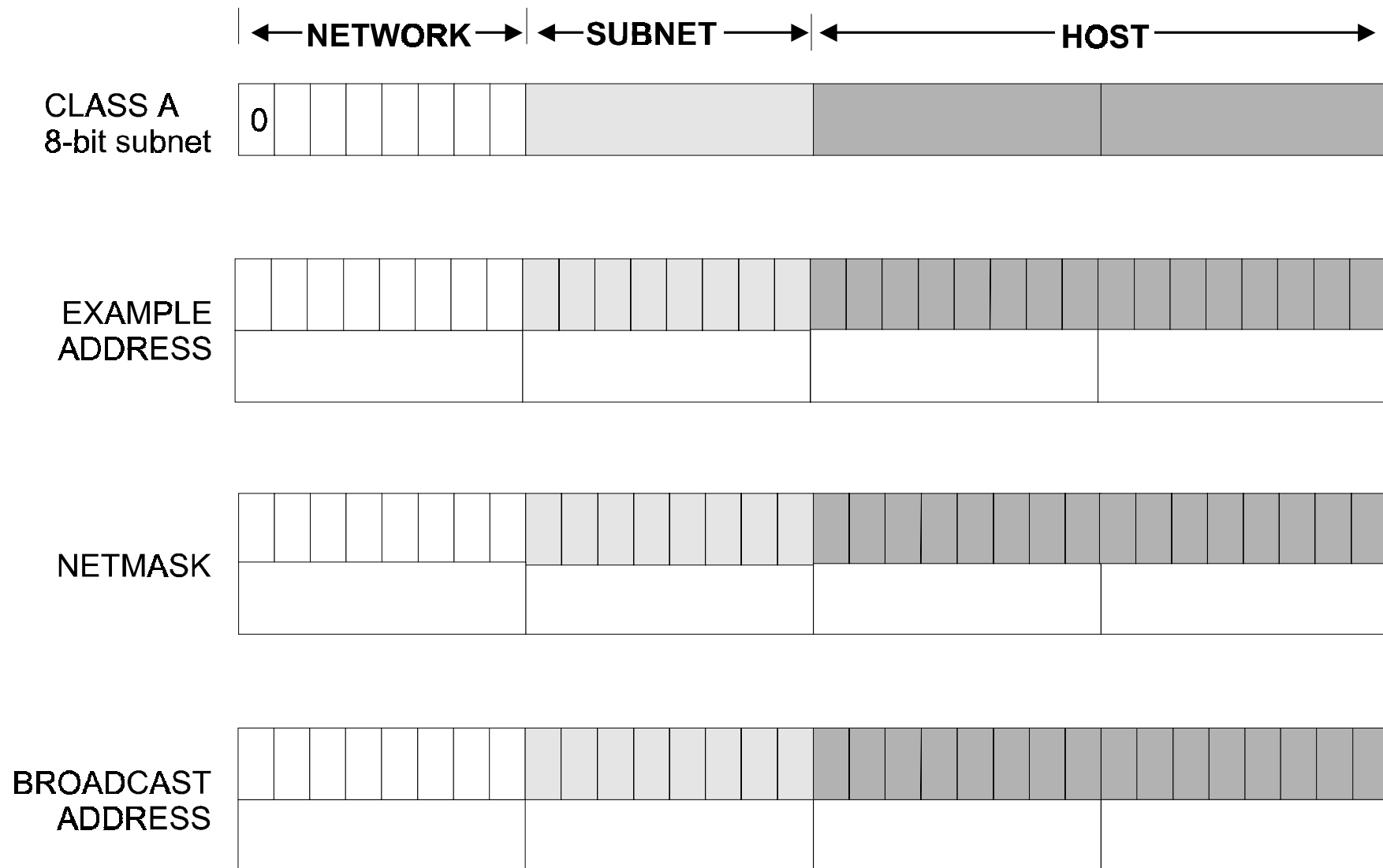
NETMASK

1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
255								255								0								0							

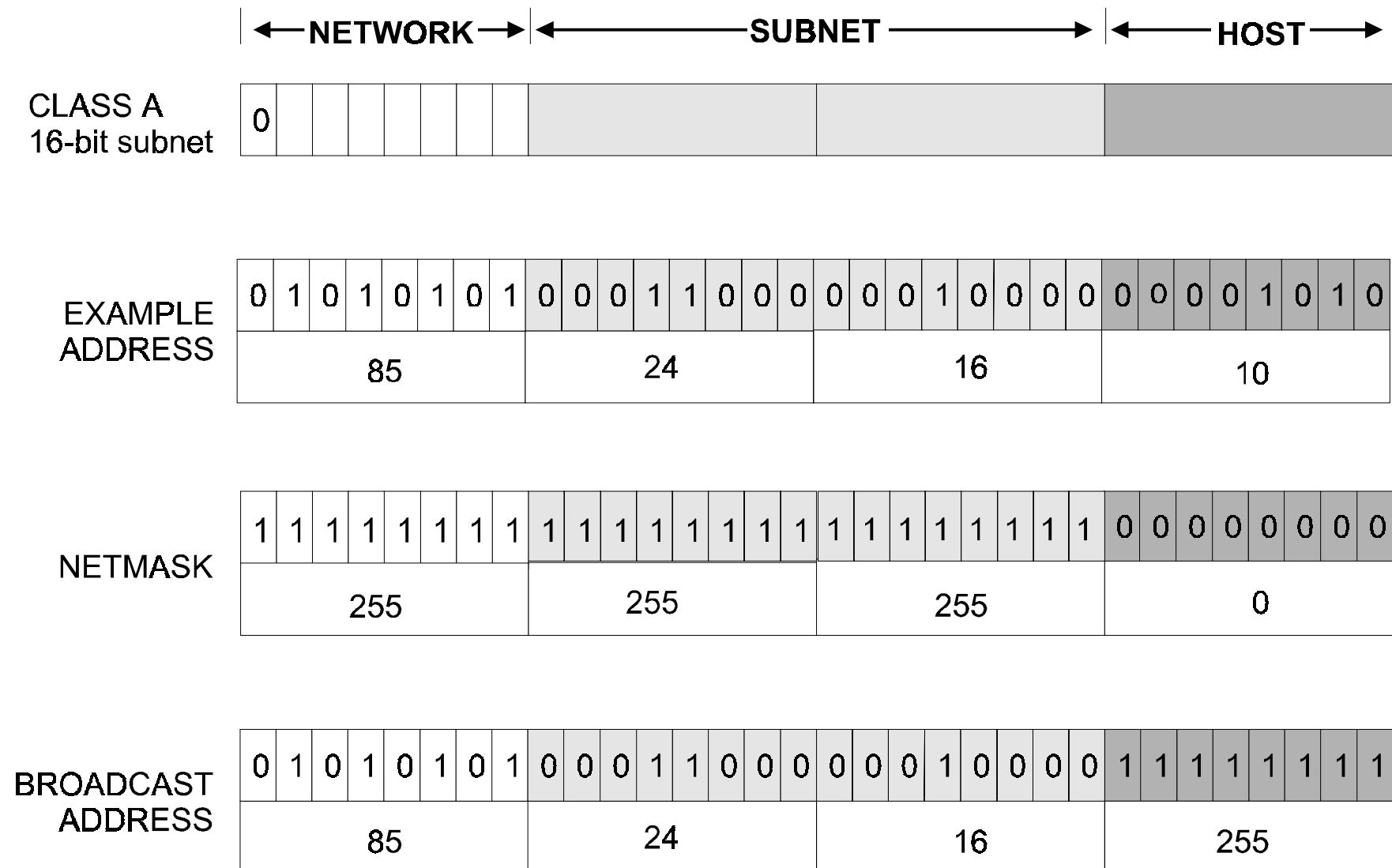
BROADCAST
ADDRESS

0	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
120								3							255							255							

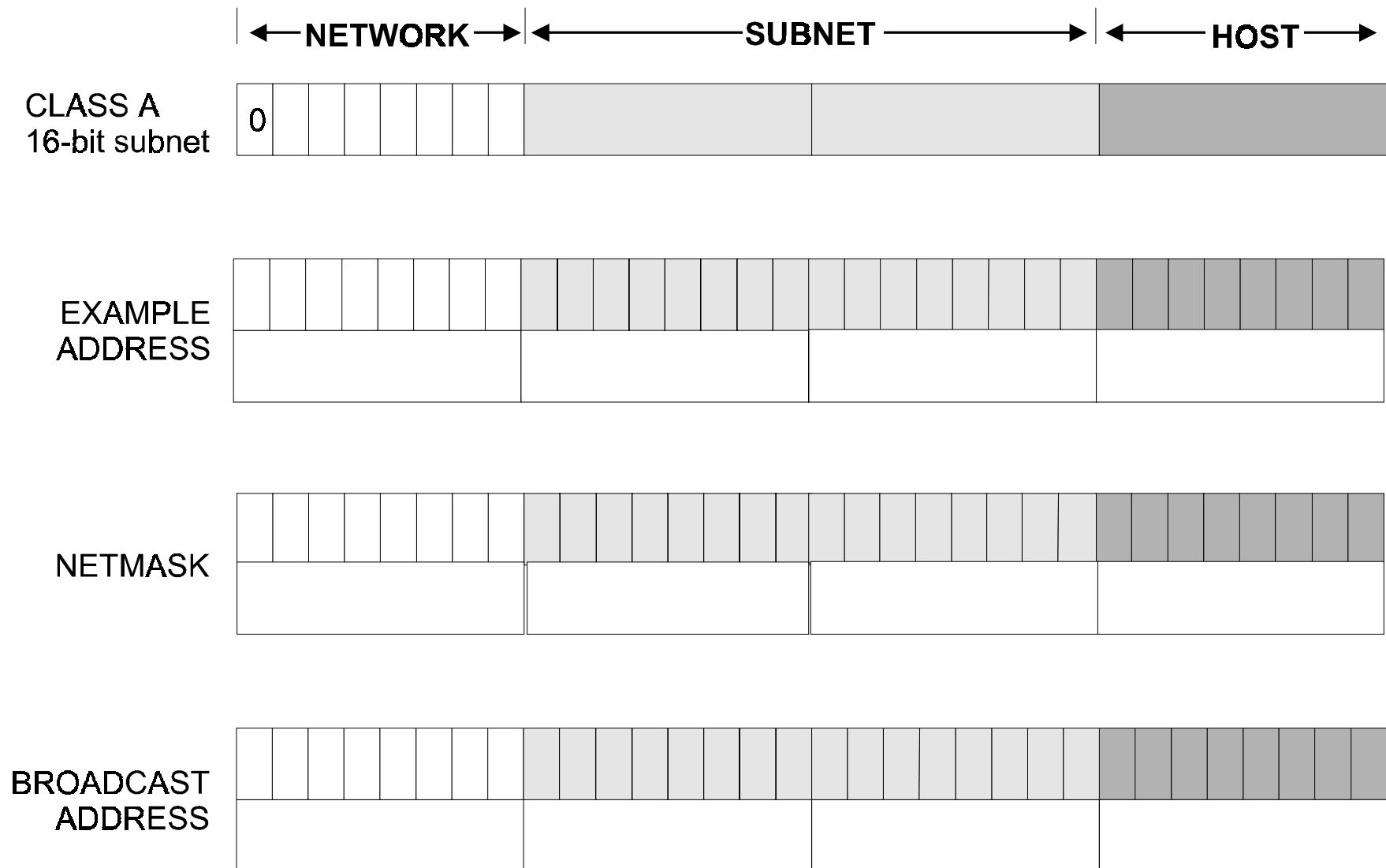
Class A Network with an 8-bit Subnet



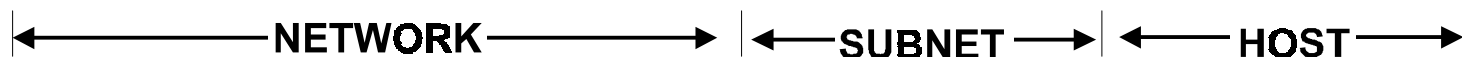
Class A Network with a 16-bit Subnet



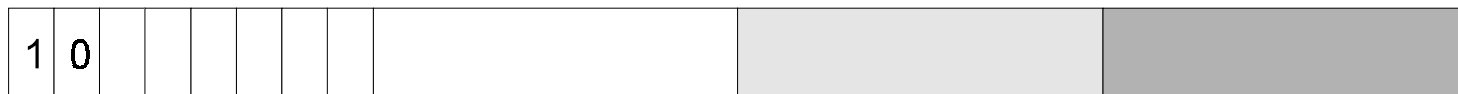
Class A Network with a 16-bit Subnet



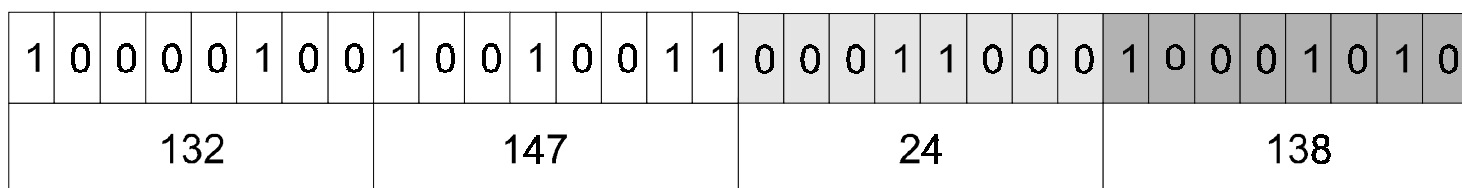
Class B Network with an 8-bit Subnet



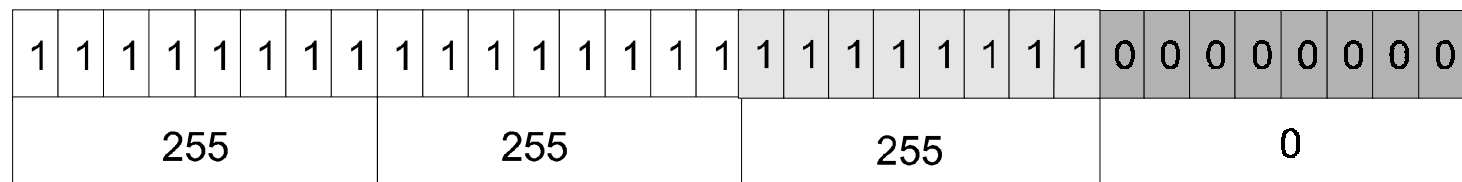
CLASS B
8-bit subnet



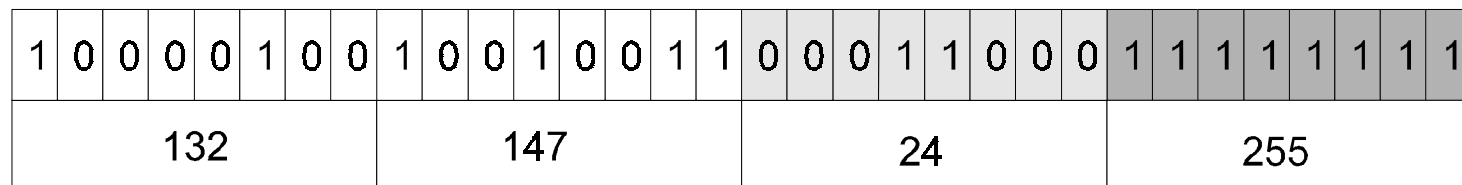
EXAMPLE
ADDRESS



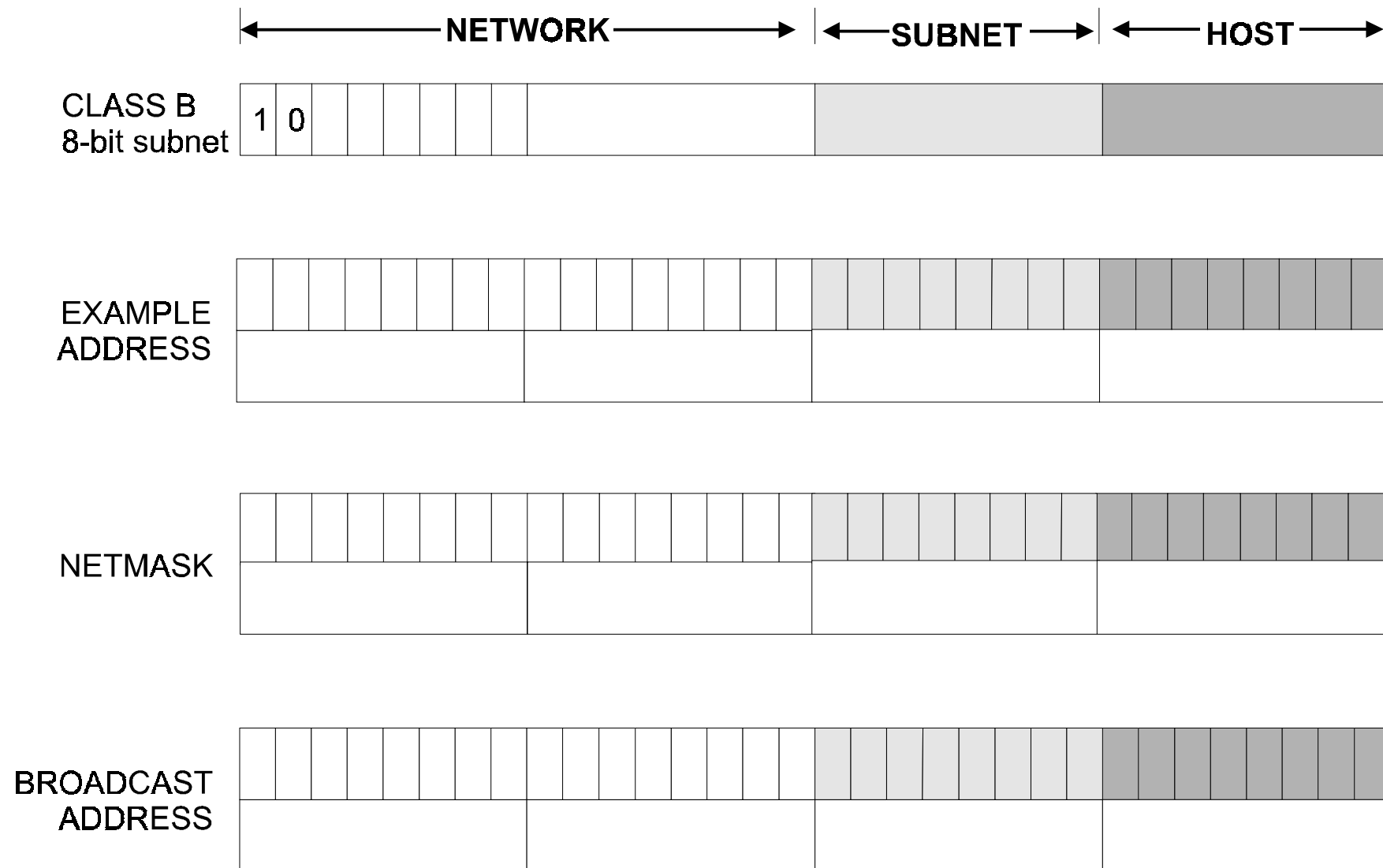
NETMASK



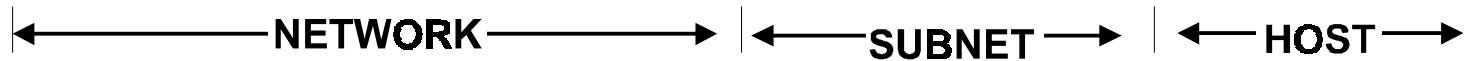
BROADCAST
ADDRESS



Class B Network with an 8-bit Subnet



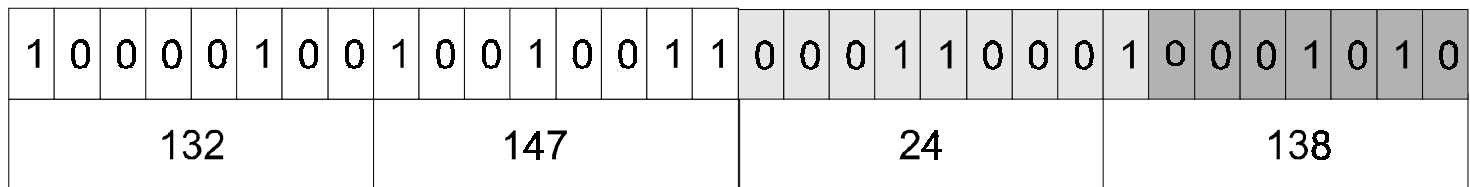
Class B Network with an 9-bit Subnet



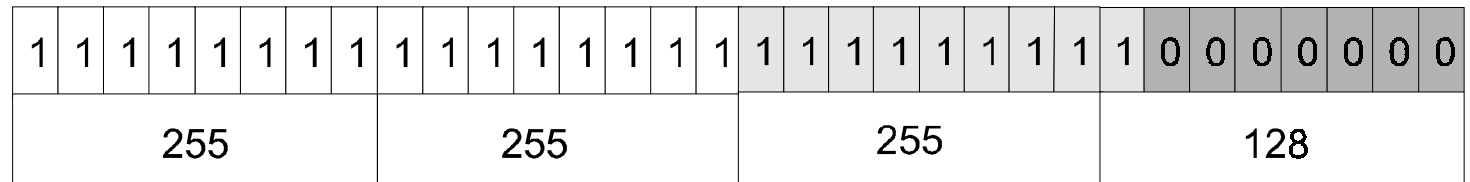
CLASS B
9-bit subnet



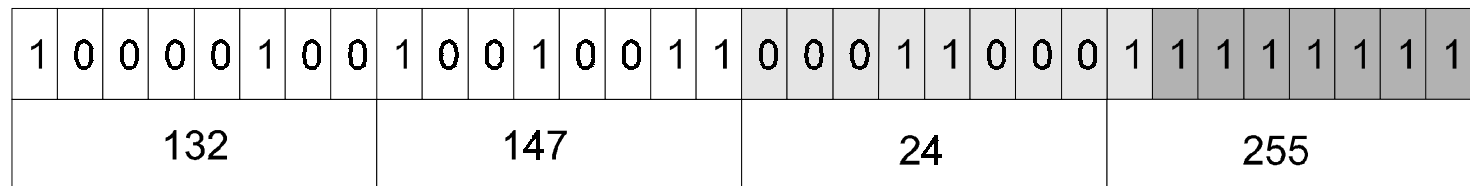
EXAMPLE
ADDRESS



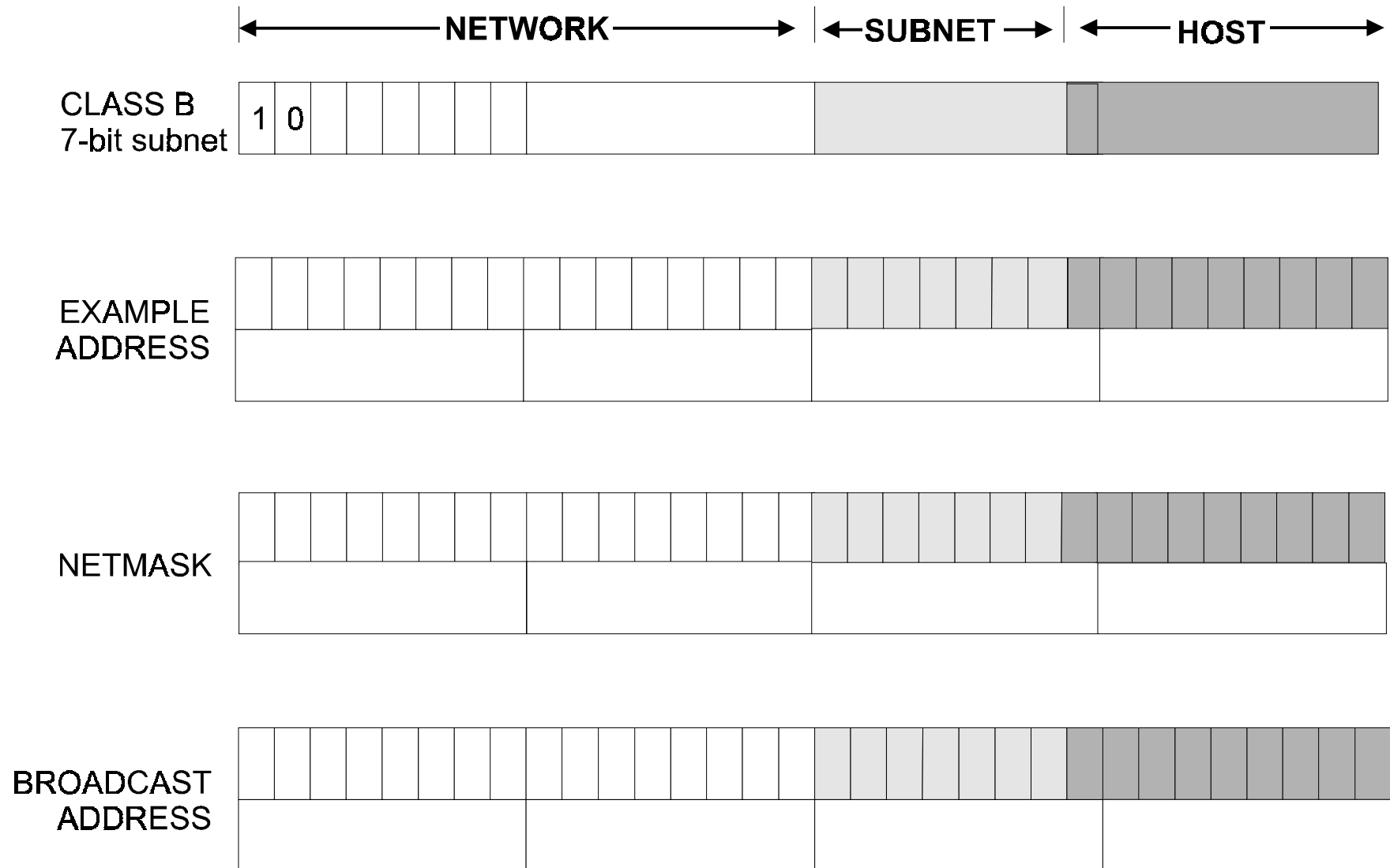
NETMASK



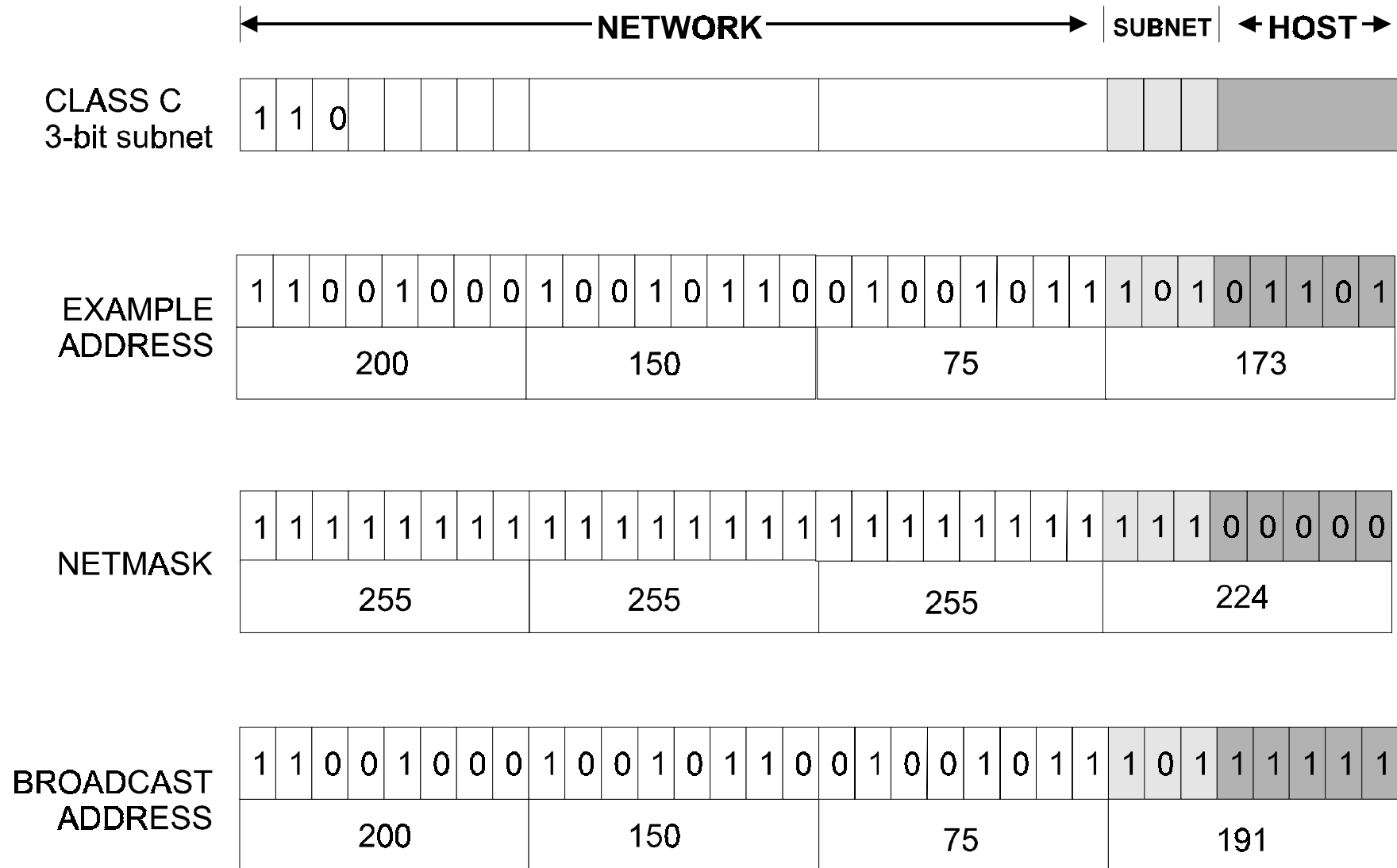
BROADCAST
ADDRESS



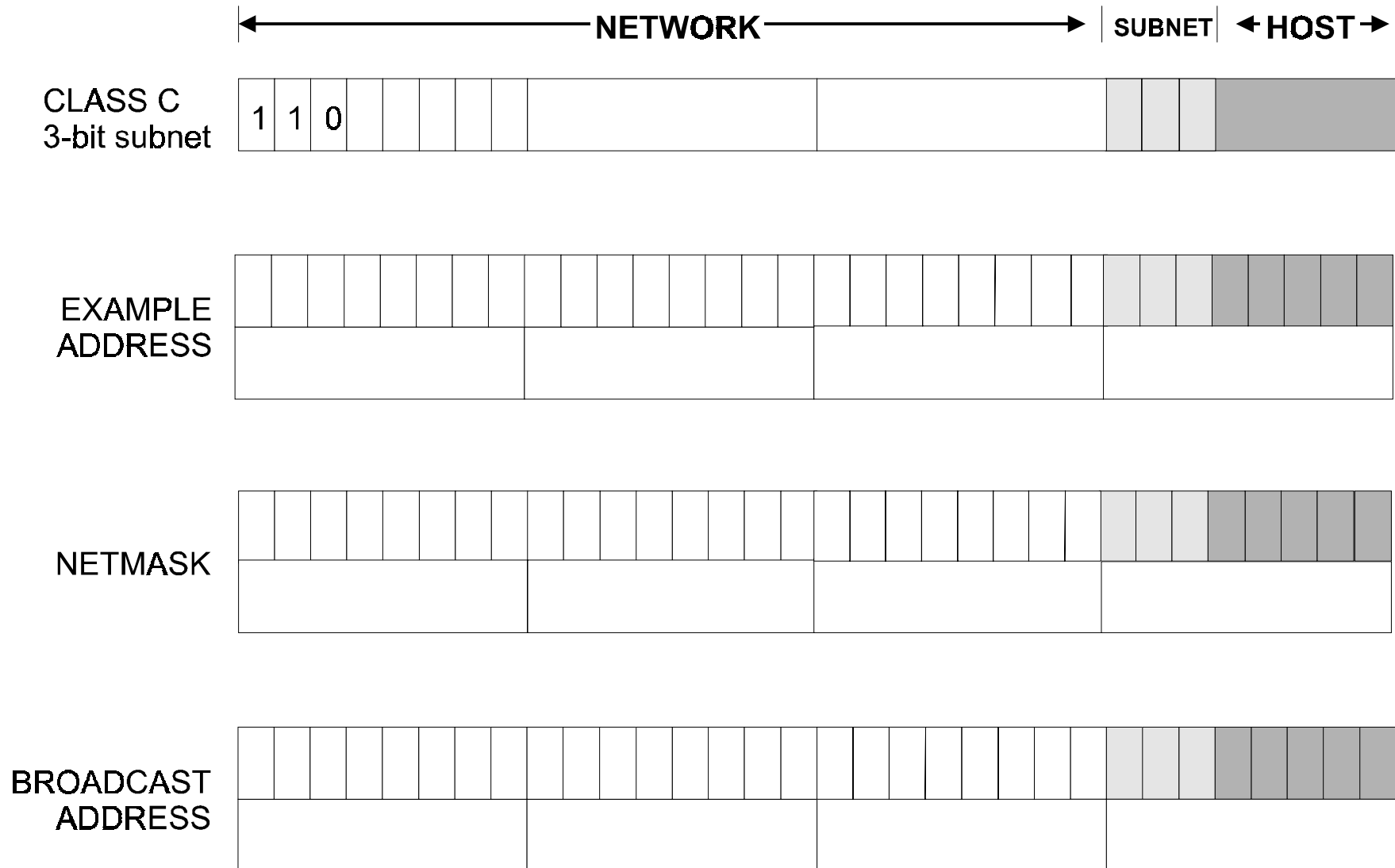
Class B Address with a 7-bit Subnet



Class C Network with a 3-bit Subnet



Class C Subnets



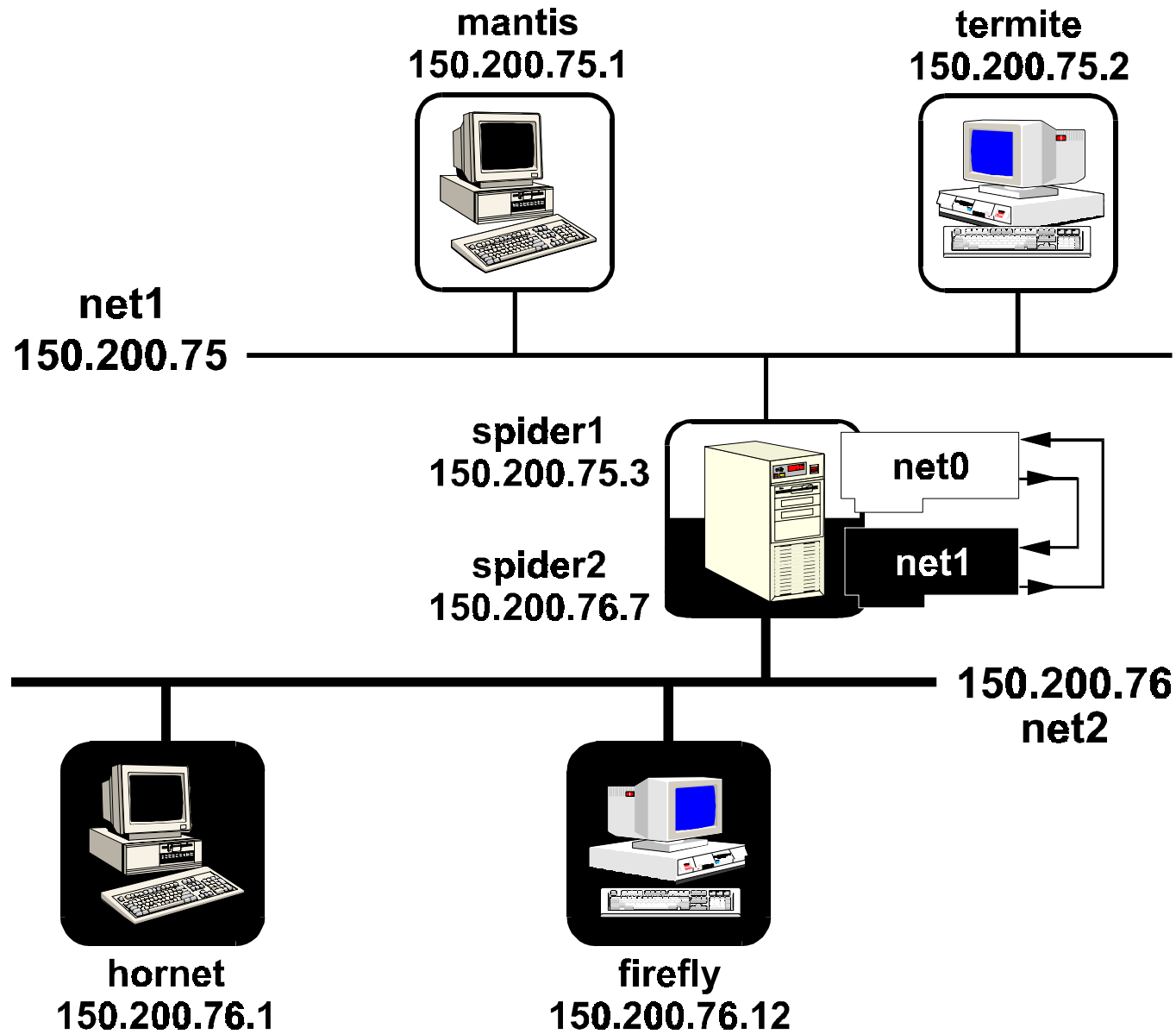
Unusual Subnet Masking

	CLASS B NETWORK														HOST		4-BIT SUB-NET				MORE HOST BITS										
IP ADDRESS	1	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0	1	0	1	0
	132								147								24				138										
NETMASK	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
	255								255								15				0										
BROADCAST	1	0	0	0	0	1	0	0	1	0	0	1	0	0	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1
	132								147								248				255										

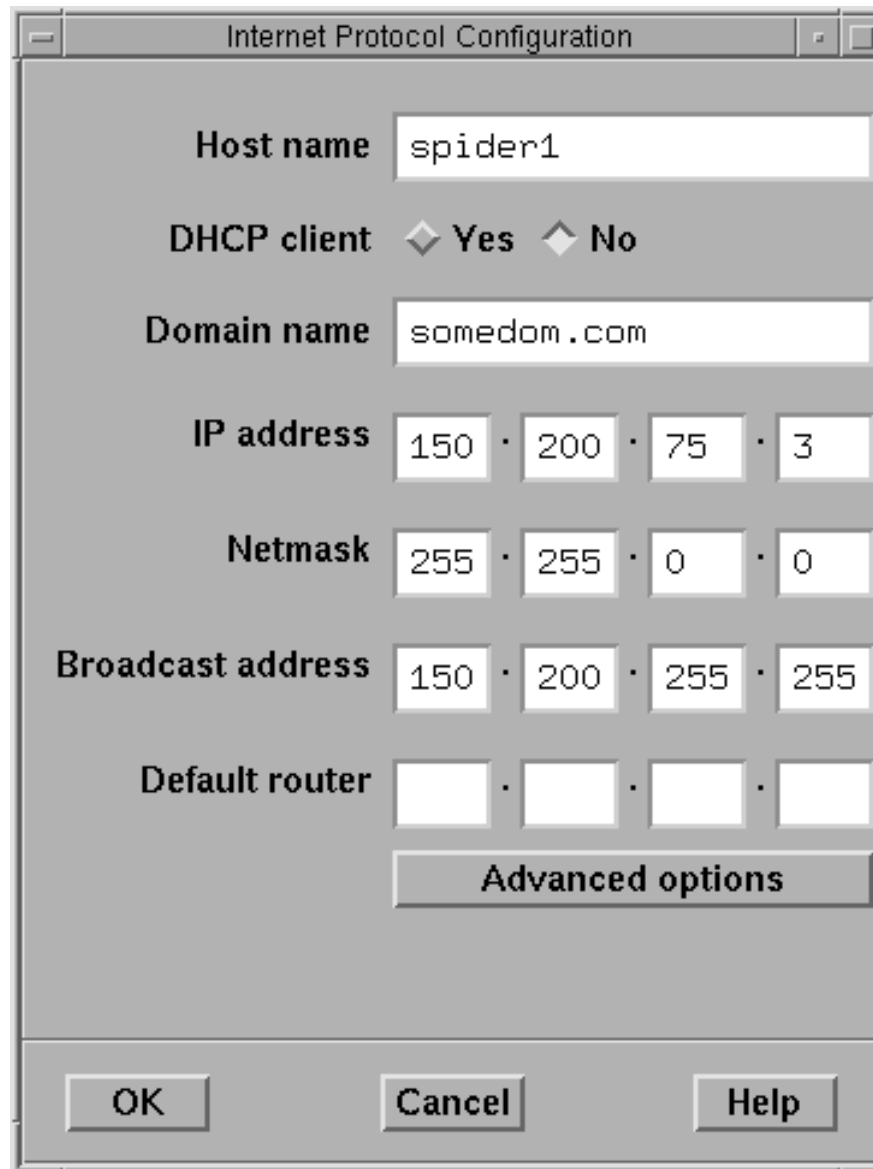
Routing

- Configuring a system as a router
- Configuring routes
- Routing daemons
- Troubleshooting routes

A Network Router



Internet Protocol Configuration



The image shows a standard Windows-style dialog box titled "Internet Protocol Configuration". It contains several fields for network settings. The "Host name" field is filled with "spider1". The "DHCP client" field has two radio buttons, "Yes" and "No", both of which are unselected. The "Domain name" field is filled with "somedom.com". The "IP address" field consists of four boxes containing the values 150, 200, 75, and 3, separated by dots. The "Netmask" field consists of four boxes containing the values 255, 255, 0, and 0, separated by dots. The "Broadcast address" field consists of four boxes containing the values 150, 200, 255, and 255, separated by dots. The "Default router" field consists of four empty boxes separated by dots. Below these fields is a button labeled "Advanced options". At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

Internet Protocol Configuration

Host name spider1

DHCP client ☐ Yes ☐ No

Domain name somedom.com

IP address 150 · 200 · 75 · 3

Netmask 255 · 255 · 0 · 0

Broadcast address 150 · 200 · 255 · 255

Default router · · ·

Advanced options

OK Cancel Help

Router Configuration

Advanced Configuration

Act as router? ☒ Yes ☐ No

Pseudo ttys

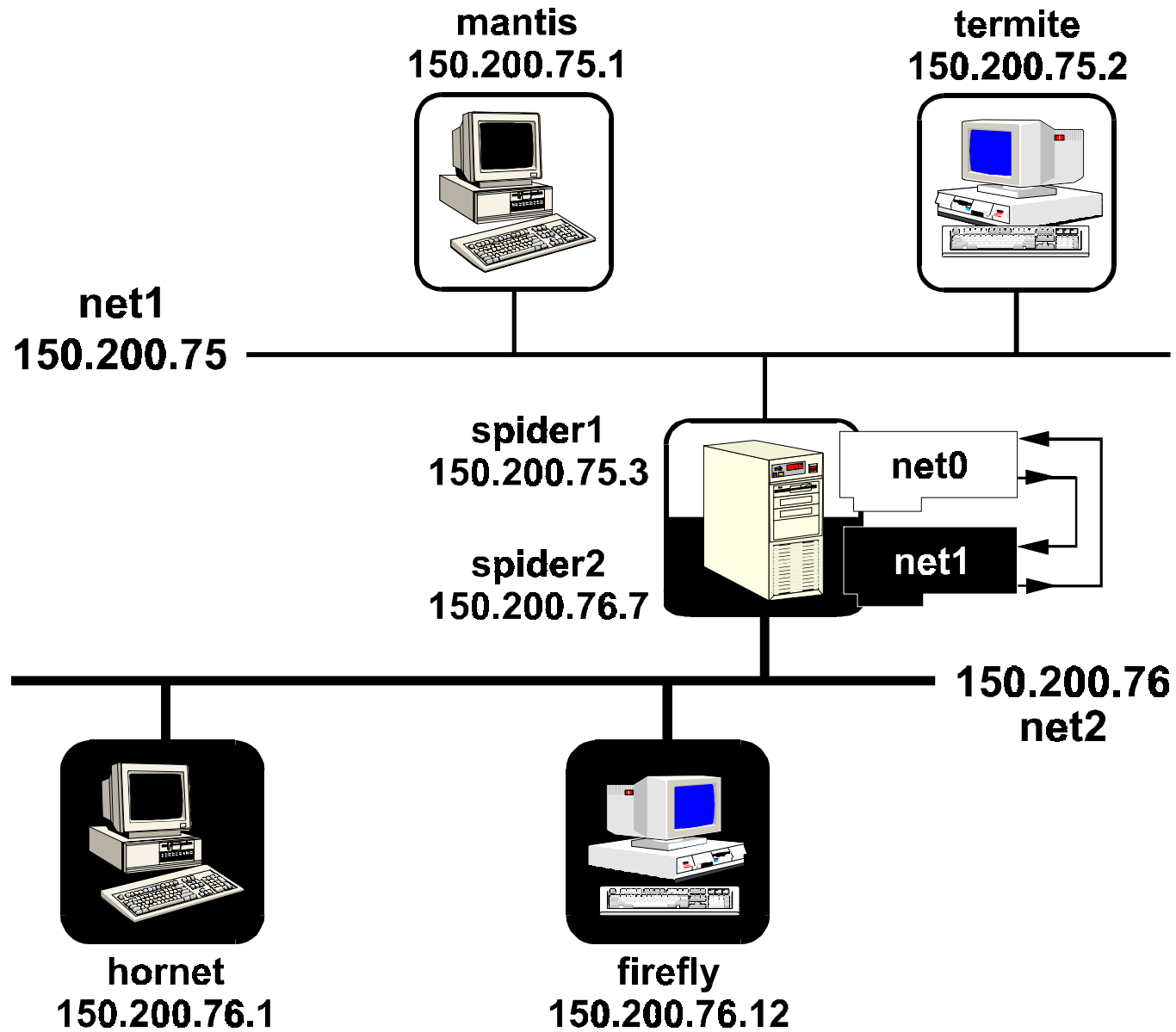
Frame format

Administrator for this system

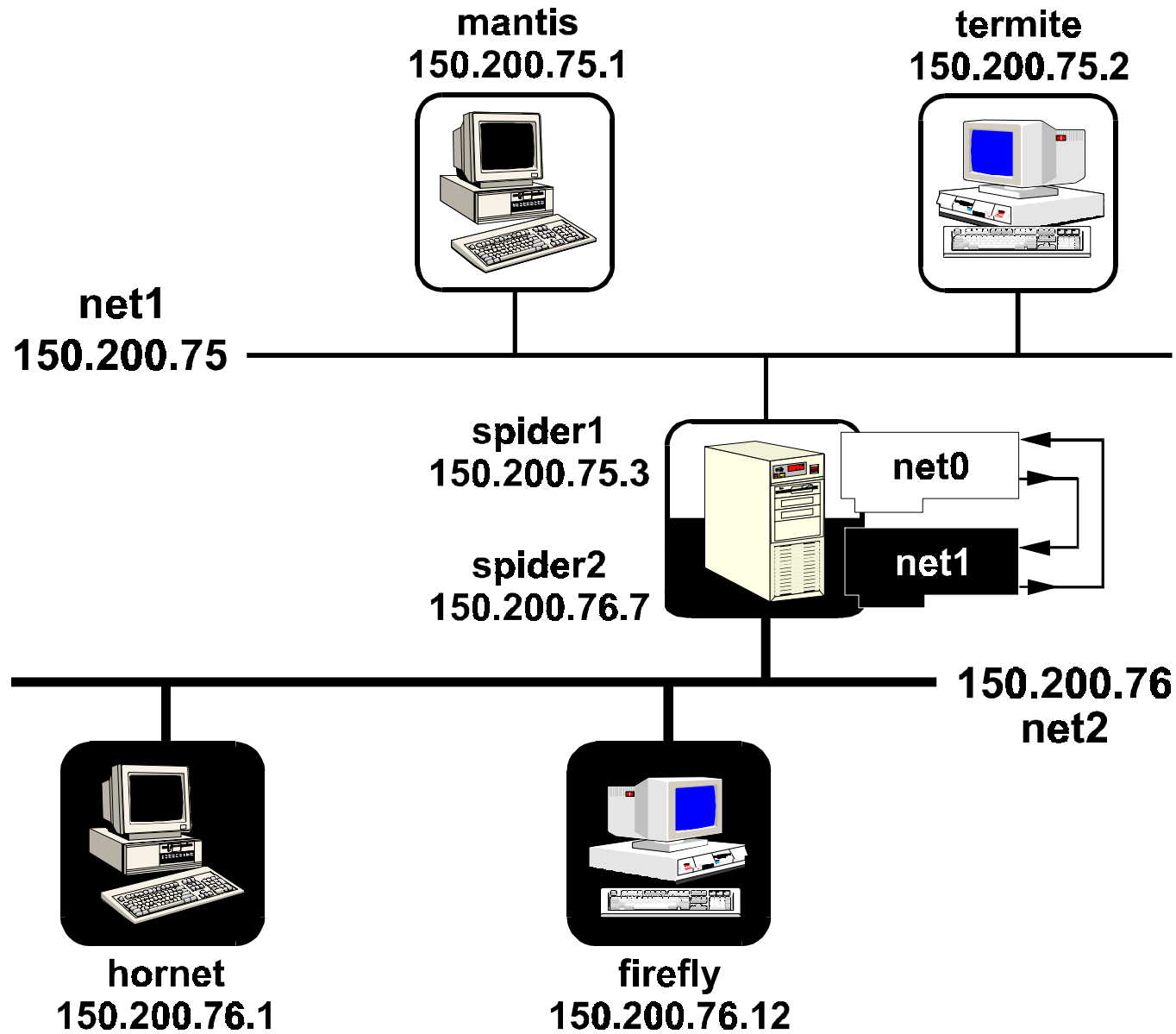
Location of this system

OK Cancel Help

A Network Router



A Network Router



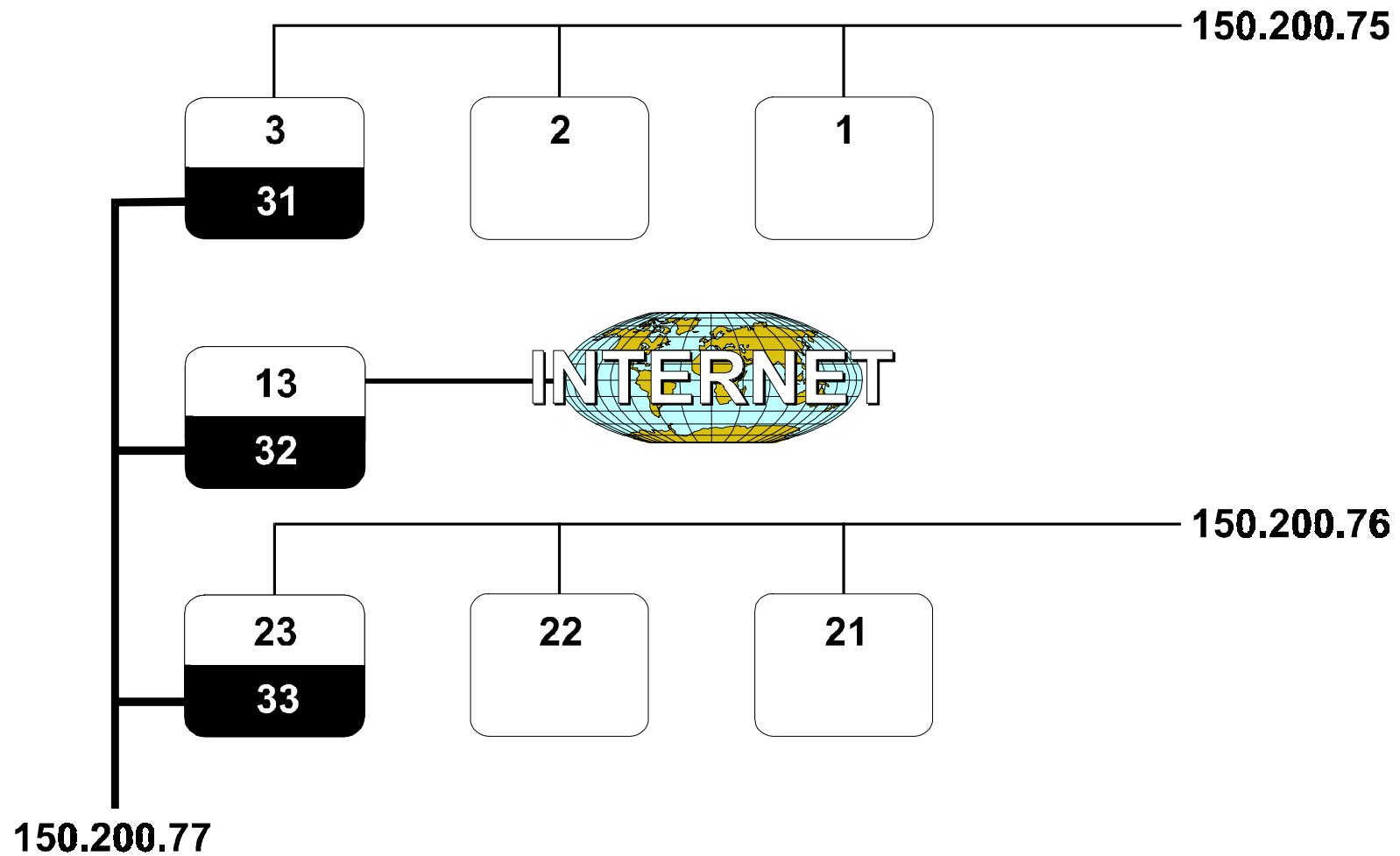
Kernel Routing Table on *mantis*

<u>Destination</u>	<u>Netmask</u>	<u>Gateway</u>	<u>Interface</u>
127.0.0.1	255.0.0.0	127.0.0.1	lo0
150.200.75.1	255.255.255.0	127.0.0.1	lo0
150.200.75	255.255.255.0	150.200.75.1	net0
150.200.76	255.255.255.0	150.200.75.3	net0
224	255.0.0.0	150.200.75.1	net0
default	N/A	150.200.75.3	net0

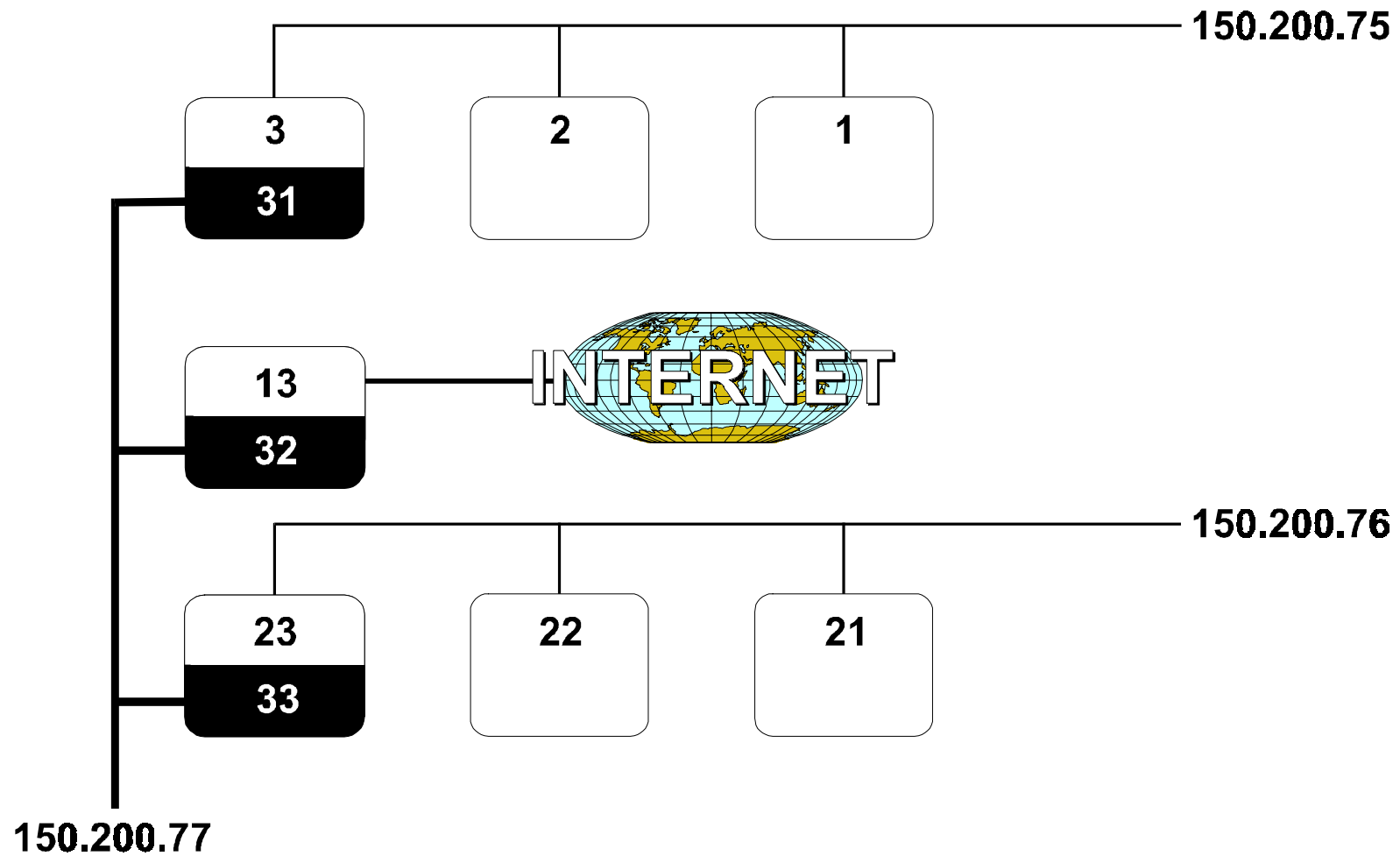
Output of `netstat -rn` on *mantis*

Destination	Gateway	Flags	Refs	Use	Interface
default	150.200.75.3	UGS	1	8443	net0
127.0.0.1	127.0.0.1	UH	2	351	lo0
150.200.75/24	150.200.75.1	UC	1	392	net0
150.200.76/24	150.200.75.3	UGS	0	0	net0
150.200.75.1	127.0.0.1	UGHS	4	1097	lo0
224/8	150.200.75.1	UGS	1	0	net0

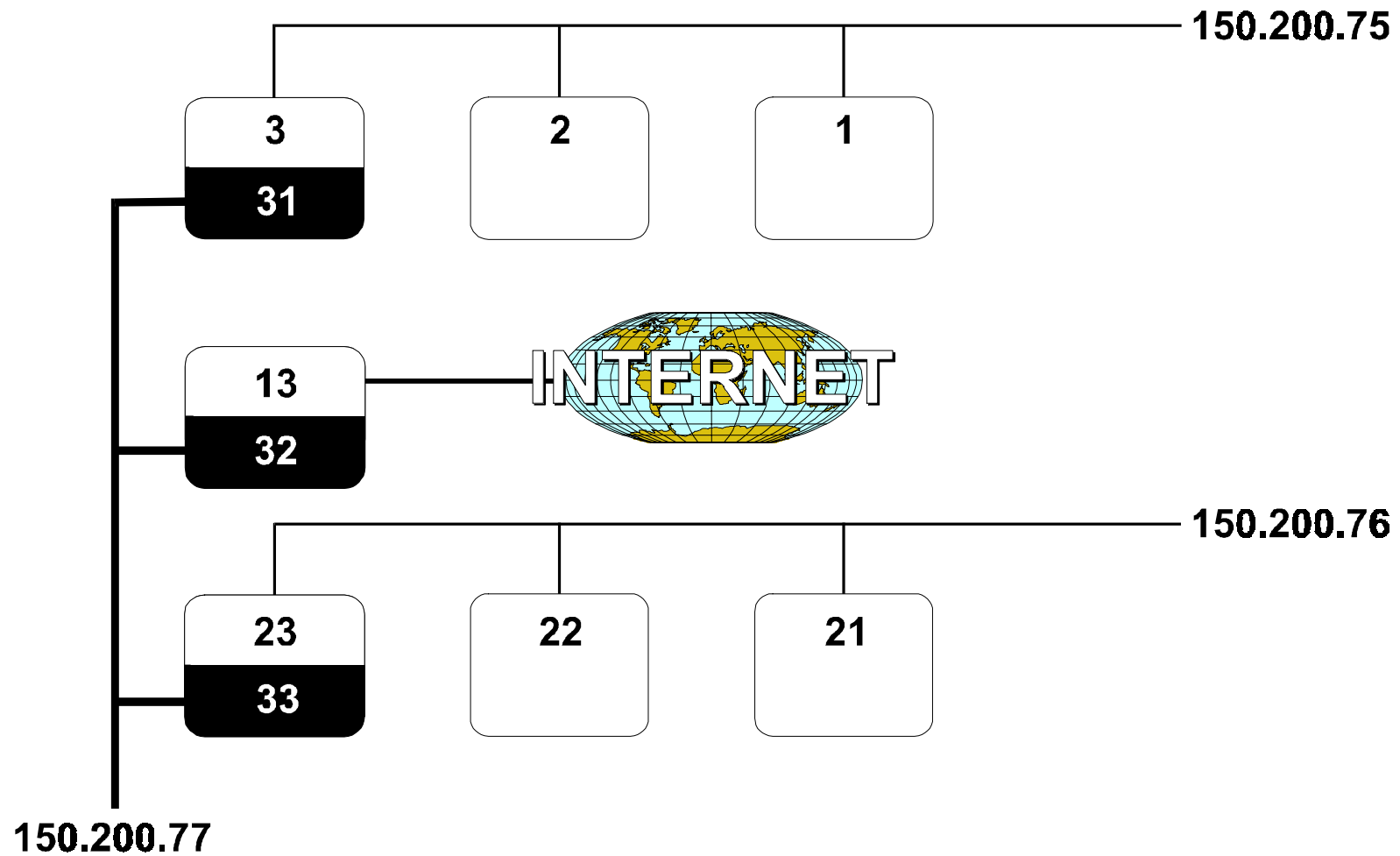
A Routing Backbone



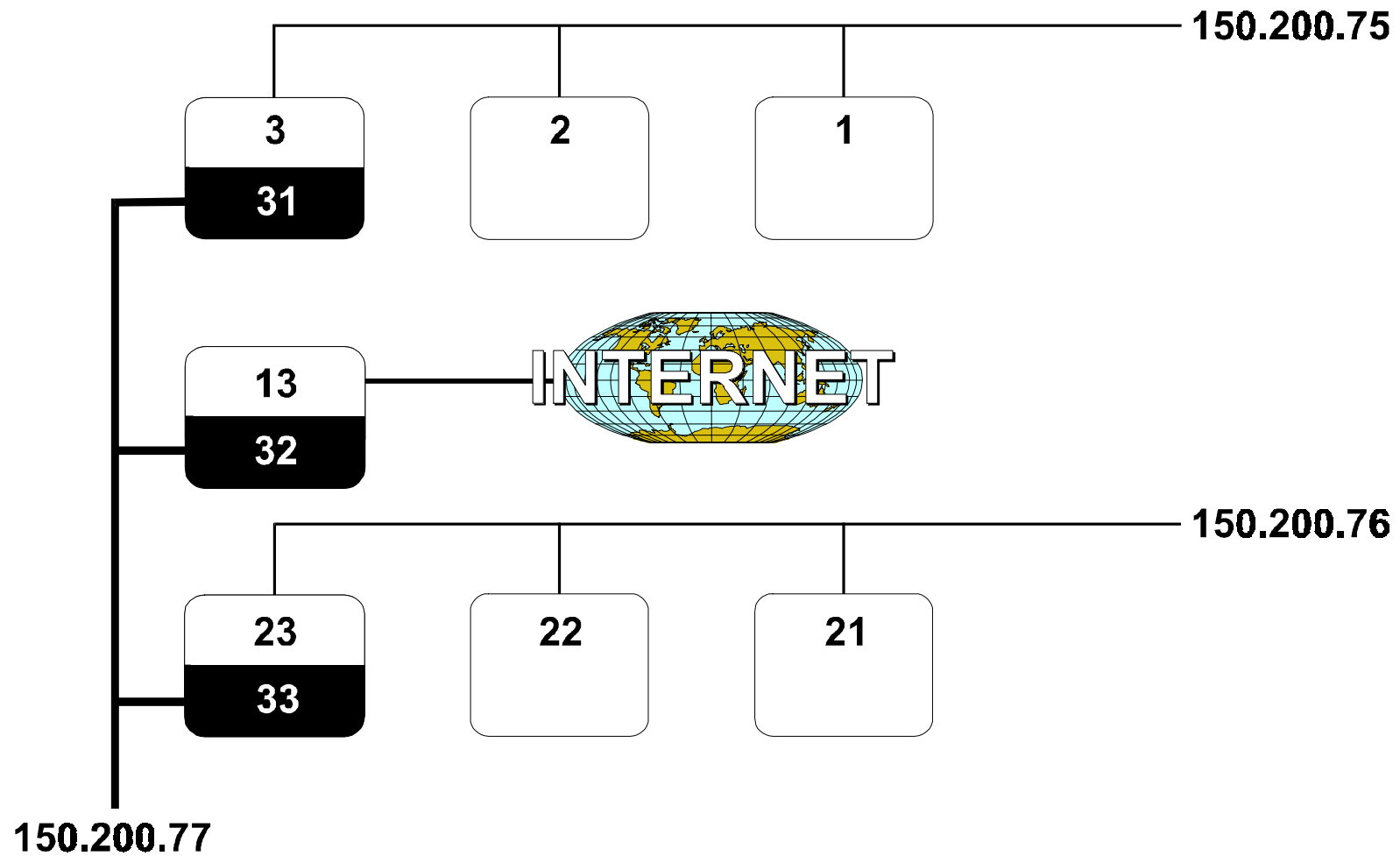
A Routing Backbone



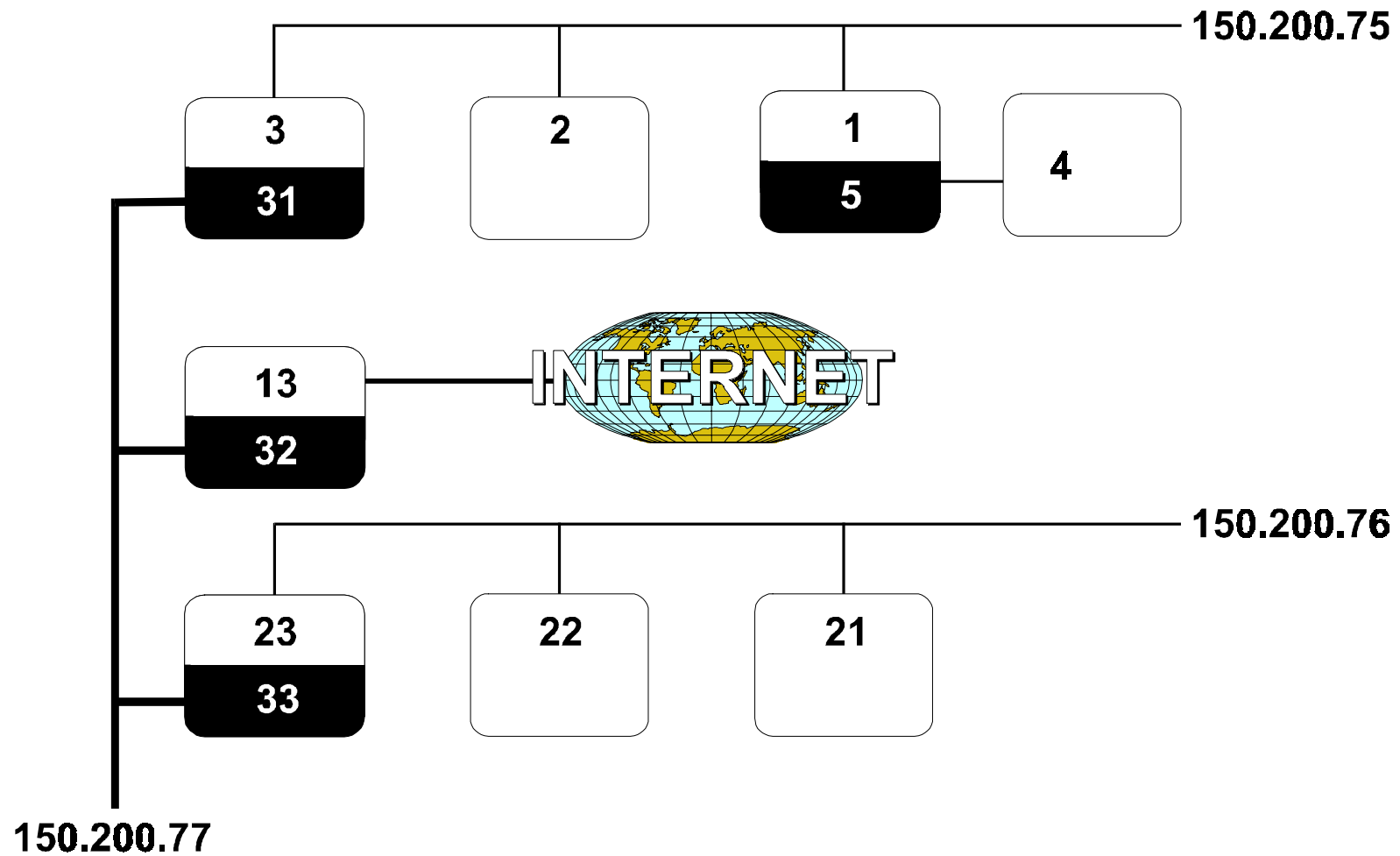
A Routing Backbone



A Routing Backbone



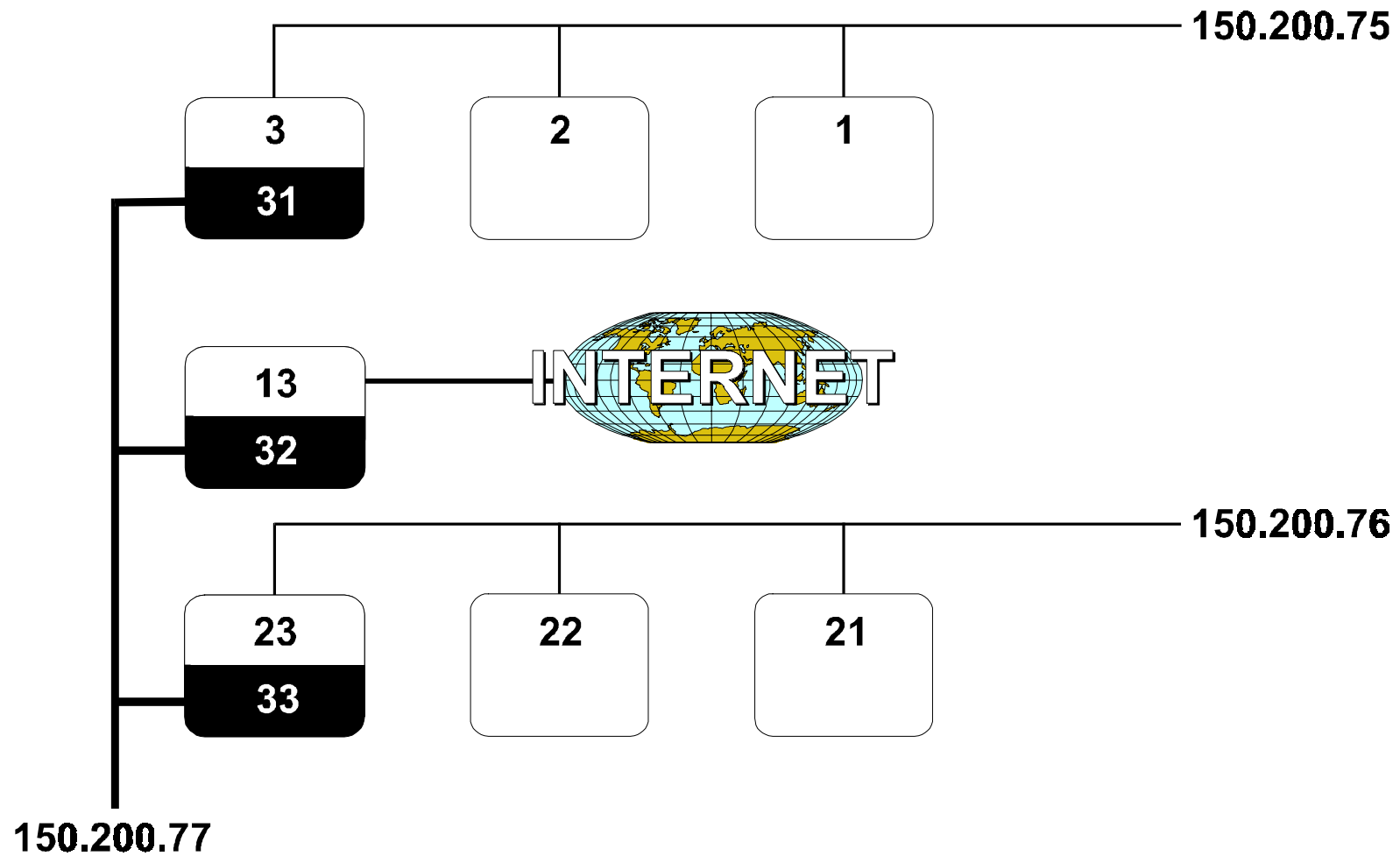
A Routing Backbone with PPP



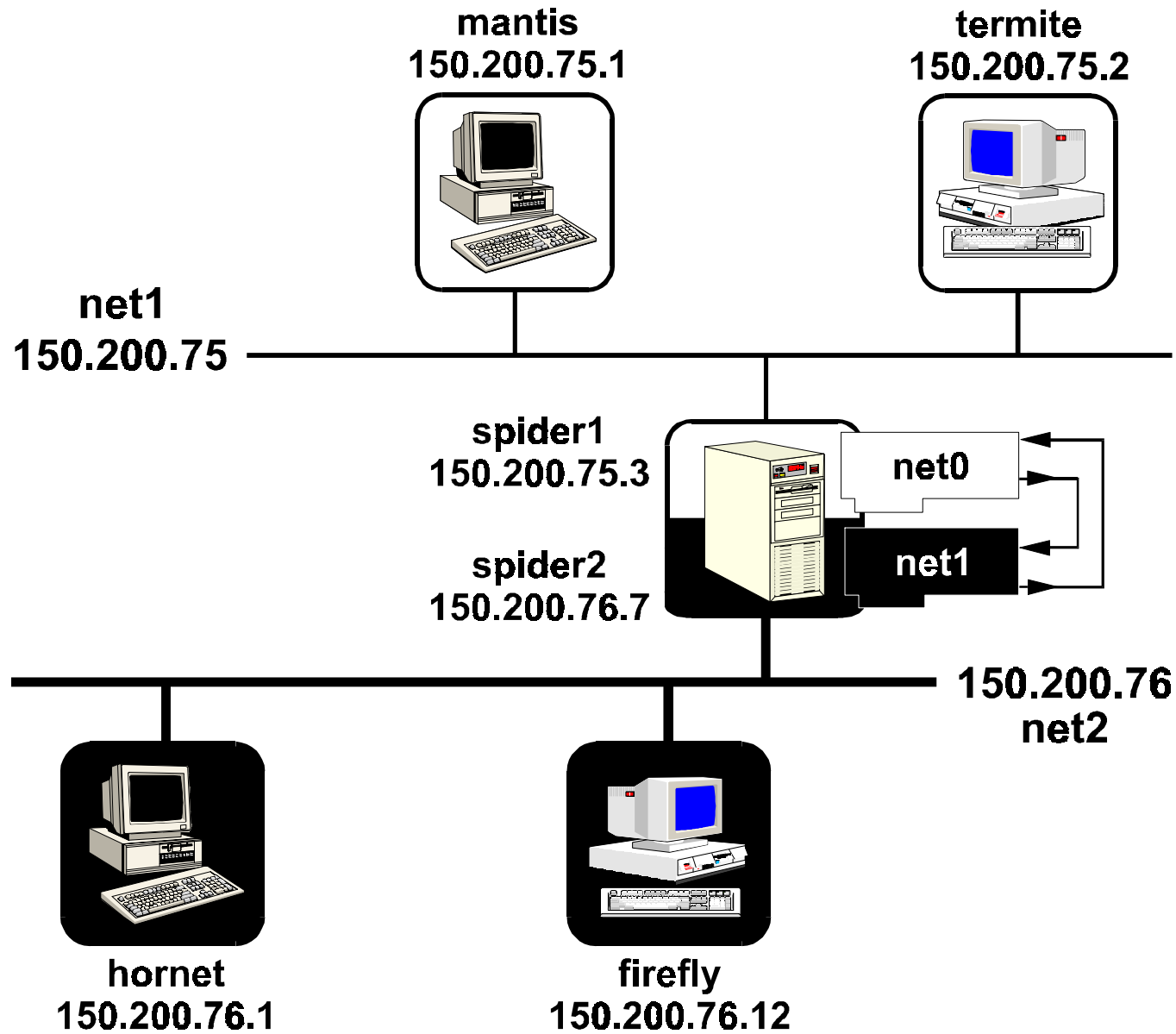
The `/etc/inet/gateways` File on host 3/31

```
# cat /etc/inet/gateways
net 0.0.0.0      gateway host32 metric 1 passive
host 150.200.76.4 gateway host1  metric 1 passive
```

A Routing Backbone



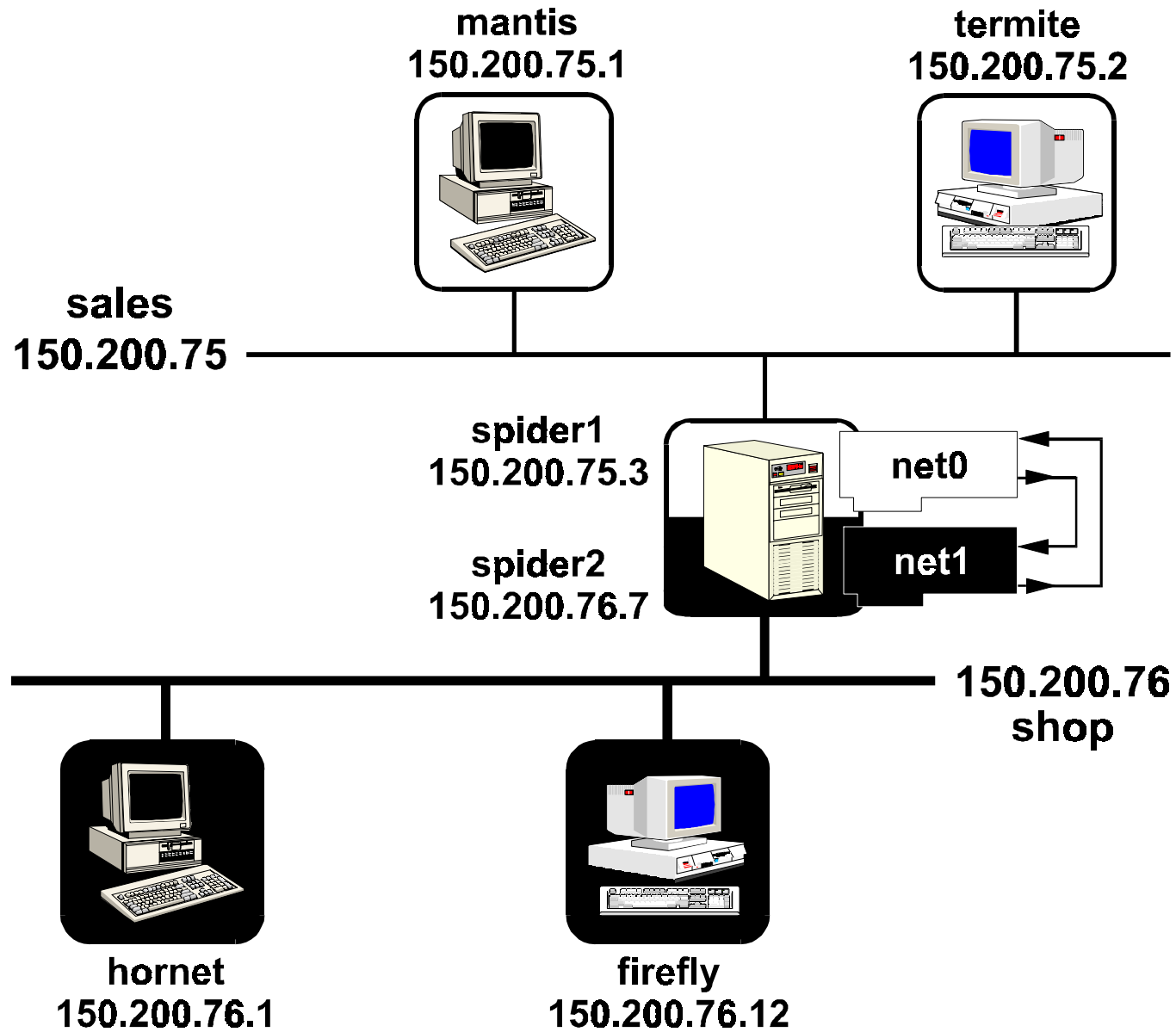
A Network Router



Output of `netstat -rn` on *mantis*

Destination	Gateway	Flags	Refs	Use	Interface
default	150.200.75.3	UGS	1	8443	net0
127.0.0.1	127.0.0.1	UH	2	351	lo0
150.200.75/24	150.200.75.1	UC	1	392	net0
150.200.76/24	150.200.75.3	UGS	0	0	net0
150.200.75.1	127.0.0.1	UGHS	4	1097	lo0
224/8	150.200.75.1	UGS	1	0	net0

A Network Router



Configuring WAN Connections

- WAN interface types
- WAN protocols
- Configuring the point to point protocol (PPP)
- Troubleshooting PPP

Modem Modulation Standards

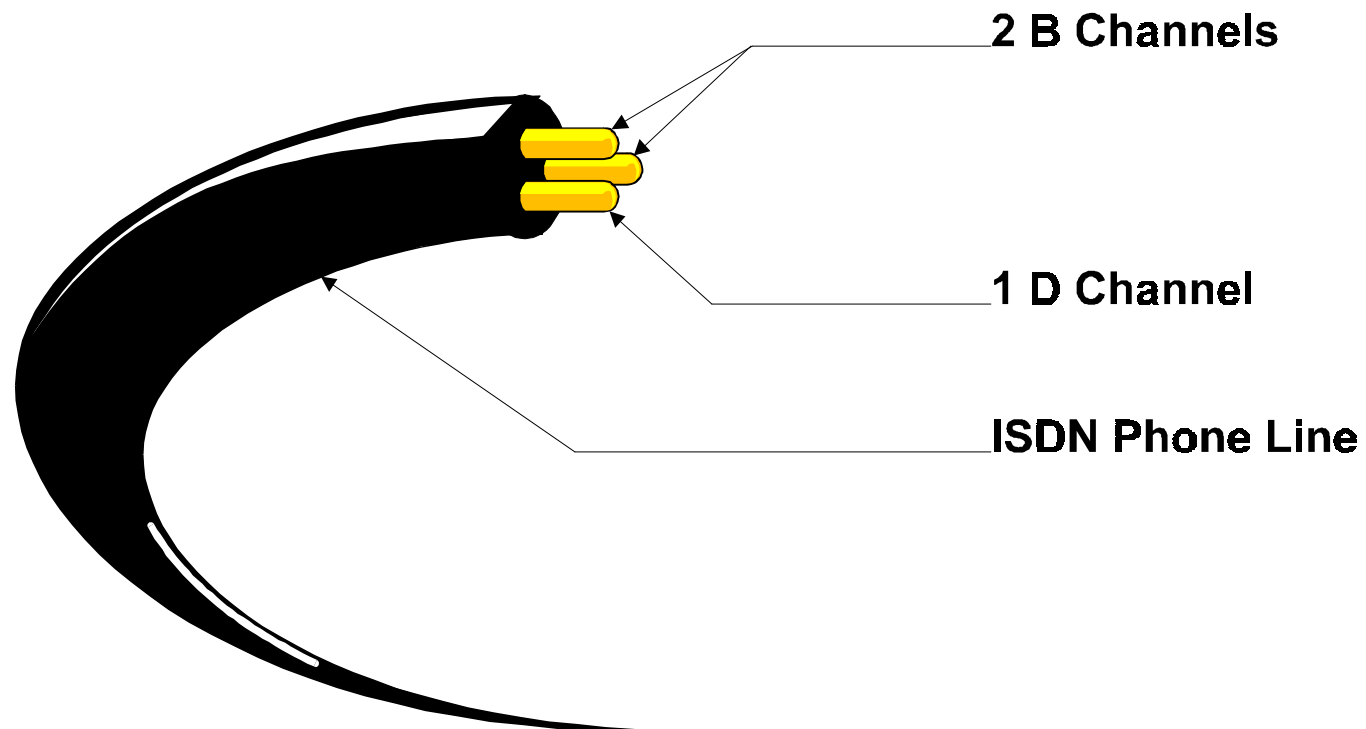
Modulation	Data Rate (bits/second)	Comments
Bell 103	300	
Bell 212A	1,200	
V.22	1,200	
V.22bis	2,400	
V.32	9,600	
V.32bis	14,400	
V.terbo	19,200	Pre-V.34 modulation with fewer features.
V.FC	28,800	
V.34	28,800	
V.34bis	33,600	
K56	56,000*	Proprietary modulation used by Rockwell & Lucent
X2	56,000*	Proprietary modulation used by 3COM
V.90	56,000*	New ITU Standard. Previously referred to as V.pcm.

(*) Achieve 56,000 bps only on downloads from specially configured providers, otherwise rate is 33,600 bps. The different modulations are incompatible.

Other Modem Standards

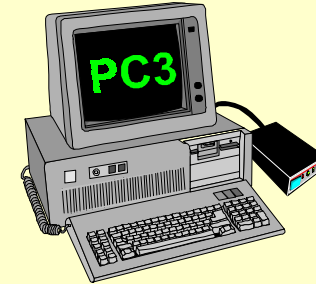
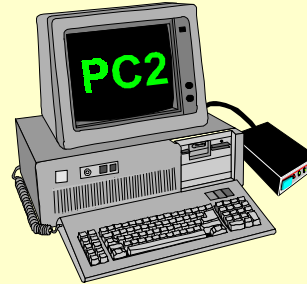
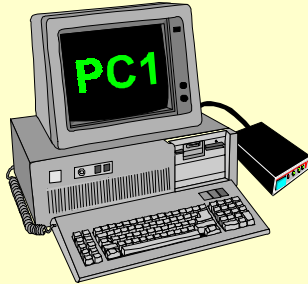
Standard	Comments
V.42 error detection and correction	Specifies LAPM error correction and can fall back to MNP 4 for compatibility.
V.42bis data compression	A ITU-T data compression standard. Most modems with V.42bis can fall back to MNP Class
V.17 fax modulation	Sends and receives faxes at 14,400 bps or slower if necessary.

ISDN Channels

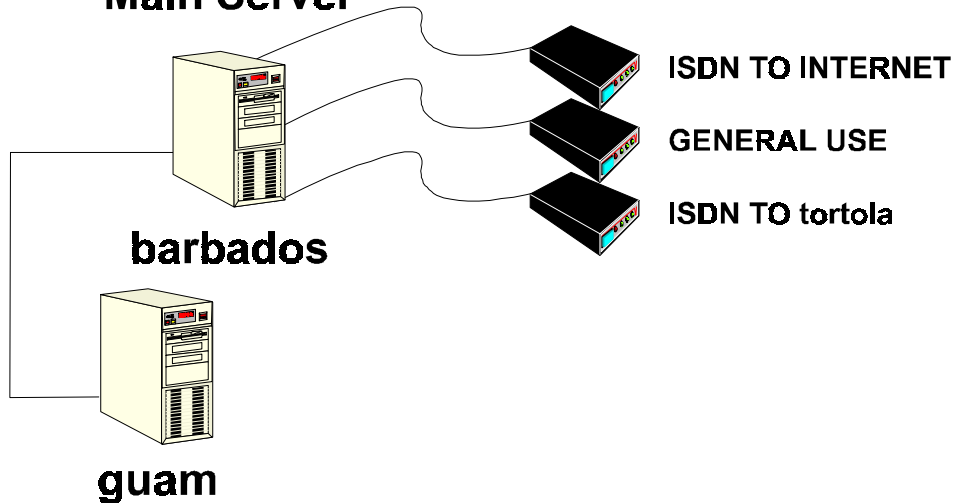


ISDN Topology

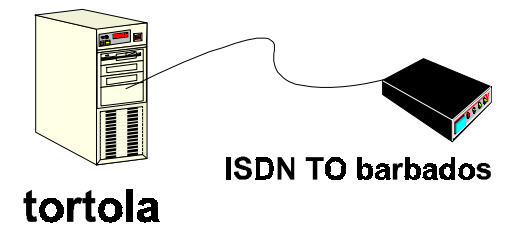
Remote Windows Workstations



SCO UnixWare 7 Main Server



SCO UnixWare 7 Remote Server



Leased Line Speeds in North America and Japan

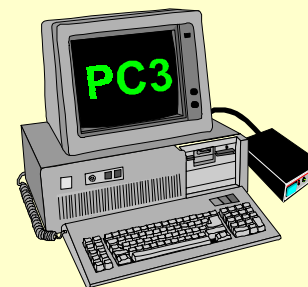
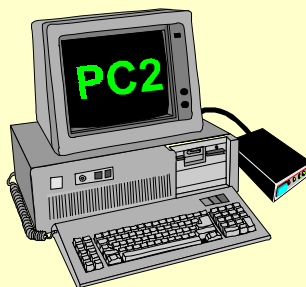
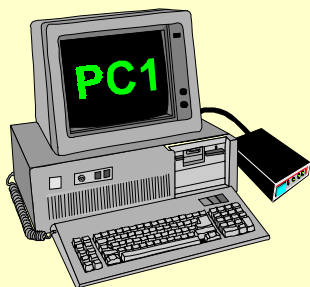
Common Name	Official Name	Description	Throughput
T1	DS1	24 64Kbps voice lines multiplexed together	1.5Mbps
T2	DS2	4 T1 lines multiplexed together	6.3Mbps
T3	DS3	7 T2 lines multiplexed together	45Mbps
T4	DS4	6 T3 lines multiplexed together	274Mbps
Fractional T1	FT1	Any integer multiple, up to 23, of 64Kbps voice lines multiplexed together	64Kbs * the number of lines
Fractional T2	FT3	Any integer multiple, up to 27, of 1.5Mbps T1 lines multiplexed together	1.5Mbs * the number of lines

Leased Line Speeds Elsewhere in the World

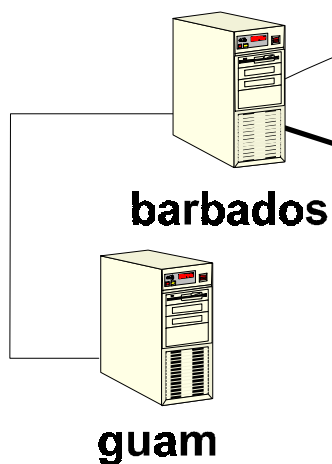
Official Name	Description	Throughput
E1	30 64Kbps voice lines multiplexed together	2.048Mbps
E2	4 E1 lines multiplexed together	8.448Mbps
E3	4 E2 lines multiplexed together	34.368Mbps
E4	4 E3 lines multiplexed together	139.264Mbps
E5	4 E4 lines multiplexed together	565.148Mbps
Fractional E1	Any integer multiple, up to 29, of 64Kbps voice lines multiplexed together	64Kbs * the number of lines
Fractional E2	Any integer multiple, up to 3, of E1 lines multiplexed together	2.048Mbs * the number of lines

Frame Relay Alternative Topology

Remote Windows Workstations



SCO OpenServer Main Server



GENERAL USE



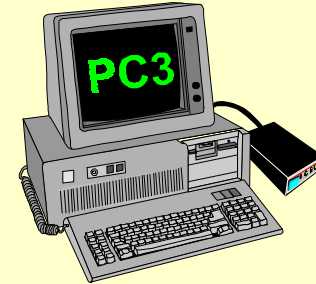
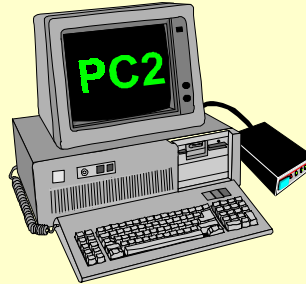
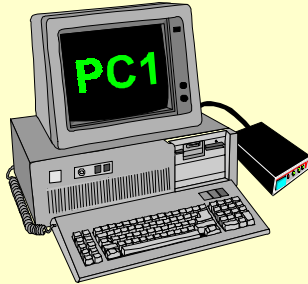
Frame Relay Cloud

SCO OpenServer Remote Server

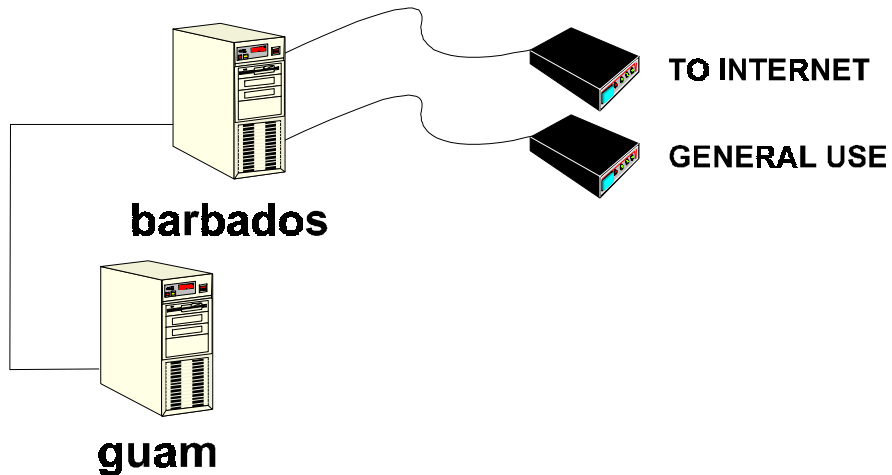


Example PPP Topology

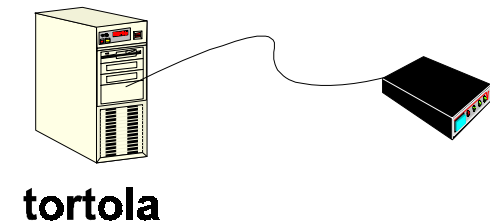
Remote Windows Workstations



SCO UnixWare 7 Main Server



SCO UnixWare 7 Remote Server



PPP File Usage

Outgoing PPP request detected



pppd contacted to make connection



**pppd looks in *.pppcfg*;
gets remote systems UUCP name**



/etc/ppp.d/.pppcfg



**UUCP subsystem invoked, looks in
Systems file, gets phone number, ...**



/etc/uucpSystems

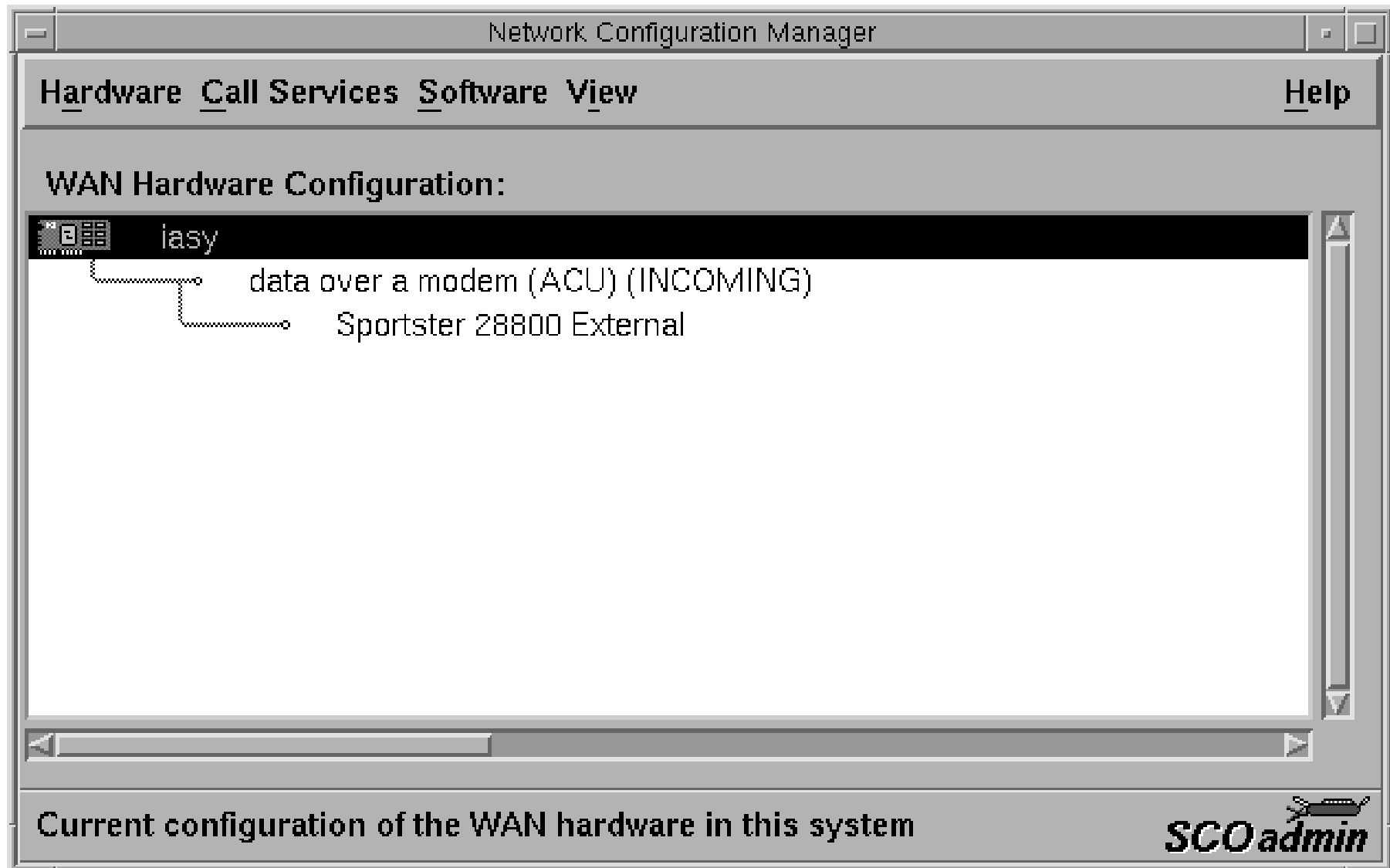


**UUCP looks in *Devices* file to select
tty line and invoke Dialer**



/etc/uucp/Devices

WAN View of the Network Configuration Manager



Modem Manager

Modem Manager on apollo

Host Modem Options Help

Configured modems on apollo:

Type	Answers	Port	Speed	Dialer
Sportster 14400 Fax	Yes	term/01m	115200	Sportster_14400_Fa

SCOadmin

Serial Manager

Modify Serial Port: term/00m

Port type: COM 1 modem ▾

Configure port: ☒ outgoing only
☒ incoming only
☐ incoming and outgoing

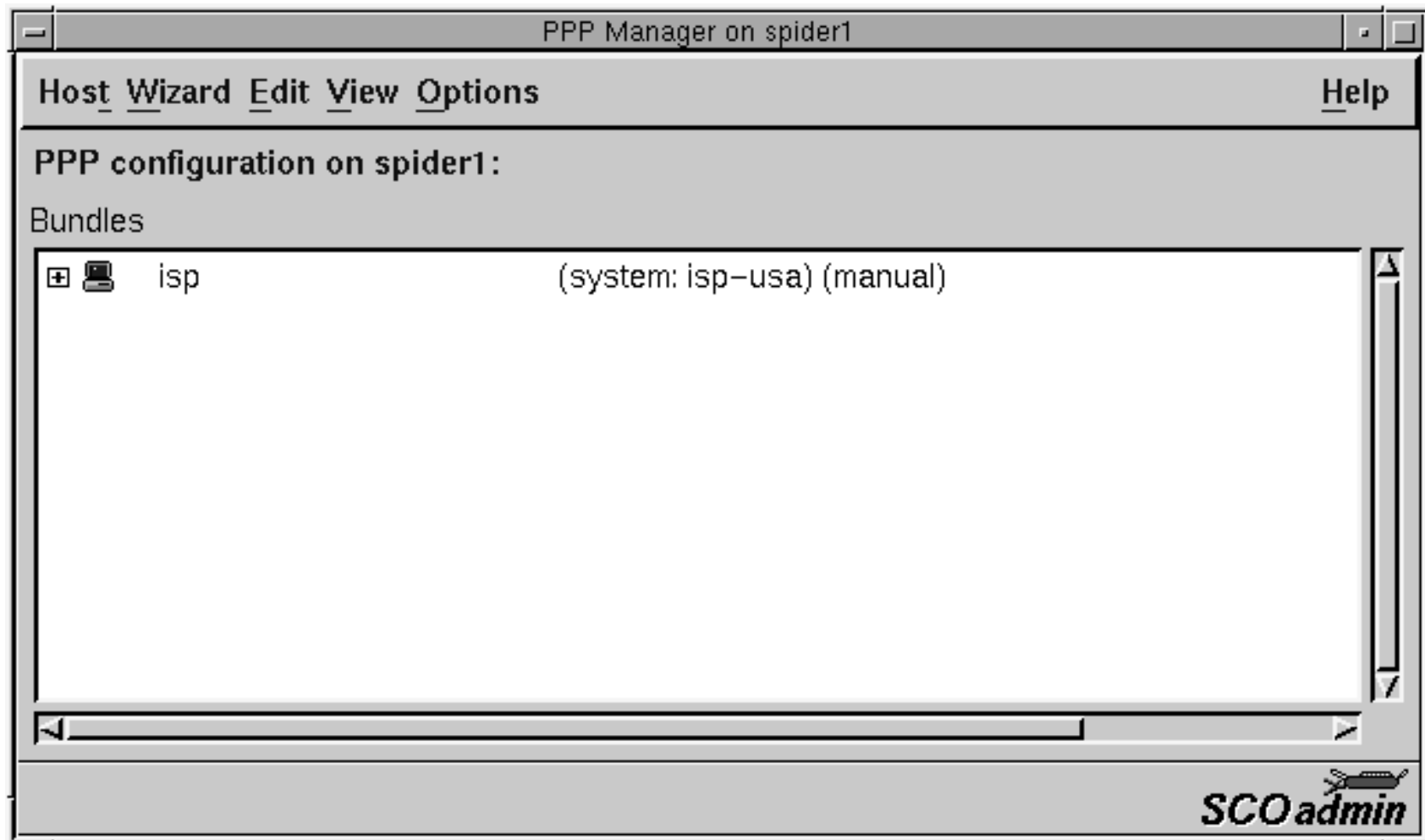
Speed (bps): 115200 ▾

Advanced options:

Port settings... Receive buffer...

OK Cancel Help

PPP Manager



Outgoing Bundle

Outgoing : Bundle

Provider bundle name:

Remote system:

Telephone numbers:

How to connect: ☒ On Demand ☐ Use pppattach

Outgoing PPP Authentication

Outgoing : PPP Authentication

Authentication protocol: ☒ None ☐ CHAP
☐ CHAP and PAP ☐ PAP

Local authentication name:

CHAP secret:

PAP password:

Login Script Window

Outgoing : Login Script

Use login script: ☒ Yes ☐ No

Login Script

1st Expect:		1st Send:	\r
2nd Expect:	in:--in:--	2nd Send:	myuserid
3rd Expect:	sword:	3rd Send:	mypassword
4th Expect:		4th Send:	
5th Expect:		5th Send:	

Next Back Cancel Help

Outgoing IP Network Protocol

Outgoing : IP Network Protocol

Local address assigned by: ☒ Local ☐ Remote

Local IP address/host name:

Remote address assigned by: ☐ Local ☒ Remote

Remote IP address/host name:

Use as default route: ☒ Yes ☐ No

Local host acts as gateway: ☒ Yes ☐ No

Act as proxy for ARP: ☐ Yes ☒ No

Outgoing Name Servers

Outgoing : Name Servers

Local domain:

Domain search order

somedom.com

Add

Delete

Raise

Lower

Name server search order

150

200

76

3

Add

Delete

Raise

Lower

Devices Window

Outgoing : Link Devices

Flow control: ☒ Hardware ☐ Software ☐ None

Multilink maximum links:

Available Link Devices

COM1 Direct (/dev)

Add >>

<< Remove

Selected Link Devices

COM1 ACU (/dev)

Raise

Lower

Finish Back Cancel Help

Incoming Remote Access

Incoming : Remote Access

Remote access bundle:

Authentication methods

Enable CHAP: ☐ Yes ☒ No

Enable PAP: ☐ Yes ☒ No

Enable login: ☒ Yes ☐ No

Enable caller ID: ☐ Yes ☒ No

Login Authentication

Incoming : Login Authentication

User name:

Change user's password: ☒ Yes ☐ No

Password:

Confirm password:

Incoming IP Network Protocol

Incoming : IP Network Protocol

Local address assigned by: ☒ Local ☐ Remote

Local IP address/host name:

Remote address assigned by: ☒ Local ☐ Remote

Remote IP address/host name:

Use as default route: ☐ Yes ☒ No

Local host acts as gateway: ☒ Yes ☐ No

Act as proxy for ARP: ☐ Yes ☒ No

Incoming Advertise DNS

Incoming : Advertise DNS

Advertise domain name servers: ☒ Yes ☐ No

Primary server address:

Secondary server address:

Incoming Link Devices

Incoming : Link Devices

Flow control: ☒ Hardware ☐ Software ☐ None

Multilink maximum links:

Available Link Devices

COM1 Direct (/dev)

Selected Link Devices

COM1 ACU (/dev)

Add >>

<< Remove

Raise

Lower

Finish Back Cancel Help

TCP/IP Administration Topics

- TCP/IP startup
- Daemon startup
- The **inetd**(1Mtcp) daemon
- the */etc/inet/config* file
- Testing daemons
- Configuring trusted access

Example **ifconfig**(1Mtcp) Commands

Configuring Interfaces:

```
# /etc/ifconfig lo0 127.0.0.1 perf 57344 57344 1
# /etc/ifconfig -p net0 200.100.50.1 netmask 255.255.255.0 \
> broadcast 200.100.50.255 perf 24576 24576 1
```

Listing Interfaces:

```
# /etc/ifconfig -a
net0: flags=4043<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 200.100.50.1 netmask ffffffff broadcast 200.100.50.255
    perf. params: recv size: 24576; send size: 24576; full-size frames: 1
    ether 00:00:c0:83:47:8f
lo0: flags=4049<UP,LOOPBACK,RUNNING,MULTICAST> mtu 8232
    inet 127.0.0.1 netmask ff000000
    perf. params: recv size: 57344; send size: 57344; full-size frames: 1
```

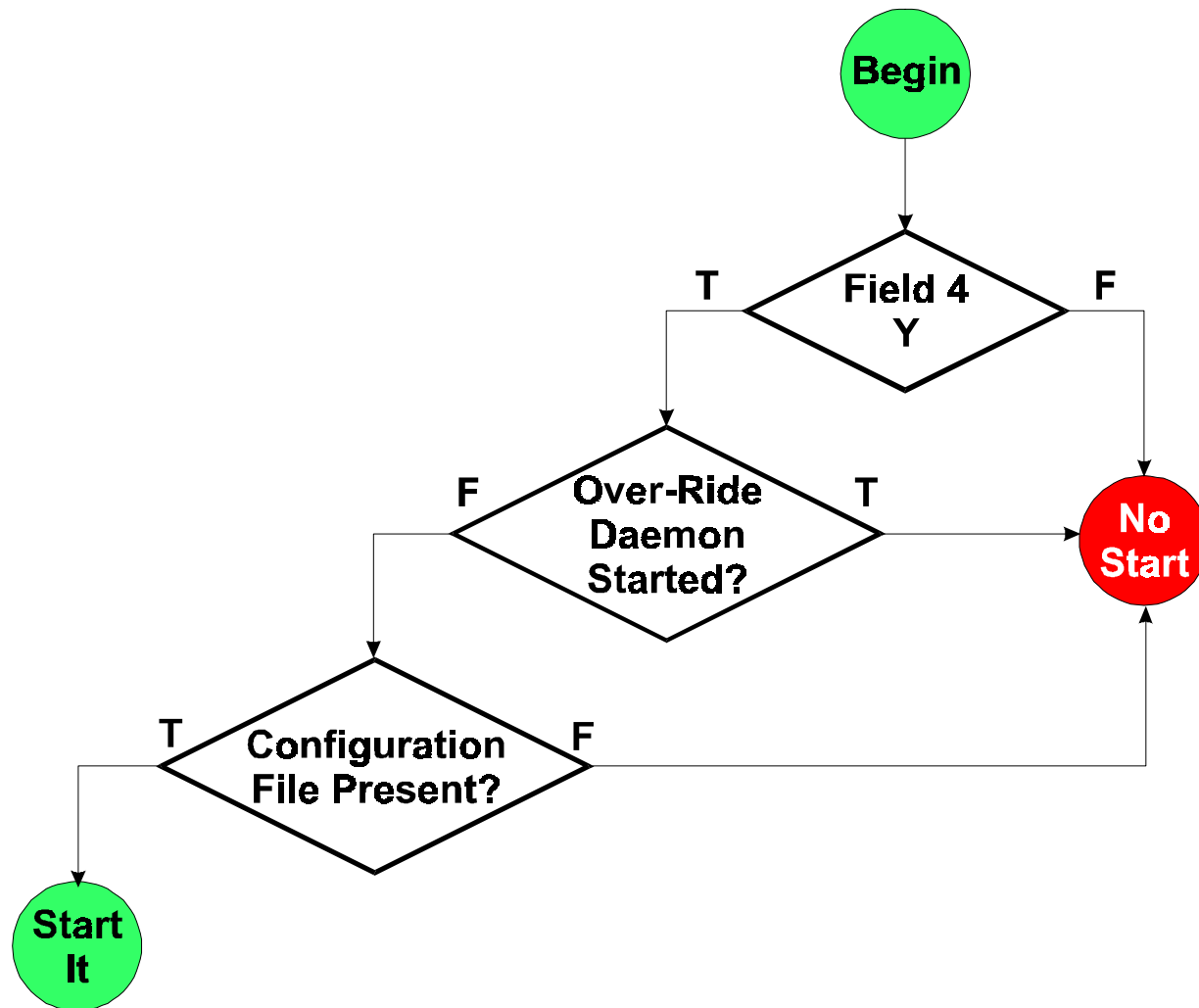
Bringing interfaces down and back up:

```
# /etc/ifconfig net0 down
# /etc/ifconfig net0 up
```

The `/etc/inet/config` File

```
1:/usr/eac/bin/initsock::y:/usr/eac/bin/initsock::
1a:/usr/sbin/inconfig::y:/etc/inet/inet.dfl::
2:/usr/sbin/syslogd::y:/etc/syslog.conf::
5:/usr/sbin/in.named::y:/etc/inet/named.boot::
3:/usr/sbin/in.pppd::y:/etc/inet/ppphosts::
4a:/usr/sbin/in.gated::Y:/etc/inet/gated.conf::
# The next line can be read:
# If field 3 is a Y and /usr/sbin/in.gated was not run, then run
# /usr/sbin/in.routed
4b:/usr/sbin/in.routed:/usr/sbin/in.gated:Y::
#4c:/usr/sbin/route::n::add default router_placeholder:
6:/usr/sbin/in.xntpd::y:/etc/inet/ntp.conf::
7:/usr/bin/sh::y:/etc/inet/rc.inet:/etc/inet/rc.inet start:
# By default start address allocation and dhcp servers
8a:/usr/sbin/in.aasd::y:/etc/inet/aasd.conf::
#8b:/usr/sbin/in.dhcpd::y:/etc/inet/dhcpd.conf:-t 0:
# Entry to start bootpd, comment-out dhcpd line
#9a:/usr/sbin/in.bootpd::y:/etc/inet/bootptab:-t 0:
# Entries to start both bootpd and dhcpd, comment out dhcpd entry
#9b:/usr/sbin/in.bootpd::y:/etc/inet/bootptab:-t 0 -S -P bootps-alt:
#9c:/usr/sbin/in.dhcpd::y:/etc/inet/dhcpd.conf:-t 0 -b bootps-alt:
4c:/usr/sbin/route::y::add default 198.140.193.1:
4d:/usr/sbin/route::y::add 224.0.0.0 198.140.193.111:
```

The `/etc/inet/config` Flow Chart



The `/etc/inet/inetd.conf` File

```
# <service_name> <socket_type> <proto> <flags> <user> <server_pathname> <args>
#
# Ftp and telnet are standard Internet services.
#
ftp      stream  tcp      nowait  root    /usr/sbin/in.tcpd      in.ftpd -a
#ftp     stream  tcp      nowait  root    /usr/sbin/in.ftpd      in.ftpd -a
telnet   stream  tcp      nowait  root    /usr/sbin/in.tcpd      in.telnetd
#telnet  stream  tcp      nowait  root    /usr/sbin/in.telnetd   in.telnetd
#
# Tnamed serves the obsolete IEN-116 name server protocol.
#
name      dgram    udp      wait     root    /usr/sbin/in.tcpd      in.tnamed
#name     dgram    udp      wait     root    /usr/sbin/in.tnamed    in.tnamed
#
# Shell, login, exec, comsat and talk are BSD protocols.
#
shell     stream  tcp      nowait  root    /usr/sbin/in.tcpd      in.rshd
#shell    stream  tcp      nowait  root    /usr/sbin/in.rshd      in.rshd
login     stream  tcp      nowait  root    /usr/sbin/in.tcpd      in.rlogind
#login    stream  tcp      nowait  root    /usr/sbin/in.rlogind   in.rlogind
exec      stream  tcp      nowait  root    /usr/sbin/in.tcpd      in.rexecd
#exec     stream  tcp      nowait  root    /usr/sbin/in.rexecd    in.rexecd
comsat    dgram    udp      wait     root    /usr/sbin/in.tcpd      in.comsat
#comsat   dgram    udp      wait     root    /usr/sbin/in.comsat    in.comsat
talk      dgram    udp      wait     root    /usr/sbin/in.tcpd      in.otalkd
#talk     dgram    udp      wait     root    /usr/sbin/in.otalkd    in.otalkd
ntalk     dgram    udp      wait     root    /usr/sbin/in.tcpd      in.talkd
#ntalk    dgram    udp      wait     root    /usr/sbin/in.talkd     in.talkd
pop-3     stream  tcp      nowait  root    /usr/sbin/in.tcpd      /etc/popper
```

The `/etc/inet/inetd.conf` File

```
# <service_name> <socket_type> <proto> <flags> <user> <server_pathname> <args>
#
# Ftp and telnet are standard Internet services.
#
ftp      stream  tcp      nowait  root    /usr/sbin/in.tcpd      in.ftpd -a
#ftp     stream  tcp      nowait  root    /usr/sbin/in.ftpd      in.ftpd -a
telnet   stream  tcp      nowait  root    /usr/sbin/in.tcpd      in.telnetd
#telnet  stream  tcp      nowait  root    /usr/sbin/in.telnetd   in.telnetd
#
# Tnamed serves the obsolete IEN-116 name server protocol.
#
name      dgram    udp      wait     root    /usr/sbin/in.tcpd      in.tnamed
#name     dgram    udp      wait     root    /usr/sbin/in.tnamed    in.tnamed
#
# Shell, login, exec, comsat and talk are BSD protocols.
#
shell     stream  tcp      nowait  root    /usr/sbin/in.tcpd      in.rshd
#shell    stream  tcp      nowait  root    /usr/sbin/in.rshd      in.rshd
login     stream  tcp      nowait  root    /usr/sbin/in.tcpd      in.rlogind
#login    stream  tcp      nowait  root    /usr/sbin/in.rlogind   in.rlogind
exec      stream  tcp      nowait  root    /usr/sbin/in.tcpd      in.rexecd
#exec     stream  tcp      nowait  root    /usr/sbin/in.rexecd    in.rexecd
comsat    dgram    udp      wait     root    /usr/sbin/in.tcpd      in.comsat
#comsat   dgram    udp      wait     root    /usr/sbin/in.comsat    in.comsat
talk      dgram    udp      wait     root    /usr/sbin/in.tcpd      in.otalkd
#talk     dgram    udp      wait     root    /usr/sbin/in.otalkd    in.otalkd
ntalk     dgram    udp      wait     root    /usr/sbin/in.tcpd      in.talkd
#ntalk    dgram    udp      wait     root    /usr/sbin/in.talkd     in.talkd
pop-3     stream  tcp      nowait  root    /usr/sbin/in.tcpd      /etc/popper
```

Review of r-Commands and TCP Utilities

- rlogin** **Allows users to log into a remote host. If trusted access is set up, no password is needed, otherwise a password is needed.**
- rcp** **Allows users to copy files from one host to another. Requires trusted access.**
- rsh** **Allows users to execute commands on remote hosts. Requires trusted access.**
- telnet** **Similar to rlogin, only a user name and password are almost always required, and trusted access is not consulted**
- ftp** **Similar to rcp, only a user name and password is always required and trusted access is not consulted**

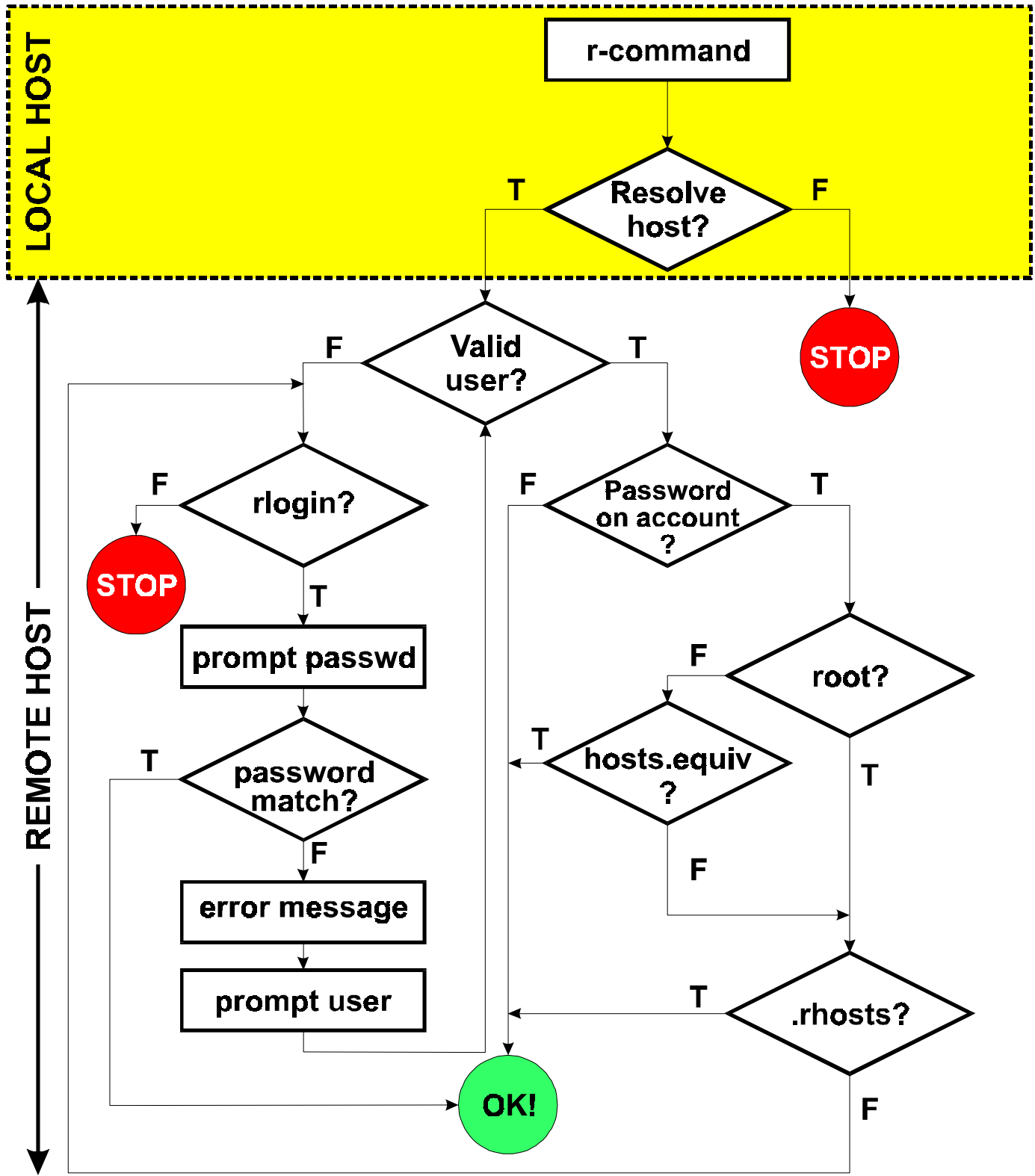
Example */etc/hosts.equiv* File on *corfu*

```
barbados  
tortola  bob  
guam
```

Example .rhosts File For User **jane** On Host *corfu*

```
barbados  
tortola  bob  
guam
```

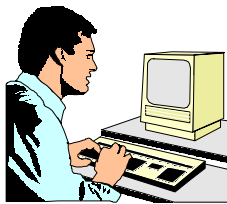
Trusted Access Sequence



Network Administrator's Account Log

LOGIN	REAL NAME	UID	<i>tortola</i>	<i>guam</i>	<i>barbados</i>	<i>name...</i>
bobb	Bob Byte	990	✓	✓	✓	✓
daven	Dave Network	10057	✓	✓		
ellene	Ellen Ethernet	7431	✓		✓	
karenc	Karen Config	13116	✓		✓	
ricko	Rick Octet	4429	✓	✓		

Two Users with Same Login Name



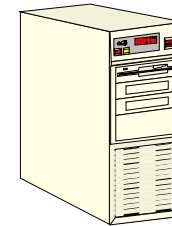
Bob Barker
login: bbarker



Barbara Barker
login: bbarker



kilgore



trout

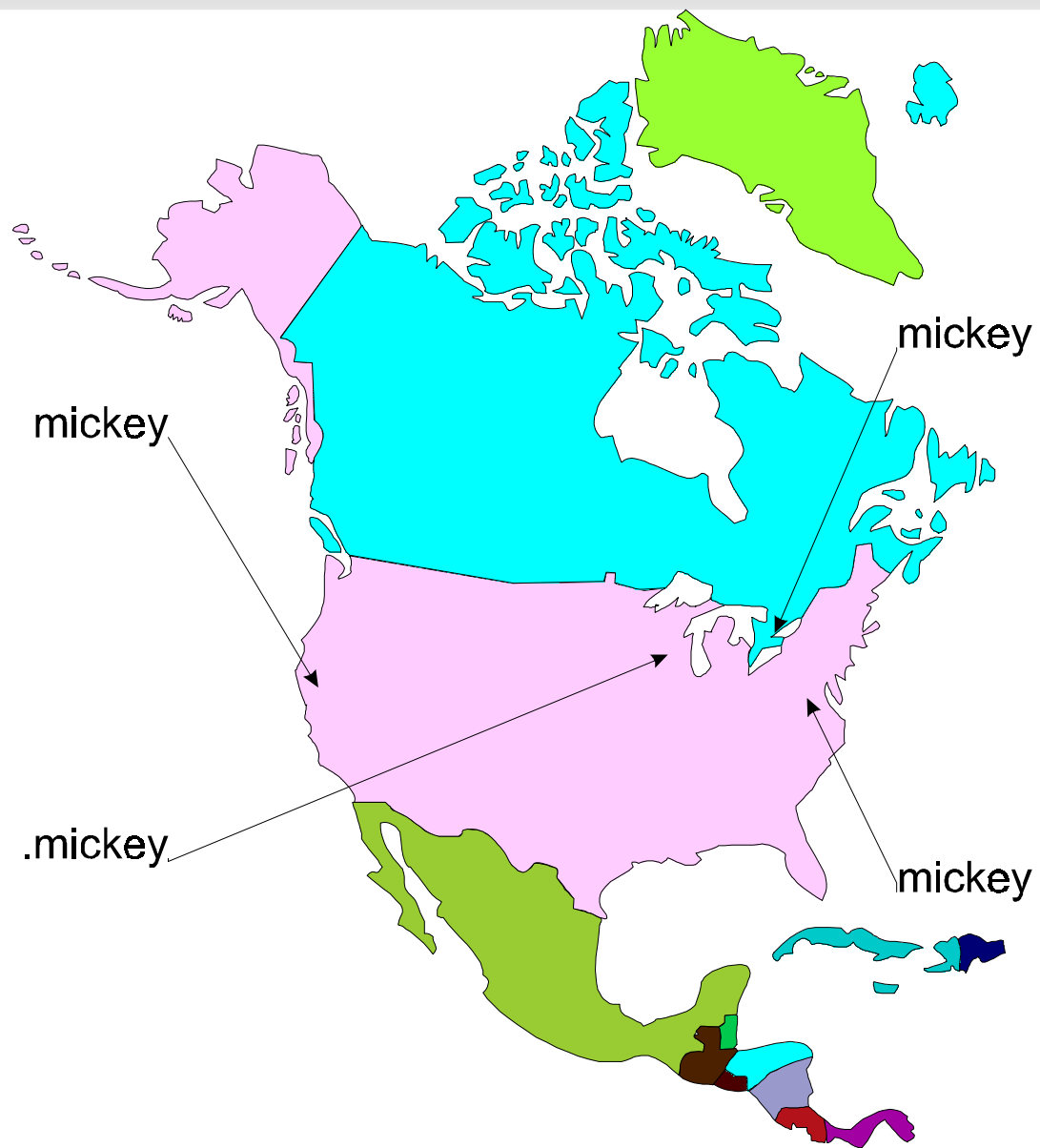
/etc/hosts.equiv

```
trout  
smelt  
tarpin
```

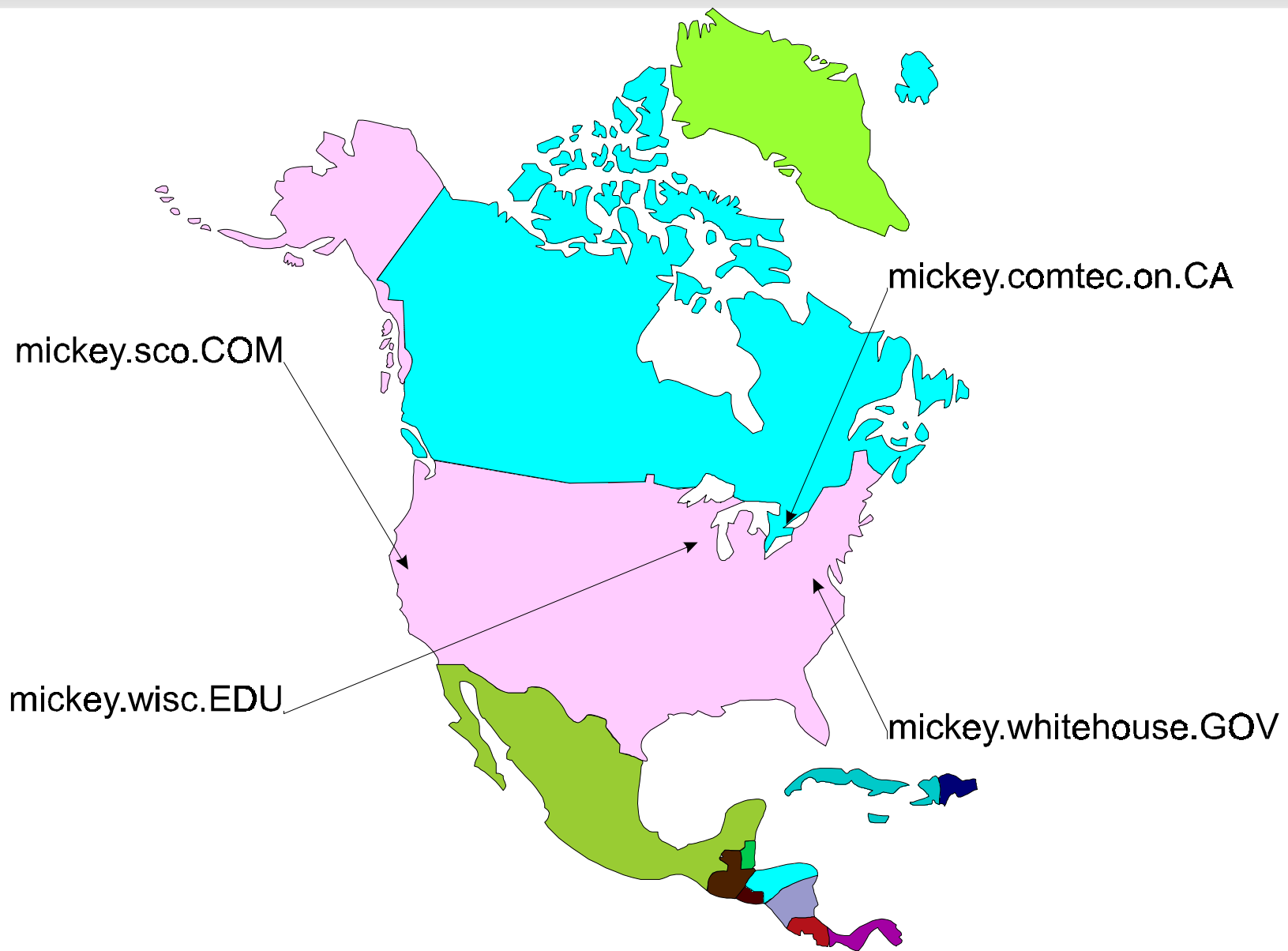
Domain Name System (DNS) Configuration

- DNS operation
- Configuring name servers
- Querying a name server
- Configuring DNS clients

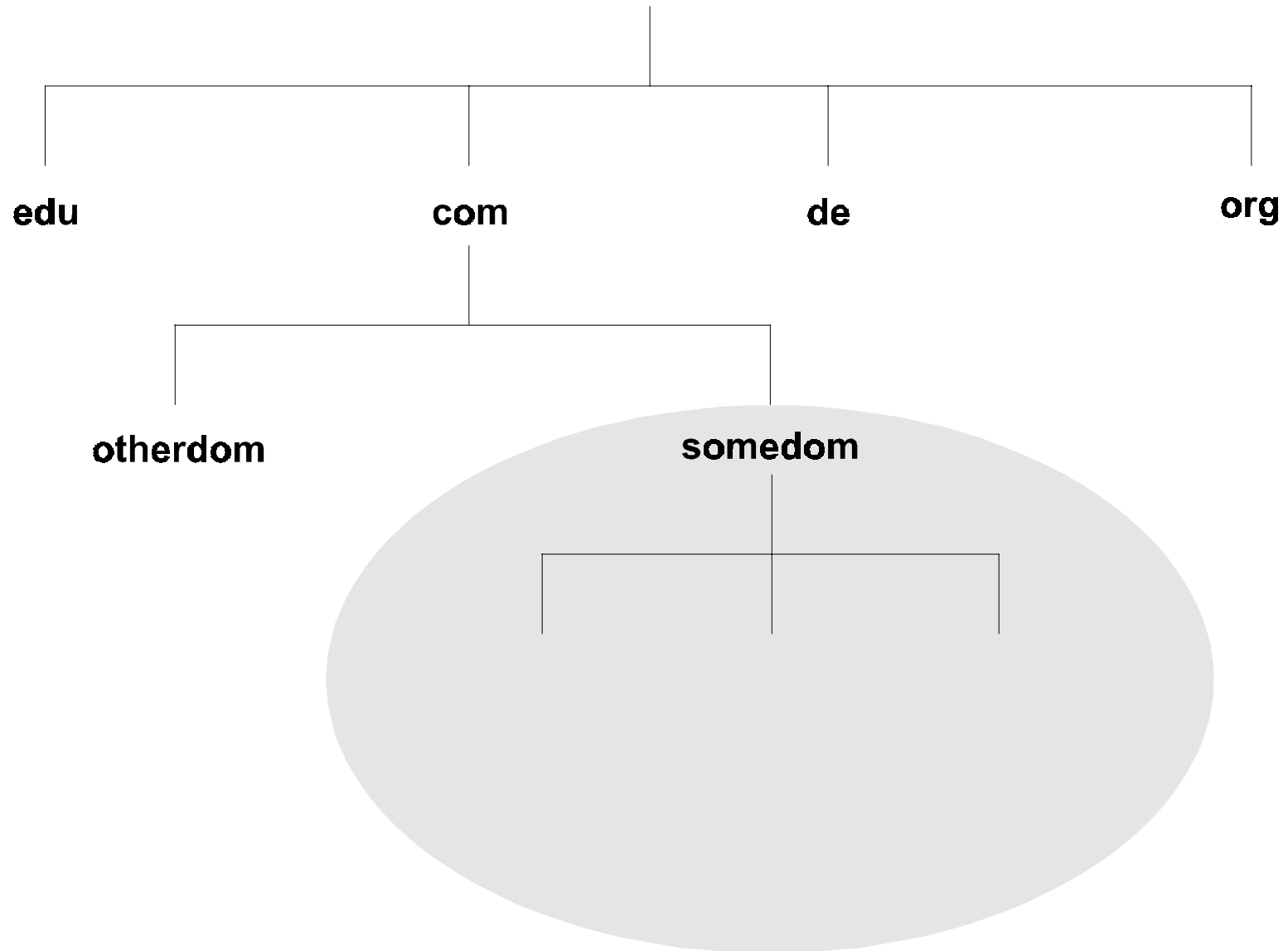
Naming Collisions on the Early Internet



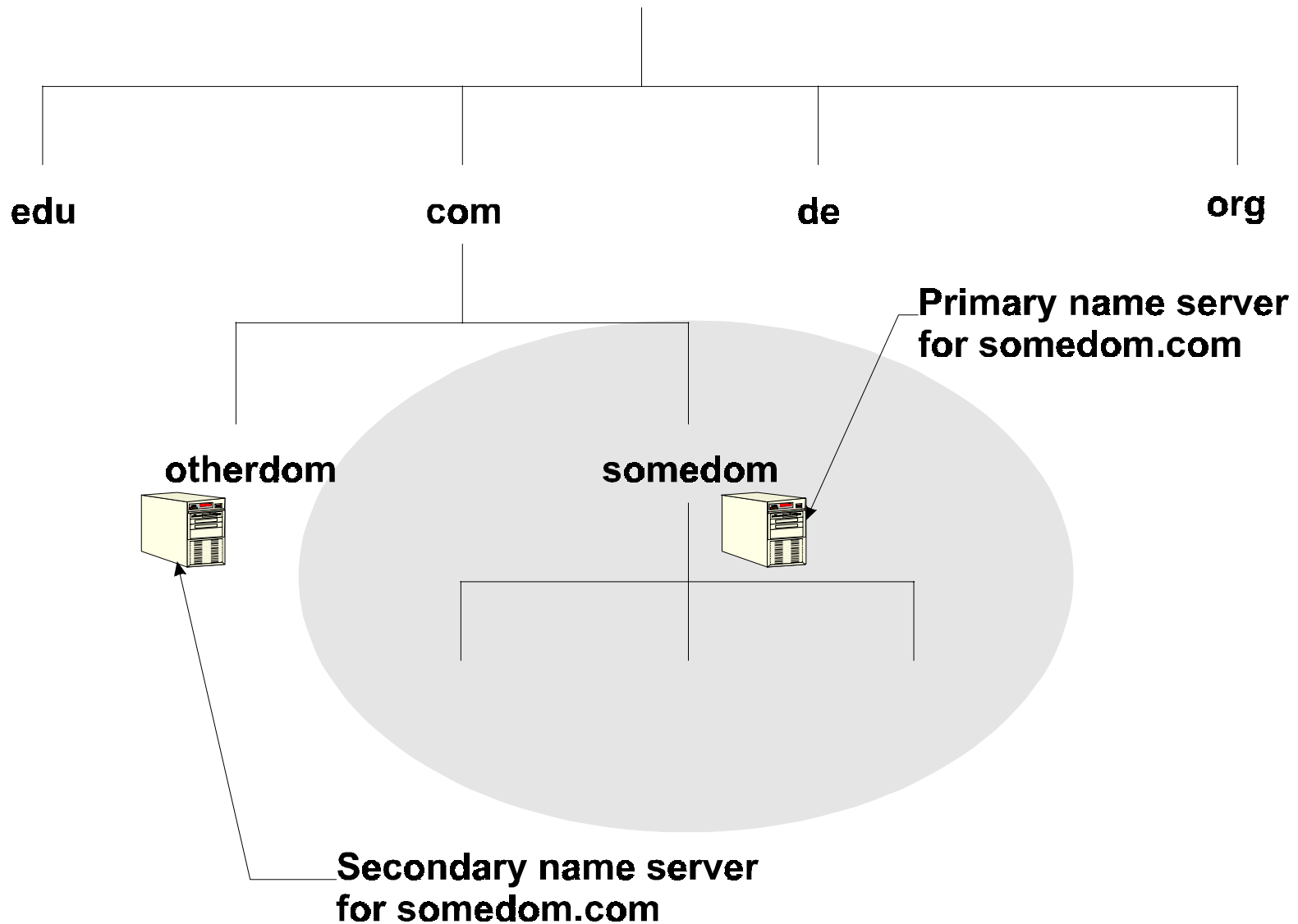
Collisions Resolved with Domains



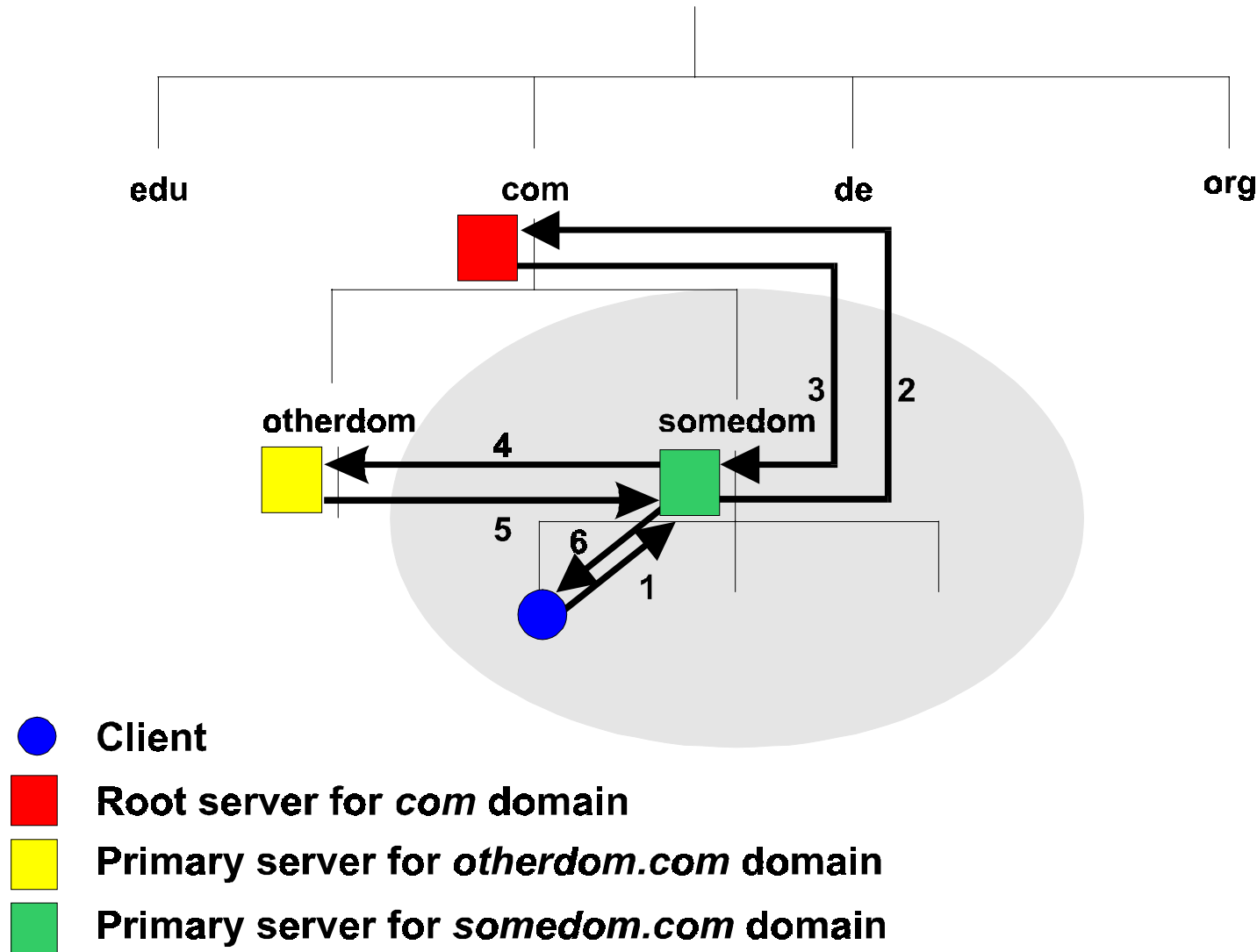
Primary Domain Only



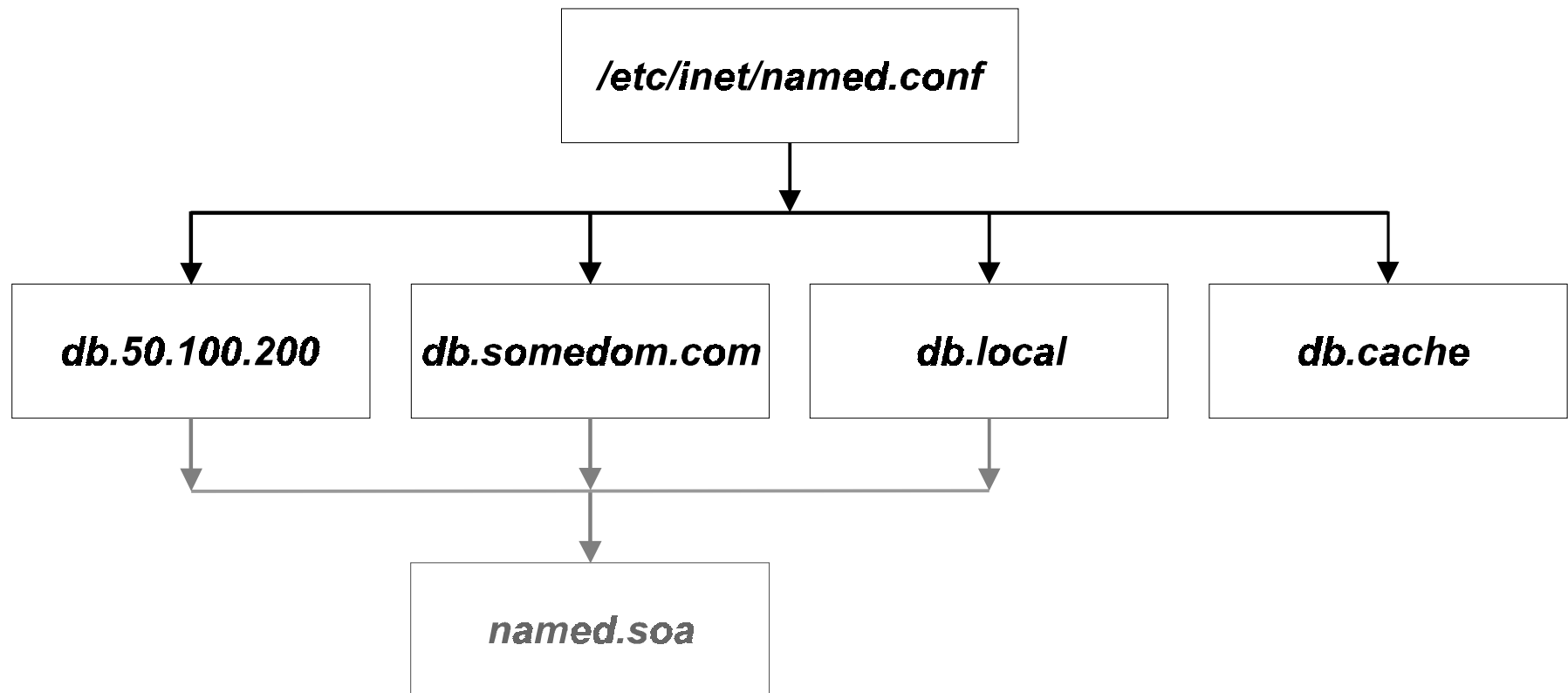
Primary and Secondary Name Servers



Query Fulfillment Sequence



File Relationships



Example *named.conf*

```
options {
    directory "/etc/inet/named.d";
};

zone "somedom.com" in {
    type master;
    file "db.somedom.com";
};

zone "50.100.200.in-addr.arpa" in {
    type master;
    file "db.50.100.200";
};

zone "0.0.127.in-addr.arpa" in {
    type master;
    file "db.local";
};

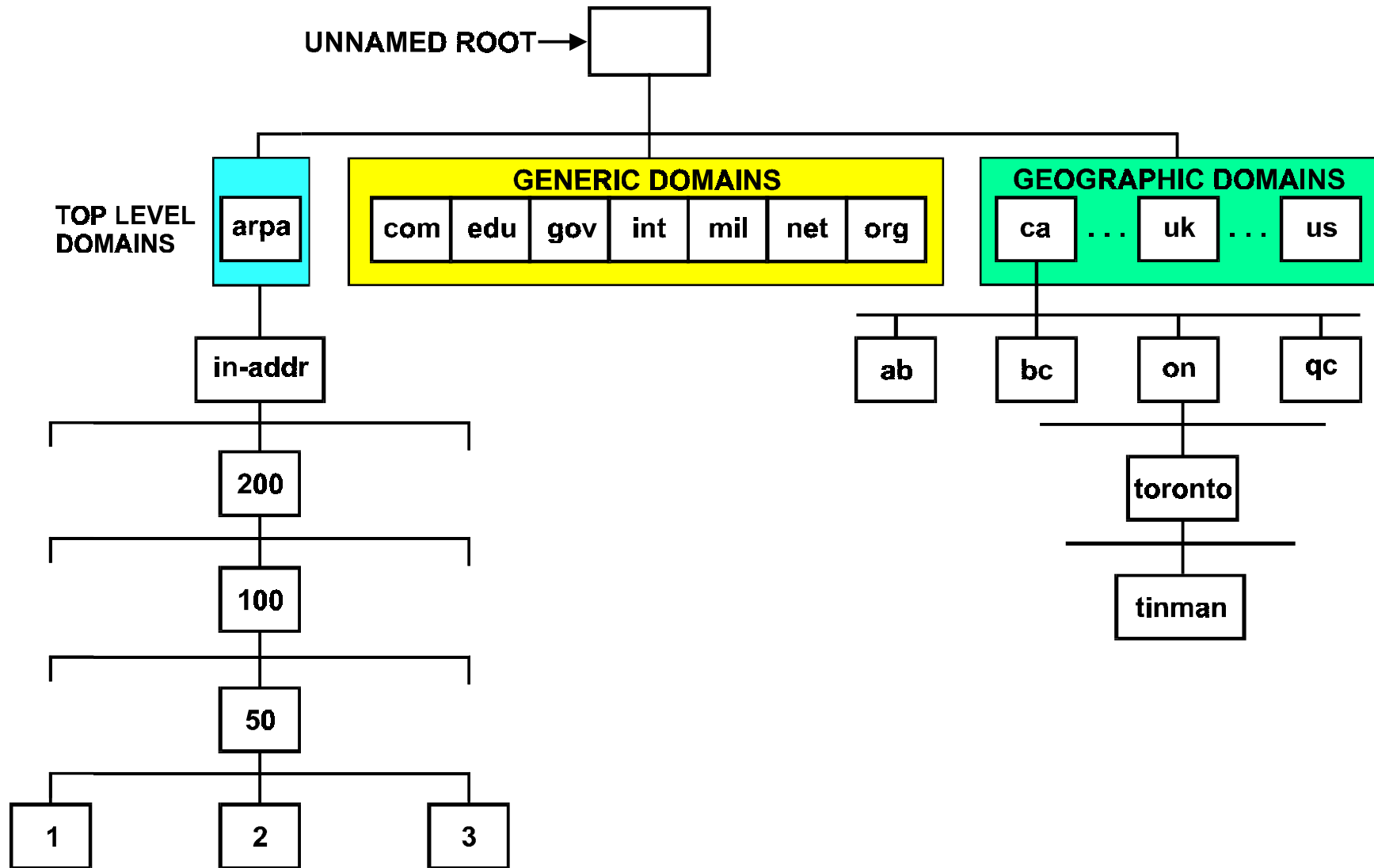
zone "otherdom.com" in {
    type slave;
    file "db.other.com";
    masters {
        200.150.75.1;
    };
};

zone "75.150.200.in-addr.arpa" in {
    type slave;
    file "db.75.150.200";
    masters {
        200.150.75.1;
    };
};

zone "london.somedom.com" in {
    type stub;
    file "db.london.stub";
    masters {
        200.200.50.1;
    };
};

zone "." in {
    type hint;
    file "db.cache";
};
```

Domain Name Space



Example *named.conf*

```
options {
    directory "/etc/inet/named.d";
};

zone "somedom.com" in {
    type master;
    file "db.somedom.com";
};

zone "50.100.200.in-addr.arpa" in {
    type master;
    file "db.50.100.200";
};

zone "0.0.127.in-addr.arpa" in {
    type master;
    file "db.local";
};

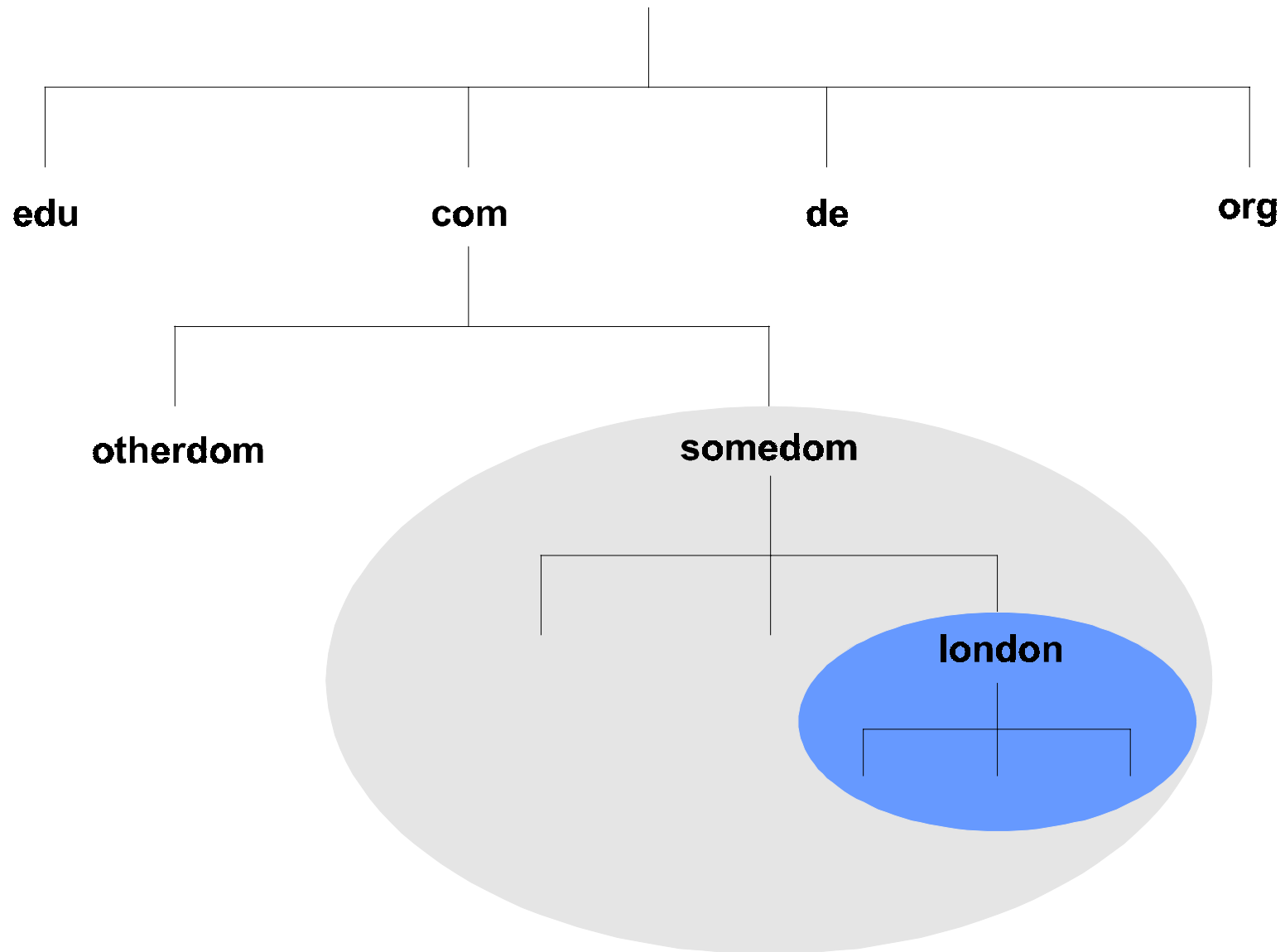
zone "otherdom.com" in {
    type slave;
    file "db.other.com";
    masters {
        200.150.75.1;
    };
};

zone "75.150.200.in-addr.arpa" in {
    type slave;
    file "db.75.150.200";
    masters {
        200.150.75.1;
    };
};

zone "london.somedom.com" in {
    type stub;
    file "db.london.stub";
    masters {
        200.200.50.1;
    };
};

zone "." in {
    type hint;
    file "db.cache";
};
```

Primary and Sub-Domain



Example Cache File

```
; name          ttl      class  type  data

; initial cache data for root domain servers.  Note no SOA included

.                9999999  IN      NS    terp.umd.edu.
.                9999999  IN      NS    ns.nasa.gov.
.                9999999  IN      NS    kava.nisc.sri.com.

; Prep (hardwire) the address cache.  Order does not matter.

terp.umd.edu.    9999999  IN      A     128.8.10.90
ns.nasa.gov.     9999999  IN      A     128.102.16.10
ns.nasa.gov.     9999999  IN      A     128.52.195.10
kava.nisc.sri.com. 9999999  IN      A     192.33.33.24
```

Example *db.somedom.com*

```
; name [ttl] class type data
```

```
@          in      soa      thatch.somedom.com.  steve.somedom.com.  (  
                                9603110830; serial  
                                10800;      refresh  
                                1800;      retry  
                                3600000;   expire  
                                86400 );   minimum (default ttl)
```

```
thatch      IN      A      200.100.50.1
```

```
www         IN      CNAME  thatch
```

```
guam        IN      A      200.100.50.2
```

```
ftp         IN      CNAME  guam
```

```
atlantis    IN      A      200.100.50.3
```

```
gateway     IN      A      200.100.50.4
```

Example *db.50.100.200*

```
; name [ttl] class type data
```

```
@           in      soa      thatch.somedom.com.  steve.somedom.com.  (  
                                9603110830; serial  
                                10800;      refresh  
                                1800;      retry  
                                3600000;   expire  
                                86400 );   minimum (default ttl)
```

```
1           in      ptr      thatch.somedom.com.
```

```
2           in      ptr      guam.somedom.com.
```

```
3           in      ptr      atlantis.somedom.com.
```

```
4           in      ptr      gateway.somedom.com.
```

Example *db.local*

```
; name [ttl] class type data
```

```
@          in      soa      thatch.somedom.com.  steve.somedom.com.  (  
                                9603110830; serial  
                                10800;      refresh  
                                1800;      retry  
                                3600000;   expire  
                                86400 );   minimum (default ttl)
```

```
1          IN      PTR      localhost.
```

Example Cache File

```
; name          ttl      class  type  data

; initial cache data for root domain servers.  Note no SOA included

.                999999   IN      NS    terp.umd.edu.
.                999999   IN      NS    ns.nasa.gov.
.                999999   IN      NS    kava.nisc.sri.com.

; Prep (hardwire) the address cache.  Order does not matter.

terp.umd.edu.    999999   IN      A     128.8.10.90
ns.nasa.gov.     999999   IN      A     128.102.16.10
ns.nasa.gov.     999999   IN      A     128.52.195.10
kava.nisc.sri.com. 999999   IN      A     192.33.33.24
```

Example DNS Records

```
; name  [ttl] class type  data
thatch      in    a      200.100.50.1
ftp          in    cname  guam.somedom.com.
1            in    ptr    thatch.somedom.com.
somedom.com. in    ns     thatch.somedom.com.
@            in    soa     thatch.somedom.com. steve.somedom.com. (
                                9603110830; serial
                                10800;      refresh
                                1800;      retry
                                3600000;    expire
                                86400 );    minimum (default ttl)
```

Example *db.somedom.com*

```
; name [ttl] class type data
```

```
@          in      soa      thatch.somedom.com.  steve.somedom.com.  (  
                                9603110830; serial  
                                10800;      refresh  
                                1800;      retry  
                                3600000;   expire  
                                86400 );   minimum (default ttl)
```

```
thatch      IN      A      200.100.50.1
```

```
www         IN      CNAME  thatch
```

```
guam        IN      A      200.100.50.2
```

```
ftp         IN      CNAME  guam
```

```
atlantis    IN      A      200.100.50.3
```

```
gateway     IN      A      200.100.50.4
```

Example *db.50.100.200*

```
; name [ttl] class type data
```

```
@           in      soa      thatch.somedom.com.  steve.somedom.com.  (  
                                9603110830; serial  
                                10800;      refresh  
                                1800;      retry  
                                3600000;   expire  
                                86400 );   minimum (default ttl)
```

```
1           IN      PTR      thatch.somedom.com.
```

```
2           IN      PTR      guam.somedom.com.
```

```
3           IN      PTR      atlantis.somedom.com.
```

```
4           IN      PTR      gateway.somedom.com.
```

Example *db.local*

```
; name [ttl] class type data
```

```
@          in      soa      thatch.somedom.com.  steve.somedom.com.  (  
                                9603110830; serial  
                                10800;      refresh  
                                1800;      retry  
                                3600000;   expire  
                                86400 );   minimum (default ttl)
```

```
1          IN      PTR      localhost.
```

Example *db.somedom.com*

```
; name [ttl] class type data
```

```
$include named.soa
```

```
thatch          IN      A      200.100.50.1
```

```
www             IN      CNAME  thatch
```

```
guam            IN      A      200.100.50.2
```

```
ftp             IN      CNAME  guam
```

```
atlantis        IN      A      200.100.50.3
```

```
gateway         IN      A      200.100.50.4
```

Example *named.soa*

```
; name [ttl] class type data
```

```
@          IN      SOA  thatch.somedom.com.  steve.somedom.com.  (  
                        96031108; Serial  
                        10800;      Refresh  
                        1800;      Retry  
                        3600000;    Expire  
                        86400 );    Minimum (default ttl)  
  
          IN      NS   thatch.somedom.com.  
          IN      NS   ahost.otherdom.com.
```

The DNS Manager



Add Zone Window

The 'Add Zone' window is a dialog box for configuring a new DNS zone. It features a title bar with the text 'Add Zone'. The main area contains several input fields and buttons. The 'Server type' is set to 'Master' in a dropdown menu. The 'Zone name' is 'somedom.com' in a text box. Below this, the 'Networks' section has four empty input boxes separated by dots, followed by an 'Add' button. A text box below the networks contains '200.100.50', with a 'Delete' button to its right. At the bottom of the main area are two buttons: 'Start of Authority...' and 'Name servers...'. Below these is a section titled 'Optional records' which contains five buttons: 'Host info...', 'Owner...', 'Requesters...', 'Mail exchangers...', and 'Description...'. At the very bottom of the window are three buttons: 'OK', 'Cancel', and 'Help'.

Server type: Master

Zone name: somedom.com

Networks: . . . Add

200.100.50 Delete

Start of Authority... Name servers...

Optional records

Host info... Owner... Requesters...

Mail exchangers... Description...

OK Cancel Help

Adding Name Server (NS) Records

Nameserver	IP address
server2	200.100.50.12

Buttons: Add..., Modify..., Delete

Buttons: OK, Cancel, Help

Start Of Authority (SOA) Record

Start Of Authority (SOA) Record

Person in charge:

Refresh rate: 3 hours

Transfer retry: 30 minutes

Expire: 1 day 14 hours 53 minutes 20 seconds

Time-to-live: 1 day

Add Host (A) Record Window

Add Host (A) Record

Hostname:

IP address: · · ·

Optional records

Configuring Forwarders

Forwarders

Use forwarders only: ☒ Yes ☐ No

Name servers: . . .

Example nslookup Session

```
Default Server:  thatch.somedom.com  
Address:  200.100.50.1
```

```
> student4  
Server:  thatch.somedom.com  
Address:  200.100.50.1
```

```
Name:      student4.somedom.com  
Address:  200.100.50.4
```

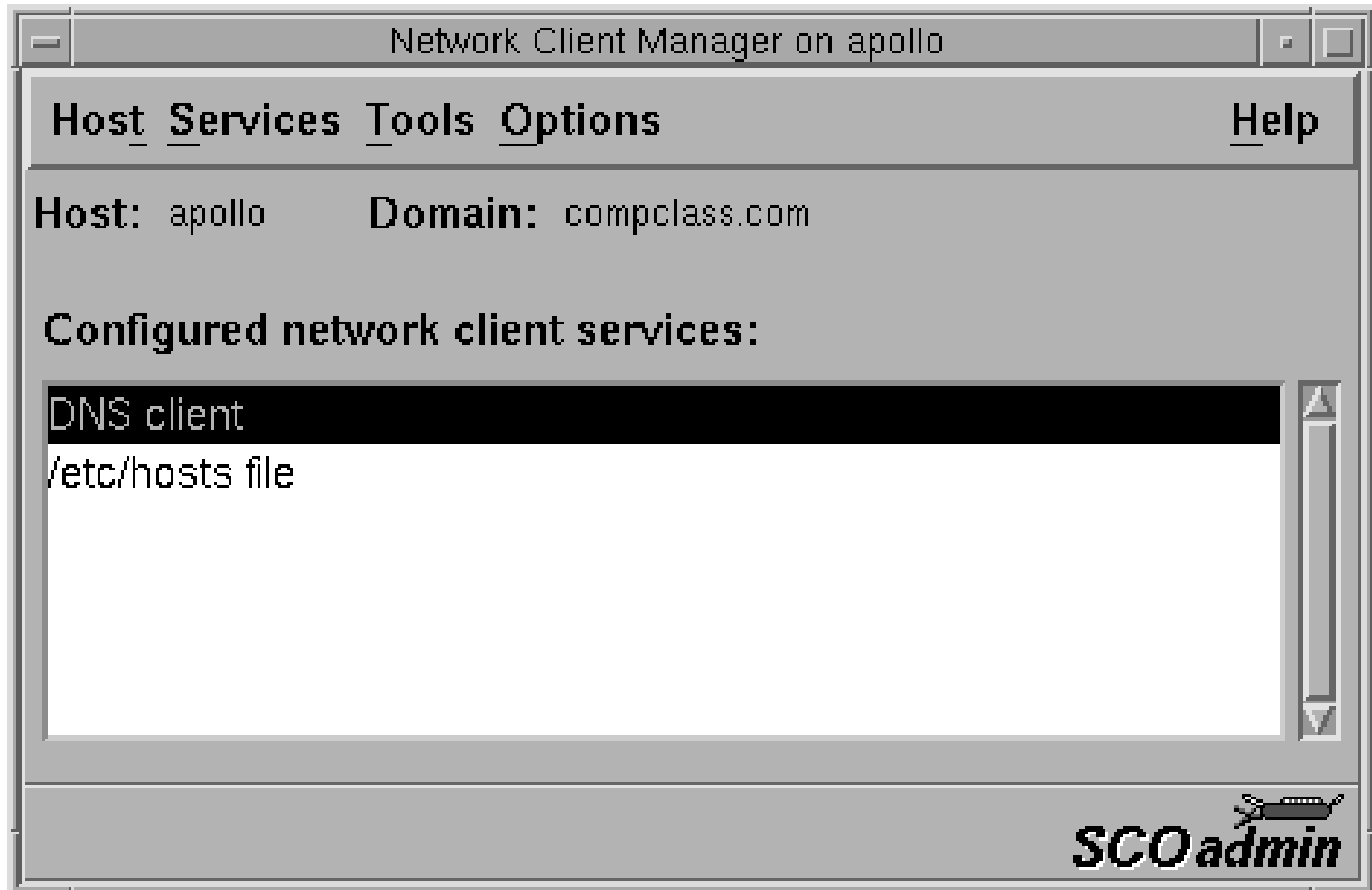
```
> unknown  
Server:  thatch.somedom.com  
Address:  200.100.50.1
```

```
*** thatch.somedom.com can't find unknown: Non-existent host/domain
```

```
> set type=PTR  
> 4.50.100.200.in-addr.arpa  
Server:  thatch.somedom.com  
Address:  200.100.50.1
```

```
4.50.100.200.in-addr.arpa      name = student4.somedom.com  
>
```

Network Client Manager



Example *resolv.conf*

```
domain somedom.com
```

```
; query local server first, then secondary
```

```
nameserver 200.100.50.1
```

```
nameserver 200.150.75.1
```

Configuring Internet Services

- Configuring virtual domains
- Configuring the Netscape HTTP server
- Configuring an FTP server
- Configuring the Network Time Protocol service

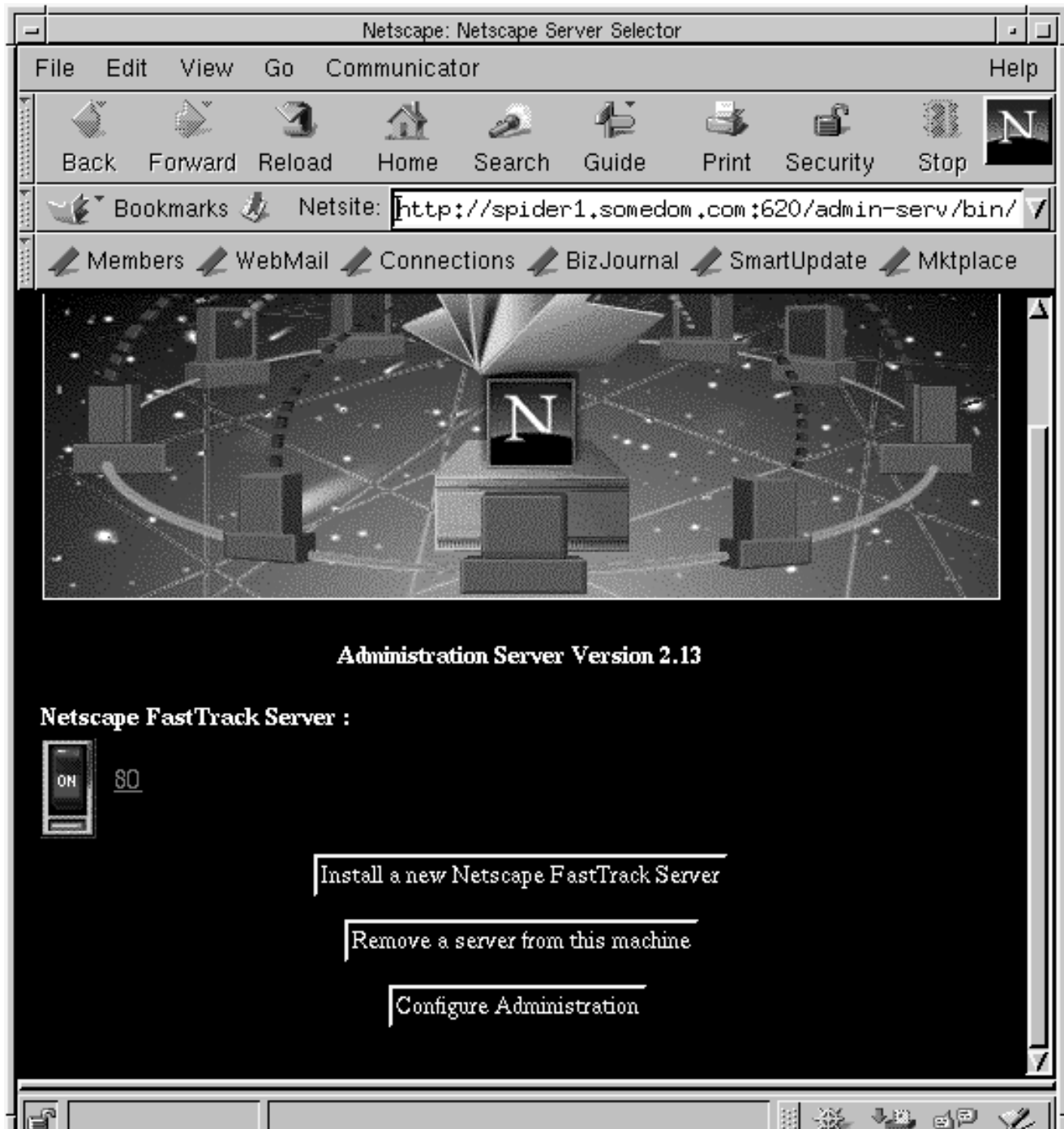
Example S70ipaliases File

```
#!/sbin/sh
echo "setting up IP aliases:"
echo "\t150.200.76.99"
ifconfig net0 alias 150.200.76.99
```

Example Additions to */etc/inet/config*

```
4a:/usr/sbin/in.gated::Y:/etc/inet/gated.conf::
# The next line can be read:
# If field 3 is a Y and /usr/sbin/in.gated was not run, then run
# /usr/sbin/in.routed
4b:/usr/sbin/in.routed:/usr/sbin/in.gated:Y:::
#4c:/usr/sbin/route::n::add default router_placeholder:
6:/usr/sbin/in.xntpd::y:/etc/inet/ntp.conf::
7:/usr/bin/sh::y:/etc/inet/rc.inet:/etc/inet/rc.inet start:
# By default start address allocation and dhcp servers
8a:/usr/sbin/in.aasd::y:/etc/inet/aasd.conf::
#8b:/usr/sbin/in.dhcpd::y:/etc/inet/dhcpd.conf:-t 0:
# Entry to start bootpd, comment-out dhcpd line
#9a:/usr/sbin/in.bootpd::y:/etc/inet/bootptab:-t 0:
# Entries to start both bootpd and dhcpd, comment out dhcpd entry
#9b:/usr/sbin/in.bootpd::y:/etc/inet/bootptab:-t 0 -S -P bootps-alt:
#9c:/usr/sbin/in.dhcpd::y:/etc/inet/dhcpd.conf:-t 0 -b bootps-alt:
4c:/usr/sbin/route::y::add default 198.140.193.1:
4d:/usr/sbin/route::y::add 224.0.0.0 198.140.193.111:
4e:/usr/sbin/ifconfig::y::net0 alias 150.200.76.99:
```

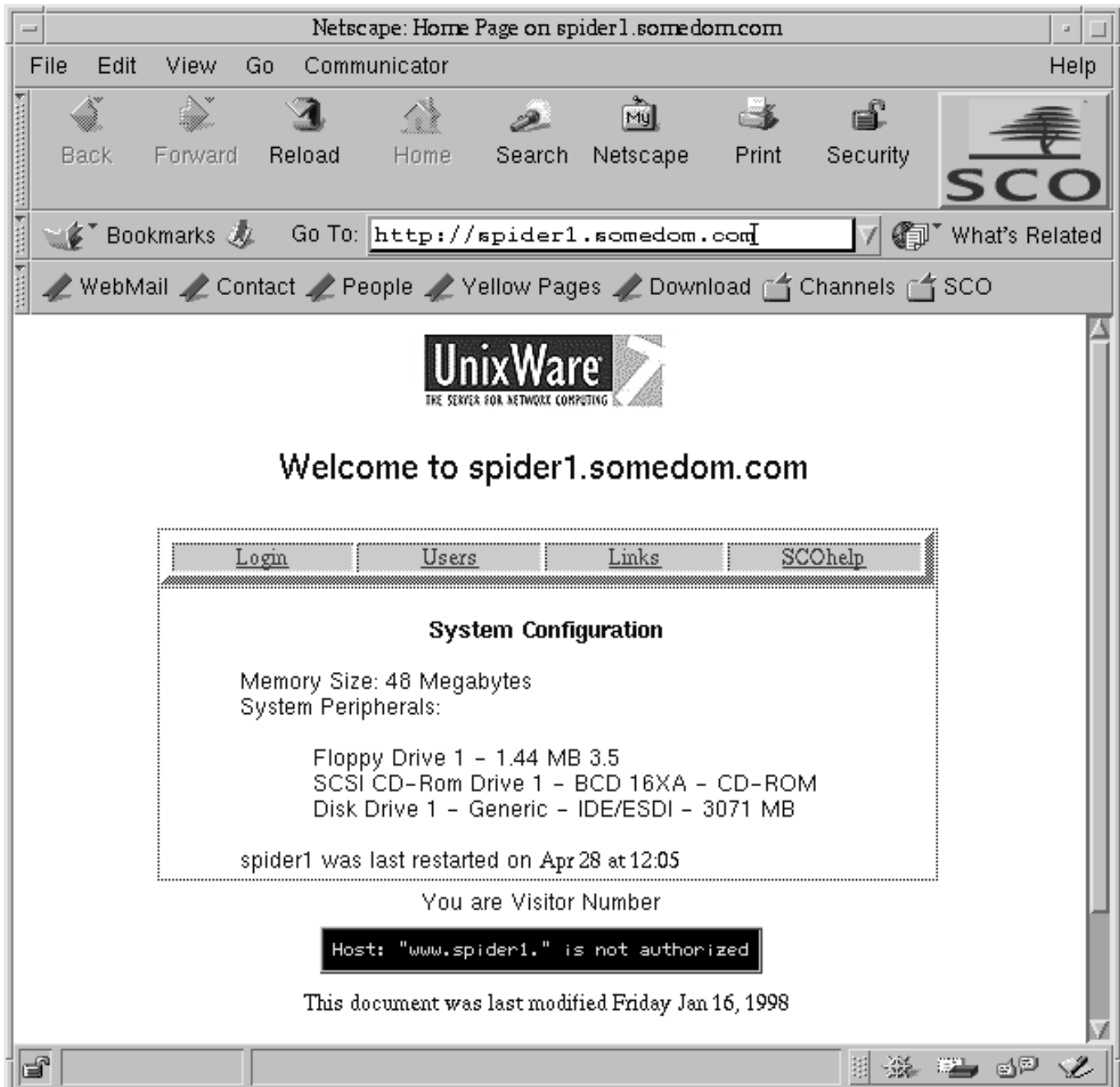
Netscape Administration Server



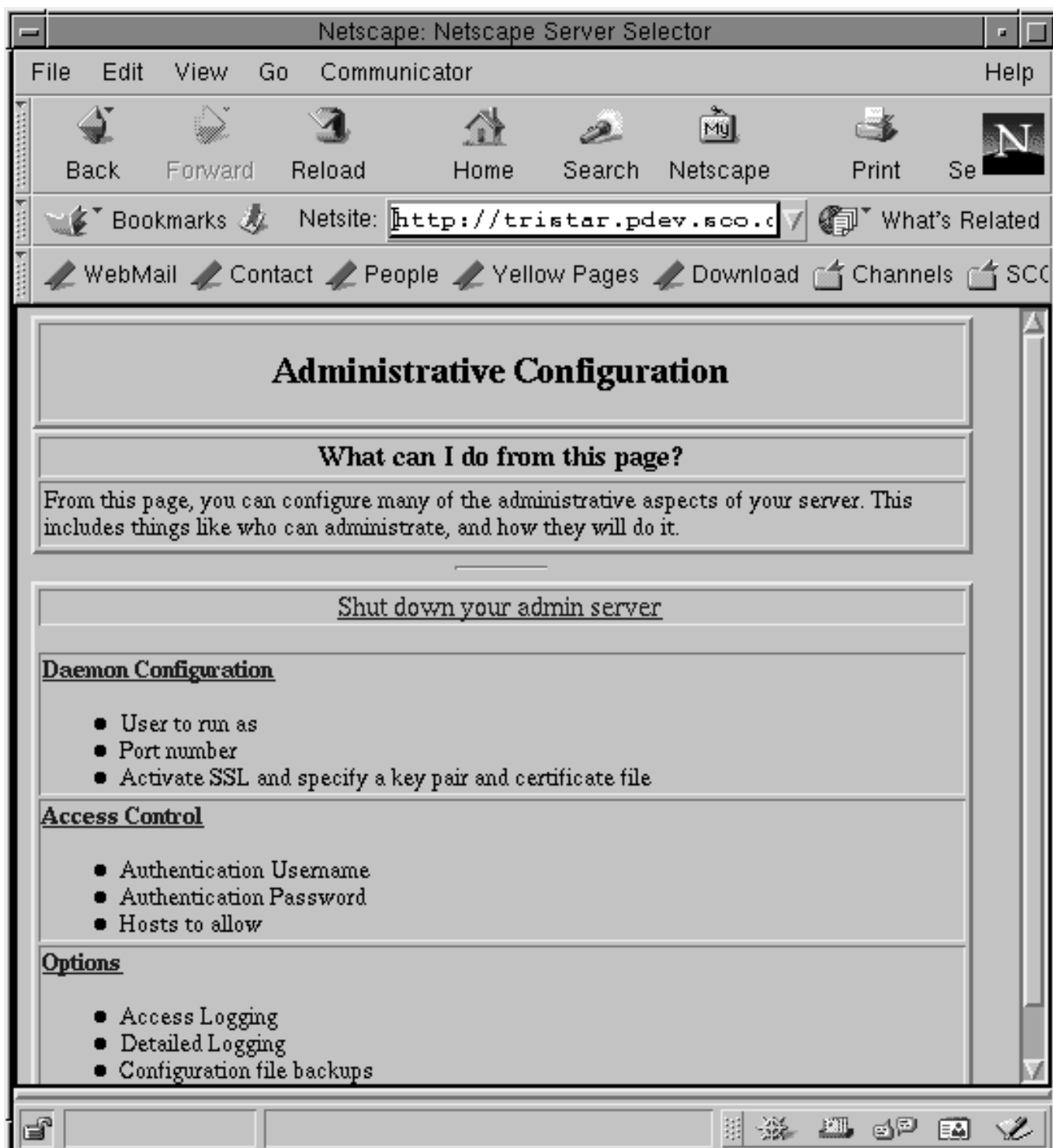
Configuring the FastTrack Server



Default Home Page



Netscape Server Selector-Configuring Administration



Configuring Administration-Access Control

Netscape: Netscape Server Selector

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Security Stop

Bookmarks Netsite:

Members WebMail Connections BizJournal SmartUpdate Mktplace

Administration Server Access Control

Hostnames to allow:

IP addresses to allow:

Authentication user name:

Authentication Password:

Authentication Password (again):

[Return to Administrative Configuration](#)

The */usr/ns-home/admserv/ns-admin.conf* File

```
NetsiteRoot /usr/ns-home
Port 620
User root
ErrorLog /usr/ns-home/admserv/errors
AccessLog /usr/ns-home/admserv/access
PidLog /usr/ns-home/admserv/pid
ServerName spider1.
Backups 10
AdminUsers /usr/ns-home/admserv/admpw
Addresses
(127.0.0.1|150.200.76.3|150.200.76.50|150.200.76.33)
Security off
```

Adding a FastTrack Server

Netscape: Netscape Server Selector

File Edit View Go Communicator Help

Bookmarks Go To: <http://www.spider1.com> What's Related

Server Name:

Bind address:

Server Port:

Server Identifier:

Server User:

Processes:

Minimum Threads:

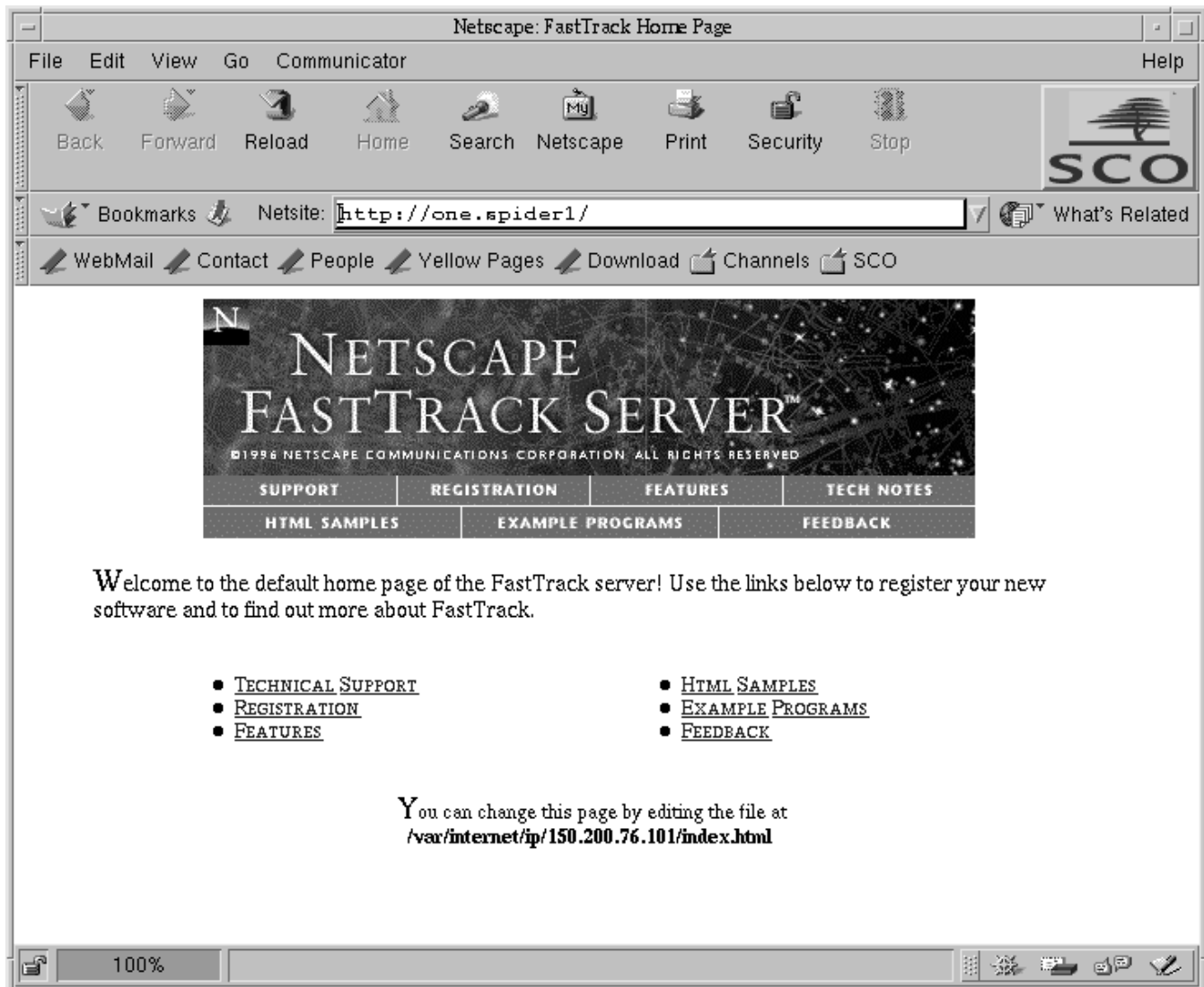
Maximum Threads:

☐ Always attempt to resolve IP addresses into host names.
☐ Attempt to resolve IP addresses only for access control and CGI.
☐ Never attempt to resolve IP addresses into host names.

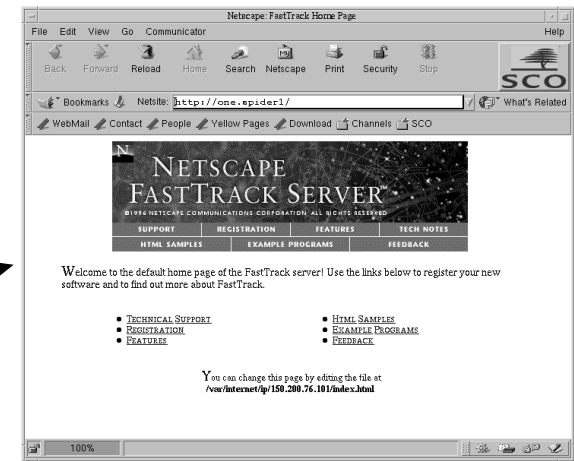
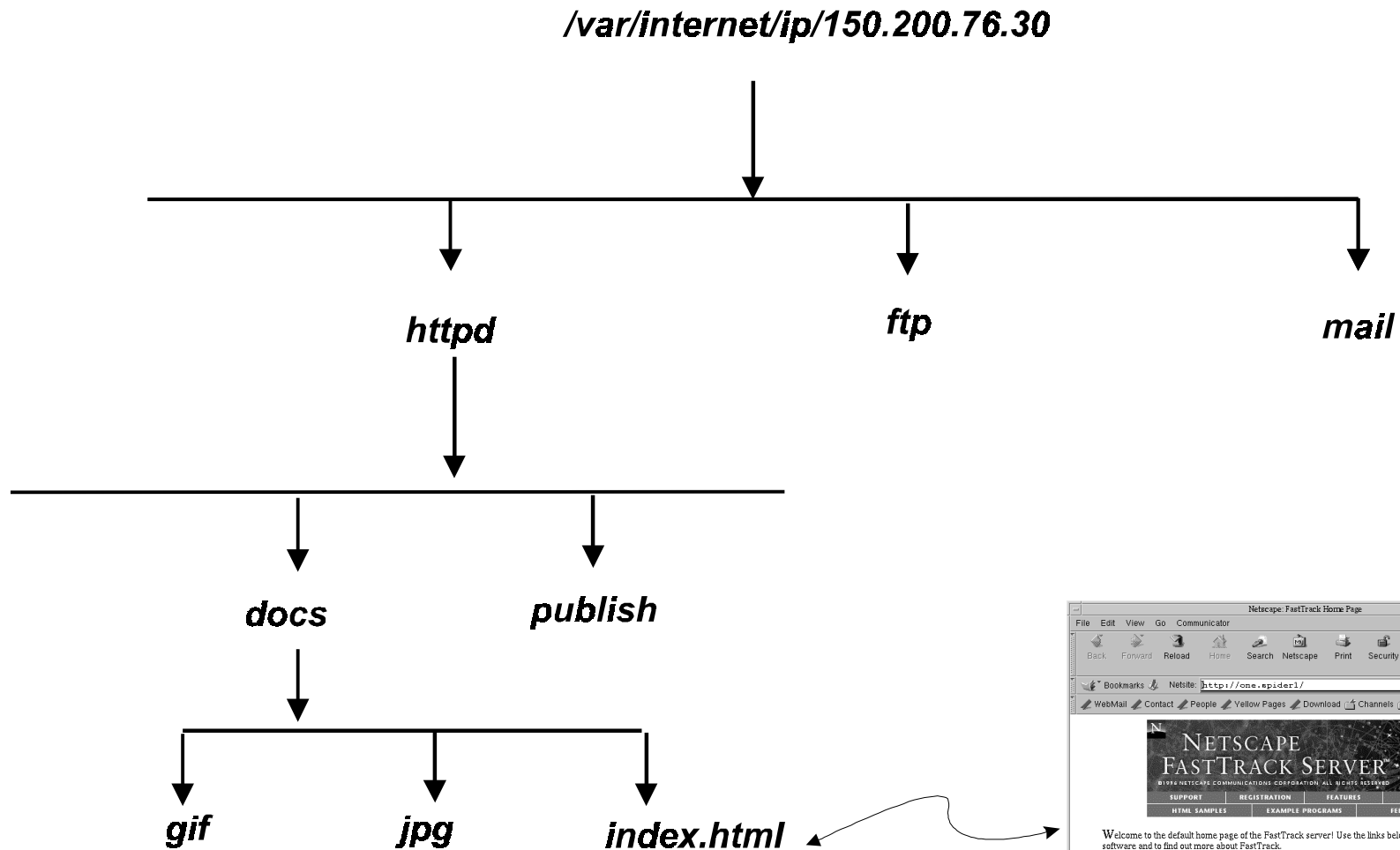
Document Root:

100%

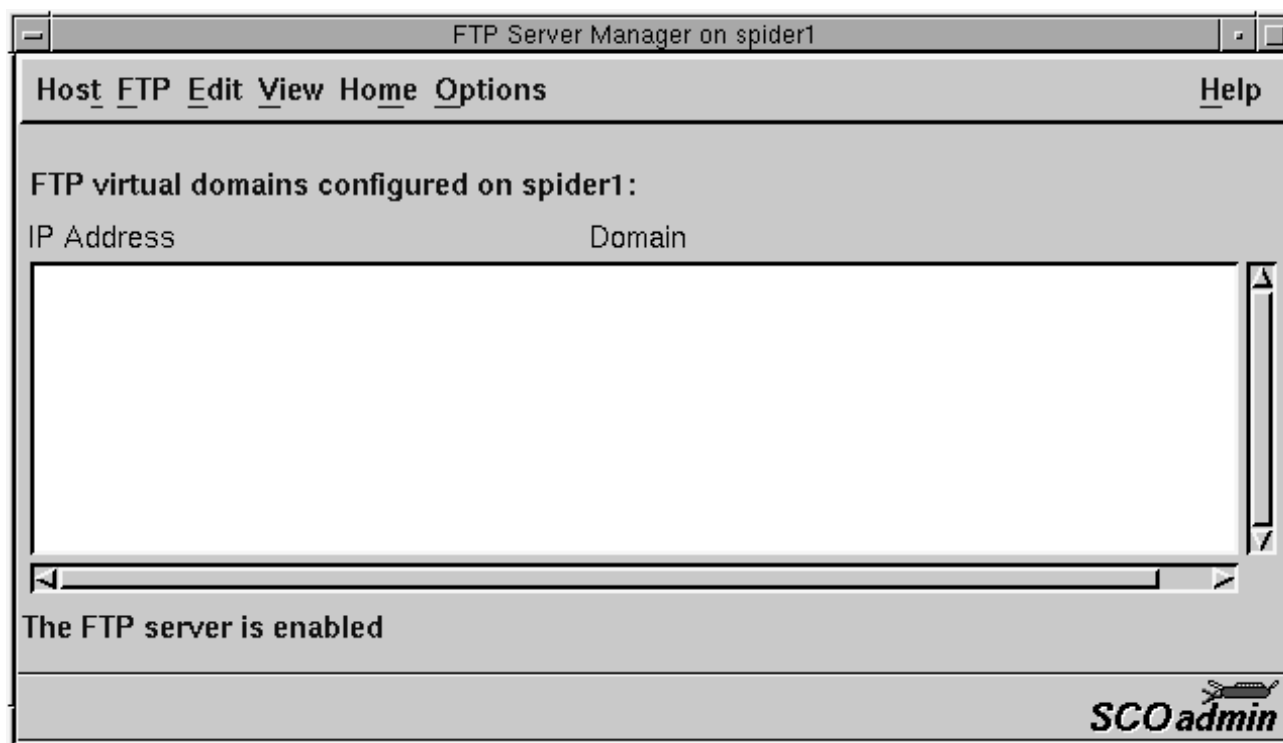
Default Home Page



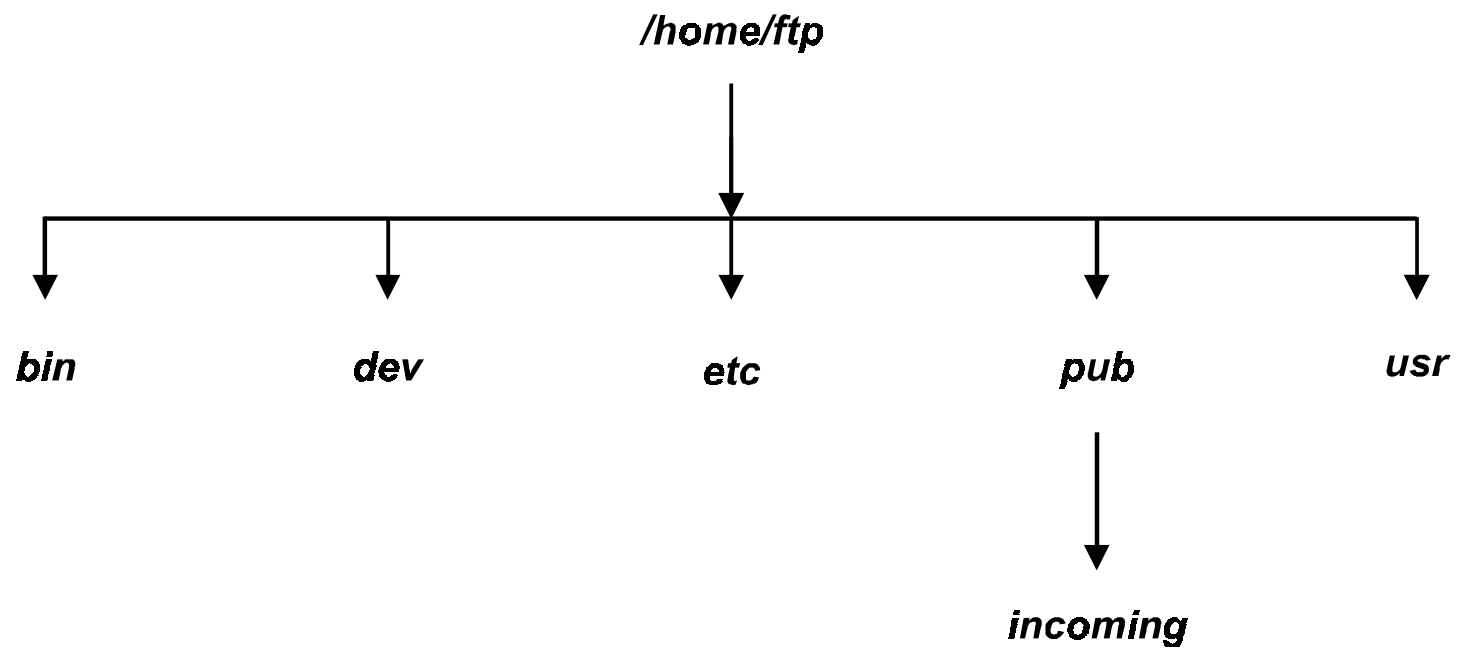
Example Virtual Domain Configuration Hierarchy



FTP Server Manager



Anonymous FTP Directories



Configuring Anonymous FTP for Virtual Domains

The image shows two overlapping dialog boxes from a network configuration utility. The background dialog is titled 'Add FTP Virtual Domains' and contains fields for IP Address, Anonymous FTP home, Banner file, and Logfile, each with a 'Select...' button and a 'Default' button. The IP Address field is filled with '150.200.76.30'. There is also a checkbox for 'Use primary log file' and 'OK' and 'Cancel' buttons at the bottom. The foreground dialog is titled 'Select IP Address' and displays a table with two columns: 'IP Address' and 'Domain'. It lists two entries: '150.200.76.3' with domain 'spider1.somedom.com' and '150.200.76.30' with domain 'www.somedom.com'. Below the table is a 'Selection' field containing '150.200.76.30'. The 'Select IP Address' dialog has 'OK', 'Cancel', and 'Help' buttons at the bottom.

Add FTP Virtual Domains

IP Address: 150 · 200 · 76 · 30 **Select...**

Anonymous FTP home: /var/internet/ip/150.200. **Select...** **Default**

Banner file: /var/internet/ip/150.200. **Select...** **Default**

Logfile: /var/internet/ip/150.200. **Select...** **Default**

☐ Use primary log file

OK **Cancel**

Select IP Address

IP Address	Type	Domain
150.200.76.3	interface	spider1.somedom.com
150.200.76.30	alias	www.somedom.com

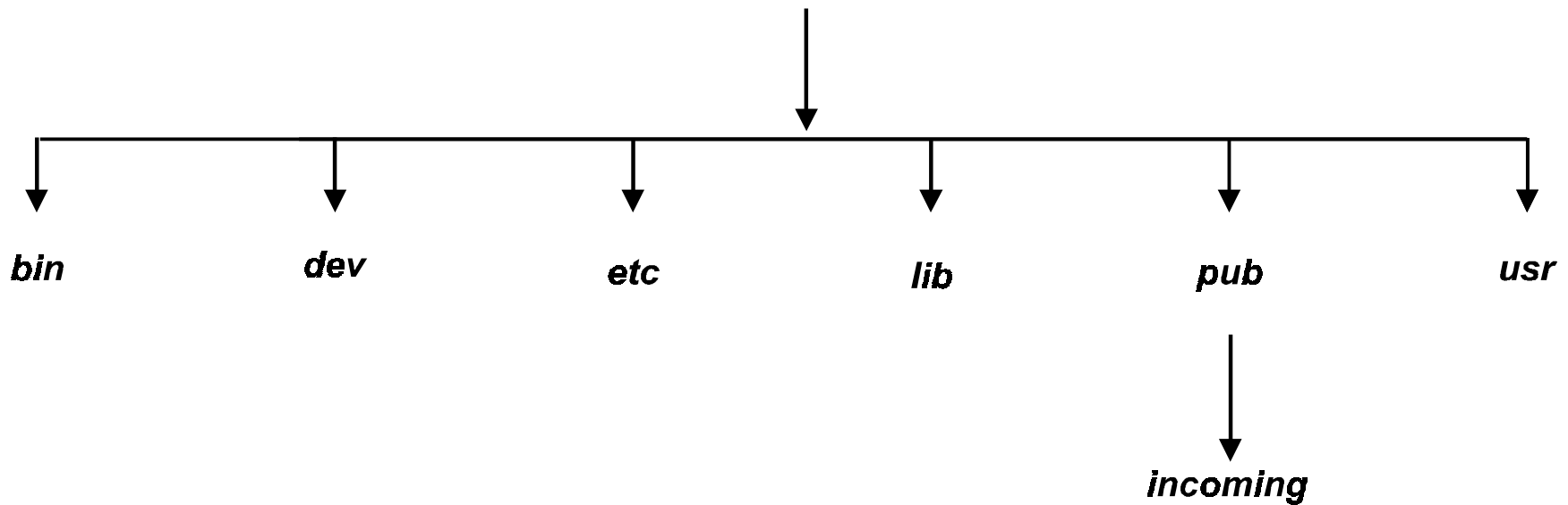
Selection

150.200.76.30

OK **Cancel** **Help**

FTP Configuration Files

/var/internet/ip/150.200.76.30/ftp/home



Creating User Classes

Add Class

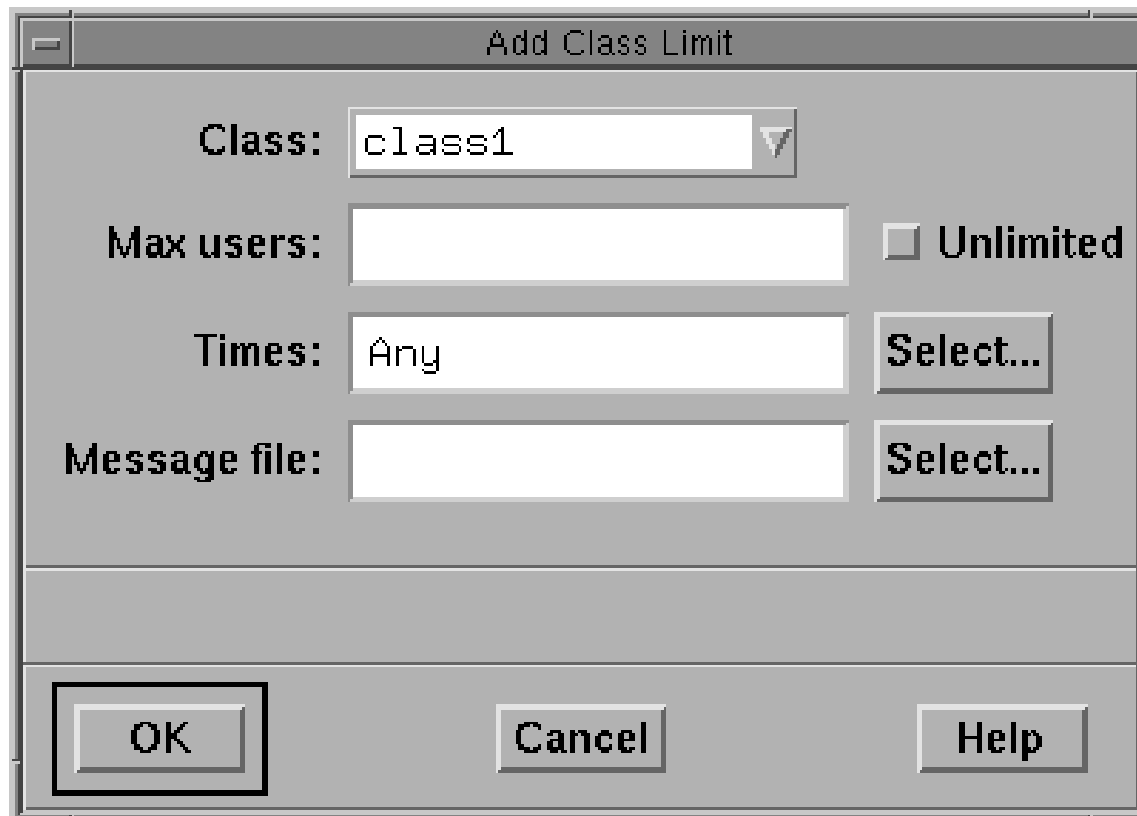
Class name:

User types: ☐ anonymous ☐ guest ☐ real

Addresses:

Anon group: ▼

Creating Class Limits



The image shows a dialog box titled "Add Class Limit". It contains four input fields: "Class:" with a dropdown menu showing "class1", "Max users:" with an empty text box and an unchecked "Unlimited" checkbox, "Times:" with a text box containing "Any" and a "Select..." button, and "Message file:" with an empty text box and a "Select..." button. At the bottom are three buttons: "OK", "Cancel", and "Help". The "OK" button is highlighted with a black border.

Add Class Limit

Class: class1 ▼

Max users: ☐ Unlimited

Times: Any

Message file:

Default `/etc/ftppass` File

```
#ident      "@(#)ftppass 1.3"
#
# ftpd configuration file, see ftpaccess(4tcp).
#
loginfails      3
passwd-check    trivial          warn
class           all              anonymous,guest,real      *
compress       yes              all
tar             yes              all
readme          README*          login      all
readme          README*          cwd=*      all

#banner         /var/ftp/banner.msg
#message        /var/ftp/welcome.msg      login      all
#message        .message      cwd=*      all

#chmod          no              anonymous
#delete         no              anonymous,guest
#overwrite      no              anonymous,guest
#rename         no              anonymous,guest
#umask          no              anonymous

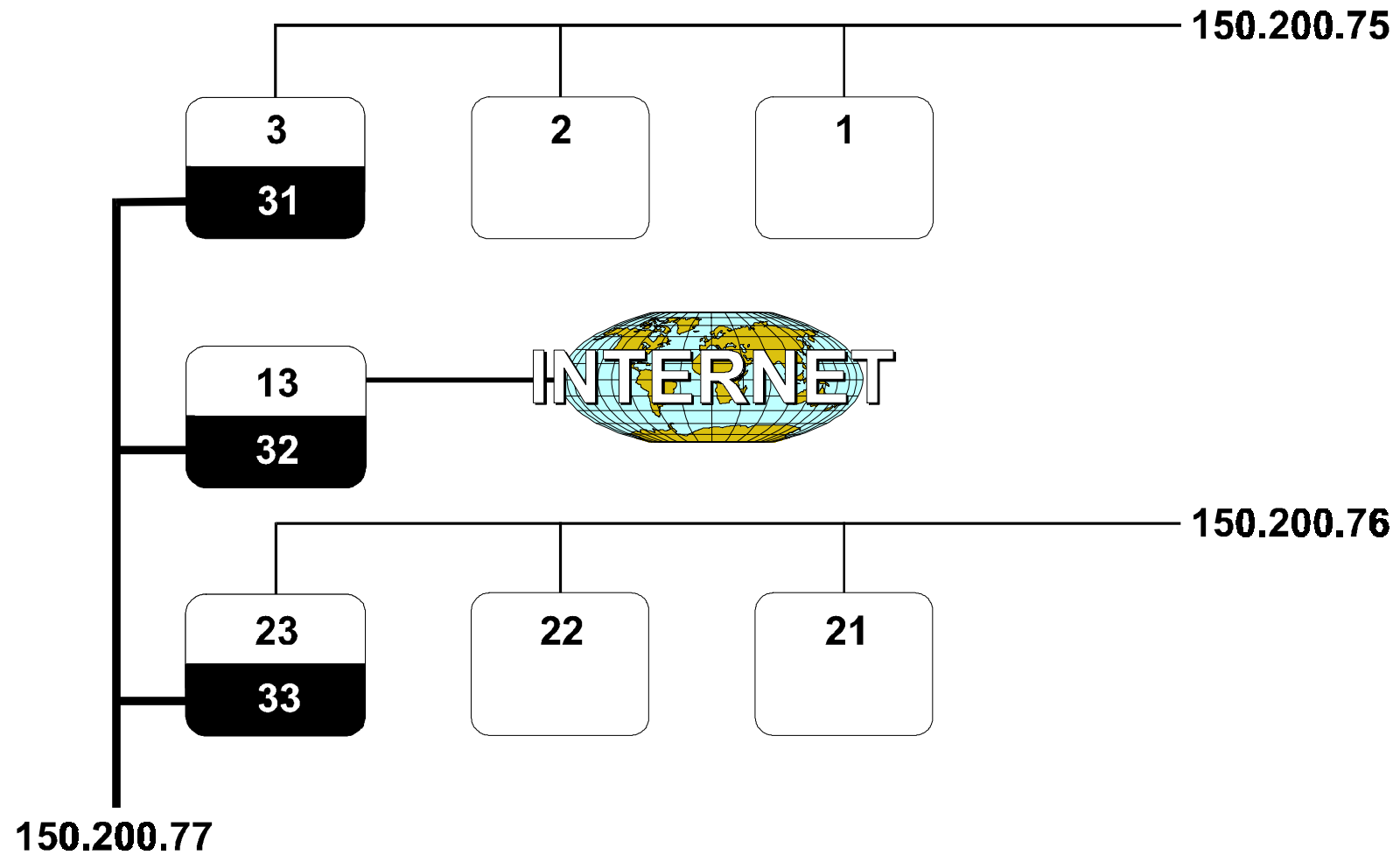
#limit          all      5      Wk0900-1800      /var/ftp/toomany.msg
#limit          all      20     SaSu|Any1800-0900  /var/ftp/toomany.msg

#log            commands  anonymous,guest,real
#log            transfers anonymous,guest,real      inbound,outbound

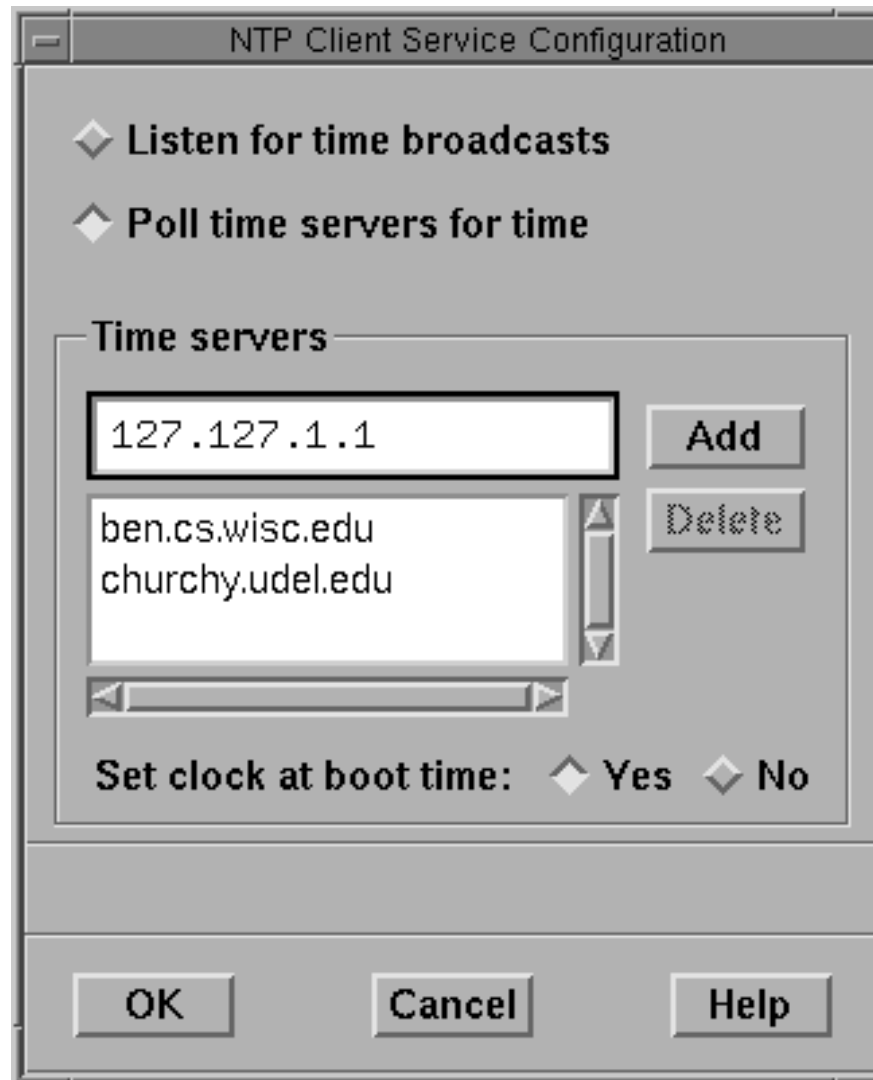
#path-filter    anonymous,guest      /var/ftp/filename.msg      ^[[[:alnum:]]-._]*$ ^[.-]

#upload         /home/ftp *          no nodirs
#upload         /home/ftp /pub/incoming yes ftp other 0444 nodirs
```

Configuring Time Servers



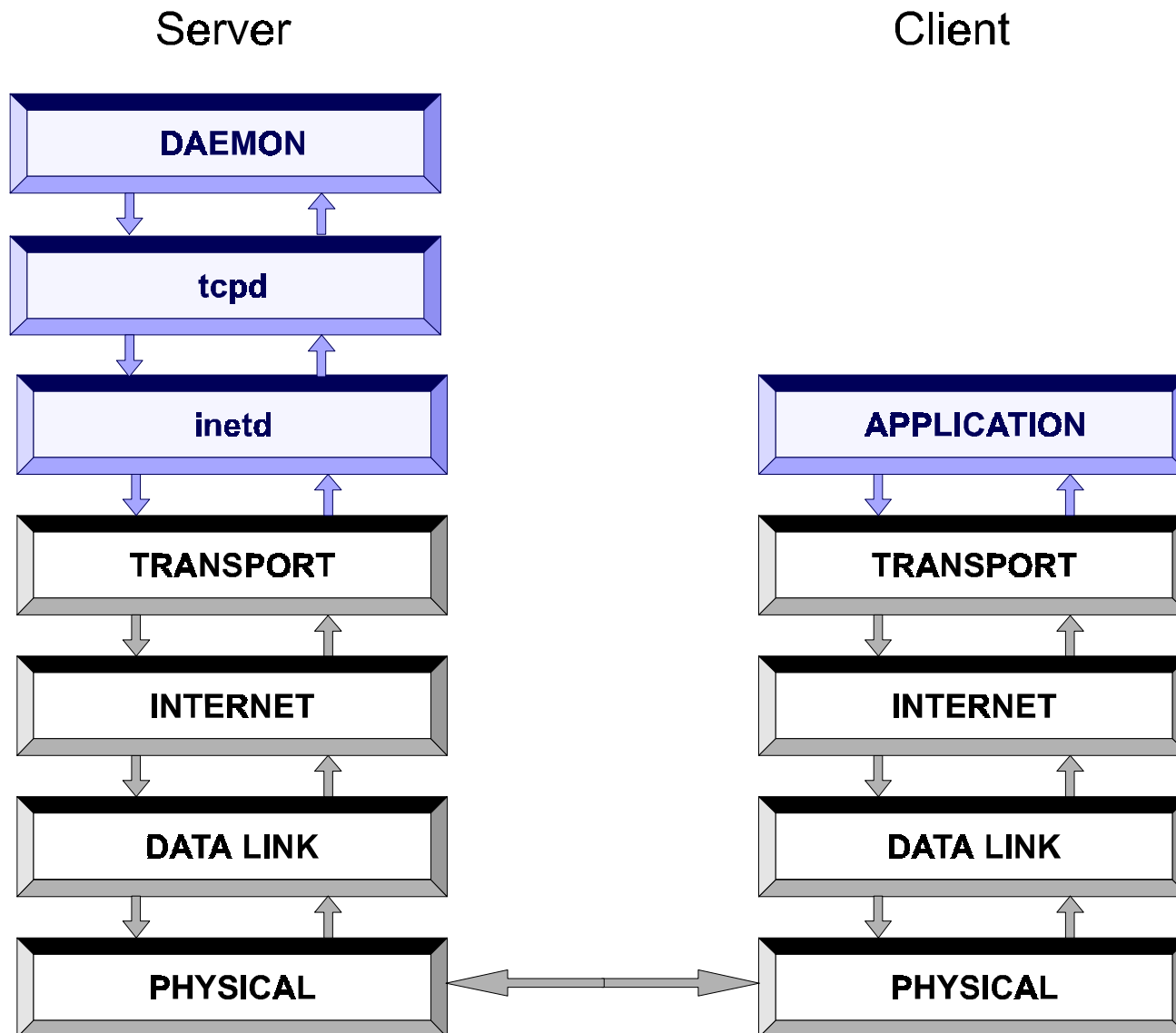
Adding NTP Servers



Network Security

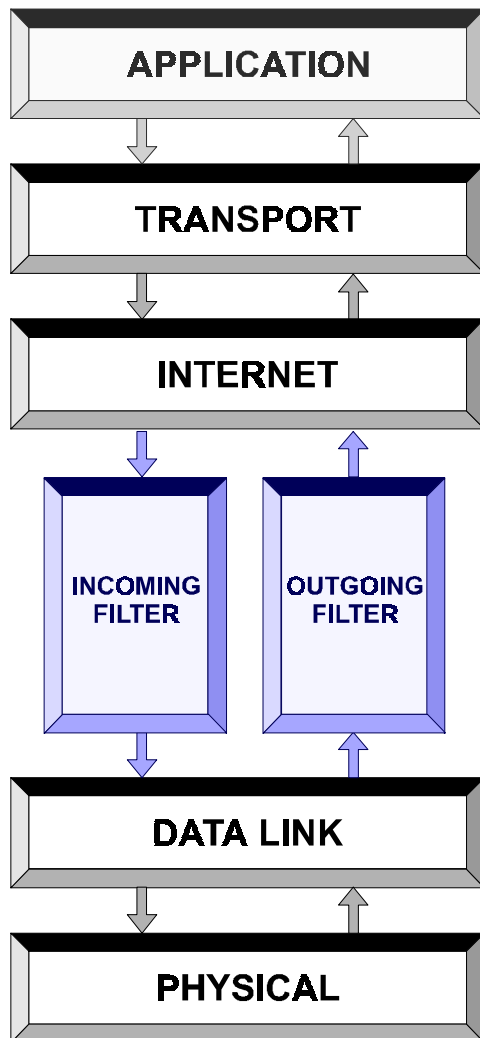
- TCP wrappers
- Firewalls
- Packet Filters
- Proxies
- Packet Sniffing
- The Secure Socket Layer (SSL)

TCP Wrappers

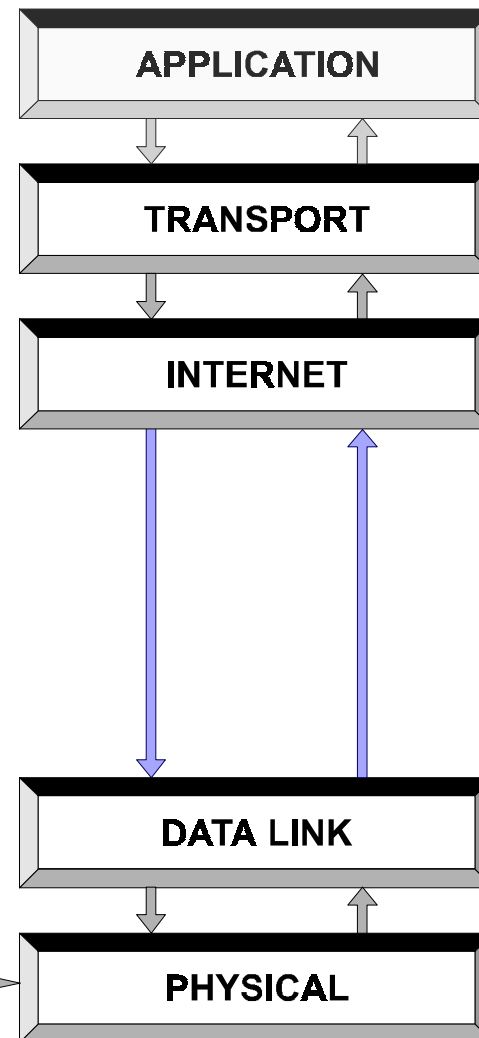


Packet Filters

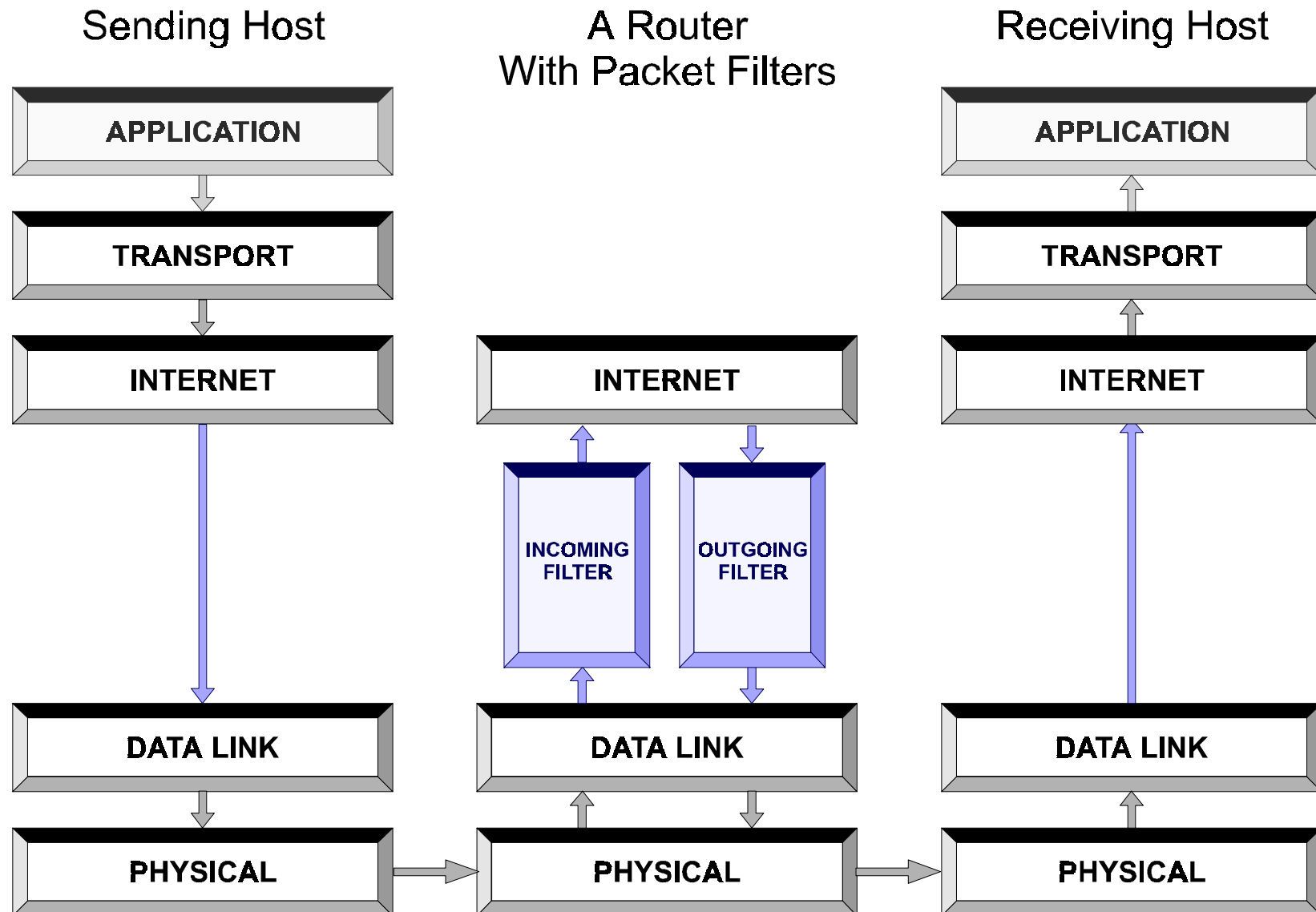
With Packet Filters



Without Packet Filters



A Packet Filtering Router



Packet Filter Manager



Select Interface

Select Interface

Interface:

ppp
net0

☐ Template filters

OK Cancel Help

Modify Filter

net0: newfilter

Filter Method: ☒ Block ☐ Allow Filter Element: 1/1

Services/Ports

☒ Specific ☐ All ☐ All Except

101/tcp	hostnames
80/tcp	http
360/tcp	i2odialog
143/tcp	imap-4
6969/tcp	inetinst

Add...
Modify...
Delete

Direction: ☐ From ☐ To

Hosts/Networks

☒ Specific ☐ All ☐ All Except

🖥️ sco.com
🖥️ host@otherdom.com

Add...
Modify...
Delete

SCOadmin

Back... Delete Finish Next... Help

Modify Filter

net0: newfilter

Filter Method: ☒ Block ☐ Allow Filter Element: 1/1

Services/Ports

☒ Specific ☐ All ☐ All Except

101/tcp	hostnames
80/tcp	http
360/tcp	i2odialog
143/tcp	imap-4
6969/tcp	inetinst

Add...
Modify...
Delete

Direction: ☐ From ☐ To

Hosts/Networks

☒ Specific ☐ All ☐ All Except

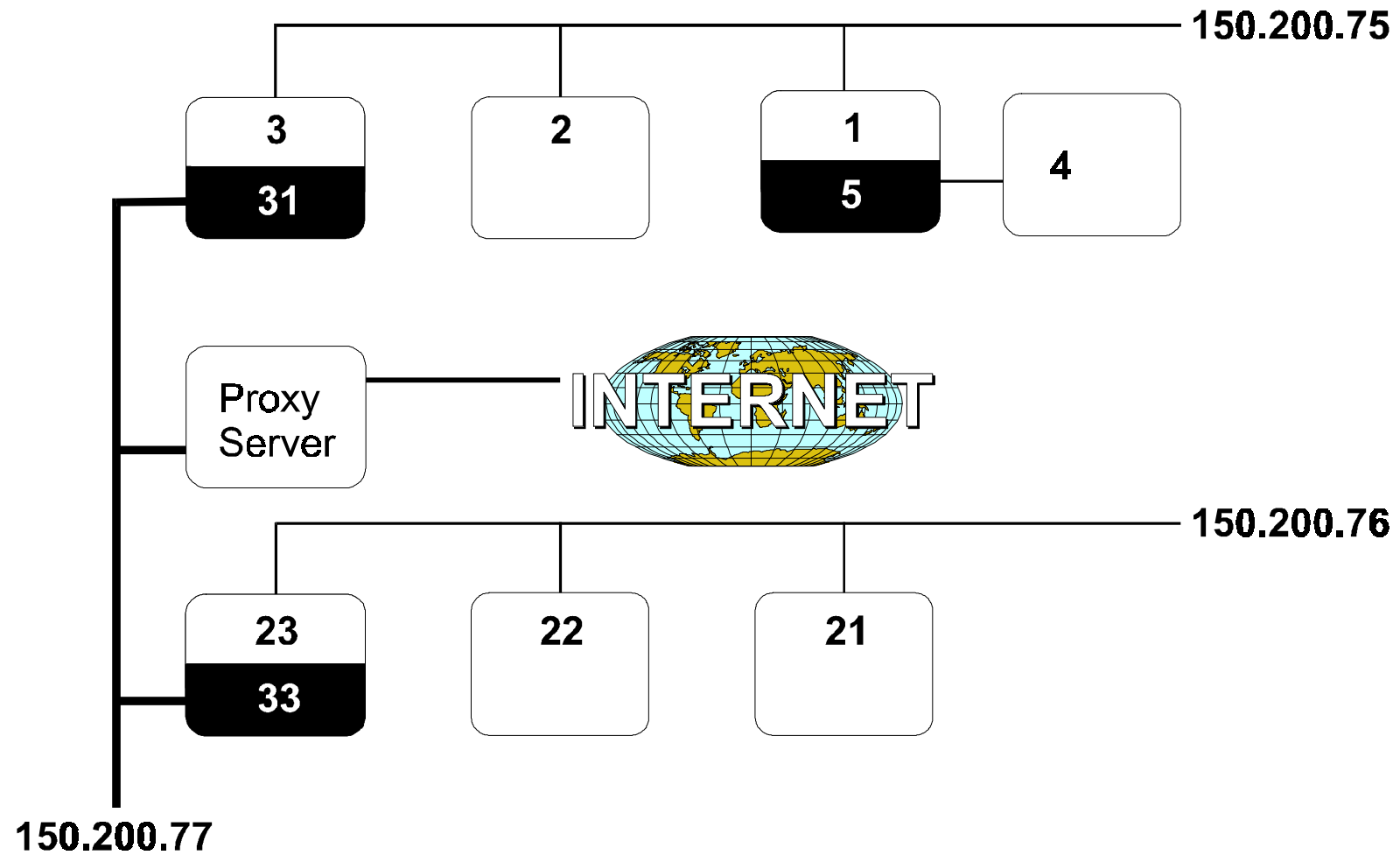
 sco.com
 host@otherdom.com

Add...
Modify...
Delete

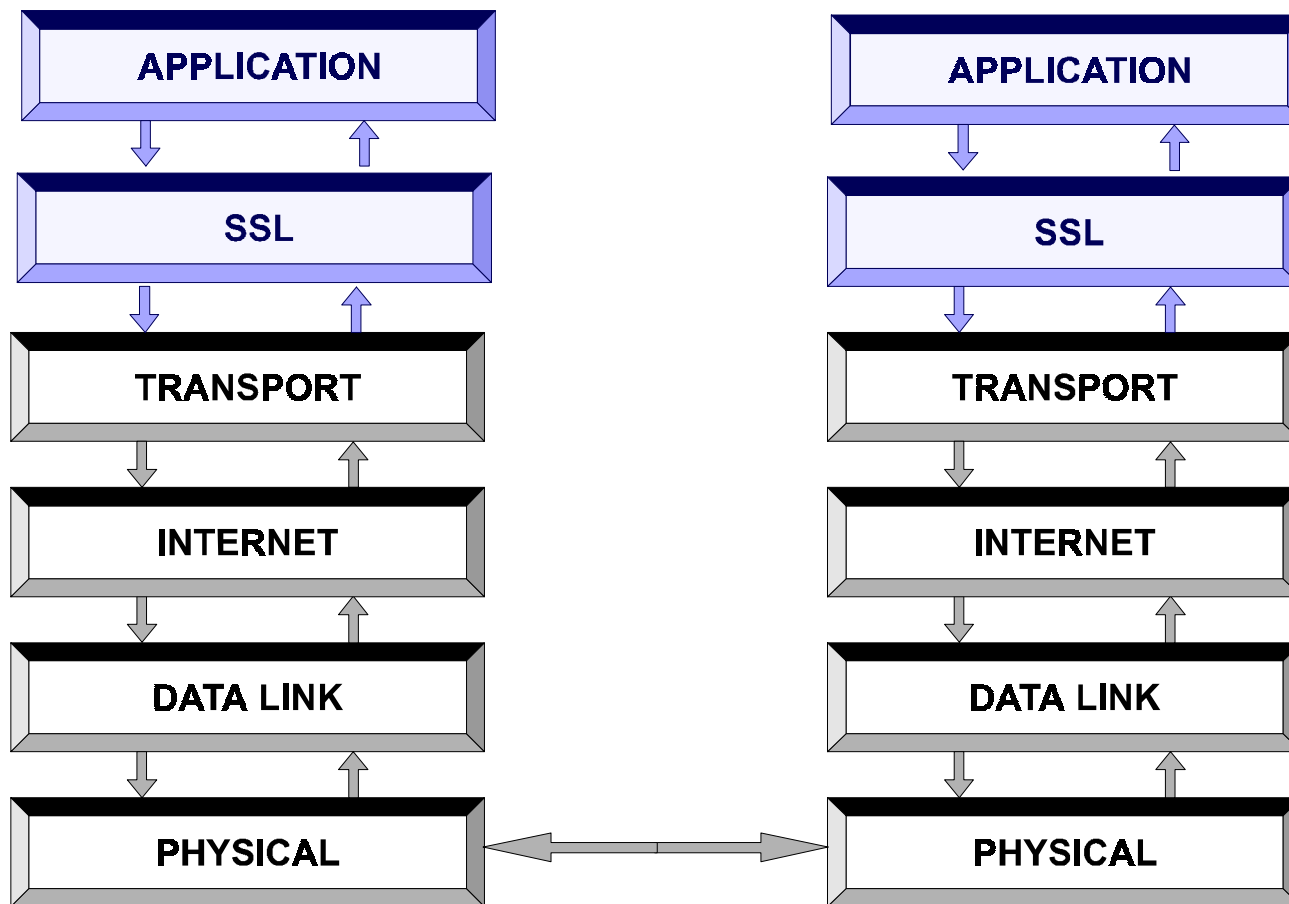
SCOadmin

Back... Delete Finish Next... Help

Proxy Server



Secure Socket Layer (SSL)



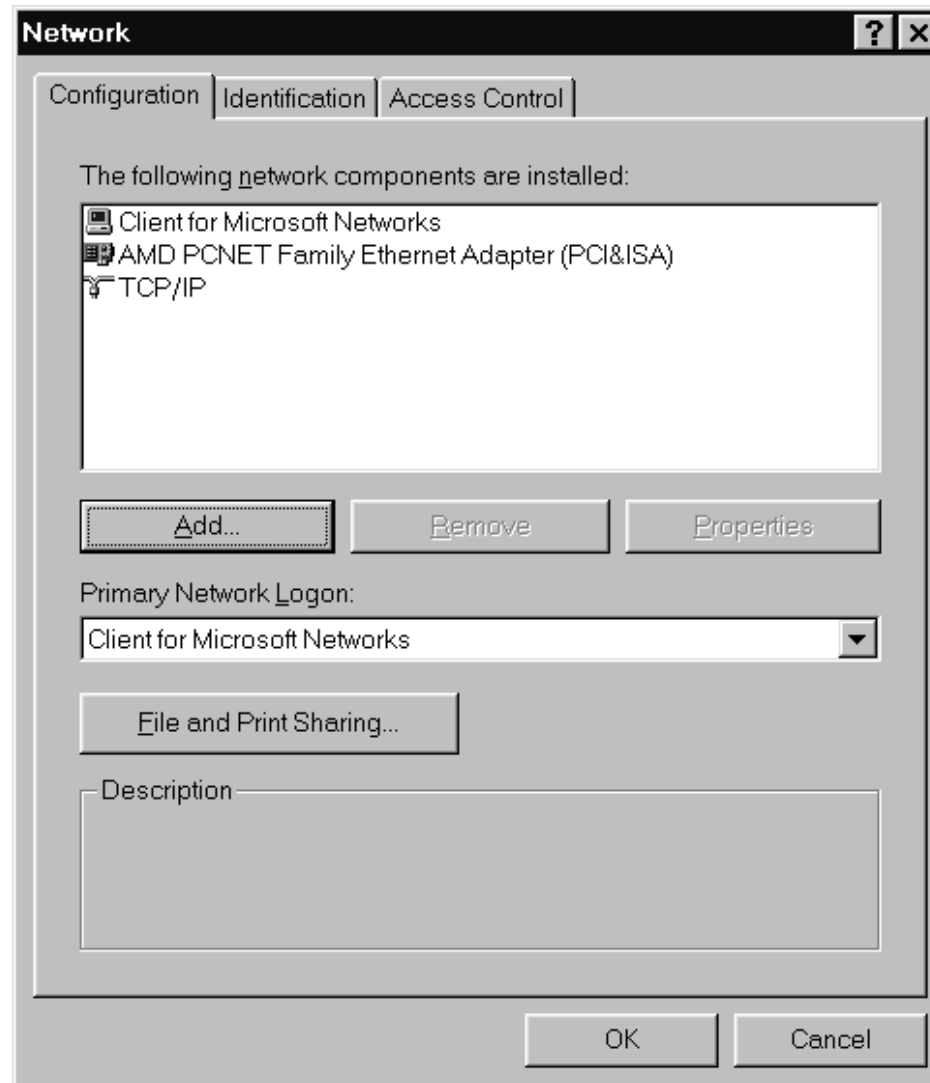
Windows Connectivity

- File and Printer Sharing
- Configuring VisionFS
- Remote Application Access
- Remote Boot Configuration

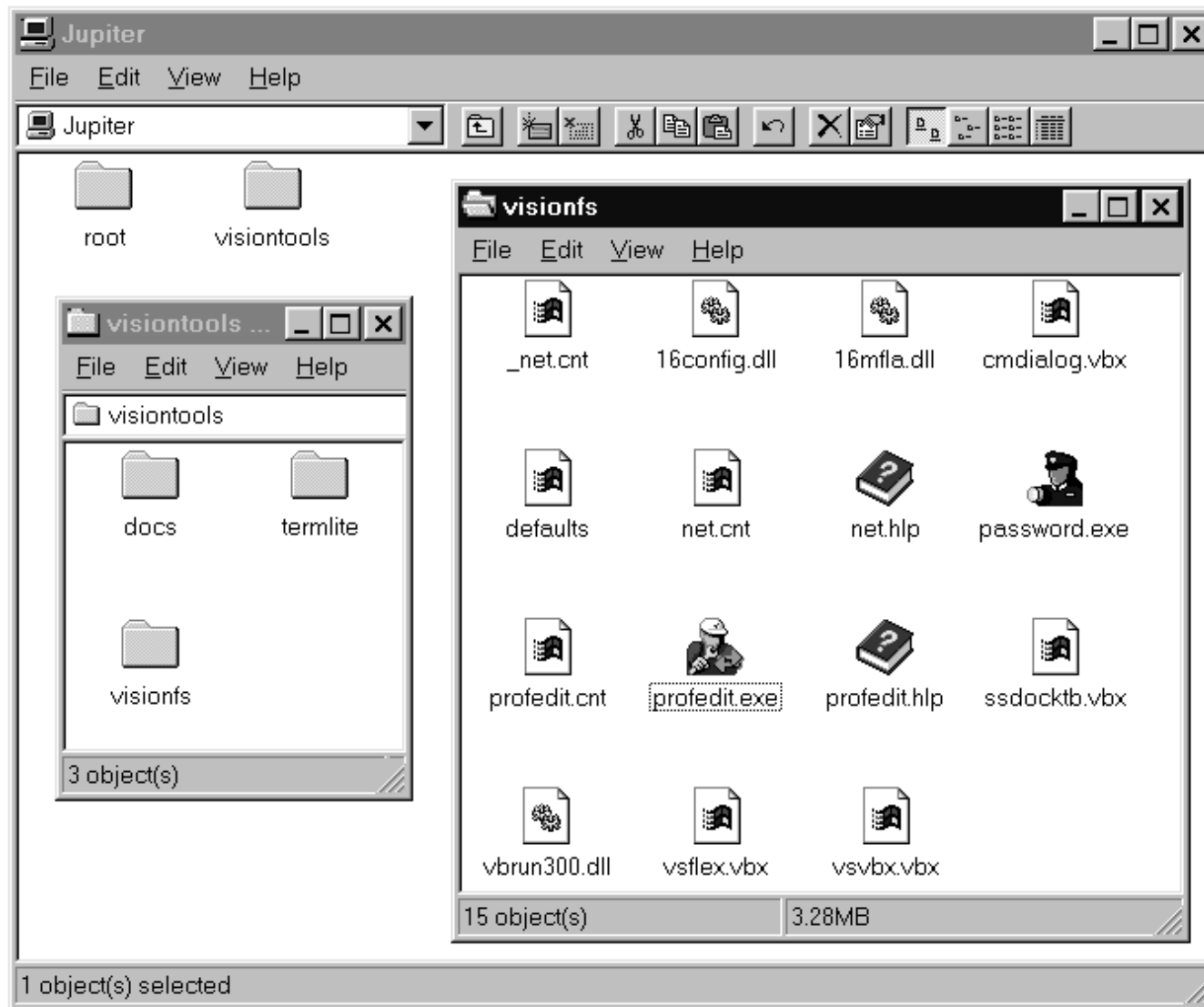
File and Printer Sharing

- Network File System (NFS)
- NetWare Services (NWS)
- VisionFS
- Advanced File and Print Server (AFPS)

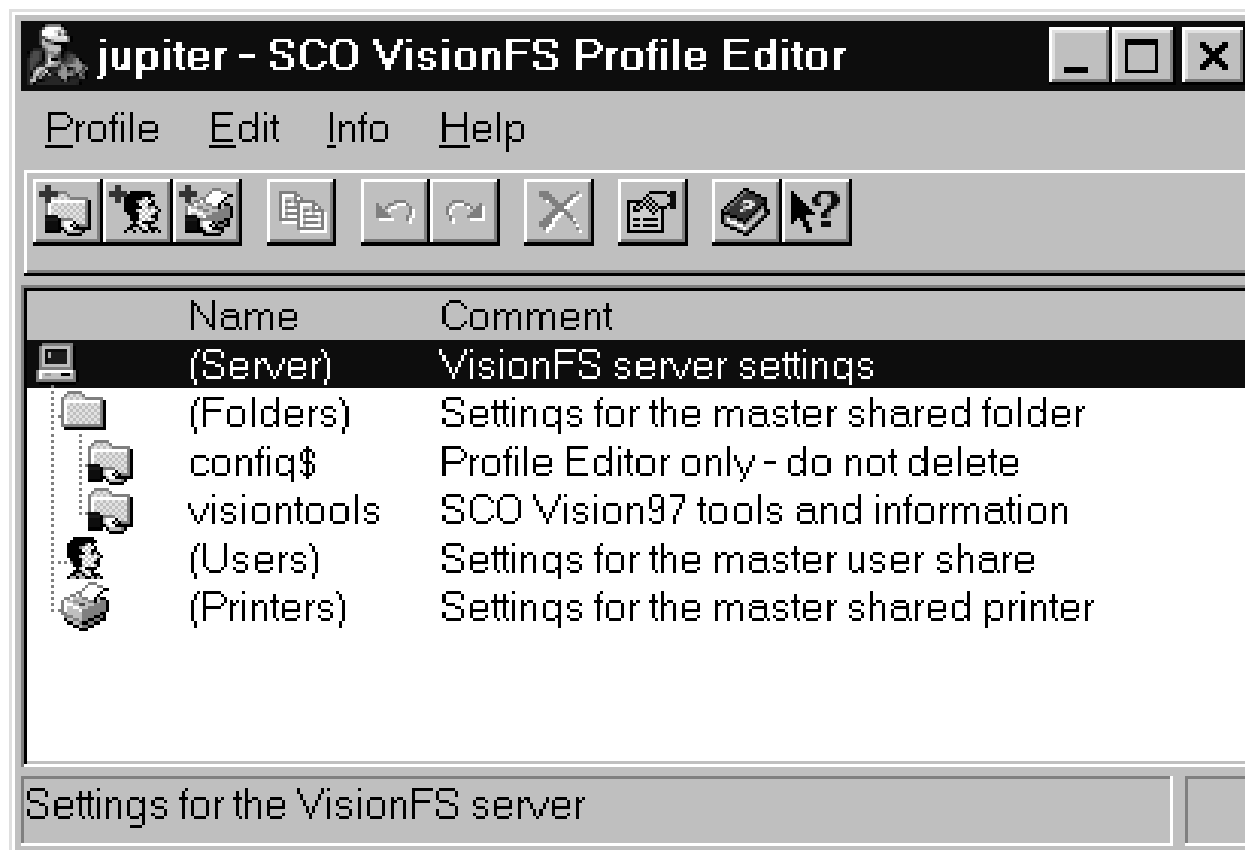
Windows 95 Network Configuration



VisionFS Shares



VisionFS Profile Editor



VisionFS Shared Folder Properties Window

The screenshot shows a window titled "wordfiles Properties" with a close button in the top right corner. Below the title bar are four tabs: "General", "Access", "Files", and "Permissions". The "General" tab is selected. Inside the tab, there is a folder icon and a text instruction: "Please type a name and comment for this share, give its location on the VisionFS server, and set its availability." Below this instruction are three input fields: "Share Name:" containing "wordfiles", "Comment:" containing "Shared folder on (dir-name)", and "UNIX Directory:" containing "/wordfiles". To the right of the "UNIX Directory:" field is a "Browse..." button. Below the "UNIX Directory:" field is a checkbox labeled "Link?". At the bottom of the dialog, there is a section titled "Availability" containing four checkboxes: "Active" (checked), "Browsable" (checked), "Link?" (checked), and another "Link?" (checked). At the very bottom of the window are four buttons: a question mark icon, "OK", "Cancel", and "Help".

wordfiles Properties

General Access Files Permissions

Please type a name and comment for this share, give its location on the VisionFS server, and set its availability.

Share Name: wordfiles

Comment: Shared folder on (dir-name)

UNIX Directory: /wordfiles Browse...

☐ Link?

Availability

☒ Active ☒ Link?

☒ Browsable ☒ Link?

? OK Cancel Help

VisionFS Username Mapping Window

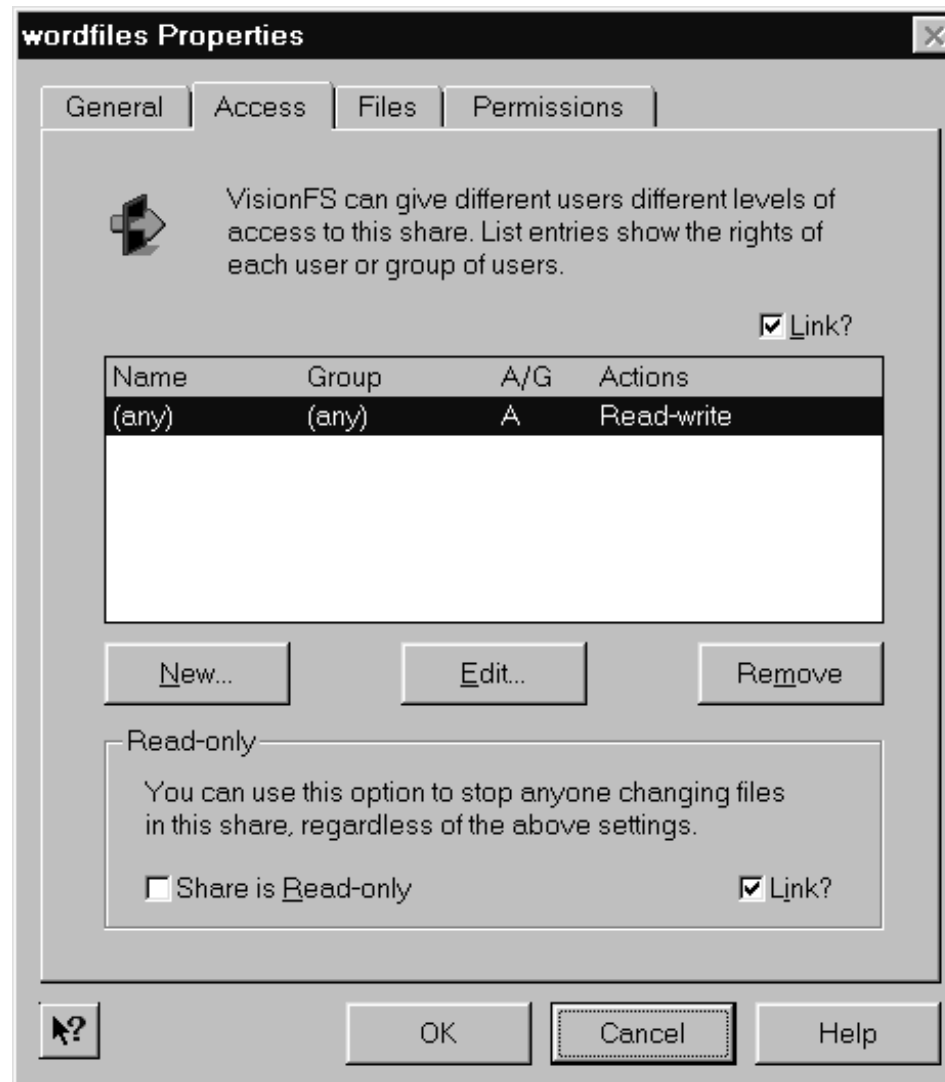
Username Mapping [X]

Windows username:

UNIX username: ▼

☐ VisionFS Addministrator privileges

VisionFS Share Access Window



VisionFS User Access Rights Window

User Access Rights [X]

Connected user:

UNIX Name: [v]

UNIX Group: [v]

☒ Authenticated
☐ Guest

Actions

☐ None
☒ Read-write
☐ Read only
☐ Write only
☐ Custom

Directories

☒ Create
☒ Delete
☒ Rename
☒ List

Files

☒ Create
☒ Delete
☒ Rename
☒ Open

☒ Read
☒ Write

Performed as UNIX user:

Name: [v] Group: [v]

[?] [OK] [Cancel] [Help]

VisionFS User Access Rights Window

User Access Rights [X]

Connected user:

UNIX Name: (any) [v]
UNIX Group: (any) [v]

☐ Authenticated
☒ Guest

Actions

☐ None
☐ Read-write
☒ Read only
☐ Write only
☐ Custom

Directories

☐ Create
☐ Delete
☐ Rename
☒ List

Files

☐ Create
☐ Delete
☐ Rename
☒ Open
☒ Read
☐ Write

Performed as UNIX user:

Name: cindy [v] Group: (enduser-group) [v]

[?] [OK] [Cancel] [Help]

VisionFS Shared Printer Properties Window

laser-101 Properties [X]

General | Access | Commands | Spooling

 Please type a name and comment for this share, give its name on the VisionFS server, and set its availability.

Printer Name:

Comment:

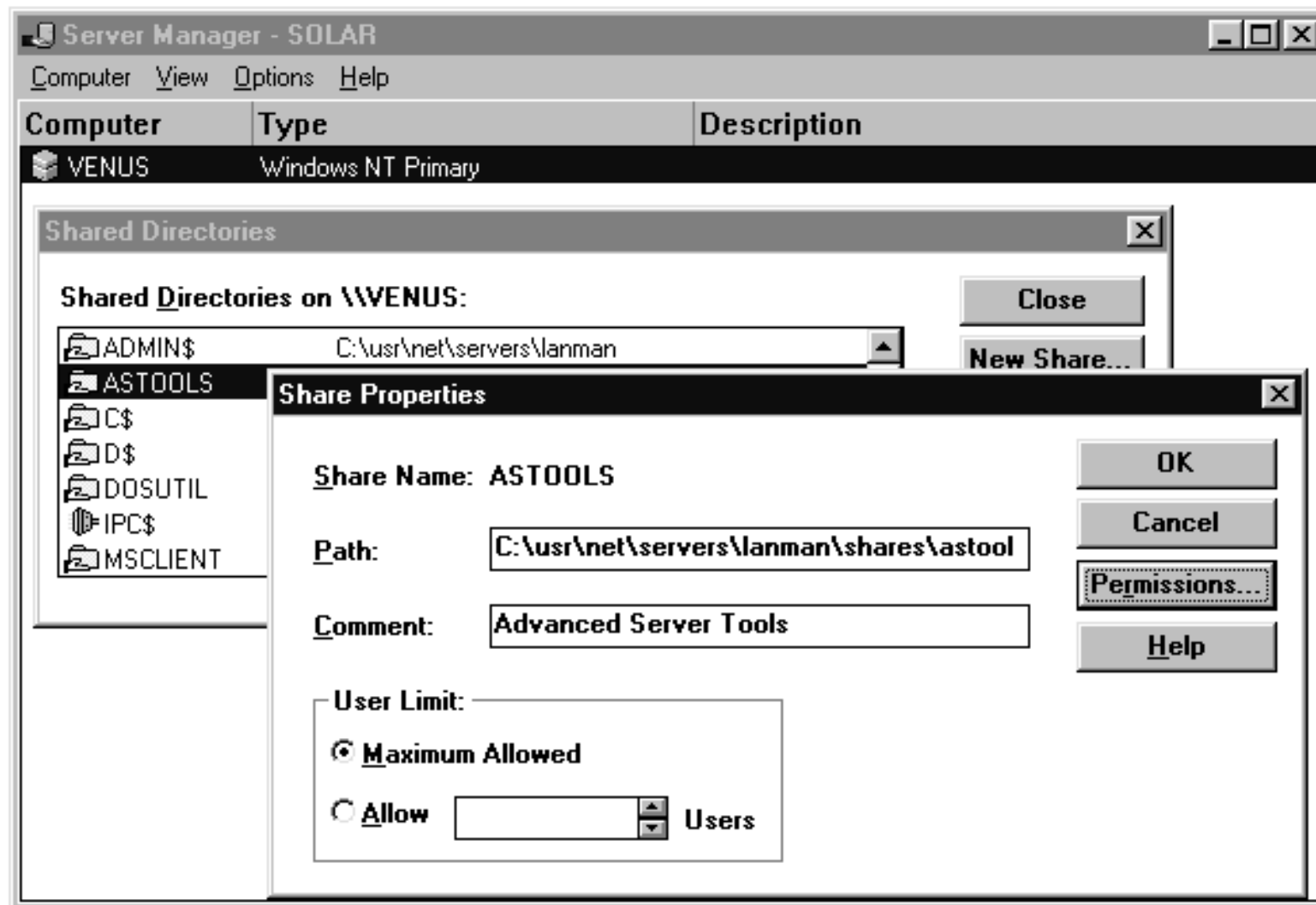
Share Name:

Availability

☒ Active	☒ Link?
☒ Browsable	☒ Link?

[?] OK Cancel Help

Advanced File and Print Server



Remote Application Access

- Terminal Emulation
- X Window Servers
- Custom Client Agents
- Webtop

TermLite running SCOadmin

jupiter - SCO TermLite

Connect Edit Configure Help

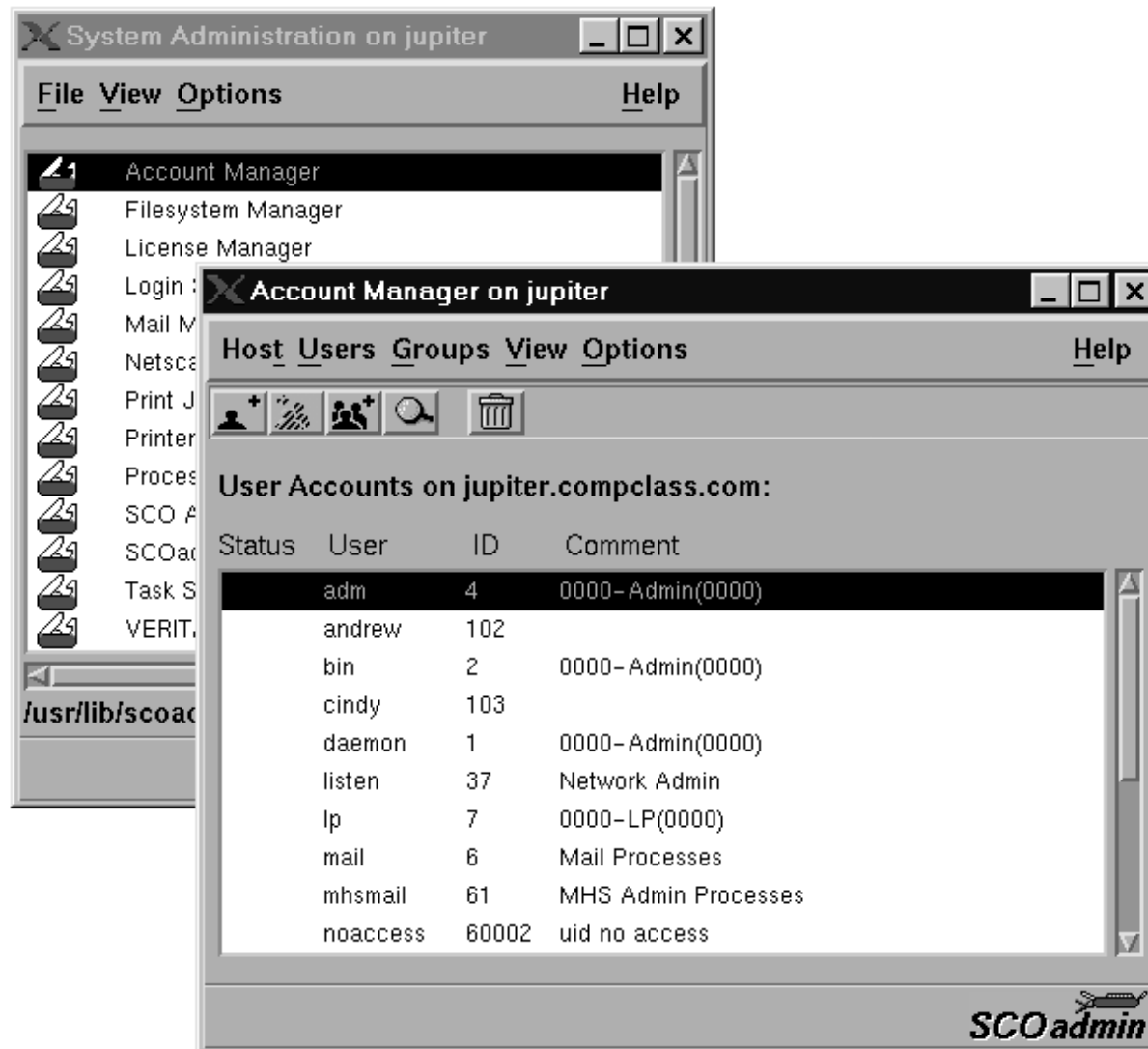
Account Manager on jupiter

Host	Users	Groups	View	Options	Help
User Accounts on jupiter.compel			User Defaults Group Defaults		
Status	User	ID	Com	[] Show Status [*] Point Help	
*	adm	4	000		
	andrew	102			
	bin	2	0000-Admin(0000)		
	cindy	103			
	daemon	1	0000-Admin(0000)		
	listen	37	Network Admin		
	lp	7	0000-LP(0000)		
	mail	6	Mail Processes		
	mhsmail	61	MHS Admin Processes		
	noaccess	60002	uid no access		
	nobody	60001	uid no body		
	nuucp	10	0000-uucp(0000)		

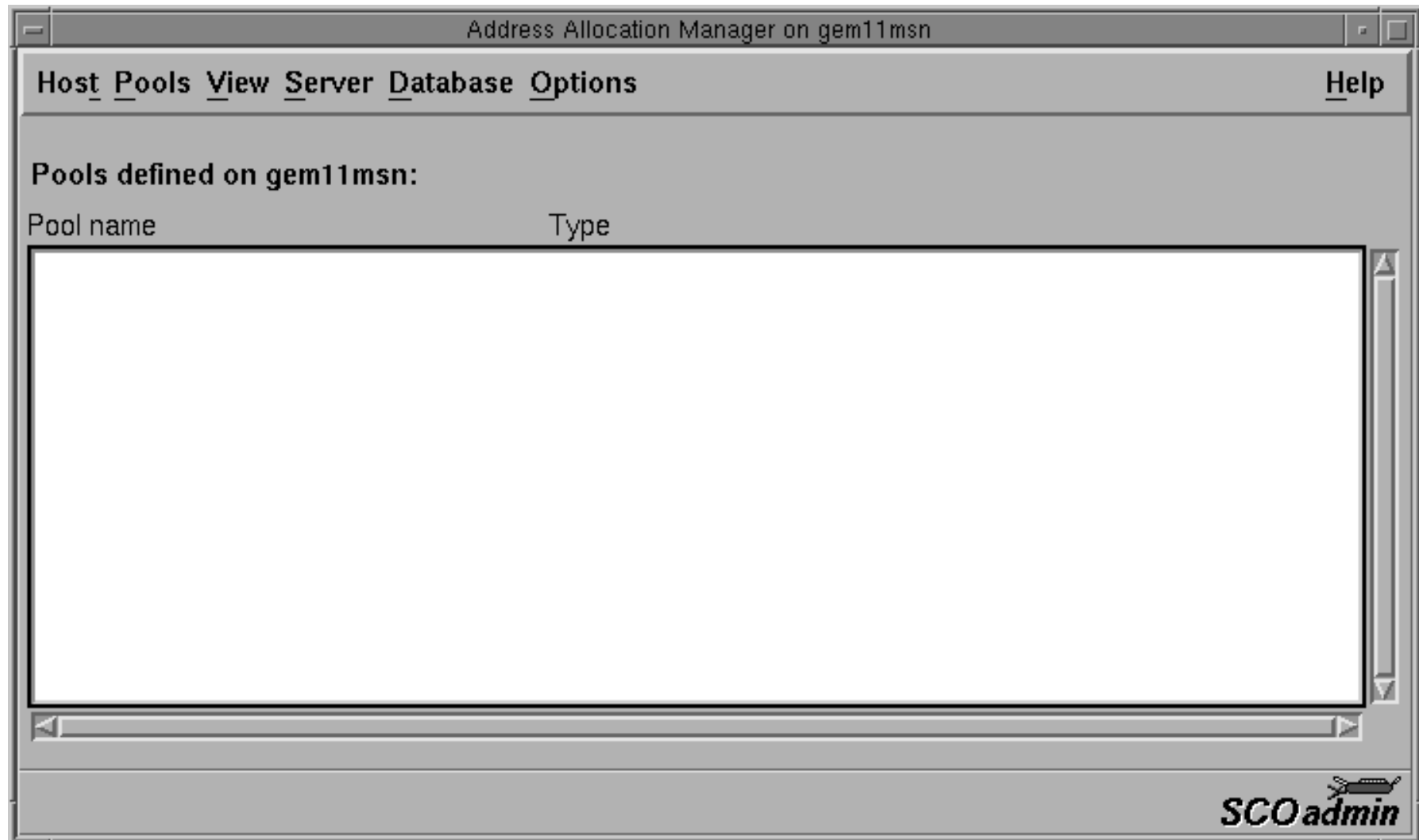
<*****>

Change the system defaults for groups

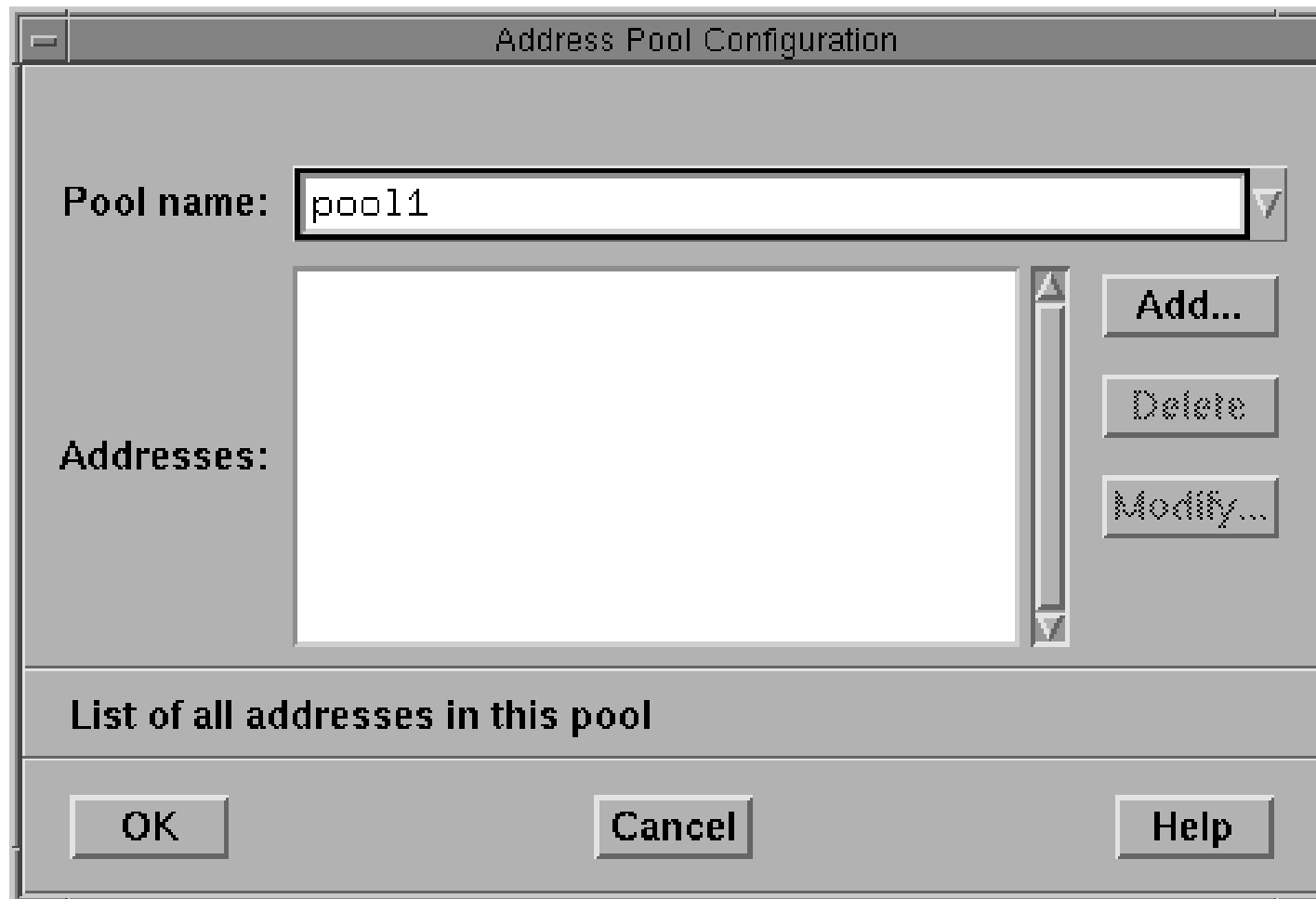
XVision running SCOadmin



Address Allocation Manager



Adding Pools



The dialog box is titled "Address Pool Configuration". It features a "Pool name:" label followed by a text input field containing "pool1". Below this is an "Addresses:" label next to a large, empty list box. To the right of the list box are three buttons: "Add...", "Delete", and "Modify...". At the bottom of the dialog, there is a section labeled "List of all addresses in this pool" and three buttons: "OK", "Cancel", and "Help".

Address Pool Configuration

Pool name: pool1

Addresses:

Add...

Delete

Modify...

List of all addresses in this pool

OK Cancel Help

Adding Addresses

Add Address or Address Range

Pool name:

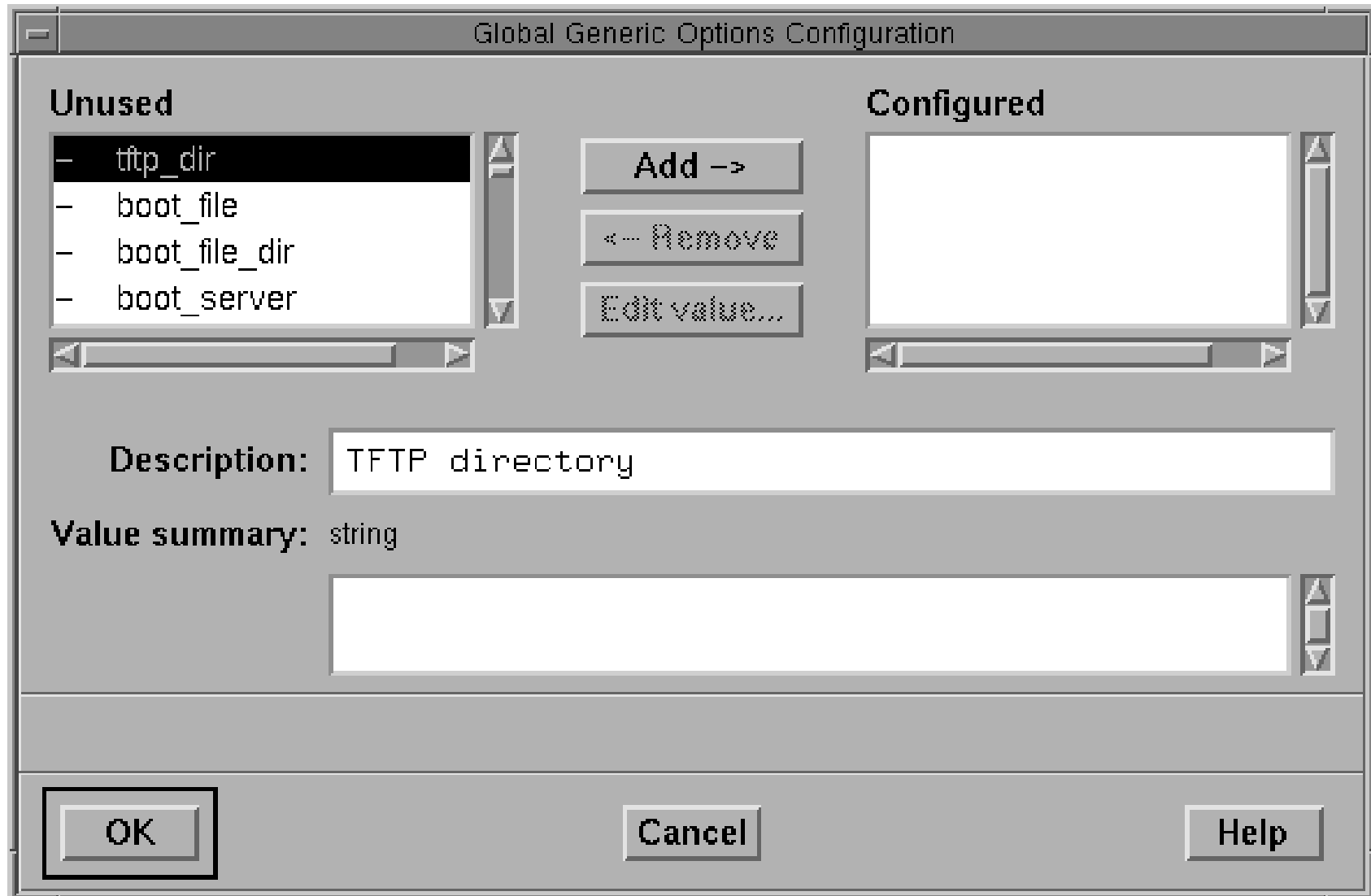
Select: ☒ **Address** ☐ **Range**

Address: . . .

Start address: . . .

End address: . . .

Global Generic Options Configuration



The dialog box is titled "Global Generic Options Configuration". It features two main panes: "Unused" on the left and "Configured" on the right. The "Unused" pane contains a list of options: "tftp_dir", "boot_file", "boot_file_dir", and "boot_server". The "tftp_dir" option is currently selected. Between the panes are three buttons: "Add ->", "<- Remove", and "Edit value...". The "Configured" pane is currently empty. Below the panes, there is a "Description:" label followed by a text field containing "TFTP directory". Below that is a "Value summary:" label followed by the text "string" and a large empty text area. At the bottom of the dialog are three buttons: "OK", "Cancel", and "Help".

Unused

- tftp_dir
- boot_file
- boot_file_dir
- boot_server

Configured

Add ->

<- Remove

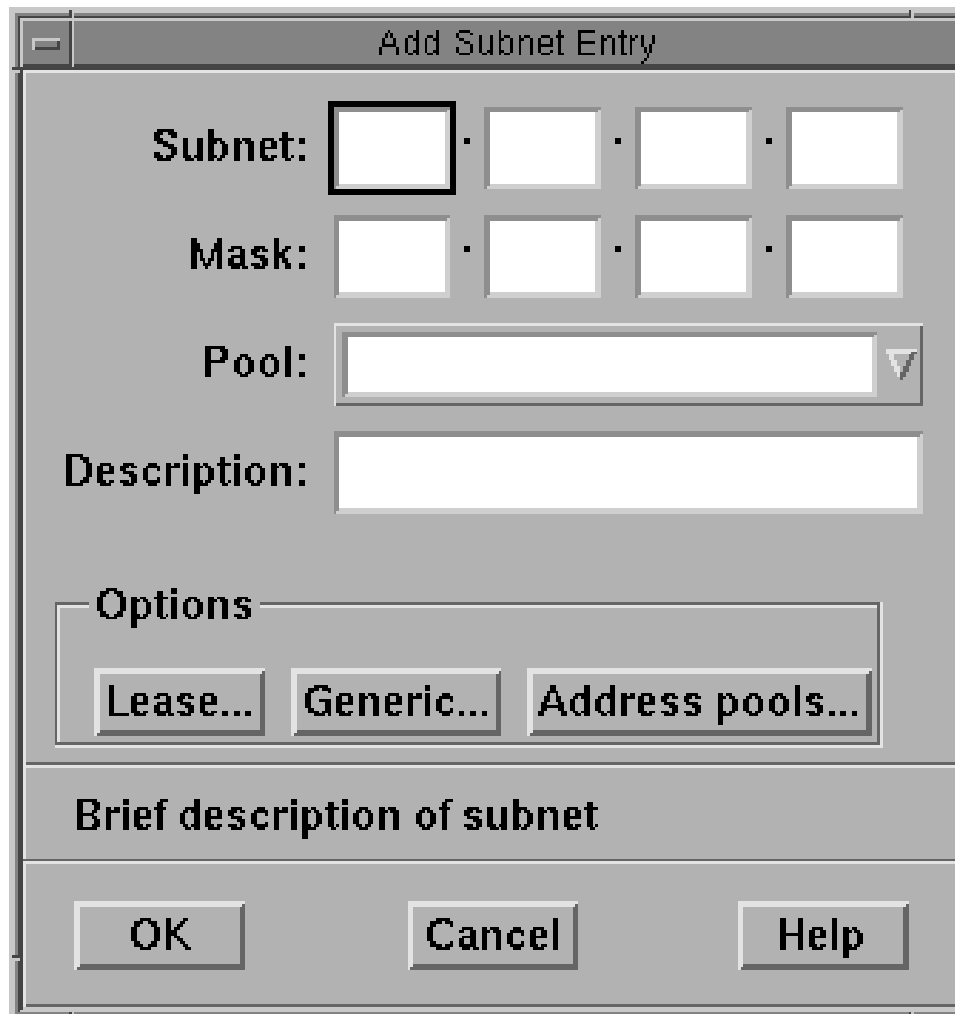
Edit value...

Description: TFTP directory

Value summary: string

OK **Cancel** **Help**

Adding DHCP Subnets



The image shows a 'Add Subnet Entry' dialog box with the following fields and controls:

- Subnet:** Four input boxes for IP address octets, with the first box highlighted.
- Mask:** Four input boxes for subnet mask octets.
- Pool:** A dropdown menu with a downward arrow.
- Description:** A text input field.
- Options:** A group box containing three buttons: 'Lease...', 'Generic...', and 'Address pools...'.
- Brief description of subnet:** A label for the bottom section.
- Buttons:** 'OK', 'Cancel', and 'Help' buttons at the bottom.

Configuring DHCP Parameters by Client

The screenshot shows a dialog box titled "Add Client Entry". It contains the following fields and controls:

- Client identifier type:** Two radio buttons, "Opaque" (selected) and "Hardware".
- Client identifier:** A text input field.
- Hardware type:** A dropdown menu currently showing "Ethernet".
- Hardware address:** A text input field.
- Description:** A text input field.
- Options:** A section containing two buttons: "Client..." and "Generic...".
- Client's network hardware type:** A label positioned above the bottom buttons.
- Buttons:** "OK", "Cancel", and "Help" at the bottom of the dialog.

Address Lease Parameters

Lease Options Configuration

Default lease time: ☒ Limited ☐ Unlimited

Days: Hours: Mins:

Maximum lease time: ☐ Limited ☒ Unlimited

Days: Hours: Mins:

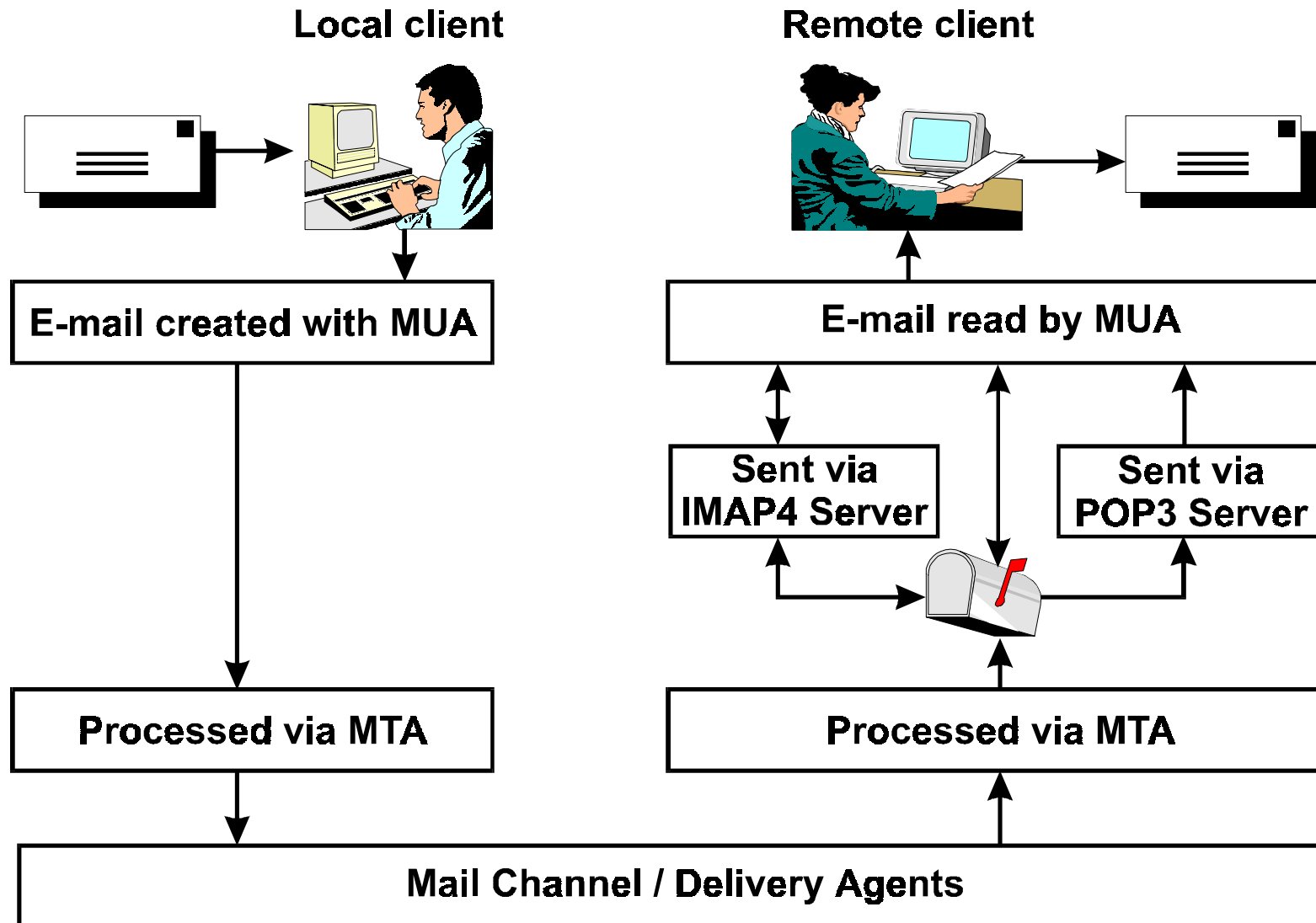
Renewal on (percent):

Rebind on (percent):

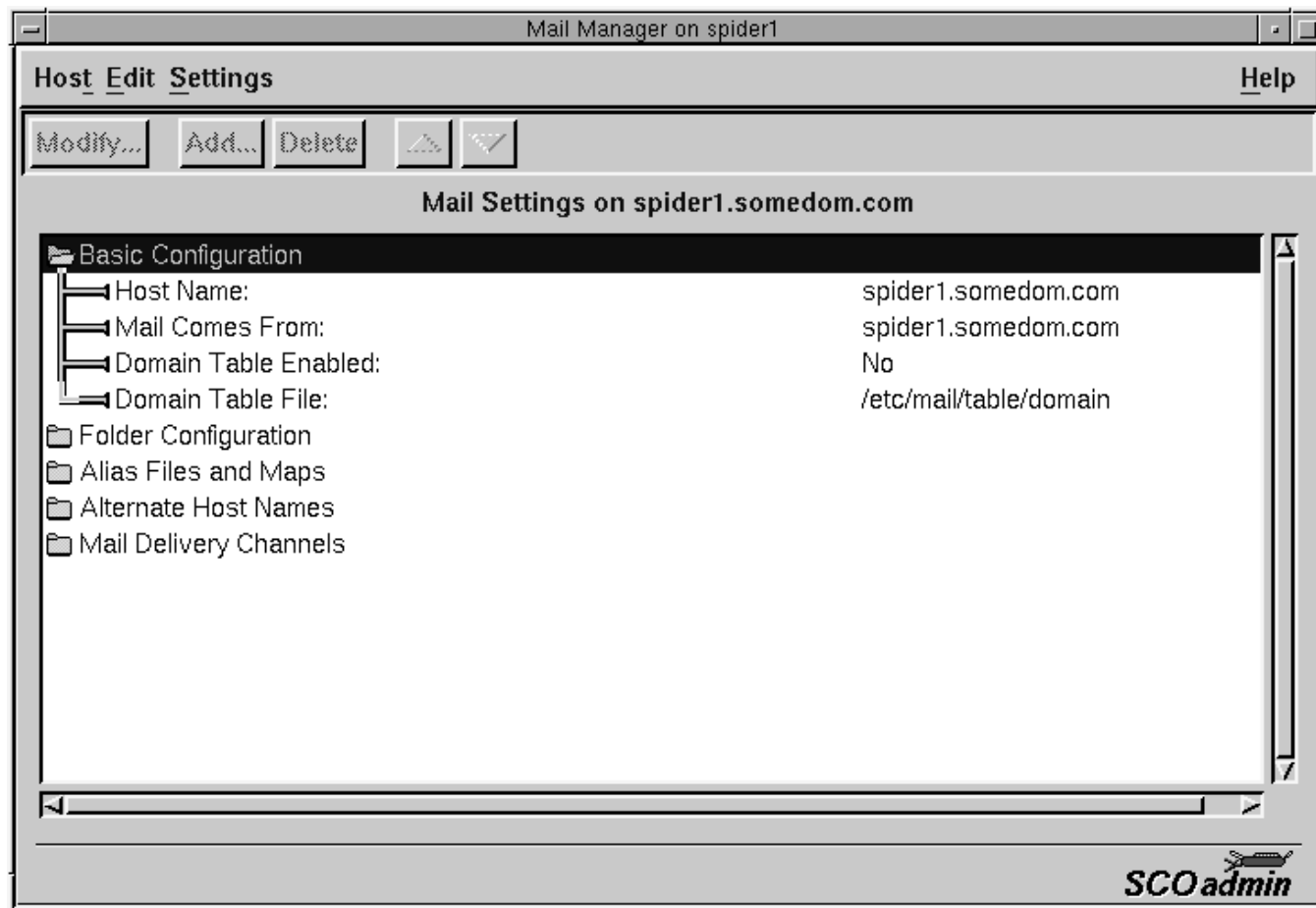
Mail Configuration

- E-mail overview
- **sendmail** configuration
- Aliases
- Name server records for e-mail
- POP3 and IMAP4 services

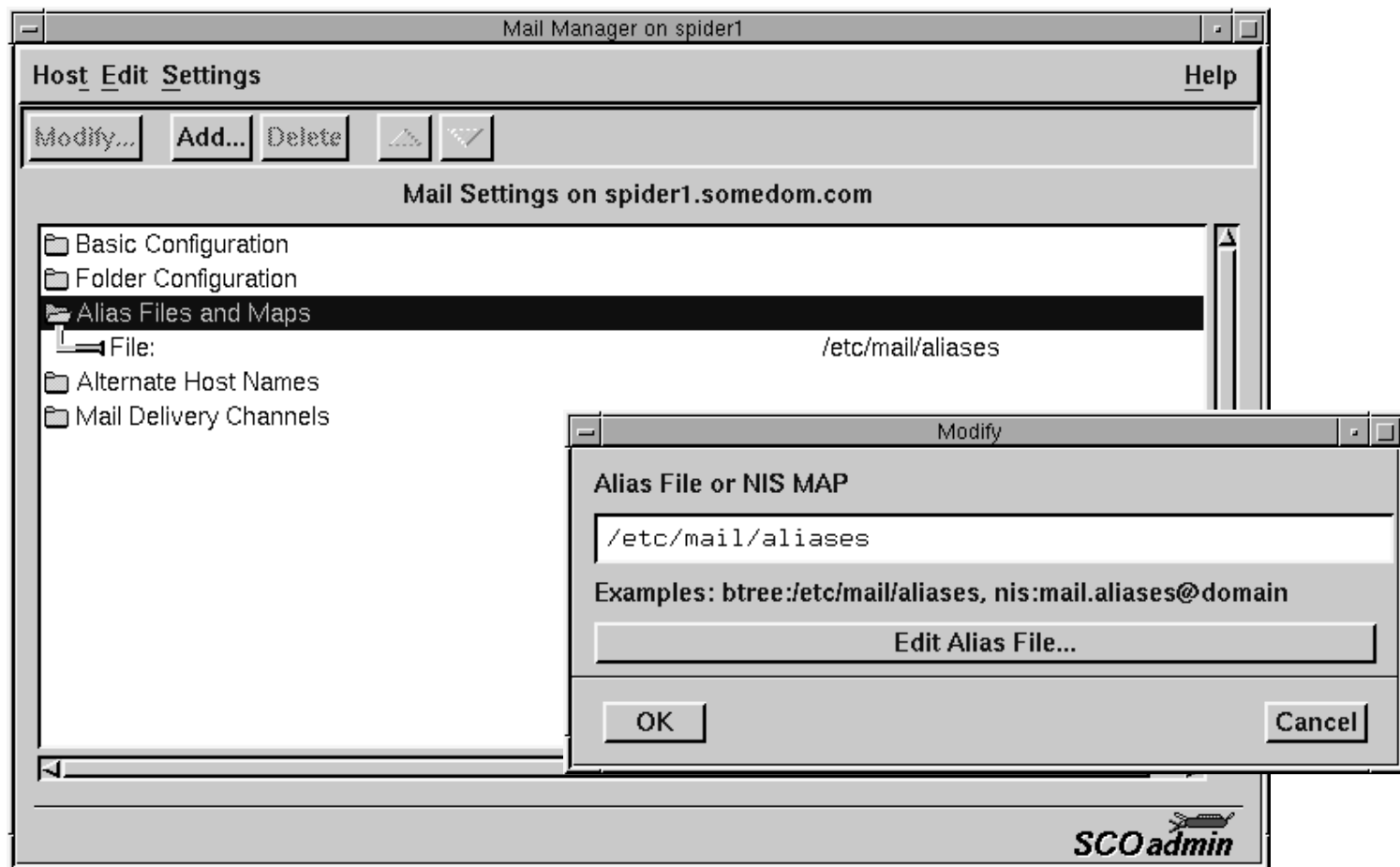
Mail Components



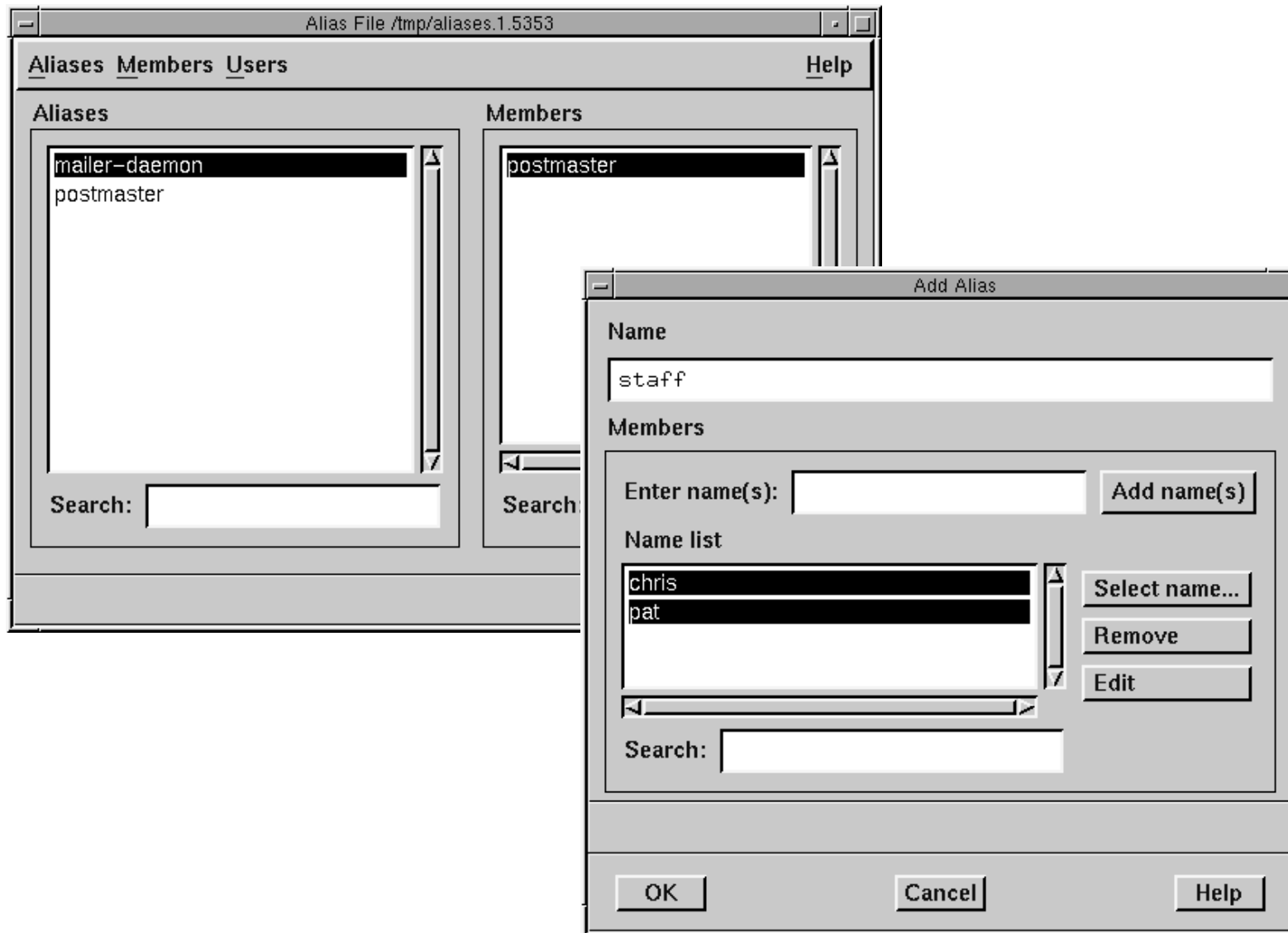
Mail Manager



Configuring Aliases



Creating an Alias



Vacation Notification Manager

Vacation Notification

Set Vacation Notices
◆ On ◇ Off

Other mail addresses for <root>

Add...
Remove

Notices Were Sent To:

Clear

Notification Subject

Absence (Automatic reply)

Default

Notification Message

This is an automatic reply to email you recently sent to root. Additional mail to root will not result in further replies. This mail indicates that the user is not

Default

OK Cancel Help