UNITED STATES PATENT AND TRADEMARK OFFICE

———————————

BEFORE THE PATENT TRIAL AND APPEAL BOARD

———————————

SIPNET EU S.R.O.
Petitioner

v.

Straight Path IP Group, Inc.
Patent Owner

Case No. IPR2013-00246
U.S. Patent No. 6,108,704

———————————

Before KLAYAN K. DESHPANDE, THOMAS L. GIANNETTI, and
TRENTON A. WARD, Administrative Patent Judges.

DECLARATION OF LESLIE EHRLICH RE WINDOWS NT 3.5 USER GUIDE

Case No. IPR2013-00246
U.S. Patent No. 6,108,704

DECLARATION

I, Leslie Ehrlich, hereby state as follows:

1. I am over the age of 18 and am competent to make this declaration.

2. I have personal knowledge of the matters stated herein.

3. I work at Kilpatrick Townsend & Stockton, LLP as a paralegal.

4. I received the box for Windows NT 3.5 from Yuri Kolesnikov. The contents include a CD-ROM that includes a digital copy of the Windows NT Server retail TCP/IP Guide (the "Yuri Guide").

5. The Yuri Guide was in the form of help screens. I printed out all the help screens, and then scanned them, which are being submitted as Exhibit 1018 in the above referenced Case, No. IPR2013-00246.

6. I had our word processing department run a software comparison of the printed and scanned copy of the Yuri Guide on the CD-ROM to Exhibit 1004 in the above referenced Case, No. IPR2013-00246. The two documents are substantially identical, with the exception of the glossaries which contain different terms. The main differences besides the different text of the glossary are formatting type differences due to the help screen format on the CD-ROM. Attached as Exhibit A is a copy of the redline comparison.

1

7.   I compared the portions of Exhibit 1004 included in the claim charts of the original petition in the above referenced Case, No. IPR2013-00246. Those portions are identical, with the exception of a few typos in the claims chart.

I declare under the penalty of perjury that the foregoing Declaration is true and correct.

Date: November 26, 2013   _Leslie Ehrlich_____
                                           Leslie Ehrlich

of Microsoft TCP/IP for
Windows NT
Transmission Control Protocol/Internet Protocol (TCP⊥/IP) is a networking
protocol that provides
communication across interconnected networks made up of computers with
diverse hardware
architectures and various operating systems. TCP/IP can be used to communicate
with
Windows NT systems, with devices that use other Microsoft networking products,
and with
non-Microsoft systems, such as UNIX.
This chapter introduces Microsoft TCP/IP for Windows NT. The topics in this
chapter include
the following:
•l What is TCP/IP for Windows NT?
•l What does Microsoft TCP/IPiP include?
•l Windows NT solutions in TCP/IP intemetworksinternetworks
For more detailed information on TCP/IP and its integration with Microsoft
Windows NT and
other networking products, see Chapter 3, "Networking Concepts for TCP⊥/IP."
Chapter 1 1of8

What IsIs TCP/IP for Windows NT?
The TCP/IP protocol family is a standard set of networking protocols, or rules,
that govern how
data is passed between computers on a network. TCP/IPlP is used to connect
the Internet, the
worldwide internetworkinternetvvork connecting over two million
universities, research labs, U.Sus. defense
installations, and corporations. (By convention, "Internet" is capitalized
when referring to the
worldwide internetwork.) These same protocols can be used in private
internetworks that
connect several local area networks.
Microsoft TCP/IP for Windows NT enables enterprise networking and
connectivity on
Windows NT computers. Adding TCP/IP to a Windows NT configuration offers the
following
advantages:
l
AstandardA standard, routable enterprise networking protocol that is the most
complete and
accepted protocol available. All modern operating systems offer TCP/IP
support, and most
large networks rely on TCP/IP for much of their network traffic.
l
AtechnologyA technology for connecting dissimilar systems. Many standard
connectivity utilities are
available to access and transfer data between dissimilar systems, including
File Transfer
Protocol (FTP) and Terminal Emulation Protocol (Telnet). Several of these
standard
utilities are included with Windows NT.
l

~~Arobust~~A robust, scalable, cross-platform client-server framework. Microsoft
TCP/IP supports the
Windows Sockets 1.1 interface, which is ideal for developing client-server
applications that
can run with Windows Sockets-compliant stacks from other vendors. Many
public-domain ~~Internet~~
internet tools are also written to the Windows Sockets standard. Windows
Sockets
applications can also take advantage of other networking protocols such as
Microsoft
NWLink, the Microsoft implementation of the ~~IPX~~lPX/SPX protocols used in
Novell® NetWare®
networks. ~~1~~
The enabling technology necessary to connect Windows NT to the global
Internet. TCP/IP,
Point to Point Protocol (PPP), and Windows Sockets 1.1 provide the foundation
needed to
connect and use Internet services.
~~Chapter 1~~ Overview of Microsoft ~~TCPnP~~TCP/IP for Windows NT 2of8

What Does Microsoft TCP/IP Include?
Microsoft TCP/IP provides all the elements necessary to implement these
protocols for ~~networking~~
nebvvorking. Microsoft TCP/IP includes the following:

• ——
Core TCP/IP protocols, including the Transmission Control Protocol (TCP),
Internet
Protocol (IP), User Datagram Protocol (UDP), Address Resolution Protocol
(ARP), and ~~Internet~~
lnternet Control Message Protocol (~~ICMP~~lClVlP). This suite of
~~Internet~~internet protocols provides ~~aset~~a set of
standards for how computers communicate and how networks are interconnected.
Support
is also provided for PPP and Serial-Line IP (SLIP), which are protocols used
for dial-up
access to TCP/IP networks, including the Internet.

• ——
Support for application interfaces, including Windows Sockets 1.1 for network
programming, remote procedure call (RPC) for communicating between systems,
NetBIOS
for establishing logical names and sessions on the network, and network
dynamic data
exchange (Network ~~ODE~~DDE) for sharing information embedded in documents
across the
network.

• ——
Basic TCP/IP connectivity utilities, including finger, ftp, lpr, ~~rep~~rcp,
rexec, rsh, telnet, and
tftp. These utilities allow Windows NT users to interact with and use resources
on
non-Microsoft hosts, such as UNIX workstations.

-
TCP/IP diagnostic tools, including arp, hostname, ipconfig, lpq, nbtstat, netstat, ping,
route, and tracert. These utilities can be used to detect and resolve TCP/~~IP~~lP networking
problems.

-
Services and related administrative tools, including the ~~FfP Server~~FTP Sewer service for transferring
files between remote computers, Windows ~~Internet~~internet Name Service (WINS) for dynamically
registering and querying computer names on an internetwork, Dynamic Host Configuration
Protocol (DHCP) service for automatically configuring TCP/IP on Windows NT computers,
and TCP/~~IP~~lP printing for accessing printers connected to a UNIX computer or connected
directly to the network via TCP/IP.

-
Simple Network Management Protocol (SNMP) agent. This component allows a
Windows NT computer to be administered remotely using management tools such as Sun®
Net Manager or HP® Open View. SNMP can also be use to monitor and manage DHCP
servers and WINS servers.
- The client ~~software~~soMare for simple network protocols, including Character Generator, Daytime,
Discard, Echo, and Quote of the Day. These protocols allow a Windows NT computer to
respond to requests from other systems that support these protocols. When these
protocols are installed, ~~asample~~a sample QUOTES files is also installed in the ~~\systemroot\~~lsysfemrootl
SYSTEM32\~~DRIVERS~~DR|VERS\ETC ~~directory~~directoiy.
- Path MTU Discovery, which provides the ability to determine the datagram size for all
routers between Windows NT computers and any other systems on the WAN. Microsoft
TCP/IP also supports the Internet Gateway Multicast Protocol (IGMP), which is used by
new workgroup software products.

The following diagram shows the elements of Microsoft TCP/IP alongside the variety of
additional applications and connectivity utilities provided by Microsoft and other developers.

Overview of Microsoft TCP/IP for Windows NT 3of8

Gcpl1ef;
wms
..f
~~Enhanced connectivity applications~~ Da mel opment tools
[}€Llb, ot-1crR1=c]
.-F

J_*
applicshona
fsx@&8®a_4eae§§mn;F=.»1¥2:§@¢=»_315
|_.
fe
Integrated ~~with~~u|.i1i1
'Windows ~~NT_D~~H'I'
Developed by ~~third parties~~ihird pa"tiea or the ~~research community~~raaeawch
oo_rn_m.|_nity
Microsoft TCP/IP~~.~~ Core Technology and Third-Party Add-ons
~~Chapter 1 Overview of Microsoft TCPnP for Windows NT~~
TCP/~~IP~~lP standards are ~~detined~~defined in Requests for Comments (RFCs), which are published by the
Internet Engineering Task Force (IETF) and other working groups. The relevant RFCs
supported in this version of Microsoft ~~TCPIIP~~TCP/IP (and for Microsoft Remote Access Service) are
described in the following table.
Requests for Comments (RFCs) Supported by Microsoft TCP/IP
RFC Title
768
783
791
792
793
826
854
862
863
864
865 ~~867 894 919,922 959 1001, 1002 1034, 1035 1042 1055 1112 1122, 1123 1134 1144~~
~~·1157~~
867
894
91_9,
~~Title_~~959
User Datagram Protocol (UDP)
Trivial File Transfer Protocol (~~TFrP~~TFTP)
~~Internet~~internet Protocol (IP)
~~Internet~~internet Control Message Protocol (ICMP)
Transmission Control Protocol (TCP)
Address Resolution Protocol (ARP)
Telnet Protocol (TELNET)
Echo Protocol (ECHO)
Discard Protocol (DISCARD)
Character Generator Protocol (CHARGEN)
Quote of the Day Protocol (QUOTE)
Daytime Protocol (~~DAYfiME~~DAYTIME)
IP over Ethernet
922 IP Broadcast Datagrams (broadcasting with subnets)
File Transfer Protocol (FTP)
J\»\v\.<>.>»,~:~\><,\/¢.f..w,
.|1"ff?~"iH._m"|i1_I_I_1

">$-4<»E/:n>'9*>~<if6
\:,E,;'..:.:.:.:.::,.:.:.
`4\-vs/:'v'>44»\»<>\f
.3
'Q
.»<,\/M/.».nw.<.\»w\.-y..-><-.
rI*EG*"Ff?"if."iTi'?T?'?i?"%fi
/».
WWW fr:fm=
VIII
?>/¥$'52*r*!é\/\\'*S!§f»**'l4\P$?v*'\~'*r' /2S*P**`
96
|'v'u1ndow| HFS] J
9*i'5'i'§zlT1!$§4`5=!-l'l~!&§Ki|2§=3§11§i1§: iia1§fi§69|*$&u Ef
Enhanced
cnnnacxii vitgr

1001,1002
1034,1035
1042
1055
1112
1122,1123
1134
1144
1157
1179
1188
1191
1201
1231
1332
1334
1533
1534
1541
1542
1547
1548
1549
1552
1553
1570
Draft RFCs
NetBIOS Service Protocols
Domain Name System (DOMAIN)
IP over Token Ring
Transmission of IP over Serial Lines (IP-SLIP)
Internet Gateway Multicast Protocol (IGMP)
Host Requirements (communications and applications)
Point to Point Protocol (PPP)
Compressing TCP/IP Headers for Low-Speed Serial Links
Simple Network Management Protocol (SNMP)

RFC   Title
1179   Line Printer Daemon Protocol
1188   IP over FDDI
1191   Path MTU Discovery
1201   IP over ARCNET
1231   IEEE 802.5 Token Ring MIB (MIB-II11)
1332   PPP Internet Protocol Control Protocol (IPCP)
1334   PPP Authentication Protocols
1533   DHCP Options and BOOTP Vendor Extensions
1534   InteroperationInteroperation Between DHCP and BOOTP
1541   Dynamic Host Configuration Protocol (DHCP)
1542   Clarifications and Extensions for the Bootstrap Protocol
1547   Requirements for Point to Point Protocol (PPP)
1548   Point to Point Protocol (PPP)
1549   PPP in High-level Data Link Control (HDLC) Framing
1552   PPP Internetwork Packet Exchange Control Protocol (IPXCP)
1553   IPX Header Compression
1570   Link Control Protocol (LCP) Extensions
Draft RFCs NetBIOS Frame Control Protocol (NBFCP);, PPP over ISDN;, PPP over X.25; 25,
Compression Control Protocol
All RFCs can be found on the Internet via ds.intemicinternic.net.
In this version of Windows NT, Microsoft TCP/IP does not include acompletea complete suite of TCP/IP
connectivity utilities, Network File System (NFS) support, or some TCP/IP server servicessen/ices
(daemons) such as routed and telnetd. Many such applications and utilities that are available
in the public domain or from third-party vendors work with Microsoft TCP/IP.
Tip
For Windows for Workgroups computers and MS-DOS basedDOSbased computers on a Microsoft
network, you can install the new version of Microsoft TCP/IPlP-32 for Windows for Workgroups
and the Microsoft Network Client version 2.0 forMS for MS-DOS from the Windows NT Server 3.5
compact disc. This software includes the DHCP and WINS clients and other elements of the
new Microsoft TCP/IP software. For information about installing these clients, see Chapter 9,
"Network Client Administrator,." in the WindowsVW/vdows NT ServerSen/er
Installation Guide.

Chapter 1 Overview of Microsoft TCPnPTCP/IP for Windows NT
Windows NT Solutions in TCP/IP InternetworksInternetworks
When TCP/IP is used as a transport protocol with Windows NT, Windows NT computers can
communicate with other kinds of systems without additional networking software. Microsoft
TCP/IPlP in combination with other parts of Windows NT provides a scalable solution for
enterprise networks that include a mix of system types and software on many platforms.

This section summarizes ~~how~~now TCP/IP works with Windows NT to provide enterprise networking
solutions. For information about how the elements discussed in this section fit within the
networking architecture, see "TCP~~·~~/IP and Windows NT Networking" in Chapter 3, "Networking
Concepts for TCP/~~IP~~|P."

Windows NT Solutions in TCPIIP lnternetworks
Using TCP/IP for Scalability in Windows Networks
TCP/IP delivers a scalable ~~intemetworking~~internetworking technology widely supported by hardware and
software vendors.
When TCP/~~IP~~lP is used as the enterprise networking protocol, the Windows networking solutions
from Microsoft can be used on an existing internetwork to provide client and server support for
TCP~~·IP~~/lP and connectivity utilities. ~~TheSt~~ These solutions include:

•——
l Microsoft Windows NT Workstation 3.5, with enhancements to support wide area networks
(WAN), TCP~~·~~/IP printing, extended LMHOSTS, Windows Sockets 1.1, FTP Server service
software, and DHCP and WINS client software.

•——
l Microsoft Windows NT Server 3.5, with the same enhancements as Windows NT, plus
DHCP server and WINS ~~server~~sen/er software to support the implementation of these new
protocols.

•——
l Microsoft TCP/IP-32 for Windows for Workgroups ~~3.11,~~3.1 1, with Windows Sockets support,
can be used to provide access for Windows for Workgroups computers to Windows NT,
LAN Manager, and other TCP~~·IP~~/lP systems. Microsoft TCP/IP-32 includes DHCP and WINS
client ~~software.~~ soMare.

•——
' Microsoft LAN Manager, including both client and server support for Windows Sockets,
and MS-DOS®~~·~~based connectivity utilities. The Microsoft Network Client 2.0 software on the
Windows NT Server compact disc includes new Microsoft TCP/IP support with DHCP and
WINS clients.
The current version of TCP/IP for Windows NT also supports IP routing in systems with
multiple network adapters attached to separate physical networks
(~~multihomed~~multlhomed systems).
N1-tuori;"'

B
Net~|of"* *
Ovewiew of Microsoft TCP/IP for Windows NT 5of8
IP router. ,rTo other"
1n9tg0fk5
IP mmék *'iP rcuter
Other
netuorls
hletwo"
c

ItrIai11"Use
3cie1it:E, presml'
Researchers "
HQbilL D3*Jid, 'ii
'§fisua]i`iai:iu11
'1"cI3t, Jeffat*;, I
C1l11131. Praducers
Sniizwaré
Wam*efr::=nt Tec
DescripHuIl *
|
¢ThE L£Jrer1z8tt1'act=31f is 3 *sfilxitinxx trzajset nf differential
equatiljxiswlmifzlz displays s\:»1*11»3 rather
remarkable 6eh31fi¢i11.a11d 1*epr&se11ts 0:118 of the 1ar1dfn3¢rl::3irf1tha
Eelfl QfCh3fjs. The 6qL1:ati¢:=11s
ciescribc t1i€ 2D Haw ufHuid3;1asiinp1e 1fe1:ta11gi_1131*
1:}i3§€32Sf1';i1311isheatec1alungthéljnttofn.
siff1I31¢ mntielwas it1tei'1|:1ef1.¢tasi1'nL11ate_rf1e;1iu11i-$0318
f3t11'i§rsIj1416fil3i:un'i;€ctinn. j
MESA Mnsaicfnr M5 Windnws "fr *
file _Edit Qptiuns Llavigate hnnutate Starting Paints Quad Kill Heat3tutt
_Help
Qummands Qptiuns Quukrnarks Help
1 I
Previous Menu if Lakeside School, Seattle, Washington 1
Congressional Committee Assignments for 1Il3rd Congress (U
Electronic Mail Addresses for Members of Congress
Government Manual: Legislatiue Branch {UMich]'
List of Firsts for 1ll3rd Congress {UMd)
3
Windows NT Solutions in TCPIIP Internetworks
Using ~~TCPnP~~TCP/IP for Connectivity to the Internet
Microsoft TCP/IP provides Windows networking with ~~aset~~a set of
~~intemetworking~~internetvvorking protocols based
on open standards.
Microsoft TCP/IP for Windows NT includes many common connectivity
applications such as
ftp, rsh, and telnet that support file transfer, remote process execution,
and terminal emulation
for communication on the ~~Internet~~internet and between non-Microsoft network
systems.
~~Chapter 1 Overview of Microsoft TCPnP for Windows NT~~

TCP/IP applications created by researchers and other users, such as Gopher and NCSA
Mosaic, are in the public domain or are available through other vendors as both 16-bit and
32-bit Windows-based applications. Any of these applications that follow the Windows Sockets
1.1 standard are compatible with Windows NT. Such applications allow a Windows NT
computer to act as a powerful ~~Internet~~internet client using the extensive ~~intemetworking~~internetworking components
with public-domain viewers and applications to access Internet resources.
~~Tip~~fri,
Public-domain Windows-based utilities such as LPR and Gopher can be obtained on the
Internet via ftp.cica.indiana.edu in the /pub/win3/nt or
/pub/~~win~~vvin3/winsock directory, or via the
same directories on ftp.cdrom.com.
Overview of Microsoft TCP/IP for Windows NT 6of8

M_CFO aoft TG p;||:'
HFS|1oat
x__for UH|}{|1oat
Q \ K' urlm host 1
Windows NT Solutions in TCP/IP lnternetworks
TCP/IP for Heterogeneous Networking
Because most ~~modem~~modern operating systems (in addition to Windows NT) support TCP/IP
protocols, an internetwork with mixed system types can share information using simple
networking applications and utilities. With TCP~~+~~/IP as ~~aconnectivity~~a connectivity protocol, Windows NT can
communicate with many non-Microsoft systems, including:

•

Internet hosts

•

Apple® Macintosh® systems

•

IBM® mainframes

•

UNIX systems

•

Open VMS® systems

•

Printers with network adapters connected directly to the network

~~NFS host~~
~~Microsoft TCPnP~~
fhhemat re-anuroea)

~~UNIX host~~ [Pat|1\nx:»rka for '-m1S|
Microsoft TCP/IP Connectivity
Microsoft TCP/IP provides ~~aframework~~a framework for interoperable heterogeneous networking. The
modular architecture of Windows NT networking with its transport-independent services
contributes to the strength of this framework. For example, Windows NT supports these
transport protocols, among many others:

- IPX/SPX for use in NetWare environments, using the Microsoft NWLink transport. Besides
providing interoperability with NetWare networks, IPX/SPX is ~~afast~~a fast LAN transport for
Windows networking as well.

- TCP~~+~~/IP for internetworks based on IP technologies. TCP~~+~~/IP is the preferred transport for
internetworks and provides interoperability with UNIX and other TCP~~+~~/IP-based networks.

~~Chapter 1 Overview of Microsoft TCPnP for Windows NT~~

- NetBEUI as the protocol for local area networking on smaller networks and compatibility
with existing LAN Manager and Lan Server networks.

- AppleTalk® for connecting to and sharing resources with Macintosh systems. Other transport protocols provided by third-party vendors, such as ~~DECnet'"~~DECnetfM and OSI, can also
be used by Windows NT networking services.
Windows NT provides standard network programming interfaces through the Windows
Sockets, RPC, and NetBIOS interfaces. Developers can take advantage of this heterogeneous
client ~~server~~~sen/er platform to create custom applications that will run on any system in the
Ovewiew of Microsoft TCP/IP for Windows NT 7of8
4
L:'3~.T.1
Mmsqsr
Windovua NT LAN Ma1age°:F"
_[including RAS;
Windows for
Wori-cgroupa

enterprise. An example of such a ~~service~~sen/ice is Microsoft ~~SOL Server~~SQL Sewer, which uses Windows
Sockets ~~1.1~~1.1 to provide access to NetWare, MS-~~DOS based~~DOSbased, Windows NT, and UNIX clients.

[Windows NT Solutions in TCP/IP Internetworks](#)
Using ~~TCPnP~~TCP/IP with Third-Party Software
TCP/IP is ~~acommon~~a common denominator for heterogeneous networking, and Windows Sockets is a
standard used by application developers. Together they provide a framework for cross-platform
client-server development. TCP~~+IP~~/lP-aware applications from vendors that comply with the
Windows Sockets standards can run over virtually any TCP~~+~~/IP implementation. The Windows Sockets standard ensures compatibility with Windows-based TCP/IP utilities
developed by more than 30 vendors. This includes third-party applications for the ~~XWindow~~ X Window
System, sophisticated terminal emulation software, NFS, electronic mail packages, and more.
Because Windows NT offers compatibility with 16-bit Windows Sockets, applications created
for Windows 3.x Windows Sockets will run over Windows NT without modification or
recompilation.
For example, third-party applications for ~~XWindow~~X Window provide strong connectivity solutions by
means ~~of XWindow~~ofX Window servers, database servers, and terminal emulation. With such
applications, a Windows NT computer can work as an ~~XWindow~~X Window server platform while
retaining compatibility with applications created for Windows NT, Windows 3.1, and ~~MS~~NIS-DOS
on the same system. Other third-party software includes ~~XWindow~~X Window client libraries for
Windows NT, which allow developers to write ~~XWindow~~X Window client applications on Windows NT
that can be run and displayed remotely on ~~XWindow~~X Window server systems.
The Windows Sockets API is a networking API used by programmers creating applications for
both the Microsoft Windows NT and Windows operating systems. Windows Sockets is an open
standard that is part of the Microsoft Windows Open System Architecture (WOSA) initiative. It
is a public specification based on Berkeley UNIX sockets, which means that UNIX applications
can be quickly ported to Microsoft Windows and Windows NT. Windows Sockets provides a
single standard programming interface supported by all the major vendors implementing
TCP~~+~~/IP for Windows systems.
The Windows NT TCP/IP utilities use Windows Sockets, as do 32-bit TCP/IP applications
developed by third parties. Windows NT also uses the Windows Sockets interface to ~~support~~suppoit
Services for Macintosh and ~~IPX~~lPX/SPX in NWLink. Under Windows NT, 16-bit Windows-based
applications created under the Windows Sockets standard will run without modification or

recompilation. Most TCP/IP users will use programs that comply with the Windows Sockets
standard, such as ftp or telnet or third-party applications.
The Windows Sockets standard allows a developer to create an application with a single
common interface and a single executable that can run over many of the TCP/IP implementations provided by vendors. The goals for Windows Sockets are the following:

- l Provide a familiar networking API to programmers using Windows NT, Windows for
Workgroups, or UNIX

- l Offer ~~binary~~binaw compatibility between vendors for heterogeneous Windows-based TCP/IP
stacks and utilities

- l Support both connection-oriented and connectionless protocols
Typical Windows Sockets applications include graphic connectivity utilities, terminal emulation
software, Simple Mail Transfer Protocol (SMTP) and electronic mail clients, network printing
utilities, SQL client applications, and corporate client-server applications.
~~Ifyou~~If you are interested in developing a Windows Sockets application, specifications for Windows
Sockets are available on the Internet from ftp.microsoft.com, on CompuServe® in the MSL

Cverview of Microsoft TCP/IP for Windows NT 8of8

library, and in the Microsoft Win32® Software Developers Kit.
~~.,~~ To get a copy of the Windows Sockets specification via anonymous FTP
1.   Make sure you have write permission in your current working directory.
2.   Start ftp and connect to ftp.microsoft.com (or 198.105.232.1).
3.   Log on as anonymous.
4.   Type your electronic mail address for the password~~.,~~
5.   Type cd \advsys\winsock\~~specll~~spec11 and press ENTER.
6.   Use the dir command to see the list of available file types. ~~Ifyou~~if you want binary data such as
in the Microsoft Word version, type bin and press ENTER.
~~6.~~7. Determine the file with the format you want [for example, ASCII (.TXT), PostScript® (.PS),
or Microsoft Word (.DOC)], and then type get winsock.~~ext~~exf where ~~ext~~exf is the format that you
want, such as winsock.doc for the Microsoft Word version.
~~Chapter 1 Overview of Microsoft TCPnP for Windows NT~~
~~.,~~ To get a copy of the Windows Sockets specification from ~~CompuServe~~CompuSeNe
~~l.~~1. Type go msl and press ENTER.
2.   Browse using the keywords windows sockets.

3.   Choose the file with the format you want [ASCII (~TXT), PostScript (.PS),
or Microsoft Word
for Windows (.DOC)], and then type get winsock.~~ext~~exf.
There is also an electronic mailing list designed for discussion of Windows
Sockets ~~programmmg~~
programming.
~~._,~~ To subscribe to the Windows Sockets mailing list
•   Send electronic mail to ~~listserv~~listserv@sunsite.unc.edu with a message
body that contains
subscribe winsock user's-email-address.
You can use the same procedure to subscribe to two mailing lists called
winsock-hackers
and winsock-users.

TCP/IP
*. .
~~CHAPTER 2~~ :<»<=
Installing and Configuring Microsoft ~~TCP/IP~~
and SNMP
This chapter explains how to install TCP/IP and the SNMP service for Windows
NT and how to
configure the protocols on your computer.
The TCP/IP protocol family can be installed as part of Custom Setup when you
install Windows
NT, following the steps described in this chapter. Also, if you upgrade to
~~anew~~a new version of
Windows NT, Setup automatically installs the new TCP/IP protocol and preserves
your
previous TCP/IP settings. This chapter assumes that Windows NT has been
successfully
installed on your computer but TCP/IP has not been installed.
The following topics appear in this chapter:
•l Before installing Microsoft TCP/IP
•l Installing TCP/IP
•' Configuring TCP/IP
•' Configuring TCP/IP to use DNS
•' Configuring advanced ~~TCPliP~~TCP/IP options
•l Configuring SNMP
•' Removing TCP/IP components
•' Configuring Remote Access Service (RAS) for use with TCP/IP
You must be logged on as a member of the Administrators group to install and
configure all
elements ~~ofTCP~~of TCP/IP.
. Chapter 2 1of13

. Installing and Configuring Microsoft TCP/IP and SNMP 2<>f13
Before Installing Microsoft TCP/IP
Important
The values that you will use for manually configuring TCP/IP and SNMP must
be supplied by
the network administrator.
Check with your network administrator to find out the following information
before you ~~install~~instali
Microsoft TCP/IP on a Windows NT computer:

l Whether you can use Dynamic Host Configuration Protocol (DHCP) to configure TCP/IP.
You can choose this option if a DHCP server is installed on your internetwork. You cannot
choose this option if this computer will be a DHCP server. For information, see "Using
Dynamic Host Configuration Protocol" later in this chapter.
l Whether this computer will be a DHCP server. This option is available only for
Windows NT Server. For information, see Chapter 4, "Installing and Configuring DHCP
Servers."

l Whether this computer will be a Windows Internet Name Service (WINS) server. This
option is available only for Windows NT Server. For information, see Chapter 5, "Installing
and Configuring WINS Servers."

Whether" Whetner this computer wil! be a WINS proxy agent. For information, see "Windows
Internet Name Service and Broadcast Name Resolution" in Chapter 3, "Networking
Concepts for TCP/IP."
If you cannot use DHCP for automatic configuration, you need to obtain these values from the
network administrator so you can configure TCP/IP manually:
l' The IP address and subnet mask for each network adapter card installed on the computer.
For information, see "P Addressing" in Chapter 3.
l' The IP address for the default Local gateways (IP routers).

Whether' Wnether your computerwill use Domain Name System (DNS) and, if so, the IP addresses
and DNS domain name of the DNS servers on the internetwork. For information. see
"Domain Name System Addressing" in Chapter 3.
l' The IP addresses for WINS servers, if WINS servers are available on your network.
Chapter 2 Installing and Configuring Microsoft TCPnP and SNMP
You need to know tne following information before you install the Simple Network Management
Protocol (SNMP) service on your computer0, as described in "Configuring SNMP" later in this
chapter:

' Community names in your network

l Trap destination for each community

' IP addresses or computer names for SNMP management hosts

Installing and Configuring Microsoft TCP/IP and SNMP 30f13

Installing TCP/IP

~~I...~~ You must be logged on as a member of the Administrators group for the local computer to
install and configure TCP/IP~~.___~~,

To install Microsoft TCP/IP on a Windows NT computer

~~1.~~ 1. Start the Network option in Control Panel.

2.   In the Network Settings dialog box, choose the Add Software button.

3.   In the Add Network Software dialog box, select TCP~~+~~/IP Protocol And Related Components
from the Network Software list~~,.~~ and then choose ~~the~~tne Continue button.

4.   In the Windows NT TCP~~+~~/IP Installation Options dialog box, check the options for the
TCP/IP components you want to install, as described in the table that follows this
procedure, and then choose the Continue button.

If any TCP/IP elements have been installed previously, ~~these~~tnese are dimmed and not
available in the Windows NT TCP~~+IP~~/lP Installation Options dialog box.

You can read the hint bar at the bottom of each TCP~~+~~/IP dialog box for information about a
selected item, or choose the Help button to get detailed online information while you are
installing or configuring TCP/IP.

5.   Windows NT Setup displays a message asking for the ~~full~~fuii path to the Windows NT
distribution files. Provide the appropriate location, and choose the Continue button.

You can specify ~~adrive~~a drive letter for ~~floppy~~ftoppy disks, a CD-ROM drive, or a shared network
directory, or you can specify the Universal Naming Convention (UNC) path name for a
network resource, such as \\NTSETUP\MASTER.

All necessary files are copied to your hard disk.

Note

If you are installing from floppy disks, Windows NT Setup may request disks more than
once. This is normal and is not an error condition.

6. ~~Ifyou~~lf you selected the options for installing the SNMP and ~~FfP~~FTP Server services, you are
automatically asked to configure these services. Follow the directions provided in the
online Help for these dialog boxes. For additional details, see "Configuring SNMP" later in
this chapter, and see also Chapter 7, "Using the Microsoft ~~FfP~~FTP Server Service."

7.   In the Network Settings dialog box, choose OK.

~~Ifyou~~If you checked the Enable Automatic DHCP Configuration option and a DHCP server is
available on your network, all configuration settings for TCP~~+~~/IP are completed
automatically, as described in "Using Dynamic Host Configuration Protocol" later in this
chapter.

~~Ifyou~~If you did not check the Enable Automatic DHCP Configuration option, continue with the

configuration procedures described in "Configuring TCP~~I~~/IP Manually" later in this chapter.
TCP~~I~~/IP must be configured in order to operate.
~~Ifyou~~If you checked the DHCP Server Service or WINS Server Service options, you must
complete the configuration steps described in Chapters 4 and 5.
Windows NT TCP~~I~~/IP Installation Options
~~Option~~Cption
TCP/IP ~~Intemetworking~~ Internetworking
Connectivity Utilities
SNMP Service
TCP/IP Network Printing
Support
FTP Server Service
Simple TCP/IP Services
DHCP Server Service
WINS Server Service
Enable Automatic DHCP
Configuration
Usage
Includes the TCP~~I~~/IP protocol, NetBIOS over TCP/IP and Windows
Sockets interfaces, and the TCP/~~IP~~lP diagnostic utilities. These
elements are installed automatically.
Installs the TCP/IP utilities. Select this option to install the
connectivity utilities described in Chapter 11, "Utilities Reference."
Installs the SNMP service. Select this option to allow this computer
to be administered remotely using management tools such as Sun
Net Manager or HP Open View. This option also allows you to
monitor statistics for the TCP/~~IP~~lP services and WINS servers using
Performance Monitor, as described in Chapter 8, "Using
Performance Monitor with TCP~~I~~/IP Services."
~~Chapter 2 Installing and Configuring Microsoft TCPnP and SNMP~~
~~Windows NT TCP/IP Installation Options (continued)~~
~~Option~~
~~TCP!IP Network Printing Support~~
~~FTP Server Service~~
~~Simple TCP!IP Services~~
~~DHCP Server Service~~
~~WINS Server Service~~
~~Enable Automatic DHCP Configuration~~
~~Usage~~
Allows this computer to print directly over the network using
TCP/~~IP.~~lP_ Select this option if you want to print to UNIX print queues
or TCP/IP printers that are connected directly to the network, as
described in Chapter 9, ~~''Internetwork~~"lnternetwork Printing with TCP/IP."
This option must be installed if you want to use the Lpdsvr service
so that UNIX computers can print to Windows NT printers.
Allows files on this computer to be shared over the network with
remote computers that support FTP and TCP/IP (especially
non-Microsoft network computers). Select this option if you want to
use TCP/IP to share files with other computers, as described in

Chapter 7, "Using the Microsoft FTP Server ~~Service~~Sen/ice."
Provides the client software for the Character Generator, Daytime,
Discard, Echo, and Quote of the Day services. Select this option to
allow this computer to respond to requests from other systems that
support these protocols.
Installs the server software to support automatic configuration and
addressing for computers using TCP/IP on your internetwork. This
option is available only for Windows NT Server. Select this option
if this computer is to be a DHCP Server, as ~~descriQed~~described in Chapter
4, "Installing and Configuring DHCP Servers."
If you select this option, you must manually configure the IP
address, subnet mask, and default gateway for this computer.
Installs the server software to support WINS, ~~adynamic~~a dynamic name
resolution service for computers on a Windows internetwork. This
option is available only for Windows NT Server. Select this option
if this computer is to be installed as a primary or secondary WINS
server, as described in Chapter 5, "Installing and Configuring
WINS Servers."
Do not select this option if this computer will be a WINS proxy
agent.
Turns on automatic configuration ~~of TCP!~~ofTCP/IP parameters for this
computer. Select this option if there is a DHCP server on your
internetwork to support dynamic host configuration. This is the
preferred method for configuring TCP~~!~~/IP on most Windows NT
computers.
This option is not ~~available~~availabie if the DHCP Server Service or WINS
Server Service option is selected.
~~Chapter 2 Installing and Configuring Microsoft TCPnP and SNMP~~

If you have trouble installing Microsoft TCP/IP on your computer, follow the suggestions in the
error messages. You can also use diagnostic utilities such as ping to isolate network hardware
problems and incompatible configurations. For information, see Chapter 10, "Troubleshooting
TCP/IP."
After TCP/IP is installed, the \systemroof\SYSTEM32\DRlVERS\ETC directory contains several
files, including default HOSTS, NETWORKS, PROTOCOLS, QUOTES, and SERVICES files
plus a sample LNIHOSTSSAM file that describes the format for this file.

Installing and Configuring Microsoft TCP/IP and SNMP 4of13
Configuring TCP/IP
For TCP/IP to work on your computer, it must be configured with the IP addresses, subnet
mask, and default gateway for each network adapter on the computer. Microsoft TCP/IP can
be configured using two different methods:
' lf there is a DHCP server on your internetwork, it can automatically configure TCP/IP for
your computer using DHCP.
' If there is no DHCP server, or if you are configuring a Windows NT Server computer to be

a DHCP server, you must manually configure all TCP/IP settings.
These options are described in this section.

Installing and Configuring Microsoft TCP/IP and SNMP 5of13
Configuring TCP/IP
Using DHCP
The best method for ensuring easy and accurate installation of TCP/IP is to use automatic
DHCP configuration, which uses DHCP to configure your local computer with the correct IP
address, subnet mask, and default gateway,
You can take advantage of this method for configuring TCP/lP if there is a DHCP server
installed on your network. The network administrator can tell you if this option is available. You
cannot use DHCP configuration for a server that you are installing as a DHCP server. You
must configure TCP/IP settings manually for DHCP servers, as described in "Configuring
~~llJl>~~ TCP/lP Manually" later in this chapter.
To configure TCP/IP using DHCP
~~I.~~ 1. Make sure the Enable Automatic DHCP Configuration option is checked in either the
Windows NT TCP/IP Installation Options dialog box or ~~the~~tne TCP/IP Configuration dialog box.
~~.,~~ 2. When you restart the computer after completing TCP/IP ~~installation~~instailation, the DHCP server
automatically provides the correct configuration information for your computer.
If you subsequently attempt to configure TCP/~~IP~~lP in the Network Settings dialog box, the system
will warn you that any manual settings will override the automatic settings provided by DHCP.
As a general rule, you should not change the automatic settings unless you specifically want to
override a setting provided by DHCP. For detailed information about DHCP, see "Dynamic
Host Configuration Protocol" in Chapter 3, "Networking Concepts for TCP/~~IP~~lP."

Installing and Configuring Microsoft TCP/IP and SNNIP eof1a
Configuring TCP/IP
Configuring TCP/IP Manually
After the Microsoft TCP/~~IP~~lP protocol ~~sottware~~software is installed on your computer, you must manually
provide valid addressing information if you are installing TCP/~~IP~~lP on a DHCP server or if you
cannot use automatic DHCP configuration.
You must be logged on as a member of the Administrators group for the local computer to
configure TCP/IP.
Caution
Be sure to use the values for IP addresses and subnet masks that are supplied by your

network administrator to avoid duplicate addresses. ~~If~~lf duplicate addresses do occur, this can

cause some computers on the network to function unpredictably. For more information, see "~~IP~~lP

Addressing~~''~~" in Chapter 3, "~~~~Networking Concepts for TCP/IP."

~~——————~~To manually configure the ~~TCP/IP~~TCPIIP protocol

1.   When you are installing TCP/IP, the Microsoft TCP/IP Configuration dialog box appears

automatically when you choose the OK button in the Network Settings dialog box after

completing all options in the Windows NT TCP/IP ~~Installation~~installation Options dialog box.

~~—Or—~~

If you are reconfiguring TCP/~~IP~~lP, start the Network option in Control Panel to display the

Network Settings dialog box. In the Installed Network Software list box, select TCP/IP

Protocol, and choose the Configure button.

~~. TCP/IP Contiguration~~

~~-0 .(nable AutoIlldiiC DHCP Conligu-ahon~~

~~tPAddreu: 103 .41 .12~~

~~111 I Sybnel Mask: .255 .255 .0~~

~~1255~~

~~.!!efaul~~

__ - qdapter:
.;.?`§43;3§%?:f 3§§34;¥§§.§wz384:3 33 8/8 if2§ §f§§§3%§§q.:§32§%ieiiéézé
LP Mddress:
Sgbnet Hash:
Qefaull Gateway: ~~111 .103 .41 .12 I~~
~~eriaaiJ~~
_E-imary WINS Server:
~~I I~~
~~-econdaly \IIINS Server. I~~
Qecnndary WINS Server:
4 ¢ {;¢5{§;¢3§§;Q1i2V{¥?((y ?!€4<4<v/4? {Q¢}¢&.21/.Y!65'!(&3 ¢
f4¢.<¢mv¢»w>2m <¢§i&i":<14&l>14?"14I1<"&.6¥/97!&?/42? . .> . : f
¢4(¢:94&4¢iiQ § * 4c¢7 9¢°"(?2l C¢< <¢ f 4 . < > i ¢ 4 9 i 4 r 3 1 . ? k R
> r k 9 H ? 4 W ¢ i k } 4 ? § ? ¢ 4 € ¢ <
MX
ee N .
E
*E
§»
Select t|*|e netwerk adapter that _vom war'at to corafigufe. This list
eeadteirus the netwark adapters
ee this computer.
q. . . . .
F ...'.. * ! I UK
I 1 !. ' |..1.* F. 1 1 | '| .|P
Cancel
D46
103 .41
AQfanQed

lieln
255 .255 .255
1U3 .41

2. . In the Adapter list of the TCP~~+~~/IP Configuration dialog box, select the network adapter for
which you want to set IP addresses.
The Adapter list contains all ~~network~~newvork adapters to which IP is bound on this computer. This
list includes all adapters installed on this computer.
You must set specific IP addressing information for each bound adapter with correct
values provided by the network administrator. The bindings for a network adapter

determine how network protocols and other layers of network software work together.
~~Chapter 2 Installing and Configuring Microsoft TCPnP and SNMP~~
3. . For each ~~hound~~bound network adapter, type values in the IP Address and ~~Suhnet~~Subnet Mask boxes.
•

l The value in the IP Address box identifies ~~the~~tne IP address for ~~vour~~your local computer or, if
more than one network card is installed in the computer~~. t\)r~~, for the network adapter card
selected in the Adapter box.

•

l The value in the ~~Suhnet~~Subnet Mask box identifies the network membership for the selected
network adapter and its host ID. This allows the computer to separate the IP address
into host and network IDs. The ~~suhnet~~subnet mask defaults to an appropriate value, as
shown in the following list:

~~Address class Range of first octet in IP address Subnet mask~~
~~Class A 1 126   255 .0.0.0~~
~~Class B 12B 191   255.255.0.0~~
~~Class C 192 223   255.255.255.0~~
K DNS:name resolutionzsearch order K TCP/IP:configuring:name resolution
Search order K
Name resolutiomsearch order
4. . For each network adapter on the computer, type the correct IP address value in the Default
Gateway box, as provided by the network administrator.
This value specifies the IP address of the default gateway (or IP router) used to forward
packets to other networks or ~~suhnets~~subnets. This value should ~~he~~be the IP address of your local
gateway.
This parameter is required only for systems on internetworks. ~~If~~if this parameter is not

provided, IP functionality ~~will~~Will be limited to the local ~~suhnet~~subnet unless a route is specified with
the TCP/~~IP~~lP route utility, as described in Chapter ~~I L '~~11, "Utilities Reference."
If your computer has multiple network cards, additional default gateways can ~~he~~be added
using the Advanced Microsoft TCP/IP Configuration dialog box, as described later in this
chapter.
Address
class
Class A
Class B
Class C
Range of first octet in
IP address
1126
128191
192223
Subnet
mask
255.0.0.0
255.255.0.0
255.255.255.0

~~5.~~. If there are WINS servers installed on your network and you want to use WINS in
combination with broadcast name queries to resolve computer names, type ~~IP~~IP addresses ~~in~~
In the boxes for the primary and, optionally, the ~~secondary~~secondaiy WINS servers. The network
administrator should provide the correct values for these parameters. These are global
values for the computer, ~~not just~~notiust individual adapters.
If an address for a WINS ~~server~~sewer is not specified, this computer will use name query
broadcasts (the b-node mode for NetBIOS over TCP/IP) plus the local LMHOSTS file to
resolve computer names to ~~IP~~IP addresses. Broadcast resolution is limited to the local
network.
Note
WINS name resolution is enabled and configured automatically for a computer that is
configured with DHCP.
On a WINS server, NetBIOS over TCP/IP (NETBT.SYS) uses WINS on the local computer
as the primary name server, regardless of how name resolution may be configured. Also,
NetBIOS over TCP/IP binds to the first ~~IP~~lP address on ~~anetwork~~a network adapter and ignores any
additional addresses.
For overview information about name resolution options, see "Name Resolution for

Windows Networking" in Chapter 3. For detailed information about installing and
configuring WINS servers, see Chapter 5.

~~6.~~
~~Ifyou~~. If you want to configure the advanced TCP/~~IP~~iP options for multiple gateways and other
items, choose the Advanced button, and continue with the configuration procedure, as
described in "Configuring Advanced TCP/IP Options" later in this chapter.

~~7.~~
~~Ifyou~~. lf you want to use DNS for host name resolution, choose the DNS button, and continue
with the configuration procedure, as described in the next section.

~~8.~~
~~Ifyou~~. If you do not want to configure DNS or advanced options, or if you have completed the
other configuration procedures, choose the OK button. When the Network Settings dialog
box reappears, choose the OK button.
Microsoft TCP/IP has been configured. ~~Ifyou~~If you are installing TCP/IP for the first time, you

must restart the computer for the configuration to take effect. ~~Ifyou~~If you are changing your
existing configuration, you do not have to restart your computer.
After TCP/IP is installed, the
\~~systemroot~~sysfemroof\SYSTEM32\~~DRIVERS~~DRlVERS\ETC directory contains ~~adefault~~a
default HOSTS file and ~~asample LMHOSTS.SAM~~a sample LMHOSTSSAM file. The
network administrator may require
that replacement HOSTS and LMHOSTS files be used instead of these default files.

°~ DNS Conf~i~ur~ati~n . 4
Host Mama: Domain Name:
Domain Name Qervice [DNS] Search Order
Order
Dgmain Suffix Search Older
Order
This list specifies, in pfariiy order, lin: d.nmain suffi-ees to be app ied
to hostnamcs d.|ring
hostname re.; Jlutian.
~~Chapter~~ a-anniep2
11 101.101
<- .BCMOV8
|.:olpU1.lle' com
1 .|
<- Rgmove
UK Cancel Help
Installing and Configuring Microsoft ~~TCPnP~~TCP/IP and SNMP 70f13
Configuring ~~TCP/IP~~TCPIIP to Use DNS

~~1\lthough~~Although TCP/IP uses IP addresses to identify and reach computers, users typically prefer to

use computer names. ~~"'iS~~DNS is a naming service generally used in the UNIX networking

community to provide standard naming conventions for ~~IP~~lP workstations. Windows Sockets

applications and TCP/IP utilities, such as ftp and telnet, can also ~~use~~use DNS in addition to the

HOSTS file to find systems when connecting to foreign ~~111 '"ts~~hosts or systems on your network.

~~('ontact~~Contact the network administrator to find out whether you should configure your computer to

use DNS. Usually you will use DNS if you are using TCP/IP to ~~L·ommunicate~~communicate over the Internet

or if your private internetwork uses DNS to ~~distrihute~~distribute host information. For information, see

"Domain Name System ~~.\ddrcssing~~Addressing" in Chapter 3.

~~\1 inosoft~~Microsoft TCP/~~IP~~lP includes DNS client software for resolving Internet or UNIX ~~>\ '>lL'Ill~~system names.

Microsoft Windows networking provides dynamic name resolution ~~lm Net BIOS~~for NetBIOS computer

names via ~~WINS~~WlNS servers and NetBIOS over TCP/IP.

~~I>NS~~DNS configuration is ~~glohal~~global for all network adapters installed on ~~acomputer~~a computer.

~~IJJ. Tu wntigure Tet•;IP~~To configure TCPlIP DNS connectivity

~~I.   St;trt~~1. Start the ~~NL·twork~~Network option in Control Panel to display the Network Settings dialog ~~llux. In the~~box. ln ~~.talled~~ the Installed Network Software ~~list hox~~list box, select TCP/IP Protocol, and then ~~dHHlse~~choose the ~~(\mfigure~~ Configure button.

~~1~~ 2. In the ~~I'< '1'/11' <'on figuration~~TCP/IP Configuration dialog ~~hox~~box, choose the DNS button.

~~Domain Name iervice (ONSJ Search Order~~

~~1< B. 1~~

~~c_____J~~

~~· llumdlfl Suffix Search Order   ,~~

~~,   ;.::· :   , Order~~

~~,   , corp01.trey.com~~

~~I   Alfd '> I ·'l!!'h.l ·...:~~

~~1< RJIIII¥81~~

~~OK   I u.•~~

~~This HI speck$, i 1 pOOrtjlordel, the domain to be appied to hoslnames Wring hostMne resokJ!iorl. 3.~~   In the DNS Configuration dialog box, you can, optionally, type a name in the Host Name

box (usually your computer name).

The name can be any combination ~~of A Z~~ofAZ letters, ~~0 9~~09 numerals, and the hyphen (-) ~~plus~~pius the

period (.) character used as a separator. By default, this value is the Windows NT

computer name, but the network administrator can assign another host name without

affecting the computer name.

Note

Some characters that can be used in Windows NT computer names, particularly the
underscore~. cannot be used in host names.
The host name is used to identify the local computer by name for authentication by some
utilities. Other ~TCPIIP~TCP/IP-based utilities, such as rexec, can use this value to learn the name
of the local computer. Host names are stored on DNS servers in a table that maps names
to IP addresses for use by DNS.
~4.~~-~. Optionally, type a name in the Domain Name box. This is usually an organization name
followed by ~aperiod~a period and an extension that indicates the type of organization, such as ~microsoft.com~ microsoftoom.
The name can be any combination ~of A Z~ofAZ letters, ~0 9~09 numerals, and the hyphen (-) plus the
period (.) character used as a separator.
This DNS Domain Name is used with the host name to create a fully qualified domain
name (FQDN) for the computer. The FQDN is the host name followed by ~aperiod~a period (.)
followed by the domain name. For example, this could be
~corp01.~corp01.research.trey.com,
where ~corp01~corp01 is the host name and research.trey.com is the domain name. During DNS
queries, the local domain name is appended to short names.
Note
A DNS domain is not the same as a Windows NT or LAN Manager domain.
~5.~~-~. In the Domain Name System (DNS) Search Order box, type the IP address of the DNS ~server~
ser\/er that will provide name ~resolution~resoiution. Then choose the Add button to move the IP
address to the list on the right. The network administrator should provide the correct ~values~vaiues
for this parameter.
You can add up to three IP addresses for DNS servers. The servers running DNS will be
queried in the order listed. To change the order of the IP addresses, select an IP address
to move, and then use the up- and down-arrow buttons. To remove an IP address, select it
and choose the Remove button.
~Chapter 2 Installing and Configuring Microsoft TCP/IP and SNMP~
~11~ ~111 tile Ilnmmn~. In the Domain Suffix ~S~:arch~Search Order ~hox.~box, type
the domain ~sullix~:s~suffixes to add to ~yllur dn111:1in sullix se:1rch~
~list.~your domain
suffix search list, and then choose the Add button.
~l'hi.., li..,t ..,pccifi.:s~This list specifies the DNS domain suffixes to be
appended to host ~nam.:s durin. 11:1111e~ names during name
resolution. You can add up to six domain suffixes. To ~chan.e the .'ic:1rch~
~mder uf the~ change the search order of the
domain suffixes~. s.:lcct~, select a domain name to move~.~, and ~use~use the up-~,md~
~dtlwn~ and down-arrow buttons.

To remove a domain name~~.~~, select it and choose ~~th ~~:the Remove button.
~~' .~~ When you ~~are~~are done setting DNS options~~.~~, choose the OK button.
~~, .;~~ When the TCP~~,~~/IP Configuration dialog box reappears~~.~~, choose the
OK button. When the
Network Settings dialog box reappears~~.~~, choose the OK button.

~~I'IH: s ..:ttings~~The settings take ~~dkct~~effect after you restart the computer.

[1] DEC Elhe│'W'UFlKS Turbo Adapter
11.1 03.41 .1 2 255 255.2550
< Qemove
1110341.12
IQPDH LHHUSTS
UK Cancel .lieln
Installing and Configuring Microsoft TCP/IP and SNMP 8of1a
Configuring Advanced TCP/IP Options
If your computer has multiple network adapters ~~conncct .:d~~connected to
different ~~nd\vorks~~networks using TCP/IP~~.~~,
you can choose the Advanced button in the TCP/~~1 PConfiguration~~IP Configuration
dialog ~~hox~~box to configure
options for the ~~adapt .:rs~~adapters or to configure alternate default
~~g:1teways~~gateways.
~~ ...~~To configure or reconfigure advanced TCP/IP options
~~I.~~ 1. Start the Network option in Control Panel to display the
~~Nl.:'twork~~Network Settings dialog box. ~~In~~ln the
Installed Network Software list ~~hox~~box, select TCP/IP Protocol and choose the
Configure
button.
~~1~~ 2. In the TCP/IP Configuration dialog box~~.~~, choose the Advanced button.
~~=I Ada(!ter Ll11 DEC EtherW'OAKS Turbo Adapter IP Address: IP Addresses~~
~~Subnet Masks I l 11 11:1) 411 ;55 .'·5 255 (I~~
~~·ubnetMask·~~
~~[< f!emov I ============·~~
~~1 ==:..:.J r·· .,,,41 ,:~~
~~De[ault Gateway:~~
~~0~~
~~.: tJ~~
~~W'mdows Netwmkmg Parameters~~
~~:== Endll_le DNS lor Windows Name Resoluhon ·J Enable IP Roul;ng~~
~~:.:.J Enable lMHOS TS Lookup li!!JPortLMHOSTS_ j i[J~~
~~Sr,ope ID I "~~
~~1~~
~~I~~
3.   In the Adapter box of the Advanced Microsoft TCP/IP Configuration dialog
box, select the
network adapter for which you want to specify advanced configuration values.
The IP
address and default gateway settings in this dialog box are defined only for
the selected
network adapter~~.~~,
'hdagler
LWW
§ubnetM ask:

Default Gateway:
>< Enable LHHDSTS Lookup
Sgope ID:
Type additional IP addreszes for the selected network adapter.
Qf
4 I
. 4 -.4 ~ ' 1
]_P Address:
IP Addresses Subnet Masks
Windows Networking Parameters
Ena1J_|e DNS for Windows Name Resolution Egable IP Routing

4.
5.
6.
7.
8.
9.
10.
In the IP Address and SubnetMask boxes, type an additional IP address and subnet mask
for the selected adapter. Then choose the Add button to move the IP address to the list on
the right. The network administrator should provide the correct values for this parameter.
Optionally, if your network card uses multiple IP addresses, repeat this process for each
additional ~~IP~~lP address. You can specify up to five additional ~~IP~~lP addresses and subnet
masks for identifying the selected network adapter. This can be useful for ~~acomputer~~ a computer
connected to one physical network that contains multiple logical IP networks.
~~5.~~ In the Default Gateway box, type the IP address for an additional gateway that the selected
adapter can use. Then choose the Add button to move the IP address to the list on the
right. Repeat this process for each additional gateway. The network administrator should
provide the correct values for this parameter.
This list specifies up to five additional default gateways for the selected network adapter.
To change the priority order for the gateways, select an address to move and use the ~~up or~~upor
down-arrow buttons. To remove ~~agateway~~a gateway, select it and choose the
Remove button~~.~~.,
~~6.~~ If you want to use DNS for DNS name resolution on Windows networks, check the Enable
DNS For Windows Name Resolution option.
If this option is checked, the system finds the DNS server by using the IP address specified
in the DNS Configuration dialog box, as described earlier in this chapter. Checking this
option enables DNS name resolution for use by Windows networking applications.

7. If you want to use the LMHOSTS file for NetBIOS name resolution on Windows networks,
check the Enable LMHOSTS Lookup option. If you ~~already have~~aiready nave a configured LMHOSTS
file, choose the Import LMHOSTS button and specify the directory path for the LMHOSTS
file you want to use. By default, Windows NT uses the LMHOSTS file found in\sysfemroof ~~lsystemroot~~
\SYSTEM32\DRIVERS\ETC.
For any method of name resolution used in ~~aWindows~~a Windows NT network, the LMHOSTS file is
consulted last after querying WINS or using broadcasts, but before DNS is consulted.
~~Chapter 2 Installing and Configuring Microsoft TCPnP and SNMP~~
~~8.~~ In the Scope ~~lD~~ID box, type the computer's scope identifier, if required on an internetwork
that uses NetBIOS over TCP/IP.
To communicate with each other, all computers on ~~aTCP~~a TCP/IP internetwork must have the
same scope ID. Usually this value is left blank. ~~Ascope~~A scope ID may be assigned to a group of
computers that will communicate only with each other and no other systems. Such
computers can find each other if their scope ~~IDs~~lDs are identical. Scope ~~IDs~~lDs are used only for
communication based on NetBIOS over TCP/IP~~.~~,
~~The~~Tne network administrator should provide the correct value, if required.
~~9.~~ To ~~tum~~turn on static IP routing, check the Enable IP Routing option.
This option allows this computer to participate with other static routers on a network. You
should check this option if you have two or more network cards and your network uses
static routing, which also requires the addition of static routing tables. For information
about creating static routing tables, see the route utility in Chapter ~~11,~~11, "Utilities Reference."
This option is not available if your computer has only one network adapter and one IP
address. Also, this option does not support routers running ~~the~~tne Routing ~~Information~~information
Protocol (RIP).
~~I0.~~ If you want this computer to be used to resolve names based on the WINS database,

check the Enable WINS Proxy Agent option.
This option allows the computer to answer name queries for remote computers, so other
computers configured for broadcast name resolution can benefit from the name ~~resolution~~resoiution
services provided by a WINS server.
This option is available only if you entered a value for a primary WINS server in the TCP/IP
Configuration dialog box, as described in "Configuring TCP/~~IP~~lP" earlier in this chapter.