Innovative, simple, scalable solutions for TN3270 and network transport with two new Network Utility models from IBM

IBM Network Utility TN3270E Server and Transport

- ***Cost-effective, incremental capacity to meet your growing needs***
- ***Standards-based to work with IBM or other vendors' standards-compliant offerings***
- ***Two slots with rich adapter selection for flexible network design, all as part of a stand-alone package***
- ***Step-by-step documentation includes predefined, tested configuration templates***
- ***Integrated packaging that includes hardware and code at a single price***
- ***Highly scalable to meet changing needs***

The Network Utility plays a vital role in offering a simple, scalable and affordable solution for IP access to SNA host applications, and for high-volume transport over an IP or SNA backbone.

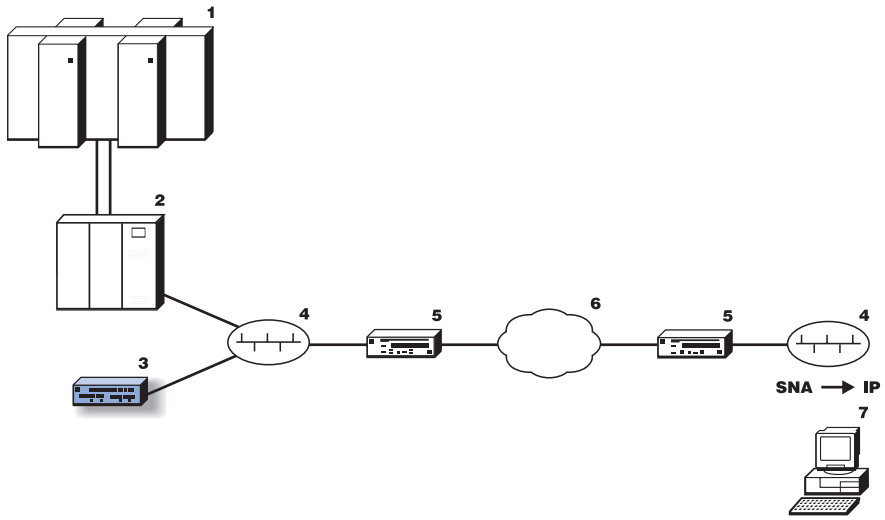
Positioning and Benefits

Problem: Need for TN3270E server capacity to complement NCP subarea users moving to IP desktops

Environment: A growing company network with an existing SNA host and a 3745 or 3746 running NCP and an existing router WAN network.

Solution: Using the existing 3745 or 3746 channels to carry traffic from Network Utilities saves additional cost of new channel connections and avoids disruption to the channel configuration.

1. *SNA host applications*
2. *3745/3746 running NCP*
3. *Network Utility TN3270E Server (Model TN1)*
4. *Campus backbone*
5. *Router*
6. *IP WAN backbone*
7. *Migration at desktop to IP*



Network Utility TN3270E server provides sessions at a substantial savings

Benefits

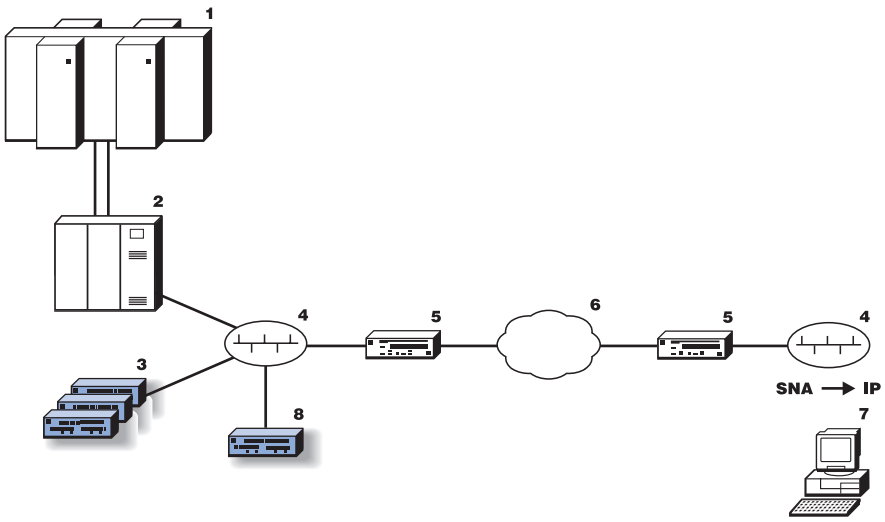
- Retains the benefits of NCP
- Saves cost of new channel connections and channel disruption
- Provides TN3270E server function at a cost-effective price per session
- Leverages existing SNA channel-attached equipment while accommodating IP desktop growth

Problem: Need for incremental TN3270 capacity to complement other TN3270 servers

Environment: A company network with an existing SNA host and a channel-attached host gateway, with or without existing TN3270E function.

Solution: Using the Network Utility Model TN1 for incremental TN3270 growth with the 2216, the 3746 MAE or with other manufacturers' TN3270 solutions to provide additional TN3270 capacity.

1. *SNA Host*
2. *Any channel-attached host gateway, with or without existing TN3270E function*
3. *Network Utility TN3270E Server (Model TN1)*
4. *Campus backbone*
5. *Router*
6. *IP WAN backbone*
7. *Migration at desktop to IP*
8. *Network Utility Transport or TN3270E Server with integrated Network Dispatcher for load balancing*



Multiple Network Utility Model TN1s provide highly scalable and cost-effective TN3270 function with load-balancing among servers for a high service level to end users

Benefits

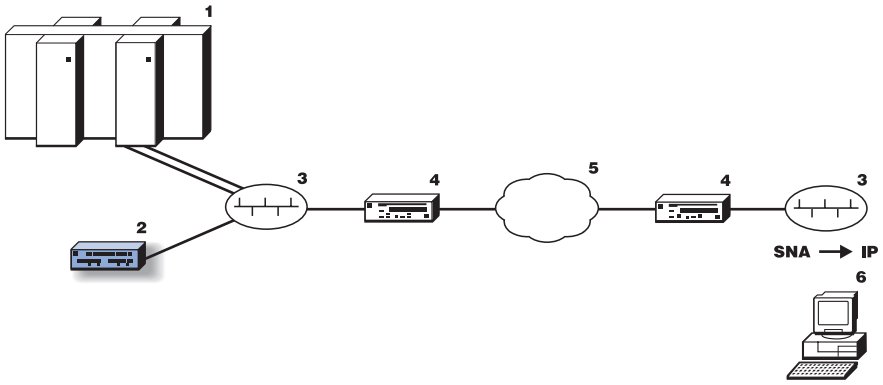
- Uses existing SNA channel-attached equipment (both IBM's and other manufacturers') while providing incremental TN3270 growth
- Integrated load-balancing technology ensures that users are connected to the least-busy, available TN3270E server
- Offers scalable TN3270 capacity at a cost-effective price per session

Problem: Need for a cost-effective alternative to TN3270 in the S/390 using the Open Systems Adapter (OSA-2)

Environment: A company network with an existing SNA host with OSA-2 attached to a campus backbone with no channel-attached gateway.

Solution: Attaching the Network Utility TN3270E Server Model TN1 to the campus backbone distributes TN3270 function.

1. *IBM S/390 SNA host with Open Systems Adapter (OSA-2)*
2. *Network Utility TN3270E Server (Model TN1)*
3. *Campus backbone*
4. *Router*
5. *IP WAN backbone*
6. *Migration at desktop to IP*



Even without a channel-attached gateway, Network Utility Model TN1 provides cost-effective TN3270 capacity

Benefits

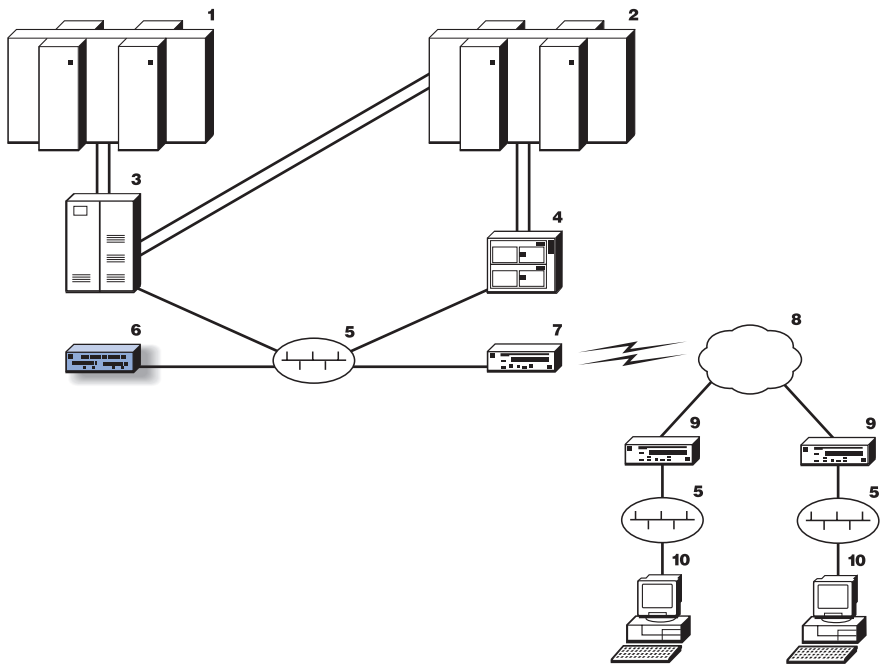
- Offers a cost-effective, scalable TN3270 solution for those choosing not to run TN3270 Server on the S/390
- Provides TN3270 capacity for S/390® using the OSA-2 connection to the campus LAN
- Supports TN3270 function without the need for a channel-attached gateway

Problem: Need for up to 10 000 circuits to be supported by DLSw or up to 10 000 LU-LU sessions to be support by APPN DLUR

Environment: A company network with an existing SNA host connected to a campus backbone through a 3745 with NCP or a 3746 Expansion Unit with APPN or IP and an existing TCP/IP host connected to the same campus backbone through either the 3745/3746 or and 3172 Interconnect Controller or a 2216.

Solution: Attaching the Network Utility Transport Model TX1 to the campus backbone instead of multiple, lower-capacity peer routers allows you to scale the logical session concentration of very large DLSw, APPN DLUR or Enterprise Extender Wide Area Networks.

1. *SNA Host*
2. *TCP Host*
3. *IBM 3745 Communicaitons Controller with NCP*
   IBM 3746 Expansion Unit with APPN or IP
4. *IBM 3172 Interconnect Controller or IBM 2216*
   Nways Multiaccess Connector
5. *Campus backbone*
6. *Network Utility Transport (Model TX1)*
7. *Router*
8. *WAN backbone*
9. *Large number of routers (supporting DLSw, APPN,*
   Enterprise Extender)
10. *End users*



A cost-effective peer router, each Network Utility Model TX1 supports the logical traffic of over 500 downstream DLSw routers or up to 10 000 APPN LU-LU sessions

Benefits

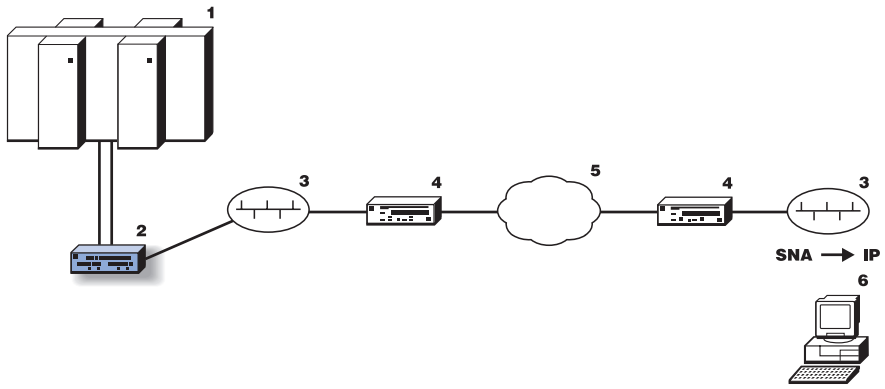
- Provides a cost-effective alternative to using multiple, lower-capacity routers
- Offers higher capacity DLSw, APPN and Enterprise Extender function than midrange “peer” router or stacks of low-end routers

Problem: Need for a high-performance channel gateway

Environment: A company network with an existing SNA or TCP/IP host requiring a channel attachment to a campus backbone

Solution: Attaching the Network Utility Transport Model TX1 to the campus backbone makes an ideal channel gateway in high-performance environments needing few physical connections, such as a single channel to a single LAN gateway.

1. *TCP/IPSNA host*
2. *Network Utility Transport (Model TX1)*
3. *Campus backbone*
4. *Router*
5. *WAN backbone*
6. *SNA or IP desktop*



Replace any single-channel host gateway with a cost-effective Network Utility Model TX1

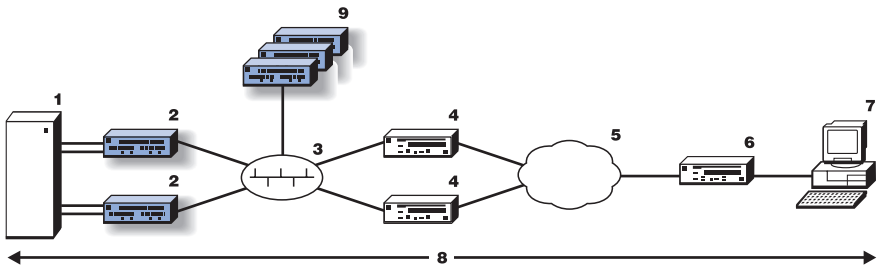
Benefits

- Provides a high-performance, cost-effective, single-channel host gateway
- Provides a high-speed campus connection to a S/390 mainframe

Problem: Need for a high-availability network

Environment: A company network with an existing SNA or TCP/IP host requiring high availability.

Solution: Couple multiple, single-channel Network Utility Model TX1s with Virtual IP Address (VIPA) support in the host for IP environments or with APPN High-Performance Routing (HPR) and VTAM Multi-Node Persistent Sessions (MNPS) for SNA with S/390 Parallel Sysplex servers and TN3270 environments.



1. *TCP/IPSNA host*
2. *Network Utility Transport (Model TX1)*
3. *Campus backbone*
4. *Router*
5. *WAN backbone*
6. *Branch office router*
7. *SNA or IP desktops*
8. *APPN High-Performance Routing (HPR) for all-SNA networks, Virtual IP Address (VIPA) for all-IP networks, or Enterprise Extender for networks integrating IP and SNA*
9. *Multiple TN1s for scalable TN3270E service, and multiple TX1s for peer routing session concentration*

Use Network Utility Model TX1 for high-availability, redundant mesh networks and Network Utility Model TN1 for high-availability TN3270E server function

Benefits

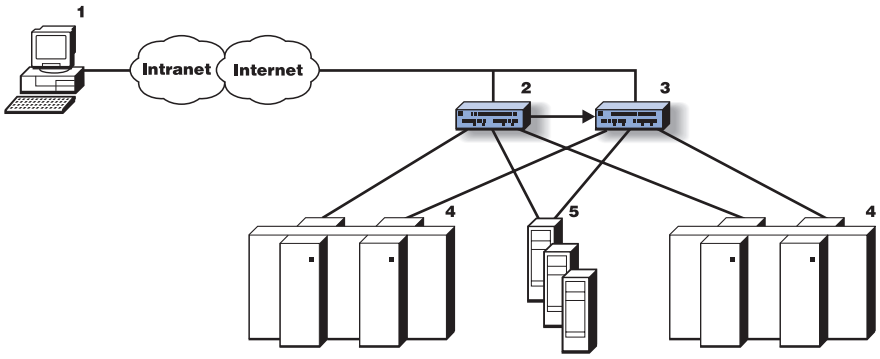
- Supports the attachment of multiple Network Utility Model TN1s for balanced TN3270E server capacity
- Provides TCP/IP web, application and TN3270E server load balancing for high service level to end users

Problem: Need for high service levels for e-business customers

Environment: Growing e-business traffic demands high performance load balancing and high service levels to customers accessing multiple Web servers.

Solution: A Network Utility Model TX1 with integrated Web server load balancing technology ensures that user connections are always sent to the least busy, available Web server.

1. *User*
2. *Network Utility Model TX1*
3. *Backup Network Utility Model TX1*
4. *Servers*



Network Utility works with Web servers of many different vendors

Benefits

- Patented load-balancing technology knows when a Web server is inoperable and sends traffic to other available servers.
- Network Utility permits the addition, removal and maintenance of servers transparent to user connection requests.
- A second Network Utility Model TX1 can be used as a backup, ensuring that connections are protected.

Product Overview

Scalable Logical Capacity
To remain competitive, your business may be integrating its SNA and IP networks to accommodate more end users and provide higher service levels. If your environment integrates SNA and IP, you may have discovered that growth in user connections requires not only increased bandwidth on physical links but, more important, tremendous numbers of logical session connections.

The new Network Utility from IBM offers a simple, scalable and cost-effective solution for high logical session capacity.

You may not know exactly how much capacity you'll need to support your emerging telecommuting sales force or automated delivery control system that communicates with your suppliers; the customers ordering products from your Internet business site; or the Internet surfers accessing your sports site during a game.

There's no need for an up-front investment in a large, expensive solution. The Network Utility handles scalability by allowing you to add additional Network Utilities cost-effectively. The simple solution to scaling the logical capacity of your network, Network Utility offers the capacity you need, and an opportunity to increment the capacity you already have, at a low cost.

The powerful Network Utility TN3270E Server (Model TN1) can support over 16 000 TN3270E sessions with an attractive price per session. The Network Utility Transport (Model TX1) supports high-density Data Link Switching (DLSw) for dependable SNA traffic over IP; Enterprise Extender for the traffic priority and nondisruptive sessions that SNA provides, but over an IP network; and high-performance routing (HPR) in APPN networks. Network Utility also supports a single channel attachment for S/390 or S/370® servers. Both models support Network Dispatcher to balance traffic load among multiple IP servers.

Model TN1 TN3270E Server
Designed to integrate IP and SNA, Network Utility Model TN1 provides:

- For networks with an existing investment in a channel-attached, NCP-controlled IBM 3745/46 Communication Controller, TN3270E sessions at less than half the cost of many competitive offerings and with minimal disruption to your existing channel solution.
- Incremental capacity at a very attractive price for your existing TN3270 investment from Cisco, Microsoft®, Apertus, or BusTech.
- The same for existing TN3270 investments from IBM on the 2216 Nways® Multiaccess Connector or the 3746 with Multiaccess Enclosure.
- For IBM S/390 Open Systems Adapter (OSA-2) users, a TN3270E solution that offers an alternative to running TN3270E Server in an S/390 host.

Model TX1 Transport
Designed for moving traffic with high processing requirements through concentration points in a network, Model TX1 provides:

- A fully scalable, highly cost-effective peer routing solution complementing the physical connectivity of the IBM 2216 Multiaccess Connector, IBM 3746 Expansion Unit and 3746 Multiaccess Enclosure. High-capacity Data Link Switching (DLSw), APPN and Enterprise Extender solutions for large SNA or mixed SNA-IP networks supporting up to 500 routers.
- More logical capacity than midrange routers or stacks of low-end routers.
- A high-performance, single-channel host gateway.
- High availability when using dual, single-channel gateways in mesh design networks.
- High-performance, cost-effective load balancing for multiple TCP/IP servers.
- High-speed media conversion or bridging, such as ATM to FDDI, FDDI to HSSI, or Token-Ring to Ethernet.

Integrated packaging
Network Utility provides a flexible package for placement in a multitude of environments specific to your requirements. Interfaces provide:

- LAN support for Token Ring, 10/100-Mbps Ethernet, and FDDI
- ATM support for 155-Mbps OC3 multimode fiber and single-mode fiber
- Channel support for ESCON® and parallel channels
- WAN support for V.24, V.35, V.36, X.21 and HSSI

Separately priced and orderable, the adapters are common with the IBM 2216 Multiaccess Connector Model 400. This is especially helpful when combining the Network Utility with a 2216 for a channel-attachment solution.

At a glance
Both Network Utility models offer:

- Two adapter slots for LANs, ATM, channel and WANs.
- Cost-effective support for high numbers of user connections
- Customized configurations
- Integrated Network Dispatcher for TCP/IP server load balancing.

The TN3270E Server (Model TN1) provides:

- A base 256-MB TN1 with support for up to 9000 TN3270E sessions with a low cost per session while handling up to 500 transactions per second, depending upon transaction size
- A customer-installable memory option for 512 MB of total memory that will support over 16 000 sessions
- Configurations and publications tailored to TN3270 to get you up and running quickly and easily
- Network Dispatcher Advisor for TN3270 to optimize the efficiency of balancing traffic among multiple Network Utility TN3270 servers and providing high-availability service to users and customers

- Additional TN3270 functions, including LU pooling, TN3270 IP client IP address filtering, DDDLU (dynamic definition of dependent LUs) and multiple TCP port support, as follows:
  - LU Pooling: The ability to set up named pools of LUs and map incoming connection requests to any LU in the pool.
  - TN3270 IP Client Address Filtering: The ability to associate client IP addresses with individual LU names or an LU pool name.
  - DDDLU: The ability to send a list of dependent LU addresses to VTAM for each TN3270 PU so that VTAM can dynamically create its PU and LU definitions. This avoids having to code the definitions by hand.
  - Multiple TCP port support: Allows separate ports to be defined for clients needing base TN3270 support instead of TN3270E support. By associating an LU pool with a port, TN3270 clients can specify an SNA resource to use for the connection without specifying the LU pool name or LU name.

The Network Utility Transport (Model TX1) provides:

- Support for up to 500 DLSw partners (downstream routers) and up to 10 000 circuits (PUs) while handling more than 1500 transactions per second
- Support for over 10 000 LU sessions with APPN DLUR
- Single channel gateway to S/390 servers
- Low-cost and high-capacity (10 000 connections/second) load balancing with Network Dispatcher function
- Code tailored to IP and SNA Transport to get you up and running quickly and easily

Take advantage of IBM reliability

Network Utility is designed for availability. Front panel access to the adapters and system card allow for quick replacement without removing the Network Utility from a rack. Individually powered, hot-plugged adapters can be inserted or removed while the Network Utility is operational and without re-booting the software.

Network Utility maintains its configuration and operating history in nonvolatile storage to reduce off-line diagnostics and servicing. A PCMCIA Ethernet LAN adapter is provided for fast service access and high-speed configuration updates. Additionally, for most countries an integrated modem feature is included so that IBM experts can dial in and diagnose problems if the system is unreachable through other network connections.

IBM's world-famous worldwide service provides onsite support and field replacement of failed components 24 hours a day, 7 days a week.

Easy to install and manage

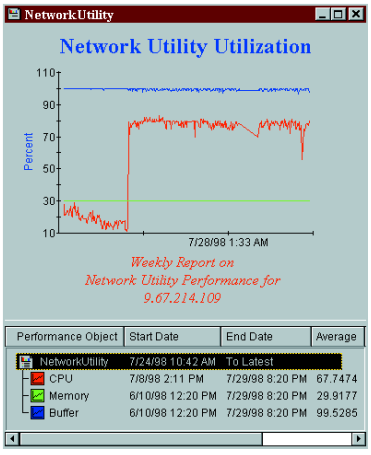
Network Utility is designed for fast, easy installation. Following the hardware installation, the Network Utility can be configured from a local ASCII terminal, an ASCII terminal connected by modem or a laptop connection via null modem. The null modem and all cables needed for direct connection are included.

Predefined, tested configuration templates for typical-use scenarios are provided in the documentation and on the Internet. Code tuned for maximum capacity with predefined parameters makes high-performance operation minutes away from configuring local addresses. GUI configuration programs running on IBM AIX®, OS/2®, Microsoft Windows® 95 or Windows NT can then tailor the Network Utility to meet your requirements.

Once the Network Utility is configured, a Simple Network Management Protocol (SNMP) manager can direct the Network Utility over a TCP/IP network. IBM provides comprehensive, easy-to-use GUI software to support the Network Utility administration, management, problem analysis, and reporting capabilities. Current management applications include Nways Manager for AIX Version 1.2.2, Nways Manager for HP-UX Version 1.2 and Nways Workgroup Manager for Windows NT Version 1.1.2.

Nways Managers for AIX and HP-UX, and Nways Workgroup Manager for Windows NT take advantage of Java technologies to deliver real-time network performance characteristics to network administrators. To facilitate long-term server-capacity management and planning, a graphical Java Management Application provides response times for defined TN3270E client groups. This and other TN3270 management functions, such as server status and client name mapping, are based on the emerging IETF standard for a TN3270E MIB and TN3270E Response Time Management MIB.

Similar graphical displays are available for CPU and memory utilization, making capacity planning and operations easier.



Management displays for CPU and memory utilization make capacity planning and operations easier

Comprehensive IP and SNA integration technologies

The new Network Utility provides a comprehensive set of IP and SNA routing protocols and other functions. This broad base of multiprotocol routing and transport code is based on the Multiprotocol Access Services Version 3 code for the IBM 2216 Nways Multiaccess Connector Model 400, guaranteeing compatibility with 2216, 3746 Multiaccess Enclosure, IBM 2210 Nways Multiprotocol Router and campus Multiprotocol Switched Services (MSS) solutions. Highlights of the functions provided include:

- Routing protocols: TCP/IP with RIP, RIPv2, Open Shortest Path First (OSPFv2-RFC 2178), MOSPF, DVMRP, BGP-4

- SNA Data Transport:
  - APPN NN, HPR, ISR, DLUR, Branch Extender, Enterprise Extender to bring APPN/HPR benefits to IP backbones, and Extended Border Node.
  - DLSw (RFC 1795, RFC 2166) including NetBIOS support
  - SDLC, both primary and secondary capabilities
- TN3270E server support (Model TN1 only)

- Integrated Network Dispatcher support for TN3270E Server load balancing, both when you have multiple TN3270E servers or when you TN3270E servers in the same machine. Network Dispatcher Advisor for TN3270 to optimally balance Network Utility TN3270E Servers

- Bridging
  - (SR, TB, SRT, SR-TB, IP Bridging Tunnel)
- Asynchronous Transfer Mode (ATM) Adapter support:
  - ATM Forum-Compliant LAN Emulation
  - Classical IP
  - Native HPR over ATM

- WAN Data Link Controls (DLCs):
  - Frame Relay (RFC 1490), including Boundary Access Node (BAN) support
  - Point-to-Point Protocol (PPP)
  - X.25, including DTE Transport (XTP) to "carry" X.25 traffic over IP connections and including QLLC for SNA
  - SDLC, both primary and secondary capabilities

- Security Features:
  - PAP, CHAP, SPAP
  - PAP, CHAP, SPAP, RADIUS, TACACS, TACACS+ for PPP
  - TACACS+/RADIUS for Telnet access to the Network Utility
  - Extensive filtering support for Bridging, DLSw and IP
  - Bandwidth Reservation System (BRS) over FR and PPP DLCs

- Configuration Program GUI application for use on Windows, AIX, or OS/2 workstations

Network Utility Specifications

Models	Network Utility TN3270E Server (Model TN1) Network Utility Transport (Model TX1)
System Card	• PowerPC 604e 200-MHz processor, 256 MB RAM, and 512 KB of L2 cache
Memory options	• Memory upgrade feature to 512 MB
Code	• Based on IBM Nways Multiprotocol Access Services technology • Network Utility hardware and code are offered as integrated single models (adapters priced separately) • Routing protocols: TCP/IP, OSPF, RIP, BGP4, DVMRP, MOSPF • SNA Data Transport: APPN NN, HPR, ISR, DLUR, Branch Extender, and Enterprise Extender DLSw (RFC 1795 and 2166) including NetBIOS support Frame Relay BAN LAN Network Manager support • Bridging: Source-route bridging Transparent bridging Source-route transparent bridging SR-TB translational bridging IP bridging tunnel • ATM: ATM UNI 3.0/3.1 ATM Forum-compliant LANE Client (LEC) Classical IP and NHRP 1483 encapsulation for IP, IPX, and bridging Native HPR routing • WAN data link controls: Frame Relay (RFC 1490): BAN support, compression, and congestion control PPP, including compression X.25, including DTE Transport (XTP) to "carry" X.25 traffic over IP connections and including QLLC for SNA SDLC primary and secondary • IP and SNA over ESCON and parallel channels including HPDT MPC (MPC+) • Bandwidth Reservation System (BRS) over Frame Relay and PPP • Network Dispatcher for balanced traffic among TCP/IP servers, including Web servers and TN3270E servers

Adapters

Interface	Feature Code
1- port Parallel Channel	2299
1-port ESCON Channel	2287
2-port Token Ring	2280
2-port 10-Mbps Ethernet	2281
1-port 10/100-Mbps Ethernet	2288
8-port EIA 232/V.24	2282
6-port V.35 or V.36	2290
8-port X.21	2291
1-port 155-Mbps Multimode fiber ATM	2294
1-port, 155-Mbps Single-Mode Fiber ATM	2295
1-port FDDI	2286
1-port HSSI	2289

Capacity	• 2 slots available for communication adapters

Management	• SNMP with configurable MIB information access and support for standard and enterprise-specific MIBs including: WAN interfaces LAN interfaces ATM interfaces Bridging and routing DLSw APPN TN3270E server TN3270 MIB, Response Time Monitor (RTM) MIB ATM LAN Emulation Client System specific (CPU usage, memory usage, thermal sensing) • Enterprise specific: LAN Network Manager support • The following IBM Nways Managers, with Network Utility-specific support: Nways Manager for AIX Version 1.2.2 Nways Workgroup Manager for Windows NT Version1.1.2 Nways Manager for HP-UX Version 1.2
Physical	Width: 440 mm (17.3 in.) without rack-mounting flange 480 mm (19 in.) with rack-mounting flange Depth: 457.2 mm (18 in.) Height: 133 mm (5.2 in.) Weight: 13 kg (28.5 lb) base box with mechanical chassis, backplane, power supply, system card and fan assembly 1 kg (2.2 lb) each adapter 0.1 kg (0.2 lb) each filler plate for unoccupied adapter slots
Operating environment	Temperature: 10° to 40°C (50° to 104°F) Relative humidity: 8% to 80% Maximum wet-bulb temperature: 27°C (80°F) Input power: 358 BTU/hr (105 W/hr) Electrical power: 0.26 kVA Volumetric airflow: 0.99m^3/min (35 ft^3/min) Noise level: 42.1 dB Leakage current: 3.0 mA maximum Starting current: 100 amps peak inrush
Electrical requirements	Automatically senses line voltage within a nominal input range from 100 to 240 V ac at 50 to 60 Hz and converts single-phase to dc input.
ISO 9000	The IBM Network Utility was developed and is manufactured by IBM under a registered ISO 9000 quality management system.
Hardware warranty	The IBM Network Utility is backed by a 1-year warranty. The hardware warranty and subsequent IBM Maintenance Agreements include IBM Onsite Repair.
Year 2000 ready	The IBM Network Utility is Year 2000 ready when used in accordance with its associated documentation and is capable of correctly processing, providing, and receiving data within and between the 20th and 21st centuries provided that all other hardware, software, and/or firmware used with the product properly exchange accurate data with it.

Key Customer Benefits

Network Utility TN3270E Server

- Customized packaging and easy installation
- Highly scalable to meet changing needs
- Low cost, incremental capacity
- Best price and performance per session
- Java Management Application for TN3270 client response time monitoring and CPU and memory utilization

Network Utility Transport

- High capacity logical concentration for large DLSw, APPN and Enterprise Extender routing networks
- Cost effective addition to IBM routing product family
- Low cost for connection to a specific platform
- High performance single-channel S/390 gateway
- High service levels for e-business user access to Web servers

Supplementary Information

The following sales tools are available for Network Utility:

- Specification sheet:
  IBM Network Utility TN3270E Server and Transport, G224-4569
- Information on the Network Utility is available at:
  www.networking.ibm.com
  www.networking.ibm.com/networkutility