



IBM eNetwork Communications Server for Windows NT

Highlights

Provides easy integration of Java, ActiveX and ODBC applications within industry-standard Web pages, with 3270 and 5250 integration coming soon*

Provides TN3270E and TN5250 servers, including load-balancing and SSL security

Extends the reach of SNA applications over IP networks, using enterprise extender, without sacrificing reliability, scalability or control

Improves network reliability and performance with High-Performance Routing (HPR), load-balancing, hot standby, and multipath channel

Enhances AS/400 integration with access to 5250 applications, shared folders, and databases

Includes Host Access Class Library API for Java, to easily develop critical applications across multiple operating environments

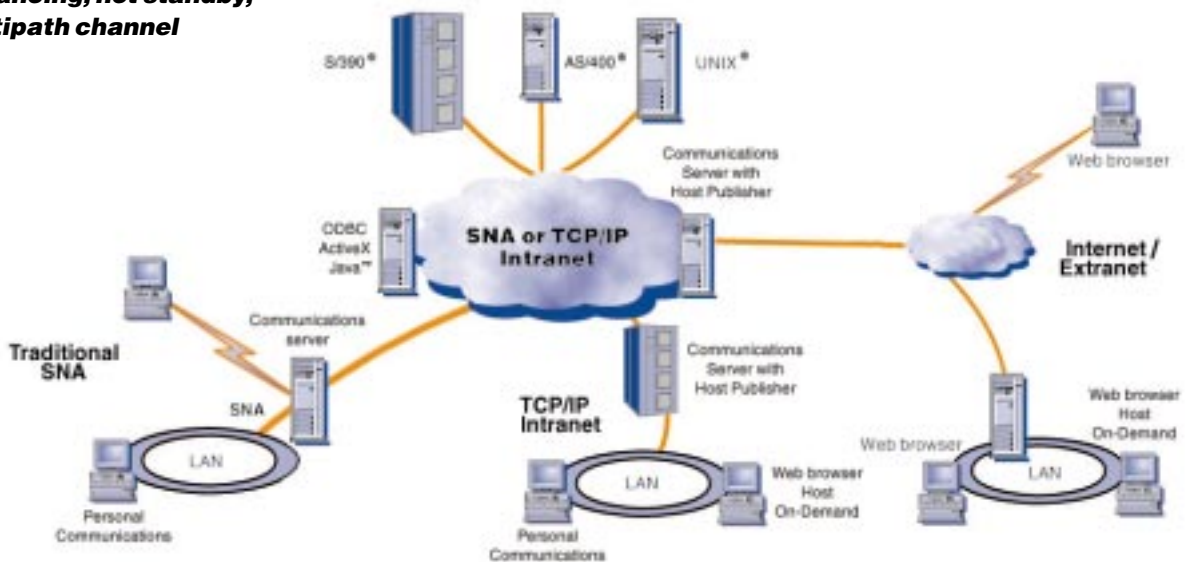
Provides authentication, integrity, and data privacy for your mission-critical applications

Provides simplified configuration and administrative management through new easy-to-use, tree-view graphical user interface

Step up to host integration

Web-based access to the host is just one step toward integrating business computing with intranets, extranets, and the Internet that can help you deliver quality products to market faster than the competition.

Today, businesses are transformed into new ones just by enhancing and applying information that was previously overlooked. In the past, you could still be competitive if you had the best product. But, in this stay-up-or-go-broke time of business computing, the world no longer beats a path to the doors of those who build better, faster widgets. Now, the name of the game is to build a better path to customers and business partners.



Communications Server for Windows NT provides a total connectivity solution

Corporate computing systems house valuable business information. A company's ability to make use of that information resource is a major factor in its ability to compete in a global economy. Customer responsiveness; cooperation with customers, suppliers and vendors; ability to control costs; and opportunities to reach new markets – all hinge on a company's access to useful information. To play the game, you must be able to provide quick and seamless access to centralized, essential information.

IBM® eNetwork™ Communications Server for Windows NT® (Communications Server) can help you enter the brave new world of host integration. Communications Server offers intranet, extranet and Internet solutions that allow your company to implement the latest network computing advances. Communications Server interconnects people and applications, even over diverse platforms and network configurations. Communications Server brings you the reliability, open standards performance, scalability and security you expect from IBM.

Web-to-host publishing

Host Publisher is an advanced Internet integration server and deployment environment for the Web. It is designed to address many of the usability, extensibility and scalability problems associated with creating sophisticated, high-volume Web commerce applications.

Host Publisher enables new uses for existing applications and data. With Host Publisher, you can combine existing information sources into composite applications for new users – and existing applications and data sources don't require rewrites! Business benefits are substantial. Extend the reach of your

business by enabling intercompany projects or contacting new customers. Establish a competitive advantage by extending sales channels, providing new services and realtime product information. Improve productivity by enhancing aging applications with new front ends or extending realtime access to a mobile workforce.

Several prebuilt system integration modules (SIMs) are available for accessing common data sources, such as ActiveX servers and controls, Java™ classes and ODBC databases. A SIM for 3270 and 5250 applications will be available soon. The SIM Software Developer's Kit (SDK) is included, which provides a framework to create and plug in new SIMs for accessing other data sources.

Web technology is revolutionizing the way applications are designed and deployed. Host Publisher breaks new ground with an open architecture that assures simple, rapid, and reliable delivery of Web commerce.

As part of IBM's industry-leading intranet network computing strategy, Communications Server compliments the existing eNetwork Host On-Demand product. Host On-Demand uses the power of Java to open the doors of your enterprise data whenever you need it, wherever you need it, straight from your browser. A single click launches a distinct Java applet that gives you broad access to your host data, with TN3270, TN5250 and VT 52/100/220 emulation in a single package. Any Java-enabled browser is

capable of downloading the Host On-Demand application from Communications Server with the click of a mouse, giving users a new way to view host applications with a browser. No programming or additional hardware is required.

Welcome to network integration

Communications Server integrates a variety of local area networks (LANs) and wide area networks (WANs), so you can add new applications without updating your network, disrupting your current network, or constructing parallel networks. You can focus on critical business issues, without being impeded by network design or application dependencies. Communications Server offers several solutions for your diverse environment.

TN3270E and TN5250 servers

Communications Server addresses the explosive growth in TN emulation by providing an integrated TN3270E server and a TN5250 server. This function provides access to SNA networks for a wide range of TCP/IP clients. Communications Server works as a Telnet server, providing SNA network access to client applications running anywhere in your TCP/IP network. The TN3270E server supports any TN3270- or TN3270E-compliant client and enables users to print from 3270 applications to locally-attached printers or network printers residing anywhere in the TCP/IP network.

Communications Server supports load-balancing for client connections of TN3270E and TN5250 servers that connect to the same host resources, if the client supports SLP.

Communications Server is reliable. It provides hot standby, which allows for a backup server to take over if your critical server ever fails.

TN3270E and TN5250 servers support IP and hostname filtering that allows controlled access to LUs without modifying client configurations. TN3270E and TN5250 servers also support Secure Sockets Layer (SSL) authentication and encryption, providing secure access across the TCP/IP network. Communications Server provides a key ring management utility that generates and manages keys and certificates for the server used by SSL, Version 3.

AnyNet

IBM AnyNet® functions, based on multiprotocol transport networking (MPTN) technology, an open industry-standard architecture, are designed to allow different applications to run over various network protocols. This means you can add applications designed to run over different protocols – without modifying applications or changing hardware.

For example, with TCP/IP over SNA, you can run TCP/IP applications, such as Lotus Notes™, SAP R/3, Web browsers and Tivoli® programs, over existing SNA networks without adding a separate TCP/IP network.

Likewise, with SNA over TCP/IP, you can extend SNA to TCP/IP users, without adding a separate SNA network. This allows Advanced program-to-program communication (APPC) or Common

Programming Interface for Communications (CPI-C) applications, such as CICS®, DB2®, MQSeries® and TXSeries® to communicate with centralized computers and workstations across a TCP/IP network, without changing the applications.

AS/400 Integration

In addition to the TN5250 Server function, Communications Server provides access to data on AS/400® systems, through the following functions:

- AS/400 OLE DB provider
- AS/400 Shared Folder Server

With OLE DB support, application developers can now have record-level access to AS/400 databases.

Communications Server enables you to create disk devices on the server that communicate with AS/400 folders through the AS/400 Integrated File System (IFS). Additionally, if the server shares these disk devices, clients can NET USE to them. Multiple clients can connect to folders on the AS/400 system as though they were drives on their workstations. You can use shared folders to:

- Exercise AS/400 security to limit access to workstation files
- Share data with multiple users at the same time
- Back up workstation files to an AS/400 folder

Enterprise-class functionality

Communications Server supports SNA connectivity in traditional hierarchical subarea networks and in peer-to-peer environments. In subarea networks, you can use Communications Server to enhance connectivity and simplify configuration.

In a peer-to-peer environment, Communications Server manages connectivity using the Advanced Peer-to-Peer Networking® (APPN®) protocol. The full-function network node enables a highly robust, low-maintenance networking backbone that offers a number of benefits, including improved bandwidth utilization, reliability, scalability, performance, and ease of configuration and administration. Bandwidth is maximized through dynamic logical unit (LU) session routing and more powerful application programming features.

Network reliability and performance are also improved by the HPR ability to nondisruptively reroute traffic around network failures and congestion. Furthermore, APPN lowers your network administration and maintenance costs by using dynamic and simplified configuration. Because Communications Server supports DLUR, dependent LUs and 3270 applications can also benefit from APPN networking.

Enterprises with hundreds to thousands of branch sites, with SNA applications in the data center and SNA clients in the branches, can save substantially on network costs with new IBM branch extender technology incorporated with Communications Server. Branch extender allows even the largest subarea SNA networks to exploit HPR cost-effectively. While primarily targeted at large organizations, the optimizations can also benefit smaller networks.

Complete connectivity

Whether you want to connect networks over a WAN, using SDLC, frame-relay, X.25, or integrated-services digital network (ISDN); over a LAN, using token ring, Ethernet, Fiber Distributed Data Interface (FDDI), Asynchronous Transfer Mode (ATM) LAN emulation; or direct-attached using S/390® channel or ESCON® support, including multipath channel (MPC+), Communications Server is the solution for you.

You can use Communications Server to connect multiple physical units (PUs) across a single physical adapter for token ring, Ethernet, X.25, SDLC, FDDI and channel. Support for multiple PUs extends the number of supported LUs per adapter port available for all link types. This allows you to connect one or more centralized computers across the same adapter.

Multiple PU support helps save you money by reducing the number of adapters required and costly links needed in your network.

Communications Server now provides HPR connections on IP networks with enterprise extender, using UDP/IP packets. To the HPR network, the IP backbone appears to be a logical link. To the IP network, SNA traffic appears to be UDP datagrams. These datagrams are routed without changes to the IP backbone. Because there is no protocol transformation and because packaging takes place at the routing layer without the overhead of additional transport layers, this results in efficient use of the intranet infrastructure for IP clients that access SNA-based data, such as TN3270 clients or Web browsers using IBM Host On-Demand, and SNA clients.

SNA gateway support

The SNA gateway function of Communications Server allows many SNA clients to access multiple centralized computers, both S/390 and AS/400, through one or more physical connections. It also allows clients to dynamically access a backup computer that shares the workload and improves availability of resources. SNA gateway allows you to preset and manage sessions, automatically logging off unattended workstations to free up access for other users.

The SNA gateway function of Communications Server supports the SNA protocols LU0, 1, 2, 3 and dependent LU 6.2 APPC. The LUs defined in the gateway can be dedicated to a particular workstation or pooled among multiple workstations. Pooling allows workstations to share common LUs, which increases the efficiency of the LUs and reduces the configuration and startup requirements at the central computer.

SNA session level compression implements data compression in the LU-LU half session. It is available to all LU types 0, 1, 2, 3 and 6.2. Data compression at the session level increases throughput for large amounts of data across communication links, resulting in enhanced throughput across slow-speed lines and faster response times. Communications Server supports run-length encoding (RLE) and a form of Lempel-Ziv (LZ), LZ9 and LZ10.

SNA API client solution

The Communications Server SNA application program interface (API) client support allows TCP/IP- and IPX-attached clients to access SNA APIs without requiring SNA protocols to flow between the clients and the server. This allows most SNA configuration to take place at the central server, allowing you to reduce DASD, memory and processor demands on your clients. And your system administrator saves time by not having to configure SNA on every client.

Communications Server supports SNA API clients on Windows 95, Windows NT, Windows® 3.1 and OS/2®. The SNA clients provide support for CPI-C, APPC, Enhanced APPC (EHNAPPC), LUA RUI, Java CPI-C (JCPI-C), and Host Access Class Libraries (HACL) API interfaces. These clients are delivered as part of the server but are actually installed and configured at the client.

Communications Server supports IPX- or TCP/IP-attached clients running emulator software packages that implement Novell Queue Element/Message Unit (QEL/MU) architecture for 3270 emulation, enabling the clients to access mainframe host data. Communications Server supports Novell NetWare for SAA clients on Windows 95, Windows NT, Windows 3.1 and OS/2.

SNA API clients can now access their configuration across your network, using the Lightweight Directory Access Protocol (LDAP).

Easy-to-use systems management

The systems management facilities enable you to monitor and control the communication resources of Communications Server. They also enable you to adjust these resources to improve the efficiency of SNA communication services or to monitor and test these services during problem determination.

You can manage Communications Server with the following facilities:

- SNA node operations
- Command line utilities
- Web-based administration
- Tivoli Plus module (separately available)

You can use any combination of these facilities for Communications Server management. Each systems management facility can display resource information, start, stop, and delete resources, and initiate path switches. Node operations offers a unique feature that provides a tree-view diagram of your configuration, which enables you to select and modify resources in a hierarchical graphical interface. The GUI configuration utility supplies defaults so you can configure your system easily, using a minimum number of parameters. And when you are complete, an automatic verification step takes place to examine your configuration files.

Communications Server allows you to perform server administration over an intranet or the Internet. Either from a remote or local workstation, the administrator can manage Communications Server through a Web browser.

Communication Server is enabled for Tivoli software to centrally manage the devices and applications in your network allows you to:

- Distribute, install and uninstall Communications Server
- Start, stop and query the server
- Display and modify server resources
- List configuration files
- Route error messages from Communications Server to a Tivoli Enterprise Console
- Establish monitors and thresholds for key Communications Server attributes

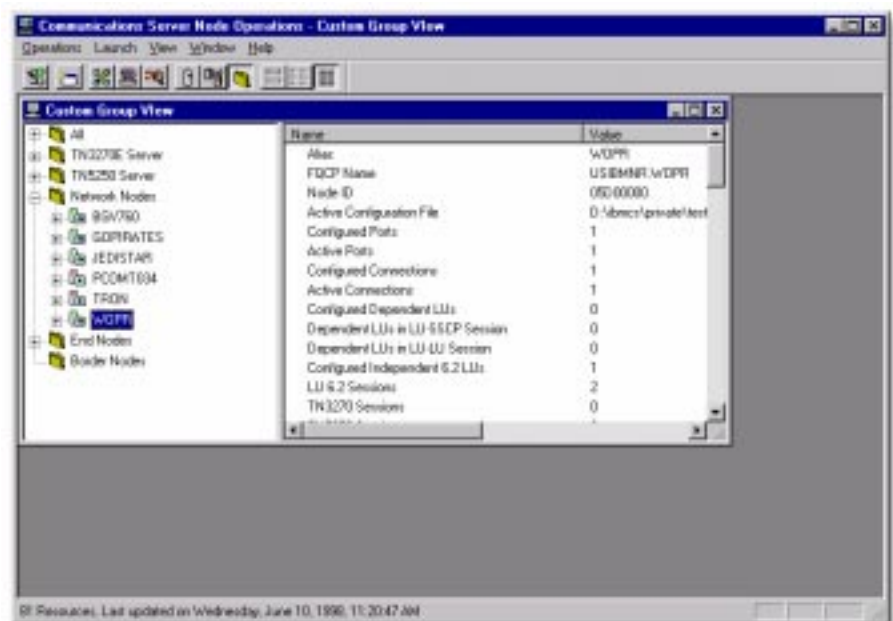
Communications Server supports simple network management protocol (SNMP) requests for APPN management information from any SNMP management system.

S/390 Remote Operations Service (ROPS) for Tivoli NetView® provides network information that is displayed on the screen and entered in the NetView log.

Power programming

Communications Server supports a wide range of 32-bit application programming interfaces (APIs) on the server for the application program developer. These APIs provide convenient ways for application programs to access Communications Server functions and allow applications to address the communication needs of connections to IBM and other computers. In addition, the provided interfaces support SNA protocols so that standardization is ensured. The APIs supported include:

- APPC
- CPI-C
- Conventional LU Application Interface (LUA) RUI and SLI
- HACL
- JCPI-C
- WinSock (in conjunction with AnyNet sockets over SNA)
- Network operator facility
- Management services
- Common services



On the clients, the EHNAPPC API is also provided.

The Communications Server Software Developers Toolkit is also available for application developers to use. This toolkit contains samples, header files, library files and online manuals for each of the APIs.

High availability, reliability

Load-balancing is a function of Communications Server that dynamically balances dependent LU (host-to-workstation) sessions and independent LU 6.2 sessions by distributing them to the Communications Server with the smallest load. Communications Server performs load-balancing for Communications Server SNA API, 3270 and 5250 emulators that connect over TCP/IP protocols, TN3270 and TN5250 emulators or Novell's QEL/MU 3270 emulator support. The load-balancing capabilities of Communications Server are built into the SNA client APIs. Other clients must be SLP-capable to use the load-balancing capabilities.

In Communications Server, you can configure certain host links to activate automatically if a specified critical server fails. Configured connections to a host can continue to function by activation of alternative connections on a backup server. This function is known as hot standby. The connections named in a critical server configuration on the backup server are activated when the backup server detects a loss of contact with the critical server and licensing charges for the critical server are managed on the backup server.

The new capability of MPC+ support for ESCON provides you with multiple subchannels between the S/390 and Communications Server. High availability can be achieved through nondisruptive recovery over alternate subchannels along with improved throughput.

Entry-level emulator functions

Communications Server includes a limited use license (single user) to the entry-level version of the popular IBM Personal Communications 3270 and 5250 emulator for administrative purposes. This emulator provides basic 5250 and 3270 support on the server that includes a subset of the features and functions that are in Personal Communications emulators.

Communications Server also includes a limited use license (single-user) to eNetwork Host On-Demand, a 100% Pure Java applet, which provides TN3270 and TN5250 emulator functions. Initially, Communications Server includes Host On-Demand Version 2.0, but will be refreshed in the future to replace this with Version 3.0 Entry Level when available. *

Security

Client/server data encryption enables the client to request encryption of the application data in communication between the SNA API client and Communications Server.

Communications Server enables Windows 95 and Windows NT SNA API clients and remote administrators to use Windows NT domain security to authenticate the client connection to the server without reentering the user id and password. Audit trail records of client connections to the server are tracked in the Windows NT Event Log. You can view the records using the Windows NT Event Viewer.

SNA session-level encryption enables you to encrypt either all of the data or selected data that is transferred between the workstation and the host. If you want to protect the transfer of workstation data by using encryption, the host must also be configured to use encryption and an IBM SecureWay 4758 PCI Cryptographic Coprocessor (the IBM 4758) adapter must be installed on the server to enable data confidentiality.

With the built-in security of SSL, you can now protect your data from eavesdropping, tampering, or message forgery over TCP/IP when using SSL-enabled TN3270 and TN5250 clients connected to the Communications Server.

IBM Communications Server for Windows NT feature and benefit chart

Feature	Benefit
Host integration	<ul style="list-style-type: none">• Provides link to new customers, business partners, business data with networking infrastructure• Extends your network to your customers or partners, regardless of where they are, or what network connectivity they have• Provides easy access to host applications and data by packaging DB2, CICS and MQSeries clients in the server
Web-to-host publishing	<ul style="list-style-type: none">• Leverages existing applications and extends and integrates them with the Web without rewriting• Easily integrates ActiveX, Java, ODBC, and coming soon 3270 and 5250 applications and data within industry standard Web pages with Host Publisher*• Provides Host On-Demand, a 100% Pure Java applet that gives you access to the Internet data with TN3270, TN5250 and VT emulation.
SNA gateway support	<ul style="list-style-type: none">• Allows many SNA clients to access multiple central computers, both S/390 and AS/400, through one or more physical connections• Brings large-computer resources to many users, while keeping adapter and line costs down• Allows you to preset and manage sessions, automatically logging off unattended workstations• Offers LUs dedicated to a particular workstation or pooled among multiple workstations. Pooling allows workstations to share common LUs, which increases the efficiency of the LUs and reduces the configuration and startup requirements at the central computer.
Network integration	<ul style="list-style-type: none">• Allows TCP/IP users easy access to IBM 3270 applications and print services through TN3270E Server and Host On-Demand Web-based 3270 emulator• Allows TCP/IP users easy access to SNA 5250 applications through TN5250 Server• Allows TCP/IP sockets to run over SNA networks and allows APPC applications to run over TCP/IP without application changes• Provides greater freedom and more choices in mixing and combining network protocols, while protecting investment in user applications• Allows users to select applications based on business need, not on your network protocol
AS/400	<ul style="list-style-type: none">• Provides access to AS/400 data without additional configuration or code installation on the client machine with AS/400 Shared Folder support• Offers record-level access to AS/400 databases with OLE DB Access to AS/400 Data
Advanced Peer-to-Peer Networking (APPN)	<ul style="list-style-type: none">• Provides APPN network node and end node support, with the benefits of peer networking – including simplified configuration, better availability, dynamic routing and easier maintenance• Allows 3270 applications to flow over APPN networks, with dependent LU requester (DLUR) enablement• Extends the reach of an APPN network with branch extender as less network topology information needs to be transmitted and overhead is reduced
High-Performance Routing (HPR)	<ul style="list-style-type: none">• Increases data routing performance and reliability• Offers nondisruptive routing around network outages
Application programming support	<ul style="list-style-type: none">• Provides an excellent platform for programming and application integration• Includes a rich set of APIs, including CPI-C, APPC, LUA RUI and SLI, HACL, JCPI-C, WinSock, Network Operator Facility, Management Services, and Common Services• Provides a core set of classes and methods that allow the development of platform-independent applications with HACL API
Security, availability, and reliability	<ul style="list-style-type: none">• Provides authentication, integrity and data privacy for a more secure deployment of distributed applications• Provides backup server which automatically connects to the host when the critical server fails• Enables you to distribute sessions across multiple servers for improved response times
Configuration/installation administration options	<ul style="list-style-type: none">• Selectively chooses the components you want to install with the easy-to-use, quick-install option.• Introduces new easy-to-use graphical user interface with a tree-view diagram of your configuration in a hierarchical view that significantly increases the productivity of system administrators
Problem determination and systems management	<ul style="list-style-type: none">• Offers quick access to integrated problem-determination functions• Enables management of Communications Server with Tivoli software to distribute, install and uninstall the server, display and modify resources, and check status – all at a central site

IBM Communications Server for Windows NT at a glance

Hardware requirements	<ul style="list-style-type: none">• Intel Pentium® processor, minimum 100 MHz (may vary depending on network environment)
Media	<ul style="list-style-type: none">• CDROM
Software requirements	<ul style="list-style-type: none">• Microsoft® Windows NT Server, Version 4.0, or higher• Microsoft TCP/IP and/or IPX/SPX (SNA API clients)
Memory requirements	<ul style="list-style-type: none">• 32 MB of real memory
Hard drive requirements	<ul style="list-style-type: none">• Minimum 75 MB of disk space• Additional 10 MB minimum of available space is required temporarily for installation
Supported communication services and protocols	<ul style="list-style-type: none">• Asynchronous• ATM (LAN emulation)• Ethernet• ESCON channel, including multipath channel support and block multiplexer• FDDI• Frame Relay• Hayes Autosync• IBM Token-Ring Network• ISDN• SDLC• Twinaxial• X.25

For remote client:

Hardware requirements	<ul style="list-style-type: none">• Hardware required by Windows NT
Software requirements	<ul style="list-style-type: none">• Windows NT Workstation or Server, Version 4.0, or Windows 95

For SNA client:

Hardware requirements	<ul style="list-style-type: none">• Hardware required by base operating system
Software requirements	<ul style="list-style-type: none">• OS/2 Warp, Version 3.0, or higher• Windows 3.1.1, or higher and TCP/IP• Windows 95, with service pack 1 or higher• Windows NT Workstation or Server, Version 3.5.1, with service pack 4, or higher, and Version 4.0, with service pack 3 (recommended)• TCP/IP and/or IPX/SPX to communication with Communications Server

For more information

To learn more about Communications Server products, contact your IBM representative or IBM business partner. Or visit our World Wide Web home page at <http://www.software.ibm.com/enetwork>.



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