

IBM eNetwork Communications Server for OS/390

Version 2 Release 7

Highlights

Provides enterprise-class networking for S/390-based e-business

Streamlines SNA and IP network integration with the Enterprise Extender function

Exploits S/390 Parallel Sysplex to enhance availability and scalability

Dramatically increases OS/390 Web-serving performance with the fast response cache accelerator function

Updates VPN support with triple DES encryption and more

Features SNMPv3 for secure network management

Adds service policy agent for leading-edge TCP/IP traffic management based on user needs

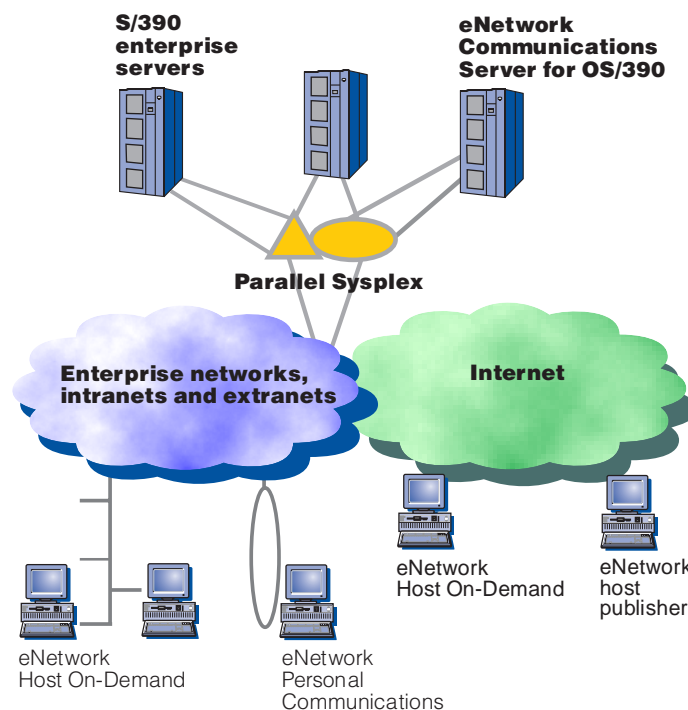
Expands SNA network element addressing to support the rapidly growing TN3270E user population

Large-scale enterprise communication

With nearly a quarter-century of IBM experience in solving large-scale networking problems for the enterprise, IBM® eNetwork™ Communications Server for OS/390™ is a proven networking foundation for System/390® (S/390®) enterprise computing and e-business.

Communications Server for OS/390, Version 2 Release 7, (Communications Server) provides the enterprise-class

dependability – performance, availability, scalability and security – required to securely extend your business reach to partners, suppliers, customers and employees anywhere. It provides universal access to connect users to your S/390 applications and data whether the networks are TCP/IP, SNA, Advanced Peer-to-Peer Networking® (APPN®), HPR, intranets, extranets, the Internet or a combination of these.



An enterprise-class solution for e-business

Enterprise-class performance

Communications Server SNA services, including APPN with High-Performance Routing, have a well-earned reputation for reliable, predictable, high-capacity network performance supporting worldwide networks of some of the world's largest enterprises with tens or even hundreds of thousands of users. Recent releases of Communications Server introduced newly designed TCP/IP services to provide superb TCP/IP performance as well. The TCP/IP communication stack performance improved by over 1500 percent.¹ Using the IBM exclusive fast response cache accelerator function of Communications Server, S/390 established a new record for Web-serving performance and scalability as measured with SPECWeb96, the industry's first standardized benchmark workload for Web-serving performance. Testing with SPECWeb96 on a ten-processor S/390 G5 Turbo server achieved a phenomenal 21,591 operations per second or about 1.8 billion Web connections per day – shattering previous records.² The new TN3270E server, widely used to access 3270 transaction applications on S/390 over TCP/IP networks, has been tested to support up to 64,000 concurrent users.¹

Communications Server supports high-speed network connectivity with S/390 OSA-2 and OSA-Express. Native ATM communication links (155 megabits per second) are supported for both TCP/IP and SNA. Gigabit and Fast Ethernet are supported for TCP/IP.

Multipath Channel with high-performance data transfer (HPDT) technology (also known as MPC+) provides added performance for channel-attached routers, such as the IBM 2216 Multiaccess Connector, Network Utility and 3746/950 Multiaccess Enclosure.

Enterprise-class scalability and availability

Communications Server is designed to take full advantage of S/390 multiprocessor configurations to gain maximum additional throughput as processors are added – offering full scalability and return on investment. It also provides unique support for S/390 Parallel Sysplex® Communications Server, for even better scalability and high availability. Working in conjunction with OS/390 Workload Manager, user requests are intelligently distributed across the available Parallel Sysplex processors. This helps ensure that the information system can easily scale up to handle growth and peak periods of demand.

This same support insulates users against applications or system failures, whether unplanned or planned for upgrades or maintenance, and offers around-the-clock availability required for today's worldwide, mission-critical information systems. In some cases, such as for SNA applications that exploit Communications Server multinode persistent session (MNPS) capability, the failure can go practically unnoticed by the

user. For others, such as the TCP/IP-based application TN3270E server, users are quickly directed to an available alternate in the Parallel Sysplex by the domain name server which, unique to Communications Server, works in conjunction with OS/390 Workload Manager to select the best available option.

Enterprise-class network security

e-business extends access to critically important enterprise information assets to users outside the enterprise over public networks, such as the Internet or extranets. Expanded access increases the need for access control, encryption and other security functions. Communications Server includes standards-based Internet security technologies.

IPSec supports the implementation of encrypted virtual private networks (VPNs). Access control through packet filtering is provided and network address translation hides the real address of a resource in the enterprise network from public view.

Further, the TN3270E server supports Secure Sockets Layer (SSL) sessions with SSL-enabled clients, such as IBM eNetwork Host On-Demand or eNetwork Personal Communications,

which provides session encryption and server authentication. These security features complement OS/390 Security Server, which includes the well-known IBM application and file security function Resource Access Control Facility (RACF), to offer a broad range of robust protection for critical S/390-based information assets.

Communications Server, Version 2 Release 7, enhancements

IBM is committed to keeping Communications Server as the best solution for S/390 networking environments. Among its newest enhancements are:

Gigabit Ethernet

The phenomenal increase in data exchanged over TCP/IP networks, driven by e-business, e-mail, extranets and other applications, has generated a corresponding increase in demand for network bandwidth. The dominant emerging high-bandwidth technology for TCP/IP LAN environments is Gigabit Ethernet. A new S/390 Open Systems Adapter (OSA), OSA-Express, in conjunction with special enhancements to Communications Server, provides Gigabit Ethernet support to dramatically increase access to S/390 applications and data. Gigabit Ethernet support fully interoperates with Ethernet and Fast Ethernet LANs. Deployed in a backbone network, Gigabit Ethernet can facilitate deployment of Fast Ethernet to the desktop.

Enterprise Extender

Enterprise Extender improves the ability of an enterprise to converge to a single Internet Protocol (IP) network by allowing SNA applications and clients to communicate over IP networks without change and continue to enjoy benefits similar to those of a pure SNA network. Enterprise Extender can offer a better solution than data link switching (DLSw), a popular technology for SNA and IP routing. Enterprise Extender uses High-Performance Routing (HPR) to manage SNA data transmissions. This retains benefits of SNA and HPR services, such as superior congestion control, class of service, transmission prioritization and high availability through transparent routing around network failures. Also, it exploits the User Datagram Protocol (UDP) layer of TCP/IP through an IP network. This eliminates substantial overhead, compared to DLSw, in S/390 channel-attached routers, which can dramatically improve performance.

Fast response cache accelerator

This important IBM-exclusive technology caches server-authorized Web pages within the TCP/IP stack, enabling significantly faster serving of requests for static Web pages. This function of Communications Server is used by the WebSphere™ HTTP Server on OS/390, Release 7. It enabled S/390 to establish a new record for Web-serving performance and scalability. When tested with SPECWeb96, the industry's first standardized benchmark for measuring performance of Web servers, a ten-processor S/390 G5 Turbo

server achieved an unsurpassed 21,591 operations per second or about 1.8 billion Web connections per day – a fifty percent increase over the previous record.²

Leading-edge network security

The Internet security technologies integrated as part of Communications Server have been enhanced. Updates to the evolving IPSec standard for VPN have been incorporated into Communications Server. These include improved authentication algorithms (HMAC-MD5 and HMAC-SHA) and more robust replay protection. Encryption capability is further strengthened by the addition of triple DES support. For optimal performance, Communications Server will employ S/390 encryption hardware, if present. Additional improvements further streamline performance, increase serviceability and maximize the reliability and availability of Communications Server VPN capability.

SNMPv3 for more secure exchange of network management data

Simple Network Management Protocol, Version 3 (SNMPv3) is the latest standard for secure network management. It includes user-based message-level security and view-based access control to secure against network management commands and requests from unauthorized sources in the network. With an optional feature, CBC 56 DES, encryption

Build on what you have.

can be employed to further protect sensitive network management data. Communications Server interoperates with other SNMPv3 management applications and agents, as well as those based on previous versions of SNMP.

Service policy agent enhances control over service levels for TCP/IP users

The service policy agent enables a network administrator to control the performance characteristics of IP data packets as they travel the network by allowing the setting of a type-of-service byte. This can be used by IP routers to ensure proper prioritization of traffic in the IP network. This enhancement also allows different levels of networking priority to be assigned based on criteria, such as :

- Service level agreements
- Classes of users
- Application needs (for example, high bandwidth)
- Mission-critical applications
- Time of day

The Service Policy Agent allows control over the number of users that can access TCP/IP services at a given time or the bandwidth they are allowed. The agent can override the priority specified by an individual application to prevent violations of established service policy.

The agent can obtain policy definitions from local file or a Lightweight Directory Access Protocol (LDAP) server. With LDAP, the agent can be a part of a centrally managed TCP/IP service policy environment.

Expanded network addressing for TN3270E server

Enhanced SNA addressing is now used by Communications Server TN3270E server in an APPN or HPR environment to significantly reduce CPU overhead and increase server capacity. Other applications that open an application control block for each user, such as session managers and TSO/VTAM®, can benefit from this improvement as well.

And more ...

Communications Server offers additional enhancements including:

- Cross-system coupling facility (XCF) dynamics and system symbolics are now used by TCP/IP to minimize system definitions in S/390 Parallel Sysplex configurations.
- Sysplex sockets support simplifies the coding of applications that run in a sysplex configuration and reduces applications overhead.
- Dynamic discovery of the path maximum transmission unit (MTU) capability of devices in the IP network achieves optimal throughput.
- TN3270 LU-name-to-host-name mapping eases problem resolution and is particularly useful for dynamically assigned IP addresses.
- IP support for IBM eNetwork On-Demand, a separately available product that can enable centralized management and administration of Java clients from an OS/390 server.

Leading-edge TCP/IP technology demonstration downloads

IBM is one of the industry's first companies to provide working prototypes of new leading-edge TCP/IP networking technologies for trial and evaluation by IBM eNetwork Communications Server customers and independent software vendors.

ReSerVation Protocol (RSVP) enables users to confirm and reserve network resources. For example, it can reserve bandwidth and buffers for applications where and when necessary to improve performance.

IPv6, the next generation evolution of Internet Protocol technology, provides many technological improvements which address the needs of a growing marketplace – the Internet.

To get demonstration code, available only through the World Wide Web, access the Web site at www.software.ibm.com/network/commserver/ and click Downloads.

For more information

For more information about IBM eNetwork Communications Server for OS/390, visit www.software.ibm.com/network/commserver/.

For more information about OS/390, visit www.s390.ibm.com/os390/.

IBM eNetwork Communications Server for OS/390, Version 2 Release 7, at a glance

Features

- SNA, APPN, HPR and TCP/IP connectivity
 - Virtual Internet Protocol addressing (VIPA) fault tolerance and automated takeover
 - Application interfaces for OS/390 UNIX® System Services sockets, C, REXX, Macro API, CALL Instruction, X/Open Transport Interface and Pascal
 - Multiprotocol services to connect any application to any network
 - Key TCP/IP applications, such as FTP, Telnet, TN3270E, Print (LPR/LPD) and Simple Mail Transfer Protocol (SMTP)
 - UNIX Standard Sendmail, such as POP3 mail server and SMTP services
 - Secure Sockets Layer (SSL)-enabled TN3270E server
 - Integrated Firewall technologies
 - Telnet support for unformatted systems services (USS) messages and commands
 - Host On-Demand support
 - CICS® and IMS™/OTMA Sockets support for TCP/IP users
 - HPDT services, including Multipath Channel with HPDT (MPC+)
 - Multinode persistent sessions (MNPS) with planned takeover and DLUS
 - Generic resource support
 - World-class network management agents and interfaces
 - OSPF, RIPv1 and RIPv2 support
 - Native ATM support (coupled with OSA-2 adapter)
 - Workload balancing
 - High-performance Web serving
 - Long fat pipes (window scale option of RFC 1323)
 - Multicast
 - Enterprise Extender
 - Fast response cache accelerator
 - SNMPv3
 - Service policy agent
 - Path MTU discovery
 - OSA-Express Gigabit Ethernet
 - Support for eNetwork On-Demand
 - Dynamic switching to alternate network node server
 - TN3270E name mapping
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Benefits

- Widest range of application choices – IBM subsystems, user-written applications and off-the-shelf applications
 - Widest range of open connectivity of any single server in the industry – SNA, APPN and HPR, TCP/IP and the Internet
 - Open standards-based network management
 - Enterprise-class dependability for e-business
 - Effective use of network assets
 - Enterprise-class performance and scalability for TCP/IP and SNA
 - Easy access to S/390 applications, using a Web browser
 - Universal access to S/390 applications and data
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¹ Test results obtained in a contained environment. Actual user results may vary. Contact your IBM representative for more information.

² S/390 test results with SPECWeb96. Visit the Web site at www.specbench.org/osg/web96/results/res99q1/ for more information about the S/390 tests.



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