TCP/IP for z/VM

Flexible, reliable solutions for an e-business world.

Highlights

- ***Improved data transfer performance and transparent access to data***
- ***More efficient data transmission and increased security***
- ***Improved usability and better TCP/IP efficiency***

TCP/IP for z/VM: Built for e-business

In today's e-business economy, robust connectivity is critical. With the next generation of e-business upon us, high-performance support for TCP/IP is essential.

The IBM @server zSeries 900 and S/390® are the platforms of choice for large-scale database and transaction processing. z/VM, the 64-bit follow-on to the legendary VM operating system, can enhance e-business applications while retaining full compatibility with existing mission-critical VM applications.

IBM @server

IBM @server offers the industry's first range of servers designed to be integrated into a robust, flexible infrastructure. This revolutionary brand responds to the unprecedented demands being made on technology in the new economy by providing extreme performance and unmatched scalability combined with IBM reliability and security.

The zSeries 900 is the first enterprise-class platform specifically optimized for the integration of business applications and designed to handle the critical transaction and data demands of the e-business world far into the 21st Century. The zSeries platform gives you the scalability and availability you need through its self-configuring and self-healing attributes.

Linking Power and Resources

TCP/IP for z/VM – available with z/VM Version 4 Release 1 – is the link that brings the power and resources of your zSeries or S/390 server to the Internet while helping to increase the

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return on your e-business investment. New features deliver expanded Internet/intranet access, improved e-business performance and extended function. TCP/IP for z/VM can support tens of thousands of users and communicate with multi-vendor systems within your enterprise via either the intranet or the Internet.

TCP/IP for z/VM, which was a priced, optional feature of VM/ESA and z/VM Version 3, is prepackaged at no additional charge and shipped enabled for use with z/VM Version 4 Release 1. The priced, optional features of the former TCP/IP feature (the NFS server and TCP/IP source) have also been packaged with TCP/IP for z/VM at no additional charge.

Users can send messages, transfer files and share printers, as well as access remote resources across a broad range of systems from multiple vendors. z/VM can participate in ATM networks without requiring hardware simulation. TCP/IP for z/VM offers an extensive set of client/server applications, programming interfaces and connectivity options, plus the data integrity and performance required within a communications network.

Expanded network connectivity
z/VM-based TCP/IP servers and clients can now exploit Gigabit Ethernet, Fast Ethernet and ATM networks through the OSA Express Adapter using Queued Direct I/O (QDIO). QDIO improves performance through a highly efficient data transfer architecture that can reduce TCP/IP path lengths by up to 25 percent. Data can be directly exchanged with an I/O device without performing traditional I/O instructions.

High-speed file transfer
TCP/IP for z/VM includes support for File Transfer Protocol (FTP) and Trivial File Transfer Protocol (TFTP). FTP and TFTP clients running on z/VM or other systems can access files residing anywhere on the Internet. z/VM provides FTP support for access to the VM Shared File System (SFS), Byte File System (BFS) and minidisk file system, as well as TFTP support for the BFS. Improved communications and functionality result in more comprehensive support of industry-leading Web browsers.

Dynamic IP routing
RouteD uses the Routing Information Protocol (RIP) to create and maintain network routing tables dynamically. RIP Version 2 delivers improved configurability and diagnostic capabilities, as well as Virtual IP Addressing and IP Multicasting support. The MPROUTE server implements Open Shortest Path First (OSPF) and Routing Information Protocol (RIP), which provides an alternative to TCP/IP static routing. When configured properly, the VM host running the MPROUTE server becomes an active OSPF and/or RIP router in a TCP/IP network. The MPROUTE server can be used to maintain the host routing table dynamically by using either (or both) of these routing protocols. By using MPROUTE, greater efficiency may be achieved within a TCP/IP network.

Virtual IP Addressing
Virtual IP Addressing (VIPA) increases the reliability and stability of TCP/IP in the event of a network or interface failure. With VIPA, hardware link fault tolerance is supplied for both inbound and outbound TCP/IP communications on z/VM providing automatic recovery of hard link failures and network traffic splitting.

Selective messaging with IP Multicasting
IP Multicasting provides a more efficient means of transmitting the same data or messages to multiple users. A set of recipients can be selected and only one copy of the data is sent to the group. This type of data transmission saves valuable network resources and users' time.

Network File System server
The Network File System (NFS) Version 3 Server allows applications and users from heterogeneous systems to access files stored in the VM Byte File System, Shared File System and CMS minidisk file system. NFS support on z/VM is a natural extension of VM file systems and enables Internet-based heterogeneous sys-

tems to use the enormous DASD resources available on z/VM. Additionally, NFS permits z/VM to be a centralized, transparent file server for PC servers and workstations.

Network File System Client

The z/VM NFS Client gives CMS users and applications transparent access to data on remote systems that run NFS servers, including z/OS, OS/390,® Windows,® AIX,® UNIX,® LINUX® and VM. The remote data is accessed by a NFS Client by mounting it on the BFS structure in a single virtual machine.

Web serving

TCP/IP for z/VM plays a critical role in the development and deployment of z/VM Web servers and Web applications currently available from IBM Partners in Development and IBM Business Partners. Using TCP/IP interfaces, a Web server application delivers easy access to VM-based functions and host-based files, data and system resources.

Application development

With TCP/IP for z/VM, you get a variety of application programming interfaces (APIs) and services. z/VM has integrated these APIs into many of its most popular programming languages and services. These services were developed to: assist customers and commercial software developers to create new and improved applications for e-business; enable customers to consolidate applications and servers across distributed systems (i.e., UNIX) onto z/VM and regain control of their environments; authorize z/VM-based applications to be displayed via Web browsers, thin clients and other high-quality graphics displays; and help customers get the most out of their existing application investments.

Interoperability of applications

Message Queueing (MQ) is a popular method for applications to interface with one another across heterogeneous systems. MQ communications requires the client API support on the communicating platforms and a message queue manager (MQ server) somewhere on the network. The MQ server facilitates communication between applications without requiring them to actually connect to one another. The MQSeries® Client is supported by z/VM, so VM-based applications can interact over the Internet with other MQSeries-enabled applications and servers.

Relational data access

z/VM offers support for Network Database System (NDB), which is used to access relational database systems in a TCP/IP environment. NDB uses the RPC protocol so interoperability is created among a variety of workstation users and host database management systems such as DB2® for VSE and VM.

Mail services

The Simple Mail Transfer Protocol (SMTP) server, which includes TCP/IP mail services, is integrated with CMS mail functions. This delivers a consistent method of mail and file transfer for TCP/IP and CMS users. The SMTP server provides service extension support, including accepting and forwarding of MIME-formatted messages.

Terminal access

Access to 3270-based applications from UNIX and other systems is available with the Telnet TN3270 support provided by the TCP/IP feature for z/VM. A Telnet session-connection user exit enables clients to connect directly to VTAM,® PVM, VSE or any other second-level system.

Remote execution

Users or applications can execute a command on a remote host and receive results based upon TCP/IP remote execution protocol (REXEC) and support from z/VM.

Remote printing

TCP/IP for z/VM allows you to print data from your z/VM system on remote printers in your TCP/IP network. It also delivers enterprise-wide network printer support with line printer router (LPR), line printer daemon (LPD) and TN3270E printer attachment. VM LPD support has been incorporated into the RSCS print server, and users can specify if they want their remote print data to be processed for delivery by TCP/IP.

Whether you run a small business or a large multinational corporation, VM can handle your TCP/IP Internet printers, improve user productivity and help ensure delivery of your print data through its proven, industrial-strength print serving capabilities.

Improved security with an SSL server

The Secure Sockets Layer (SSL) server is available with TCP/IP for z/VM. This server transfers secure and private conversations between z/VM servers and external clients. With z/VM support for SSL, a VM server can communicate with a secure client without a change to the server itself. The SSL server supplied with z/VM supports 40-bit, 56-bit and 128-bit encryption/decryption services and requires a copy of Linux for S/390 to run.

Authenticating network users

TCP/IP for z/VM maintains additional security with the Kerberos server for user authentication within a network environment. The Kerberos server feature, included with TCP/IP for z/VM at no additional charge, provides 128-bit encryption/decryption services for the Kerberos authentication server as well as APIs for application programs.

Managing TCP/IP network resources

z/VM gives you network management support with Simple Network Management Protocol (SNMP) and the award-winning IBM TME 10™ NetView® product line. You can direct your 3172 controllers through the 3172 SNMP agent support provided by TCP/IP for z/VM.

z/VM and TCP/IP development collaboration

TCP/IP for z/VM product development is managed by the same IBM team that produces z/VM and VM/ESA.® This helps to ensure that TCP/IP for z/VM will continue to stand behind the needs of VM customers in the years to come. You can find additional information about TCP/IP for VM on the official IBM VM Web site at **ibm.com**/eserver/zseries/zvm/

For more information

To learn more about z/VM, the IBM @server zSeries 900 or the S/390, contact your IBM marketing representative, Business Partner, or visit:

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