Software Announcement
February 22, 1999

OS/390 Version 2 Release 7 Availability and Release 8

Overview

Help lower your total cost of computing with these new releases of OS/390®. Releases 7 and 8 provide more ways to reintegrate workloads. File, print, Web, and Enterprise Resource Planning (ERP) workloads are more manageable and more secure.

These releases are "Tivoli Ready[1]." The Tivoli Management Agent has been integrated into the OS/390 base. Tivoli's management software, over time, can reduce your total management cost by managing your entire IT environment in a consistent way across all platforms and business applications.

OS/390 gets you ready for e-business. It provides end-to-end, and universal access to your applications and data. S/390®'s recognition as the industry's leading server for high volume transaction processing is now extended to include high volume Web serving. Recent testing with an industry standard SpecWeb96 benchmark measured 21,591 SpecWeb operations per second, a 50-percent increase over the previous record![2]

New technology better integrates SNA and TCP/IP yet retains the high availability and class of service characteristics of SNA. Current standards for Internet and SNA security, including Triple DES, can be implemented without adding to your IT staff's workload. Client certificates can be processed with reduced administrator intervention.

OS/390 can help lower total costs in a Parallel Sysplex® environment. New TCP/IP functions decrease the number of required IP addresses. Adding TCP/IP stacks has been simplified. This can significantly reduce the work of your network specialists. Other TCP/IP improvements make it is easier to scale up non-disruptively while handling increased workloads.

OS/390 reduces the time to develop and deploy new applications by applying the object-oriented technology, Component Broker for OS/390.

Application performance using the UNIX® System Services hierarchical file system (HFS) is improved dramatically through a restructure of HFS. Your programmers can build and run programs in significantly reduced time. Laboratory tests show that the performance of files with fewer than 512 KB improved by up to 30x — 40x over the previous release[2].

New interfaces make it easier to port UNIX applications to OS/390. Programmers will have the opportunity to use some familiar UNIX commands instead of MVS™ commands. Installing and maintaining UNIX applications is simpler because numerous post-installation jobs are eliminated.

Releases 7 and 8, recent IBM announcements for S/390 Parallel Enterprise Server™ — Generation 5, and software pricing options offer more computing efficiency at a lower total cost.

Footnotes: Refer to the **Reference Information** section for details.

Key Prerequisites

For a complete description of OS/390 Version 2 Release 7 hardware and software prerequisites, refer to the ***OS/390 Planning for Installation*** (GC28-1726) publication at URL:

http://www.ibm.com/s390/os390/installation/

Planned Availability Date

- March 26, 1999 — Release 7
- September 24, 1999 — Release 8

At a Glance

Release 7 includes the following enhancements:

- World-class performance for Web page processing
- Major restructuring of HFS to reduce path lengths, removal of serialization bottlenecks, improved CPU times
- WebSphere™ functionality supports applications developed using WebSphere Studio toolset, support for session-tracking APIs, security improvements
- Improved technology to dramatically enhance network integration for SNA and TCP/IP networking environments
- New set of cryptographic and security services for use in applications and applications middleware
- Usability enhancements
- Tivoli management software that makes OS/390 "Tivoli Ready[1]"

Plans for OS/390 Version 2 Release 8 include improvements to the following elements or features:

- OS/390 Print Server
- eNetwork™ Communications Server
- WebSphere Application Server
- OS/390 UNIX System Services
- Language Environment®
- JES3
- Text Search (formerly NetQuestion)
- ISPF

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Description

Releases 7 and 8 continue the logical progression of OS/390 releases in response to the industry trends of strategic S/390 growth initiatives in Server Consolidation, e-business, Enterprise Applications, Business Intelligence and Technology Leadership. System integration testing, ServerPac delivery and installation, an extended service plan, and a broader release-to-release coexistence policy define OS/390 Version 2 as a comprehensive network application server operating system for the entire range of IBM S/390 customers.

OS/390 Version 2 Release 7 Overview

S/390 Server Consolidation Initiative

The S/390 Server Consolidation Initiative focuses on reducing costs and complexity and improving overall network security. In Release 7, this Initiative offers the ability to:

- Consolidate servers through *rehosting* application and data workloads
- Improve systems management and security through centralized administration, operations, availability, and security management
- Integrate core applications with new applications through OS/390 distributed transaction processing

The following items are new or enhanced:

- **Enterprise and Systems Management**

  Tivoli Management Framework: IBM further enables OS/390 to participate in Tivoli Enterprise Management by integrating the Tivoli Management Agent into OS/390 Release 7. Tivoli management software can now be used to integrate the management of OS/390 with the management of other servers and to leverage the strengths of traditional Systems Management products on OS/390 at the same time. Major OS/390 Systems Management Products, such as Security Server and HCM now provide support for their Tivoli counterparts. With the integration of Tivoli Management Agent into OS/390, the SystemView® for MVS Base Version 1.1-level element will be removed from OS/390 beginning with Release 7.

  Resource Measurement Facility (RMF™) continues to improve its Parallel Sysplex support and provides new capabilities to support new workloads.

- **Security and Directory**

  Lightweight Directory Access Protocol (LDAP) has multiple enhancements in Release 7 including: Java™ support, improved access to data, user ID and password authentication, and server enhancements.

  Introducing the OS/390 Open Cryptographic Services Facility: Cryptography comprehensively helps meet multiple security needs, such as confidentiality, authentication and non-repudiation. Open Cryptographic Services Facility for OS/390 addresses these requirements in the emerging Internet, intranet, and extranet application domains. This set of layered cryptographic and security services, (intended to augment the Integrated Cryptographic Services Facility (ICSF)) is suitable for use in applications and application middleware on OS/390 which is targeted for use in the OS/390 UNIX System Services execution environment. It is designed to be compatible with industry standards, such as OpenGroup's Common Data Security Architecture (CDSA). The open architecture can help protect the investment made in implementation of applications by facilitating the reuse of core components of the architecture for different products.

  Open Cryptographic Services Facility for OS/390 includes software from RSA Data Security Inc. You can use the software cryptographic services provided by Open Cryptographic Services Facility for OS/390 for application development or test purposes only, provided you first register with RSA Data Security Inc. Refer to the **OS/390 Licensed Program Specification** section for additional details.

  Introducing OS/390 System Secure Sockets Layer (System SSL): System SSL is part of the Cryptographic Services element of OS/390. It repackages SSL function as a set of DLLs and makes the SSL APIs available for use by OS/390 applications. CICS® Transaction Server 1.3 will exploit System SSL.

S/390 e-business Initiative

The S/390 e-business Initiative's goal is to continue the rapid evolution of S/390 as the platform of choice for highly available, scalable, and secure e-business. Recently completed testing with an industry standard SpecWeb96 benchmark running on a single S/390 server (a 10-way S/390 G5 Server), measured 21,591 SpecWeb operations per second, a 50% increase over the previous record.[2] The Fast Response Cache Accelerator function in eNetwork Communications Server employed by the HTTP Server in OS/390 V2R7 was a key a enabler to achieving these results. For further details visit URL:

http://www.specbench.org/osg/web96/results/res99q1/

[2] These results were obtained in a controlled environment. Actual customer results may vary.

Enhancements in OS/390 Release 7 include:

The **WebSphere Application Server V1.1** comes integrated in OS/390 Release 7. Included are two components:

- **WebSphere Application Server V1.1** provides the capability to deploy Java servlets on S/390. Built on the licensed Java Server Toolkit from JavaSoft, the WebSphere Application Server takes full advantage of the advanced features of the Java Web Server. The *write once deploy anywhere* advantage of servlets is available. You can develop and test applications that are compliant with WebSphere protocols and then deploy these applications on platforms like OS/390 that are WebSphere compliant. WebSphere Application Server V1.1 supports the latest Java Development Kit, JDK 1.1.6. IBM plans to offer WebSphere functionality on OS/390 equivalent, where appropriate, to the function delivered on alternative platforms. This release includes:
  - Support for applications developed using the IBM WebSphere Studio V1.0 toolset
  - Support for session-tracking APIs
  - A graphical interface for easier servlet management
  - Security improvements
  - Java Server Pages that offer support for dynamic page content

  This release is functionally equivalent to the WebSphere Application Server that was made available via ftp download in October, 1998, for OS/390 Version 2 Releases 5 and 6.

- **The HTTP Server for OS/390 V5.1** provides improved functionality over its predecessor, Domino™ Go Webserver for OS/390. This release provides significant performance improvements for static Web page serving by exploiting the Fast Response Cache Accelerator function. This function is offered by eNetwork Communications Server for OS/390 (CS OS/390) in Release 7.

  ApplEnv Remote Configuration gives you the ability to configure application environments for workload management via configuration and administrations forms rather than editing directives in the server configuration file. This provides an easy-to-use interface for the update and management of this information.

  Digital Certificate authentication is supported for any X.509 format digital certificate issued by any Certificate Authority. In addition, WebSphere Application Server V1.1 supports strong authentication of digital certificates issued by IBM Vault Registry product, including checks for revoked certificates via Vault Registry′s Certificate Revocation List (CRL).

  Certificate Authority (CA) Servlet can be used to issue locally produced digital certificates suitable for use in Netscape and Microsoft™ Internet Explorer browsers and in other SSL applications that support X.509 certificates.

eNetwork Communications Server for OS/390 (CS OS/390) provides enhanced usability, availability, connectivity and performance for TCP/IP in a Parallel Sysplex and other environments through offering the following:

- World-class performance for Web page processing
- New technology to dramatically improve network integration for mixed SNA and TCP/IP networking environments
- Leading-edge solution to allow a network administrator to control the performance characteristics of IP data packets
- Triple DES support for virtual private networks (VPN)
- Expanded network addressing to support large-scale use of TN3270e server and other applications
- Gigabit Ethernet support to increase S/390′s capacity to serve large numbers of users and high bandwidth applications
- SNMPv3 — more securely protects valuable network management information for TCP/IP networks

S/390 Enterprise Applications Initiative

The S/390 Enterprise Applications Initiative′s goal is to deliver new applications and new infrastructure in support of programming environments, and new support for application growth through tools for S/390 and OS/390. Its customer-driven focus is based on object-oriented Component Broker technology, OS/390 UNIX technology, and technologies that can optimize application development, porting and execution while delivering a low-cost hardware and software platform solution.

Items and Enhancements Delivered in Release 7: **Language Environment for OS/390 Release 7** items include:

- Region-wide installation default options
- Performance enhancements
- Reliability, Availability and Serviceability (RAS) improvements.

OS/390 UNIX System Services has numerous enhancements:

- Performance and RAS capabilities offer faster, more efficient performance. The WebSphere Application Server runs CGI programs faster.
- Installation improvements eliminate post installation jobs, improve file system support, and simplify installation setup.
- Support of automatic installation of client certificates removes the need for the system administrator to perform this setup.

S/390 Business Intelligence Initiative

The goal of the S/390 Business Intelligence (BI) Initiative is to continue the evolution of S/390 Parallel Sysplex technology-capable hardware and OS/390 to meet the needs of increasingly diverse BI applications. IBM is investing significant resources in S/390 Parallel Sysplex technology, OS/390 Workload Manager, DB2® for OS/390 and Intelligent Miner™ for Data to support parallel queries and data mining in a data sharing environment. Existing OLTP and query applications, as well as new or ported Business Intelligence applications from UNIX and Windows NT® environments, will be able to run on a cost-effective, secure, robust, large-scale S/390 Enterprise Server to take advantage of parallelization and to use OS/390 goal-focused work load systems management.

The **OS/390 UNIX System Services Parallel Environment** is enhanced in Release 7 in support of the BI Initiative through the implementation of the Message Passing Interface (MPI) 1.2 specification for C and C++ applications. Further enhancements include POSIX file support for basic parallel I/O interfaces, support for multi-threaded user applications, support for the Multiple Program Multiple Data (MPMD) parallel application model, and various usability improvements.

S/390 Technology Leadership Initiative

IBM S/390 provides an infrastructure of hardware, software, and Parallel Sysplex technology that responds quickly and easily to changing requirements and new opportunities. S/390′s enhanced leading-edge technology integrates software and hardware functions to offer comprehensive end-to-end (from small to large) enterprise solutions required in today′s extremely fast-paced and competitive business environments.

Items and Enhancements delivered in Release 7: **DFSMS/MVS® Version 1 Release 5** is included in OS/390 Release 7. DFSMS/MVS delivers a major restructuring of HFS to improve performance. Reduced path lengths, removal of serialization bottlenecks, and improved buffering capabilities enable an order of magnitude improvement in throughput for HFS files with fewer than 512 KB. Significant improvements in CPU and elapsed times have also been made for HFS file sizes larger than 512 KB.

In a Parallel Sysplex environment, DFSMS/MVS Version 1 Release 5 allows you to enable multiple DFSMShsm™ sub-plexes to perform secondary host promotion if the DFSMShsm operation on the primary host fails. You can also access OAM objects from any system in the Parallel Sysplex environment.

DFSMSrmm™ usability enhancements provide an API for read/write access, support of separate retention and vaulting policies, and enablement of special handling instructions.

New DFSMSdfp™ usability enhancements provide most of the functions supported for NaviQuest batch and support for master catalog alias resolution by system and shared catalog access in a Parallel Sysplex environment. DFSMS/MVS can provide the growth capability you require because of the support for multi-volume HFS, a large number of open datasets for IMS™ and CICS subsystems, and removal of the DFSMShsm CDS limits. Extended addressability (EA), partial release, candidate volume space amount and system managed buffering are available for extended format VSAM ESDS, RRDS, VRRDS and LDS data sets. These functions were made available for VSAM KSDS data sets in prior releases.

OS/390 Version 2 Release 8 Overview

The following information is an early look at a subset of significant items that will be new or enhanced in Release 8. The complete list of Release 8 items and enhancements will be announced prior to the September 1999 general availability of Release 8.

S/390 Server Consolidation Initiative

OS/390 Print Server will provide many new print capabilities. Datastream transforms will allow popular PC and workstation applications and many Enterprise Resource Planning (ERP) applications to print to an AFP™ printer. In addition, a new consolidated printer inventory will allow all printers used with the Print Interface, NetSpool™ and IP PrintWay™ components of Print Server to be defined and modified from a single easy to use interface. New Client and Server support in OS/390 Print Server will enable seamless printing to and from OS/390 over the Internet using Internet Printing Protocol (IPP), the emerging standard for Internet print.

Security Server (RACF®) will allow the definition of a new type of user ID. A protected user ID will not have a password assigned and cannot be used to logon to TSO/E, signon to CICS, or rlogin from a workstation. This can be used to help protect the user ID assigned to OS/390 UNIX, UNIX daemons, and other important started tasks and subsystems, from being used for other purposes. It will also protect them from being revoked, either accidentally or intentionally, with invalid password attempts.

eNetwork Communication Server for OS/390 (CS OS/390) will provide the following enhancements:

- Internet Key Exchange (IKE)
- SNA Triple DES Session Level Encryption
- TN3270 Secure Sockets Layer (SSL) Client Authentication

Note: For information on other new function, refer to the S/390 e-business Initiative text.

S/390 UNIX System Services will provide enhanced security. UNIX System Services superuser controls will allow for selective assignment of security.

Note: For more information, refer to the S/390 Enterprise Applications Initiative text.

S/390 e-business Initiative

WebSphere Application Server provides the capability to deploy Java servlets on S/390. In Release 8, IBM plans to deliver an HTTP Server for OS/390 that significantly improves problem determination and problem source identification.

S/390 Enterprise Applications Initiative

Language Environment will include:

- UTF-8 conversion support enhancements
- Increased usability and porting capabilities
- Improved performance support through the enablement of multiple asynchronous events from the physical file systems

OS/390 UNIX Systems Services will have numerous enhancements that will:

- Offer more control for message queues
- Free up storage to make porting to different platforms easier
- Grant greater scalability on larger processors

Added shell support will offer better usability and capability. Productivity will be increased with the addition of widely recognized UNIX coding practices. Other enhancements will make the porting of shell scripts from other platforms easier.

S/390 Technology Leadership Initiative

Workload Manager (WLM) and JES3 will provide the ability to dynamically manage batch initiators.

Enhancements in **Interactive System Productivity Facility (ISPF)** will improve your productivity in application development.

Year 2000

This product is Year 2000 ready. When used in accordance with its associated documentation, it is capable of correctly processing, providing, and/or receiving date data within and between the twentieth and twenty-first centuries, provided that all products (for example, hardware, software, and firmware) used with the product properly exchange accurate date data with it.

Statement of Direction

In the release planned to be available in September, 2000, OS/390 intends to exploit ESA/390™ architectural enhancements which were implemented on IBM S/390 servers. That OS/390 release will run only on servers which implement the architectural enhancements, and will not run on servers that have not implemented them. Refer to the Supplemental section for more information.

Hardware and Software Support Services

SmoothStart™ /Installation Services

SmoothStart Services, an on-site implementation and training startup services designed to help accelerate a customer's productive use of their IBM solution, is provided by IBM Global Services or the customer's IBM Business Partner at an additional cost. For more information on IBM SmoothStart Services, refer to Services Announcement 697-004, dated March 25, 1997, or you may contact your IBM representative and ask for SmoothStart Services for OS/390.

Reference Information

For earlier OS/390 Version 2 information, refer to:

- Software Announcement 298-278, dated August 18, 1998, (the OS/390 Version 2 Release 6 Availability announcement)
- Software Announcement 298-049, dated February 24, 1998, (the OS/390 Version 2 Release 5 Availability announcement)
- Software Announcement 297-355, dated September 9, 1997, (the OS/390 Version 2 Release 4 Availability announcement)
- Software Announcement 297-194, dated June 9, 1997, (the initial OS/390 Version 2 announcement)

[1] Tivoli Ready is a trademark of Tivoli Systems Inc.

[2] These results were obtained in a controlled environment. Actual customer results may vary.

Trademarks

IBM US Announcement Supplemental Information

February 22, 1999

OS/390 Version 2 Release 7 Function Description

S/390® Server Consolidation Initiative Release 7 Items

Additional capabilities to improve systems management and security:

- **Enterprise and Systems Management**

  Hardware Configuration Manager (HCM)

  - **HCM Configuration Data in Tivoli Inventory 3.2:** Tivoli's inventory management application, Tivoli Inventory, is a computer hardware and software inventory gathering system designed to help system administrators and accounting personnel who manage the complexity of a distributed client/server enterprise.

    HCM is extended to optionally interface with Tivoli Inventory 3.2. This support makes OS/390® hardware configuration data derived in HCM available for placement in the inventory repository. This HCM support consists of extending and converting HCM's exported configuration data to a MIF file that can be processed by Tivoli Inventory.

  - **HCM Visualization of ESCON® Director Configurations:** This function uses ESCON Director Configuration information to provide better visual feedback concerning which devices are accessible and which devices are not accessible when certain ESCON director configurations and crossbar switch configurations are used.

  - **HCM FICON Migration Function:** The following functions can assist customers with FICON migration:

    -- Convert ESCON director port card to FICON port card
    -- Move port connections from one ESCON port to another ESCON port
    -- Aggregate CHPIDs on an ESCON director. On one ESCON director, this function can aggregate all I/O equipment connected via several source channels to one target channel

    The *Move port connections* and *Aggregate CHPIDs* functions can also be used for configuration changes that do not involve FICON Channel. In particular, the ability to move port connections can be useful for the installation of new ESCON directors.

    In Release 7, HCM is changed to only run as a native Windows™ 32-bit application on Windows 95/98 and Windows NT®. Note that it will no longer run on Windows 3.x or WIN-OS/2®.

  - **SMP/E Enhancements**

    Planning and Migration Assistant for OS/390 provides reports that use IBM-supplied data, your business's SMP/E CSI, and a CustomPac inventory file. This support is now an integrated function of SMP/E. You can use these reports to maintain, plan for, and order new releases of OS/390 and other products. For information on the Planning and Migration Assistant for OS/390, visit the Web site at URL:

    http://www.ibm.com/s390/pma

    Product Data provides a structure within SMP/E that product developers and packagers can use to include additional descriptive information such as, a descriptive name in text form, the program number, and the release level. This information helps you:

    -- More easily obtain an inventory of the software you have installed on an OS/390 system

    -- Associate product names in descriptive format with SMP/E FMIDs. This data helps you install or migrate to an OS/390 release.

    Shell Script Support enables the execution of UNIX® shell scripts and commands during SMP/E installation of elements into the OS/390 UNIX System Services environment. Shell script commands can be executed during SMP/E installation thus reducing post-installation effort of applications.

    Symbolic Link Support allows symbolic links, which were previously defined in pre- and post-installation jobs, to be controlled by SMP/E. Therefore, these jobs are reduced or eliminated.

    Pre-Built Load Module Support adds, replaces, and deletes load modules as complete entities within FUNCTION and PTF SYSMODs. The support applies to load modules that reside in PDS and PDSE data sets. It provides a simplified method of packaging executables in both IBM and vendor packages. Pre-built load module support can reduce or eliminate required post-installation link-edits.

    Sequential Data Set Installation reduces the amount of post-installation work currently required to install products that use sequential data sets by eliminating the need to run post-installation jobs that copy information from PDS to sequential data sets outside of SMP/E.

    Data Element Installation reduces the amount of post-installation work currently used to install some OS/390 products. You can install CLISTs (or any data element type) into VB or FB data sets dependent upon the RECFM of the target data set for the product being installed. This occurs regardless of the element format (VB or FB) that was shipped. Because CLISTs can be installed in

the RECFM you select, post-installation record format translation is reduced or eliminated. You no longer need to convert the target data set to the desired RECFM.

SYSMOD Description enables product developers and packagers to include additional descriptive information in the SYSMOD header MCS (that is, in a ++APAR, ++FUNCTION, ++PTF, or ++USERMOD statement). You now have additional data about individual SYSMODS on your systems which reduces the time to research a particular SYSMOD.

- **OS/390 Distributed Computing Environment (DCE):** DCE Security Server is elevated to the Open Group OSF DCE 1.2.2 level so that interoperability can be maintained between DCE applications on all platforms. CICS® inbound Transactional Remote Procedure Calls (TRPC) support is added to DCE AS and Encina Toolkit Executive to enable AS/CICS servers to participate in Encina distributed transaction processing applications. This means that Encina client applications can include CICS transactions which use AS/CICS, and they can combine with other operations into a single unit of work. Data integrity will be provided within the unit of work for all servers or participants. Updates to recoverable data can be committed only if all participants can successfully perform their work. This implementation utilizes Transactional EXCI, which is provided in CICS Transaction Server 1.3.

- **Firewall Technologies Enhancement:** Virtual Private Network (VPN) support meets the latest level of IPSec (RFC 2401-2406 and 2410) to increase its connectivity to servers and clients that may have also upgraded to the latest level. Enhancements are also provided to allow the configuration of Firewall Technologies on as many TCP/IP stacks on OS/390 as are connected to the Internet/intranet. Scalability of the Firewall FTP and SOCKS daemons is being enhanced to allow a greater volume of concurrent user connections with more efficient utilization of system resources. Configuration tasks are being simplified by the addition of a Graphical User Interface (GUI). This GUI is similar to the one provided by the AIX® and NT versions of the IBM Firewall. This similarity should ease administration tasks for you, if you have these firewalls installed in your enterprise.

- **OS/390 Distributed File Service (DFS):** IBM has enhanced DFS support to complete the OS/390 implementation of the OSF 1.2.2 DCE function. Multi-home server support can improve DFS server availability on an OS/390 host that is connected through multiple interfaces to multiple networks. Protected DCE RPC support is provided to allow for more secure network access to file data by enabling an administrator to specify a range of DCE authentication levels that can be used in DFS client-server communications.

  DFS continues to be enhanced to be functionally compatible and equivalent with DCE DFS implementations on other systems and to expand the support for workstation access to OS/390 file data. This includes OS/390 DFS server support for file level translation controlled at the file extension (file type) for HFS files; large DCE LFS aggregates with a size value greater than 32-bits; and the capability to create a DFS mount point in HFS. Also, DFS continues to implement performance and RAS enhancements based on customer experiences involving more than 10,000 users in a university environment.

- **Resource Measurement Facility (RMF™):**
  - **Online Reporting for Cache Subsystems:** New Monitor III reports provide high-level health indicators for the cache subsystems as well as detailed information about the I/O activities. Together with the DASD device information on the Parallel Sysplex® level, you will be able to monitor the entire I/O subsystem in the cluster in an optimal way.
  - **System Enclave Support:** The enclave support in Monitor III is enhanced to assist in managing business units of work in a Parallel Sysplex environment. Many new types of applications (for example, DB2® Distributed Data Facility and Component Broker for OS/390) create enclave transactions. An enclave transaction can execute in several address spaces or in a shared address space with other enclave transactions, and yet still be managed as its own single business unit of work. Therefore, a report showing resource consumption and delays by enclave can significantly enhance your ability to improve performance management for these new applications.
  - **Support for OS/390 UNIX System Services:** Both Monitor II and the Postprocesor offer a new report that provides performance information on the Hierarchical File System (HFS). These reports allow you to tune your system to better use HFS resources. Based on the storage information and utilization statistics in the new reports, you can optimally size the HFS buffers.
  - **Enhancements for the I/O Subsystem Support:** With the availability of new fiber channels, RMF extends the information for these channel types through reporting about data transfer rates and busy utilization values.
  - **Dynamic ICF Support:** To support the new dynamic ICF expansion function, the RMF Partition Data report has been enhanced by new information separately showing the utilization of dedicated and shared partitions for the Integrated Coupling Facility (ICF) feature.

- **Security and Directory**

  LDAP Access to Security Server (RACF®) Data: RACF data presents a large set of user, group, and profile information that is useful to applications in other environments or on other systems. This item makes RACF information that is accessible through SAF interfaces, available via an OS/390 LDAP server to programs on and off the OS/390 platform.

  LDAP Authentication Using Security Server RACF: User ID and password authentication of LDAP client access to OS/390 LDAP Directory Server can be optionally handled by Security Server RACF rather than by accessing user IDs and passwords stored within the LDAP Server Directory.

  LDAP Multi-Server Enhancement: The LDAP Multi-Server capability already available with OS/390 Version 2 is enhanced. It supports multiple LDAP servers on multiple OS/390 systems in a Parallel Sysplex environment and ensures that LDAP servers that access the same directory are managed according to the goals of the enterprise.

LDAP Java™ (JNDI) Support: This support provides the industry-standard Java Naming and Directory Interface (JNDI) for the OS/390 LDAP client so that developers can build portable, Java directory-enabled applications which can run on OS/390. It provides access for Java applications on OS/390 to LDAP information stored on OS/390 as well as other LDAP-supported platforms.

OS/390 Open Cryptographic Services Facility This set of layered cryptographic and security services, (intended to augment the Integrated Cryptographic Services Facility (ICSF)) is suitable for use in applications and application middleware on OS/390 which is targeted for use in the OS/390 UNIX System Services execution environment. It is designed to be compatible with industry standards, such as OpenGroup′s Common Data Security Architecture (CDSA). The open architecture can help protect the investment made in implementation of applications by facilitating the reuse of core components of the architecture for different products.

Open Cryptographic Services Facility for OS/390 includes software from RSA Data Security Inc. You can use the software cryptographic services provided by Open Cryptographic Services Facility for OS/390 for application development or test purposes only, provided you first register with RSA Data Security Inc. Refer to the OS/390 Licensed Program Specification for additional details.

S/390 e-business Initiative Release 7 Items

Additional capabilities to help you build a highly available and scalable e-business:

eNetwork™ Communication Server for OS/390 (CS OS/390) — An Enterprise Class Solution for e-business Networking

IBM continues to provide world-class networking solutions for S/390-based e-business networks while increasing the integration of SNA/APPN® and TCP/IP networking services. Release 7 includes the following enhancements:

- **Fast Response Cache Accelerator** extends S/390′s lead as enterprise server of choice. Fast Response Cache Accelerator improves the performance of serving static web pages. This IBM-unique new technology caches Web pages within the TCP/IP services stack enabling significantly faster processing of requests for Web pages. At the same time, CPU utilization is significantly reduced.
- Seamless network integration is dramatically improved with the **Enterprise Extender** function. Enterprise Extender improves the ability of an enterprise to converge to a single IP network by allowing SNA applications to communicate over IP networks while continuing to enjoy the benefits similar to those of SNA network such as, class of service and transmission priority. The current SNA/IP routing technology, Data Link Switching (DLSw), does not provide full SNA benefits. Enterprise Extender uses HPR to manage SNA data transmissions over the User Datagram protocol (UDP) layer of TCP/IP through an IP network. This retains the benefits of SNA and HPR services such as superior congestion control, class of service, transmission prioritization and high availability through transparent routing around network failure. IP routers′ use of UDP for HPR rather than DLSw can provide up to 10x[1] improvement in data transfer capacity. To enable these capabilities, you need a PTF: For OS/390 Release 6, the PTF for APAR OW36113; for OS/390 Release 7, the PTF for APAR OW36458.

  [1] These results were obtained in a controlled environment. Actual customer results may vary.

- The **Service Policy Agent** offers the capability to better manage and control service level agreements for users of TCP/IP networks. With the Service Policy Agent, a network administrator can control the performance characteristics of IP data packets as they travel the network by setting the Type-Of-Service (TOS) byte. This TOS byte is used by CS OS/390 and by IP routers for queueing and discarding algorithms to help ensure proper prioritization of IP data traffic. This enhancement allows different levels of TCP/IP 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 agent can obtain policy definitions from a local file or a Lightweight Directory Access Protocol (LDAP) server. With LDAP capability, the agent can be part of a centrally managed and administered TCP/IP networking service policy environment.

  In addition, the Service Policy Agent enables control over the number of users that can access TCP/IP services at a given time by user class or other criteria if desired, as well as the amount of throughput or bandwidth they are allowed. To prevent applications from violating the established service policy, the agent can override the priority specified by an individual application.
- **Virtual Private Network (VPN)** authentication and encryption capability is more robust and **IPSec** performance is improved. CS OS/390 includes recent updates to the evolving standards for Internet Protocol Security (IPSec), also known as VPN, that strengthen the ability to authenticate the origin of a message, that it has not been modified during transmission, and that it is "fresh" —that it is not a resend of a packet already received. This is achieved through the addition of stronger authentication algorithms, HHMAC-SHA and HMAC-MD5, and "replay protection". Together these provide stronger security against brute force attack on the network. Triple DES support is added to provide dramatically improved encryption capability for network security. Also, CS OS/390 IPSec support has been revised to improve performance. S/390 encryption hardware is used, when present, for additional performance improvement.
- **Enhanced Network Addressing** is used by the CS OS/390 TN3270 Server in an APPN/HPR environment to significantly reduce the consumption of network resources and increase server capacity to 64,000 client connections/sessions. Other session managers, such as TSO/VTAM®, can benefit from this enhancement without any change to the application. Individual session managers may introduce limitations that reduce the number of connections/sessions to something less than the CS for OS/390 capability.
- **Gigabit Ethernet Support** relieves network congestion. CS OS/390 and the new S/390 Open Systems Adapter-Express (OSA-Express) GbE feature offer new high speed TCP/IP connections. This new capability is a natural evolution of Ethernet and Fast Ethernet support. GbE is needed to support data intensive

TCP/IP applications and to relieve traffic bottlenecks. GbE supports full duplex transmissions to improve server throughput. OSA-Express GbE is used in conjunction with the CS OS/390 capability known as Queued Direct Input/Output (QDIO). QDIO is a new channel control unit design which dramatically improves data throughput by exploiting direct memory access (DMA). DMA allows CS OS/390 and the OSA-Express adapter to share memory. OSA-Express is available on the S/390 Parallel Enterprise Servers — Generation 5. CS OS/390 GbE capability is dependent on the availability of the OSA-Express GbE feature. For more information on the new S/390 Open Systems Adapter-Express refer to Hardware Announcement 199-048, dated February 22, 1999.

- **Simple Network Management Protocol Version 3 (SNMPv3)** delivers compliance and currency with the latest Internet Engineering Task Force (IETF) standards for Simple Network Management Protocol (SNMP). The SNMPv3 management framework enables much more secure exchange of network management data than is possible with the legacy community-based security provided by (SNMPv1 and SNMPv2). SNMPv3 capabilities include:
  - User-based, message-level security to protect against modification of information, masquerade by unauthorized users, message stream modification an optionally, disclosure. This is accomplished by the us of HMAC-MD5 or HMAC-SHA authentication algorithms and, if the appropriate separate encryption feature is installed, CBC 56-bit DES encryption algorithm (Subject to US Export laws and regulations).
  - View-based access control of providing flexible, granular control over what management data can be accessed, the type of access and the users and communities authorized to do so.
  - Support for dynamic configuration changes at the SNMP agent to improve availability because it supports remote administration of the authentication and encryption algorithm keys. Additionally, this capability supports the creation, modification or deletion of users, views and access rights.
  - Message stream modification protection to mitigate the risk of maliciously re-ordered, delayed, or re-played packets.
- **TN3270 Name Mapping** allows the network administrator to map exact host names or wildcard host names to the associated SNA LU name. This capability dramatically eases the task of managing the dynamic growth of today's networks. This function is designed to work especially well when dynamic IP addresses are being exploited.
- **Further improvements to TCP/IP Parallel Sysplex system support increase usability, availability and performance**
  - **XCF Dynamics** offers non-disruptive horizontal growth for TCP/IP in a Parallel Sysplex environment. With XCF Dynamics, you can add new TCP/IP images without requiring coordinated definitions for existing Parallel Sysplex members. Only a single definition is needed for each new TCP/IP image. It is now easier to non-disruptively scale up to handle increased workloads without impacting the existing systems and their users. Likewise, if you need to add a second stack to an OS/390 image, a Same Host link can automatically be defined for connectivity with existing TCP/IPs. Further, all dynamic XCF and Same Host links can share the same IP address thus reducing the number of IP addresses that must be allocated within a Parallel Sysplex environment. The savings in IP addresses grows dramatically in proportion to the increase in the number of members in the Parallel Sysplex cluster.
  - **System Symbolics for TCP/IP** reduces definition workload. This enhancement reduces the number of definitions required for a TCP/IP stack in a Parallel Sysplex cluster through the use of System symbolics in the PROFILE.TCPIP. A generic utility allows the use of system symbolics in any profile or other text file (for example, TCP.DATA) to be resolved and stored in an output file. This is the case whether or not the profile or other text file relates to TCP/IP. This new capability helps to simplify the process of adding new TCP/IP stacks to a Parallel Sysplex cluster so data centers can grow to accommodate its increased workloads.
  - **Parallel Sysplex Sockets** reduce overhead and improve performance. Socket applications learn when a partner application is in the same system image or Parallel Sysplex cluster. Thus, applications can:
    -- Share information so that each application won't incur overhead to generate it when in the Parallel Sysplex cluster
    -- Achieve secure communications without the overhead of encryption

    System-wide benefits include reduced CPU cycles, improved overall performance, and reduced application overhead.

Note: eNetwork Host on Demand (HOD) Version 1 does not support the Euro currency symbol. OS/390 customers currently using HOD Version 1 who require Euro currency symbol support should obtain the HOD euro-compliant level product, HOD-Entry. HOD-Entry is being made available to current HOD Version 1 customers from the web, at no additional charge, including ongoing maintenance. The URL is:

http://www.software.ibm.com/enetwork/hostondemand/downloads/entry/

S/390 Enterprise Applications Initiative Release 7 Items

Here are additional capabilities to improve your ability to optimize the development, porting and execution of applications:

- **Language Environment for OS/390**

  CEEROPT: Language Environment offers a stand-alone run time options module where you can set region-wide defaults for CICS and IMS™ environments. This removes the need to reinstall the installation default options on every release and maintenance fix of Language Environment. It also allows customized run time options on a per-CICS or IMS region basis.

  RAS: If you are used to looking at system dumps, you can now request the Language Environment to take a systems-only dump without a Language Environment formatted CEEDUMP.

  You can obtain a system dump of first failure data capture prior to the Language Environment's error recovery process.

  Performance: You can benefit from a reduction in the EXEC CICS LINK path length. Language Environment now uses less below-the-line storage. And, the current default storage settings can be modified under CICS

resulting in a reduction in CPU time. You will be able to handle multiple asynchronous events from the physical file systems. This will improve the performance of Lotus® Domino™ and other applications that implement asynchronous I/O syscalls.

- **OS/390 UNIX System Services (OS/390 UNIX)**

  Performance: Faster access to sockets can be achieved through Asynchronous I/O Real Time Signal Extensions. A dynamic reduction in the path length of file name lookups should be achieved through selective bypass of SAF calls on pathname lookups. Conformance with UNIX Asynchronous I/O Syscalls are achieved through significant changes to the signal and file system components. These changes will let you handle multiple asynchronous events from the physical file systems. Performance will be greatly improved by the freeing up of Kernel storage. This will assist you in porting applications from other platforms to OS/390.

  RAS: Multiple RAS improvements are available. Kernel error codes will display full text. IPCS support is improved for UNIX environments. The ability to diagnose problems in Lotus, Web, and DCE is improved with the addition of a modified **ps** command that allows the caller to display information for the threads in a multi-threaded server.

  User Dump Support: New support is provided for obtaining user dumps and system dumps in all environments.

  Auto Installation of Client Certificate Support: The OS/390 Security Server will accept an authenticated digital certificate from the WebSphere Application Server (formerly Domino Go Webserver) and associate the certificate with an OS/390 Security Server user. This enables users to self-register their certificates in the OS/390 Security Server directly from their browsers by connecting to an SSL protected web page. Once registered, the user can use the digital certificate to access critical OS/390 resources or data without being required to enter a user ID or password. This removes the need to involve the security administrator when Internet users wish to access OS/390 system resources.

  Shell and Utilities: Refinements within the UNIX Shell and Utilities enhance recognition among UNIX users with the functions and features of OS/390 UNIX System Services. Defacto standard shell commands of **link**, **unlink**, and **chroot** are provided. **pax/tar** support all file system attributes.

  Installation Improvements: Utility support simplifies installation setup and maintenance. UID/GID values and the setting of the extended file attribute bits can now be done during SMP/E and ServerPac installation. These values do not need to be modified after installation.

- **High Level Assembler (HLASM)**

  Support for IEEE floating point and 16 floating point registers is integrated into the OS/390 Release 7 HLASM element as well as the HLASM Toolkit optional feature.

- **DFSORT™**

  OS/390 Release 7 includes DFSORT Release 14, which was announced September 8, 1998 in IBM Software Announcement 298-312. A new generation of Year 2000 features has been made available for Release 14 via PTF UQ22534.

  This new generation of Year 2000 features can handle CH, ZD and PD full dates like yymmdd, yyddd, yymm, yyq, mmddyy, dddyy, mmyy and qyy, and their special indicators like zeros and nines. You no longer have to split dates into year and non-year pieces, and you don′t need E61 exits to handle special indicators. You can now compare dates to constants and other dates, transform CH, ZD and PD two-digit year dates to CH and PD four-digit year dates and more!

  Our updated SORT2000 paper explains how to use DFSORT′s new full date formats, as well as the earlier year formats, in the SORT, MERGE, INCLUDE, OMIT and OUTFIL statements. You can look up a particular date and go directly to examples of the DFSORT control statements that you need.

  SORT2000 also explains how to use DFSORT′s new Year 2000 features with COBOL, either automatically with COBOL MLE or explicitly without MLE.

  You can browse or download SORT2000 from the DFSORT home page at URL:

  http://www.ibm.com/storage/dfsort/

Application Enabling Technology will no longer be shipped as a base element of OS/390 starting with Release 8. Pre-built AET systems will **not** be affected. To use the AET base element after OS/390 Release 7, contact your authorized IBM client representative or business partner. IBM will continue to use the AET technology for providing easy-to-use OS/390 product offerings, such as the OS/390 Automated UNIX System Option for VM, VSE, and OS/390 (Auto UNIX System).

The Auto Unix System is a pre-built and pre-customized OS/390-based system. This option provides an automated UNIX application server platform that minimizes the need for OS/390 system programmer or operator skills. It can provide a lower total-cost-of-computing solution for small or remote departments or units in medium and large enterprises. For more information, refer to Software Announcement 298-375, dated September 29, 1998, (OS/390 Auto UNIX System Option).

S/390 Business Intelligence Initiative Release 7 Items

OS/390 UNIX Parallel Environment: Parallel Environment is enhanced to support the MPI 1.2 specification for C and C + + applications. Additional enhancements include:

- POSIX file support for basic parallel I/O interfaces is introduced according to the MPI 2.0 specification
- Support for the Multiple Program Multiple Data (MPMD) parallel application model
- Support for multi-threaded user applications
- *Man* page-based online documentation
- Additional utilities to make setting up, running, and testing Parallel Environment applications easier (for example, multiple copy utilities)
- Usability improvements to the Parallel Operating Environment component of Parallel Environment (for example, Validate Log-Space, enhanced informational messages, improved parsing of command line options, additional messages).
- Two new parallel debuggers using a command line interface and an X-Windows GUI, respectively

For information about UNIX System Services Parallel Environment, visit our Web site at:

http://www.ibm.com/s390/pe

S/390 Technology Leadership Initiative Release 7 Items

Here are additional capabilities to help you respond to the demands of many different types of complex mission-critical workloads:

- **DFSMS/MVS**® provides storage management, data access, device support, program management, and distributed data access for OS/390. Additionally, DFSMS/MVS components (dss, hsm, and rmm) are part of Tivoli's Management Solution.

  DFSMS/MVS Version 1 Release 5 provides new functions and improvements in the following areas:

  - Improved performance
    - HFS access performance
    - Shared catalog performance in a Parallel Sysplex environment
    - DFSMShsm™ volume backup performance
    - DFSMSdss™ DEFRAG RVA enhancement
  - Enhanced Parallel Sysplex exploitation by:
    - Allowing multiple DFSMShsm HSMplexes
    - Secondary host promotion when the DFSMShsm operation on the primary host fails
    - Access to OAM objects from any system in the Parallel Sysplex environment
    - Maintaining the integrity of HFS mounts in a shared environment
  - Extended removable media management by:
    - Providing an API for read/write access
    - Supporting separate retention and vaulting policies
    - Supporting environments with unshared catalogs
    - Enabling special handling instructions
  - Storage administration functions by:
    - Providing additional function in NaviQuest batch
    - Supporting master catalog alias resolution by system
    - Support DFSMSdss logical operations at storage group level
    - Support DFSMShsm volume backup operations at the storage group level
  - Application growth enablement by:
    - Supporting multivolume HFS
    - Allowing a large number of open data sets for IMS and CICS TS Subsystems
    - Allowing HSM Control Data Sets to be larger than 4GB per cluster
  - Expanded data management capabilities:
    - Extended Format support for all remaining VSAM data set organizations (ESDS, RRDS, LDS, VRRDS), including support for: extended addressability (EA), partial release, candidate space amount, and system managed buffering.
    - EA for VSAM LDS that supports DB2 table spaces larger than one TB (terabyte) —available in DB2 Version 6
  - Improved interoperability by supporting ISO/ANSI Version 4 tapes

  To learn more about DFSMS/MVS Version 1 Release 5, visit our Web site at:

  http://www.storage.ibm.com/software/sms/smshome.htm

- **Hierarchical File System (HFS) Performance Improvements**
  - For files that are 512KB or less:
    - Up to 30x[1] improvement in response time and a 75% reduction in CPU time for single-user sequential writes
    - Up to 40x[1] improvement in response time and a 85% reduction in CPU time for single-user sequential reads
  - Significant improvements in response time and CPU time for single user sequential file reads greater than 512KB.
  - Significant improvements in response time and CPU time for multiple users accessing HFS concurrently
  - Sample make test times were reduced by 75%[1]

  [1] These results were obtained in a controlled environment. Actual customer results may vary.

- **S/390 Fiber Channel (FICON):** In May 1998, a new high-performance I/O channel was announced (refer to Hardware Announcement 198-115, dated May 7, 1998) as part of the new processor. Each FICON channel is capable of supporting more that 4,000 I/O operations per second which enables each channel to support the same capacity as eight ESCON channels. FICON is a fully compatible evolution of parallel and ESCON channels and provides both improved I/O rates as well as more bandwidth. New applications, such as network computing, decision making, multimedia, and object-oriented technology can take advantage of FICON high performance.

  Software support for FICON will be available on OS/390 Releases 3 through 7. Most of the support consists of changing OS/390 to take advantage of the improved performance of FICON channels, in providing constraint relief, and in reducing the complexity of managing a large number of channels.

- **Capacity Upgrade on Demand:** You can non-disruptively add CP's and ICFs to most Parallel Enterprise Server —G5 models by exploiting the new Capacity Upgrade on Demand function. Refer to Hardware Announcement 199-036, dated January 22, 1999. To exploit this function, OS/390 Release 1 or higher with APAR OW37091 is required. If OS/390 is a guest on a VM/ESA® system, APAR VM62075 is also required.

  In addition, OS/390 supports S/390 Usage Pricing Charges announced in IBM S/390 Software Pricing Announcement 298-383, dated September 1998. To support this function, OS/390 Release 4 or higher with APAR OW36295 is required. It will be available in the first half of 1999.

- **JES2:** The JES2 component of OS/390 Release 7 incorporates the APAR fixes for all the known Release 4 $ACTIVATE problems. If you are considering $ACTIVATing and have not yet applied the required maintenance (listed in INFO APAR II10760), you should **strongly consider** migrating to the Release 7 level of the code rather than applying the maintenance to an earlier release.

- **WLM:** The WLM control of batch initiators in a JES2 environment was announced to have a controlled availability program after the September, 1997 General Availability of OS/390 Version 2 Release 4. Interested parties were directed to the WEB for further information and participation. With the announce of OS/390 Version 2 Release 7 the controlled availability program has ended and Batch Management is now generally available on OS/390 Version 2 Release 4 and higher releases.

Statement of General Direction

Architectural Level Set

In the release planned to be available in September 2000, OS/390 intends to exploit ESA/390™ architectural enhancements which were implemented on IBM S/390 servers.

That OS/390 release will run only on servers that implement the architectural enhancements, and will not run on servers that have not implemented them. The following IBM servers have these enhancements.

- Models of the S/390 Parallel Enterprise Servers except for Release 1 models
- All models of the S/390 Multiprise™ 2000
- All models of the S/390 Application StarterPak Type 3000
- All PC Server System/390® servers and RS/6000™ with System/390 Server-on-Board models
- All S/390 Integrated Servers

The following IBM servers do not have these enhancements and will not be able to run the OS/390 release scheduled for availability in September 2000.

- ES/9000® Processor Unit 9021, 9121, or 9221
- ES/3090™ Models
- ES/4381™ Models
- S/390 Parallel Transaction Server 9672 E or P models
- S/390 Parallel Enterprise Server™ 9672 Release 1 models

The architectural enhancements provide performance enhancements and reliability improvements. To exploit these enhancements, simulations or dual paths within OS/390 were needed to allow OS/390 to run on servers without the enhancements. The benefits of the architectural level set include elimination of this redundant code and potentially greater exploitation of the enhancements by designers and programmers to deliver new function to the customer more quickly.

IBM is making this statement at this time to provide additional planning time for the September, 2000 release. Note that the releases being announced today, Release 7 and Release 8, are not affected by this architectural level set.

The architectural enhancements that will be required by the release scheduled for availability in September 2000 can be found at the following URL:

http://www.ibm.com/s390/os390/plug.html

Additional Information on OS/390 Version 2 Release 7

Products and Features Related to OS/390

OS/390 Component Broker is a robust and integrated object-oriented application development and execution environment. It is composed of industry-leading technologies that ease the development and deployment of distributed object applications. OS/390 Component Broker fits the needs of programmers, who use object-oriented programming techniques, to build enterprise level, transaction applications.

Component Broker architecture is available on IBM AIX and OS/390 server platforms and Microsoft™ NT. OS/390 Component Broker application development tools can be used at a workstation to develop application business objects. These tools assist in assembling and deploying these business objects on the selected execution platform. OS/390 Component Broker lets you choose between an application development platform and the intended execution platform.

OS/390 Component Broker is available through the OS/390 Component Broker Solution Program. To learn about this program, contact your local IBM representative. Or, if in the United States, call 800-IBM-777 and mention priority code 1C8AA001.

Or visit the following Web sites:

http://www.software.ibm.com/ad/cb

or

http://www.s390.ibm.com/cb

Java for OS/390 at the JDK 1.1.6 level is available and contains significant performance enhancements over the product at the JDK 1.1.4 level, allowing some applications to run twice[1] as fast. In addition to base Java performance improvements, JDK 1.1.6 also provides native support for the IEEE floating-pointhardware shipping of S/390 G5 machines. Using this support, some Java floating point intensive applications on OS/390 could run 100 times[1] faster.

Also in the release are security enhancements: support for Java resource access authorization checking through the OS/390 System Authorization Facility (SAF) interfaces, which are designed to work with the OS/390 Security Server (RACF) or equivalent. These enhancements, described on the Java for OS/390 Web site, are the first installment of support that integrates Java security with our existing base system security.

In addition, there are two “technology previews” which consist of Java Record I/O and Remote AWT. The former provides API’s to allow application access to traditional S/390 data. The latter provides new GUI support for applications running on OS/390 which can now display input data from any Java enabled workstation. The technology preview code is available from the web site.

Java for OS/390 is available both from the IBM Software Distribution Center (PID) and from the Java for OS/390 Web site at URL:

http://www.ibm.com/s390/java

Novell Network Services for OS/390 Release 1 (5655-B12) will provide directory support for Novell customers, and will be generally available February 26, 1999 at no additional charge to customers who have an OS/390 Version 2 Release 6 license or a later release and who also have the OS/390 Security Server feature enabled and licensed with IBM. For more information on Novell Network Services, refer to Software Announcement 299-003, dated January 19, 1999.

MQ™ Series Workflow for OS/390 is the IBM solution for the definition and execution of business processes to achieve business integration. Its implementation can lead to significant quality and productivity improvements and help enable enterprises to react quickly to meet their market challenges.

MQ Series Workflow for OS/390 is a member of the MQ Series family of products that automate workflow between applications, and automate business processes involving people and applications to give organizations more control of their business activities. It helps you in daily business operations, planning, and management, to align and integrate resources and applications, and to improve efficiency.

For more information about MQ Series Workflow, refer to Software Announcement 299-008, dated January 26, 1999.

[1] Results obtained in a controlled environment. Actual customer results may vary.

S/390 Service Update Facility

S/390 Service Update Facility Version 2 Release 1.2 uses the internet to provide VM, VSE and OS/390 service, including: RSUs, Corrective Service (PTFs), PE Fixes and Hipers, along with Enhanced Holddata. Recent enhancements include installation usability improvement (removal of REXEC requirement), ability to order just reach-ahead PE Fixes and Hipers, and the ability to order corrective service by PTF or APAR number. Installation and setup assistance is also available to new users. For more information refer to the S/390 Service Update Facility Web site at URL:

http://www.ibm.com/s390/suf

Installation Enhancements

Improvements include:

- HFS Restore from Driver
- ServerPac Support for PDSE
- Product Data
- Selective JES
- Customized Offerings Driver Update
- Planning for Installation: Interactive Edition

HFS Restore from Driver: ServerPac gives you the ability to restore your Hierarchical File System (HFS) from either the target environment or your driving system environment. The driving system must be an OS/390 Release 4 with PTFs or higher system. This can reduce the number of IPLs of your target system during the installation process. It also enables you to have IP connectivity to your target system, starting with your first IPL.

ServerPac Support for PDSE: In order to realize the benefits of partitioned data set extended (PDSE) data sets, such as reducing or eliminating space problems, you can now convert most (eligible) partitioned data sets to PDSE data sets as part of Modify System Layout, and the data sets will be allocated and restored in PDSE format. This can eliminate post-installation tasks for ServerPac, SystemPac, or Software Xcel Installation Express (SIE) customers wanting to use PDSE data sets. In addition, you can now merge PDSE data sets during installation of your ServerPac order. Previously, you could merge only partitioned data sets.

Product Data: The customized offerings (ServerPac, SystemPac, Software Xcel Installation Express (SIE), and CBPDO) are exploiting the new SMP/E function that provides a more complete description of what is installed and ordered on your system. For the system replace customized offerings, the additional information helps you associate a function (FMID) with a textual description of the product or feature.

This data is accessible through SMP/E commands, query dialogs, and reports. It is also available in Planning and Migration Assistant (PMA) reports. Refer to SMP/E Release 7 enhancements for more information.

Selective JES: You can use the system replace Customized Offerings to manage your JES environment. With these offerings, you can remove either the JES2 or the JES3 component from your system. The ServerPac installation dialogs provide jobs to delete either the JES2 or the JES3 component from your system, enabling you to use JES2 or JES3 exclusively.

Customized Offerings Driver (5665-343): The driver has been enhanced to so it can be used in a TCP/IP network. The Customized Offerings Driver is a driving system for customers whose existing system does not meet the driving system requirements to install OS/390 and who choose not to upgrade their driving system. It is available in a dump/restore format.

OS/390 Planning for Installation — Interactive Edition: This publication guides you through installation planning tasks based on your choice of installation method and migration path. It is available at the OS/390 Installation Web site URL:

http://www.ibm.com/s390/os390/installation

Euro Sign Support

OS/390 V2R7 includes support for the EuroSign. Where applicable, this support is now available via PTFs. This support is provided for MVS/ESA™ SP™ 5.2 and 5.2.2 and all OS/390 releases. Refer to Euro PSP bucket — EURO390 — for specific maintenance information.

OS/390 provides:

- Support of Latin 1 countries via IBM-114x (ECECP) code pages
- Support of euro-enabled locales for the 114x code pages
- Data conversion support between the EBCDIC 114x code pages and ASCII code pages IBM-858 and the euro-enabled version of IBM-1252 (CCSID 5348). This conversion support will be provided via additional Universal Code Character Set (UCS-2) converters.

Year 2000

When used in accordance with its associated documentation, OS/390 is capable of correctly processing, providing, and receiving date data within and between the twentieth and twenty-first centuries, provided all other products (for example, software, hardware, and firmware) used with the product properly exchange accurate date data with it.

S/390 Year 2000 Initiative: The Year 2000 presents many challenges and customers may be faced with different approaches and decisions in order to complete their Year 2000 project. Tools are an essential part of helping customers meet that challenge and, while there are many tools available, most are designed to work on source code. In July 1998, IBM announced Runtime Analyzer for OS/390 and MVS™. Refer to Software Announcement 298-269, dated July 28, 1998. The Runtime Analyzer is an execution time-based software audit tool that helps identify Year 2000 date exposures in OS/390 and MVS applications. The Runtime Analyzer:

- Is designed to work on load modules. It can be used with or without source code.
- Provides an efficient runtime analysis and remediation environment, enabling user-written filter and postprocessing programs.
- Handles online and batch applications, to cover many different types of applications an installation may have.
- Can run on any existing S/390 Year 2000 ready processor.
- Supports Batch, Started Tasks (STCs), CICS, and IMS applications.

In addition, an optional hardware assist is available on the 9672 Generation 4 and Generation 5 servers which can enhance the ability to address Year 2000 date problems by avoiding the overhead of handling program interruptions for instructions that require fixing.

The Runtime Analyzer can be included in ServerPac.

UNIX 98 Branding

OS/390 has already begun to deliver certain key functions meeting immediate customer needs that are associated with UNIX 98 branding. Additional UNIX 98 functions which deliver customer and application vendor value are planned for roll out over multiple future OS/390 releases.

Product Positioning

The S/390 platform has a long-standing reputation for reliability, scalability, availability, security, and manageability.

Parallel Sysplex technology provides near-continuous availability and high scalability. Workload Manager (WLM) handles random traffic volume while sustaining response to critical applications. Firewall Technologies, Security Server, and the new Open Cryptographic Services element provides industry-leading security. The S/390 platform offers capability, such as Novell Network Services, to manage networks and to consolidate PC-based directory servers and Component Broker for OS/390, which provides the ability to develop and deploy Object-Oriented (OO) technology-based applications. The WebSphere Application Server completes a very compelling picture.

With OS/390, your business can thrive in the ever-changing environment of enterprise computing.

Documentation Information — What's New for OS/390 Version 2 Release 7

The Right Information

The right information at the right time — it's what drives the success of a business. This is especially true for the information that supports the use and management of OS/390. That's why our strategy focuses on providing you with the information you need when you need it, in the most appropriate and accessible ways. Therefore this information continues to be enhanced, in content, distribution, and delivery. For example, we're continuing to put more and more information on the Web, and we're continuing to make it easier for you to manage and print softcopy information for Version 2 Release 7 of OS/390.

We're Putting More Information on the Web

Over the last several years, the Web-based delivery of information has increased tremendously in both volume and acceptance. The sheer reach of its power to connect people to the information they seek is without precedent in history. Visit the following URL:

http://www.ibm.com/s390/os390/

This is the launching pad for all information on the Web that is related to OS/390 ... the latest news, books, service information, success stories, vendor support, downloads, education information, and installation information. For installation details, visit our installation Web site:

http://www.ibm.com/s390/os390/installation/

You'll find an exciting new tool called **OS/390 Planning for Installation: Interactive Edition** to guide you through installation planning tasks. There is also an **OS/390 Planning and Migration Assistant** tool that creates reports of what's currently on your OS/390 system and what changes to expect when migrating to the next release.

The site also includes information about ordering OS/390, access to other installation-related publications, and lists of other useful resources.

Visit our Parallel Sysplex Web site:

http://www.ibm.com/s390/pso/

Parallel Sysplex technology is the wave of the future in enterprise computing. Look at this site for the latest news, and products and services related to Parallel Sysplex computing. Brand new is a task roadmap that helps you understand, plan, and implement a Parallel Sysplex system. This task roadmap is a list of clickable topic headings that leads you through a series of information units to support tasks related to Parallel Sysplex systems. The site also contains information about the new Parallel Sysplex operator certification program that can help bring your operators up to speed in Parallel Sysplex technology.

And There's More ...

Other Web sites you might find useful:

- For S/390 education, visit:

  http://www.training.ibm.com/ibmedu/spotlight/s390.html

- For OS/390 CustomPac information, visit:

  http://www.can.ibm.com/custompac

We're Making It Easier To Manage and Print Softcopy

Manage Your Softcopy Libraries: IBM introduced the SoftCopy Librarian to transfer and manage softcopy books in repositories on OS/390 and MVS hosts, LAN Servers, and workstations. The SoftCopy Librarian runs on Windows 95 or later and Windows NT 4.0 or later workstations and is available at no additional cost on all IBM Online Library collections and other IBM product CDs.

The SoftCopy Librarian began shipping on IBM collections in December 1998. Individual collections will indicate when they are fully enabled for the new SoftCopy Librarian. The most current version of the code can be downloaded from the Web at:

ftp://ftp.software.ibm.com/ps/products/ibmreader/tools

The new SoftCopy Librarian provides these capabilities:

- Enhanced tracking of new and changed files
- Support for both hierarchical files and sequential data sets
- Ability to manage other manufacturers' book files

An OS/2® version of the SoftCopy Librarian will be available in the third quarter of 1999.

Viewing Restrictions Removed from the Free BookManager® Library Readers: You can now use the free library readers provided with the softcopy collections to view any BookManager book built with any BookManager build program.

IBM BookManager Library Reader™/2, IBM BookManager Library Reader for Windows, and IBM BookManager Library Reader/DOS are no longer restricted to reading only IBM books.

Any BookManager book you build and distribute can now be read on the OS/390, OS/2, Windows, NT and DOS platforms without purchasing an IBM BookManager reader product.

PDF (Portable Document Format) Files on CD-ROM: A basic, entitled CD-ROM collection shipped with OS/390 Version 2 Release 7 contains all the unlicensed books for the OS/390 base and optional features in PDF format. This ***OS/390 V2R7.0 PDF Collection***, (SK2T-6718), allows you to easily print high-quality hardcopy books. We have enhanced it so you can link directly from the list of publications in the README file to the books themselves.

Announcement References

For earlier OS/390 Version 2 information, refer to:

- Software Announcement 298-279, dated August 18, 1998, (OS/390 Version 2 Release 6 Availability announcement)
- Software Announcement 298-049, dated February 24, 1998, (OS/390 Version 2 Release 5 Availability announcement)
- Software Announcement 297-355, dated September 9, 1997, (OS/390 Version 2 Release 4 Availability announcement)
- Software Announcement 297-194, dated June 9, 1997, (initial OS/390 Version 2 announcement)

Other announcements referenced in this document include:

- Hardware Announcement 199-048, dated February 22, 1999, (S/390 Open Systems Adapter (OSA))
- Software Announcement 299-039, dated February 22, 1999 (DFSMS/MVS Version 1 Release 5)
- Software Announcement 299-003, dated January 19, 1999, (Novell Network Services for OS/390 Release 1)
- Hardware Announcement 199-036, dated January 25, 1999 (S/390 G5: Plan-Ahead for 1999 and Additional Upgrades to Model R06)
- Software Announcement 298-375, dated September 29, 1998, (OS/390 Automated UNIX System Option)
- Software Announcement 298-269, dated July 28, 1998, (Runtime Analyzer)
- Software Announcement 298-271, dated July 28, 1998, (High Level Assembler [HLASM])
- Hardware Announcement 198-115, dated May 7, 1998, (Generation 5 Servers)
- Software Announcement 298-151, dated May 5, 1998, (Domino Go Webserver for OS/390)
- Hardware Announcement 198-040, dated February 24, 1998, (Fast Ethernet OSA-2 feature)
- Services Announcement 697-004, dated March 25, 1997, (SmoothStart™ Services)
- Hardware Announcement 195-147, dated May 23, 1995, (concerns CD-ROM and OS/390)
- Hardware Announcement 194-281, dated September 13, 1994, (concerns Coupling Facility)
- Hardware Announcement 194-082, dated April 6, 1994, (concerns Coupling Facility)
- Software Announcement 289-581, dated October 24, 1989, (concerns security APARs)

OS/390 Version 2 Release 7 Product Content

OS/390 Version 2 Release 7 elements are listed below. OS/390 elements that are also available as stand-alone products are listed with the release level used in OS/390.

- **System Services**
  - MVS/ESA SP[2]
    - Base Control Program (BCP)[2]
    - JES2[2]
  - ESCON Director support[2]
  - MICR/OCR support[2]
  - Bulk Data Transfer (BDT) base[2,3]
  - DFSMSdfp™ Version 1 Release 5
  - EREP/MVS Version 3 Release 5
  - High Level Assembler Version 1 Release 3
  - ICKDSF Release 16
  - ISPF[2]
  - TSO/E[2]
  - 3270 PC File Transfer Program Version 1.1.1
  - FFST™/ESA Version 1 Release 2
  - TIOC[2]
- **Systems Management and Security**
  - HCD[2]
  - Cryptographic Services
    - ICSF[2]
    - Open Cryptographic Services Facility[2]
    - System SSL[2]
  - SMP/E[2]
  - Tivoli Management Framework for OS/390 (Tivoli Management Framework level 3.6)
    - Tivoli Management Agent
- **Application Enablement Services**
  - C/C++ IBM Open Class™ Library[4]
  - Language Environment[2]
  - SOMobjects™ for MVS Runtime Library[2]
  - VisualLift® RTE[2]
  - DCE AS[2]
  - Encina Toolkit Executive[2]
  - OS/390 Application Enabling Technology[2]
- **Distributed Computing Services**
  - Network File System Feature[2]
  - DCE Base Services (OSF DCE level 1.1)[2]
  - Distributed File Service (DFS support at OSF DCE level 1.2.2)[2]
- **Communications Server**
  - eNetwork Communications Server for OS/390[2,5]
    - SNA/APPN Services (includes VTAM)[2]
    - Multiprotocol/HPR Services (Includes AnyNet®)[2]
    - TCP/IP Services (Includes TCP/IP for MVS)[2]
- **e-business Services**
  - WebSphere Application Server for OS/390
    - WebSphere Application Server for OS/390 V1.1
    - IBM HTTP Server for OS/390 V5.1
  - NetQuestion[6]
- **LAN Services**
  - LANRes[2]
  - LAN Server[2]
  - OSA Support Facility Version 1 Release 2

- **OS/390 UNIX System Services**
  - OS/390 UNIX System Services Application Services[2]
    - OS/390 UNIX System Services Shell and Utilities[2]
    - OS/390 UNIX System Services Debugger[2]
- **Softcopy Publications Support**
  - BookManager READ R3[2]
  - OS/390 Softcopy Print[2]
  - BookManager BookServer Version 2.1
  - GDDM® Version 3 Release 2 (including PCLK and OS/2 Link)

You have the ability to replace an OS/390 base function with a commercially available product which provides a similar function. Contact an IBM representative for qualification and pricing information. All OS/390 integrated testing results and performance claims are voided with such replacement.

OS/390 delivers optional features that have a high affinity to the base OS/390 system.

- **System Services**
  - JES3[2]
  - Bulk Data Transfer (BDT) File-to-File[2]
  - Bulk Data Transfer (BDT) SNA NJE[2]
- **Systems Management**

  Note: The DFSMS™ features are packaged in combinations. Refer to the **Ordering Information** section for the available combinations in Software Announcement 297-355, dated September 9, 1997.
  - DFSMSdss Version 1 Release 5
  - DFSMShsm Version 1 Release 5
  - DFSMSrmm™ Version 1 Release 5
  - RMF[2]
  - SDSF[2]
  - HCM[2]
- **Cryptographic Services**
  - Open Cryptographic Services Facility France[2,5,7]
  - Open Cryptographic Services Facility Security Level 1 (RC2/RC4/RC5)[2,5,7]
  - Open Cryptographic Services Facility Security Level 2 (DES, RC2/RC4/RC5)[2,5,7]
  - Open Cryptographic Services Facility Security Level 3 (TDES, RC2/RC4/RC5)[2,5,7]
  - System SSL Crypto (TDES)[2,5]
- **Security Server**
  - DCE Security Server at OSF DCE level 1.2.2[2,5]
  - RACF[2,5]
  - Firewall Technologies[2]
  - LDAP Server-(RC2/RC4) with 40 bit crypto[2,5]
  - LDAP Server (includes DES/Triple DES crypto)[2,5]
- **Application Enablement Services**
  - C/C++ with Debug Tool[2,4]
  - C/C++ without Debug Tool[2,4]
  - DFSORT Release 14
  - GDDM-PGF Version 2 Release 1.3
  - GDDM REXX Version 3 Release 2
  - HLASM Toolkit Version 1 Release 3
  - Language Environment Data Decryption (DES)[2,5]
  - SOMobjects for MVS Application Development Environment (ADE)[2]
  - VisualLift ADE Version 1.1.2[2]
  - OS/390 Print Server[2]
    - IP PrintWay[2] and NetSpool[2]
    - OS/390 Print Interface[2]
- **Distributed Computing Services**
  - DCE User Data Privacy DES/CDMF[2,5]
- **Communications Server**
  - eNetwork Communications Server Security Level 1 (RC2/RC4, CDMF)[2,5,8]
  - eNetwork Communications Server Security Level 2 (DES, SnMPV3)[2,5,8]
  - eNetwork Communications Server Security Level 3 (SnMPV3, TDES)[2,5,8]
  - eNetwork Communication Server Network Print Facility[2]
- **e-business Services**
  - IBM HTTP Server
    - IBM HTTP Server NA Secure (TDES, RC2/RC4)[2,5,9]
    - IBM HTTP Server Export Secure (DES, RC2/RC4)[2,5,9]
    - IBM HTTP Server France Secure (RC2/RC4)[9]
- **Softcopy Publications Support**
  - BookManager BUILD Release 3[2]
- **PC Server or RS/6000 with System/390 Server-on-Board Preconfigured System for OS/390 Version 2.7.0 CD**

[2] Functional enhancements for items have already or will be made available only through OS/390 and not through additional releases or versions of these products or features.

[3] One or both of the BDT optional features (file-to-file or SNA NJE) must be ordered and installed in order to use the BDT function shipped with the base.

[4] Retroactive to OS/390 Version 1 Release 3, the C/C++ IBM Open Class Library component of the C/C++ Optional Feature is licensed with the OS/390 base operating system and can be used without enabling the C/C++ Optional Feature.

[5] Items have export considerations.

[6] Periodic updates will be made via an FTP site.

[7] Only one of the Open Cryptographic Services Facility France or Open Cryptographic Services Facility Security Level 1,2,3 features needs to be ordered for you to obtain additional security function over what is provided in the OS/390 base.

[8] The eNetwork Communications Server Security Level 1,2,3 features are mutually exclusive. Only one needs to be ordered for you to obtain additional security function over what is provided in the OS/390 base.

[9] The IBM HTTP Server features are mutually exclusive. Only one needs to be ordered for you to obtain additional security function over what is provided in the OS/390 base.

Preconfigured CD-ROM

As part of the OS/390 software order, customers with either PC Server S/390 or RS/6000 with S/390 Server-on-Board, can request a CD-ROM with a preconfigured OS/390 base image that provides a *load and go* system. This CD-ROM takes advantage of the unique dual operating system environment of the PC Server S/390 and the RS/6000 with S/390 Server-on-Board. It is available as a feature of OS/390 for no additional charge to Entry Support Licenses (ESL) of the base.

First time OS/390 customers, who order this CD-ROM, will receive the OS/390 Version 2 Release 6-level CD-ROM for all shipments that are made before May 21, 1999. A memo will be included in this shipment stating that these customers will automatically have the OS/390 Version 2 Release 7 CD-ROM shipped to them starting on May 21, 1999. Refer to Hardware Announcement 195-147, dated May 23, 1995, for additional information.

Enabling OS/390 Optional Priced Features

OS/390 optional priced features use an OS/390 product registration service, together with product policy statements, to determine whether or not the OS/390 priced feature has been ordered and should run.

Those OS/390 optional priced features, that are ordered concurrently with OS/390, will be shipped by IBM together with policy statements in PARMLIB which enable the ordered priced features. OS/390 priced features, which have not been ordered, will also be shipped with OS/390 but with policy statements which disable the unordered features. If the customer subsequently enables any of the optional priced features, those features also become subject to the payment terms of the customer's existing OS/390 license as described in *OS/390 Program Licensed Specifications* (GC28-1728). Customers must notify IBM when they enable an optional feature that was shipped disabled from IBM. A detailed description of the enablement support for OS/390 features is available in *OS/390 Planning for Installation* (GC28-1726). This publication is available at the OS/390 Installation URL:

http://www.ibm.com/s390/os390/installation/

The OS/390 priced features which support this enablement capability in OS/390 Version 2 Release 7 are:

- BookManager BUILD
- BDT File to File
- BDT SNA NJE
- C/C++ (with Debug Tool)[10]
- C/C++ (without Debug Tool)[10]
- DFSMSdss
- DFSMShsm
- DFSMSrmm
- DFSORT
- GDDM PGF
- GDDM REXX
- HCM
- High Level Assembler Toolkit
- JES3
- OS/390 Print Server
- RMF
- SDSF
- Security Server
- SOMobjects ADE

[10] The C/C++ IBM Open Class Library component of the C/C++ Optional Feature is licensed with the OS/390 base operating system and can be used without enabling the C/C++ Optional Feature.

Program Services

Central service for suspected defects in OS/390 code is provided by the IBM Support Center within the customer's geography. Central service, including the IBM Support Center, for DSLO licenses is provided through the customer location designated for the basic license. On-site (local) support, although available, is provided as part of IBM's portfolio of fee-based services.

Service Policy

It is IBM's current intention to consider each release of OS/390 as current for three years following its general availability date, and to provide maintenance during that period.

Recognizing the workload customers have ahead of them for year 2000, OS/390 Version 1 Release 1, 2, and 3, and Version 2 Release 4 will deviate from this service policy. These OS/390 releases will be considered as current until at least January 31, 2001 with IBM providing maintenance during this period.

PTF distributions, including Recommended Service Upgrades (RSUs), will continue to be available monthly through the period the release is current. RSU integration testing for a release will be performed for five quarters after the General Availability date for that release.

Service on the last release of a version might be extended beyond the intended three year-period. In all cases, the current practice of providing at least twelve months written notice prior to the withdrawal of service for a version or release, will continue for OS/390.

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice and represent goals and objectives only.

OS/390 Enhanced HOLDDATA Availability with Year 2000 Information

OS/390 Enhanced HOLDDATA, previously announced in OS/390 Version 2 Release 4, has replaced the HOLDDATA that is delivered on ESOs and Corrective Service Orders. (Refer to Software Announcement 297-355, dated September 9, 1997, to review the HOLDDATA announcement in Release 4.) In addition, OS/390 Enhanced HOLDDATA includes information to ease identification of missing Year 2000 service.

OS/390 Enhanced HOLDDATA improves the content, timeliness, and consistency of HOLDDATA. These improvements make it easier to identify and analyze missing critical service on any level of an OS/390 or MVS system. ++HOLDs are created for HIPER (High Impact and Pervasive) and Year 2000 APARs in addition to PE (PTF in Error) APARs. Additional information is provided that includes the fixing PTF number, when available, any HIPER reason flags and a **YR2000** flag for any Year 2000 APARs.

OS/390 Enhanced HOLDDATA is cumulative and complete. This allows Enhanced HOLDDATA to be a single source of HOLDDATA to serve multiple systems. There is no need to collect and compile ERROR HOLDDATA from multiple sources. The content covers the entire OS/390 and MVS platform of IBM's SMP/E-managed products with one consistent source of HOLDDATA.

Note: Coverage of the entire platform with a single HOLDDATA source does not negatively affect processing HOLDDATA since SMP/E ignores data for products that are not listed in the SMP/E environment.

Timeliness of OS/390 Enhanced HOLDDATA is improved by providing daily updates available via the Internet at URL:

http://service.boulder.ibm.com/390holddata.html

The updated files are also available via ServiceLink and through the OS/390 Service Update Facility.

The files available on the Internet and ServiceLink are the same files that are delivered on orders built that day. HOLDDATA can be kept current by downloading and receiving the most recent file. Subsequent updates of the Web data can be downloaded and received on top of existing HOLDDATA without concern about regression of HOLDDATA, provided the time span of the latest Enhanced HOLDDATA overlaps any previously

RECEIVEed HOLDDATA. Automation of data retrieval is possible through the use of Batch FTP and job scheduling.

OS/390 Enhanced HOLDDATA is currently provided on all ESOs, Corrective service orders, orders placed via the OS/390 Service Update Facility, directly through the OS/390 Service Update Facility and via ServiceLink. CBPDO will include Enhanced HOLDDATA in the first quarter of 1999.

Fee-Based Software Services Offerings

OS/390 Version 2 Release 7 is also available through the SystemPac and SoftwareXcel Installation Express (SIE) fee-based offerings.

Enhancements for OS/390 Version 2 Release 7 SystemPac Orders: SystemPac offers the capability of building a system with integrated subsystems in both copy format and full volume dump/restore format. IBM products and selected Independent Software Vendor (ISV) products can be included with the SystemPac. After the delivery of the SystemPac, Selective Follow On Service tapes (Hipers and PTFs resolving PEs) can be shipped at specified intervals and frequency based upon the customer's selection at ordering time.

Customers ordering the OS/390 Version 2 Release 7 SystemPac are now able to take advantage of the following new enhancements:

For full volume dump format only:

- Any SMP/E data-sets (for example, SMPGLOG, SMPGLOGA, SMPPTS, SMPMTS, etc.) associated with CSIs can be renamed up front during Local Order Entry. Systems will be built according to the naming convention. This capability coupled with the existing customization provided with Local Order Entry enables the customer to tailor the system. The system will be built with the specified naming convention which can be used upon the system restore at the customer's location. This saves the tremendous effort and skill required at the customer's site to do the downstream customization and tailoring upon the arrival and installation of the system.

For both full volume dump/restore format and copy format:

- Effective in R7, SFS tapes (Selective Follow On Service tapes) can be installed via batch JCL in addition to the current option of installing them via the CustomPac Dialog. This eliminates the need for customers to learn the CustomPac Dialog if they install the system through Full Volume Restore. A macro will be supplied whereby customers can define variables for the batch JCL to conform to their installation standard.
- An Increase in number of ISV products available for ordering in SystemPac (both an increase in the number of products and the vendor representation)

For more information on SystemPac, contact IBM at 800-IBM-4YOU (426-4968).

SoftwareXcel Installation Express: All items listed under section "For full volume dump format only" and section "For both full volume dump/restore format and copy format" are enhancements for SoftwareXcel Installation Express (SIE).

For more information on SIE or SystemPac, contact IBM at 800-IBM-4YOU (426-4968).

IBM Installation Services for Geographically Dispersed Parallel Sysplex: A Geographically Dispersed Parallel Sysplex is a multi-site management facility. It is spread across two or more sites, up to 40 kilometers apart. This system uses automation technology to help manage databases, processors, network resources and storage subsystem mirroring. It automatically mirrors critical data and efficiently balances workload between the sites.

Geographically Dispersed Parallel Sysplex offers you flexibility and supports all transaction and database managers, such as:

- CICS TS
- IMS TM
- DB2
- IMS DB
- VSAM

This technology offers near-continuous availability, efficient workload management, system resource management and prompt data recovery for business-critical S/390 applications and data.

This service offers the following:

- Full Geographically Dispersed Parallel Sysplex, which includes:
  - Remote Copy Configuration
  - Automation of planned reconfigurations
  - Automation of unplanned reconfigurations
- Remote Copy Management Facility (RCMF) — and the storage subsystems. It does not manage system workload.

A White Paper, "Geographically Dispersed Parallel Sysplex: The S/390 Multi-site Application Availability Solution" details IBM's approach to satisfy continuous availability solutions, is available from your IBM representative, or can be downloaded from the Internet URL:

http://www.s390.ibm.com/marketing/position.html

Planned Availability Dates: All above Fee-based Services are currently available in geographies stated unless otherwise noted.

For services information regarding IBM Global Services, refer to the Web site at URL:

http://www.as.ibm.com

OS/390 Version 2 Release 8 Function Description

The following information is an early look at a subset of significant items that will be new or enhanced in Release 8. The complete list of Release 8 items and enhancements will be announced prior to the September 1999 general availability of Release 8.

S/390 Server Consolidation Initiative Release 8 Items

OS/390 Print Server was introduced in Release 5 to enable OS/390 as an enterprise print server to manage host and LAN-based printing from a single point of control. OS/390 Print Server will be enhanced in Release 8 to provide additional print and print management capabilities.

- Datastream transforms will be provided to convert popular PC and workstation application datastreams

such as Postscript and PCL into AFP™ datastream (MO:DCA) for printing on any AFP printer. These transforms can also support printing from Enterprise Resource Planning (ERP) applications, such as BAAN or Peoplesoft, that generate these output formats. A datastream transform will also be provided to enable output from SAP R/3 to be printed on any AFP printer.

- A new consolidated printer inventory will allow all printers managed by OS/390 Print Server to be defined and modified from a single interface. This single printer inventory can be used for job validation, assignment of default print attributes, and routing for all OS/390 print.
- Printer management using the industry standard TCP/IP Simple Network Management Protocol (SNMP) will be supported by Print Server for management of network connected printers that are SNMP-enabled, and for management of printers driven by Print Services Facility™ Version 3 for OS/390.
- Internet Printing Protocol (IPP) is emerging as the standard for printing from any computer to any printer via the Internet. A new IPP Server in OS/390 Print Server will enable seamless printing from any IPP-capable client or Web browser to any printer defined to OS/390 Print Server over the Internet. IP PrintWay™ will include an IPP Client for submitting jobs either to printers which support IPP natively, or to other IPP Servers.
- New NT Server support will allow Windows clients to submit print jobs, query job and printer attributes, and cancel jobs without requiring special software to be installed on each client. This new function, combined with IP PrintWay's ability to direct host output to printers attached to NT Servers, provides transparent interoperability between OS/390 and NT clients and servers.

Firewall Technologies has enhancements in Release 8. Virtual Private Network (VPN) support will be improved to automate the handling of cryptographic keys. The Internet Key Exchange (IKE) defines the procedures for authenticating a communicating peer, creation and management of Security Association, key generation techniques, and threat mitigation (for example, denial of service and replay attacks). All of these are necessary to establish and maintain secure communications (via IP Security Service or any other security protocol) in an Internet environment.

S/390 e-business Initiative Release 8 Items

OS/390 Text Search (formerly known as NetQuestion) has two components:

- Text Search engine, an advanced search engine, can be embedded into sophisticated search applications within an enterprise. It supports many different, state-of-the-art approaches for searching, including Boolean searches, free text searches, IBM-patented hybrid searches, advanced relevance ranking, and a host of other functions. All of these functions allow you to construct a highly sophisticated search capability within an application.

  The Text Search engine has one of the broadest levels of support for national languages in the industry. You can index, and subsequently search, in a large number of languages. Nineteen single-byte languages are supported that allow linguistic processing (thus one can search on *mice* and find *mouse*). The Text Search Engine also supports double-byte and bidi languages.

  The Text Search engine provides a thesaurus for single-byte languages so that you can customize your application to a domain. For example, a pharmaceutical company can create a thesaurus that is specific to the pharmaceutical industry. This allows the creation of a very integrated, industry-specific, search application.
- The NetQuestion Solution is an application that searches through HTML which is served up by a WebServer. It provides the Precise indexes for 19 single-byte languages and the NGRAM indexes for DBCS languages (Japanese, Korean, simplified and traditional Chinese) and for US English as well.

The Text Search engine and NetQuestion solution are currently available on the following Web site:

http://www.ibm.com/s390/os390/downloads.html

eNetwork Communication Server for OS/390 (CS OS/390) — An Enterprise Class Solution for e-business Networking

IBM continues to deliver on its commitment to provide world-class networking solutions for S/390-based e-business networks while increasing the integration of SNA/APPN and TCP/IP networking services. Release 8 will include the following enhancements:

- **Internet Key Exchange (IKE)** is an IETF endorsed key and security associations management protocol for IPSec. CS OS/390 can use the IKE support that is available in the optional Security Server to automatically create and securely distribute encryption keys, for dynamic IP clients. Thus, the manual effort and time involved in managing and distributing encryption keys for IPSec secured networks is substantially reduced. These enhancements also support the non-disruptive refresh of keys. This enhancement can make it more practical to change keys more often to strengthen protection against brute force attack on the network.
- **Security improvements for SNA:**
  - SNA users can take advantage of Triple DES, which provides dramatically improved encryption capability. (Triple DES is export controlled and restricted to certain industries abroad. It may not be exported except pursuant to an appropriate license.)
  - Security against unauthorized access to S/390 SNA applications from TCP/IP clients is made more robust by the addition of Secure Sockets layer (SSL) client authentication to the TN3270e server. An end user must present a certificate from a trusted certificate authority.
- **Improved interoperability** further improves the ability to easily operate and manage mixed TCP/IP and SNA network environments from S/390 enterprise server. A VTAM display will allow network personnel to be able to identify the DNS name of a connecting TN3270 client, its IP address and its SNA LU resources status. This will allow network operator to quickly and easily resolve end-user requests for assistance.
- **TN3270e Exploitation of RACF Certificate Support** uses the RACF certificate registration capability that adds additional security checking mechanisms to ensure that an end user is an authorized user of the TN3270e server prior to the user receiving a log-on screen.

Note: eNetwork Host on Demand (HOD) Version 1 will no longer be distributed as part of the eNetwork Communications Server for OS/390, beginning with

OS/390 Release 8. OS/390 customers utilizing the HOD Version 1 function will be provided with the HOD-Entry product, including ongoing maintenance, at no additional charge. The OS/390 Release 8 general availability announcement will provide complete details and a reference URL.

S/390 Enterprise Applications Initiative Release 8 Items

Language Environment will have the following enhancements:

- **Capability, Usability, and Serviceability Improvements**
  - **New RAS item:** The addition of the version, release, and modification levels to the Language Environment Storage and Option Reports will aid you in troubleshooting, thus improving serviceability.
  - **Debugging Support:** Greater debugging support will be provided through detecting and externalizing multiple enclaves within the run-time option POSIX(ON) in a Language Environment process.
  - **Run-time Option Support:** An additional suboption will be added on the MSGFILE run-time option to tell Language Environment to serialize the message file using ENQ/DEQ services. You will be able to avoid conflicts while writing to the shared MSGFILE destination by using the ENQ suboption for each MSGFILE destination that will be shared.
  - **Porting Simplifications:** libascii has been placed into the base of OS/390 Language Environment. This will simplify the porting of ASCII-based UNIX applications to OS/390. Previously, libascii support was only available from the Web. This enhancement will provide ASCII translation support to C/C++ applications. Native support of **sprintf()** and **vsprintf()** functions will improve your performance in ASCII-based UNIX applications.
  - **Language Environment Support for Unicode through UTF-8:** Interoperability of UTF-8 (ASCII) and Unicode (EBCDIC) data will be supported through data converters to and from UTF-8 and UCS-2. More applications can access the data.

OS/390 UNIX System Services (OS/390 UNIX) will have the following enhancements:

- **Capability, Usability, and Productivity Improvements**
  - **IPL Avoidance:** You will now be able to adjust your hierarchical file system parameters and socket parameters without re-ipling the system through the support of filesystpe on the **setomvs** command. This allows for greater flexibility in the system and avoids time consuming ipl′s.
  - **Recognition of the Magic Number #!:** With Release 8, the Magic Number ′#!′ will now be recognized and allowed as the first two characters in an executable file. Support of magic number processing will eliminate the need to change your application and user behavior which uses #! in order to run on OS/390. It also allows ported applications that support ′#!′, a UNIX commonly used function, to work without having to revise the program.
  - **Shell Support:** The porting of shell scripts from other platforms will be made easier through added shell support for double-square-bracket conditional testing, and autoloaded function. These functions are considered to be commonly used functions in UNIX and will enhance the use of UNIX System Services to UNIX programmers.
  - **Tool Set enhancements for OS/390 UNIX:** Administrative options will be increased to include the ability of UNIX programmers to act as system administrators without granting them all superuser authority. The **SU** command will be used to adopt a system administration user ID, similar to the BPX.SUPERUSER function. This enhancement simplifies how you can manage your operating system.
  - **New function added to the cp and mv commands:** The **cp** and **mv** commands will be able to copy and move data between MVS data sets and UNIX files. This interoperability item will assist UNIX programmers in porting their applications to OS/390 by using familiar UNIX commands instead of the TSO commands currently available.
  - **Interoperability:** BPXBATCH Return Code Processing will be available with Release 8. This enhancement will allow you to receive a meaningful error code along with the failed program name on errors returned from unsuccessful BPXBATCH jobs when using spawn or fork/exec.
  - **Security:** Enhanced security for UNIX System Services will be provided with Release 8. UNIX System Services SuperUser Controls will allow for selective assignment of UNIX System Services security. RACF access controls can be used to grant specific superuser privileges to specific users. Also, limits that were previously set at a system level (such as the maximum number of threads for a process) can now be assigned at a user level. These new controls improve system security by limiting the number of users who require system-wide superuser authority.

S/390 Technology Leadership Initiative Release 8 Items

JES3 Improvements: You can specify by job class group whether WLM or JES3 will manage the batch initiators. When WLM manages initiators, it can dynamically start initiators when needed and intelligently place those initiators on systems with capacity. Letting the system manage initiation levels can be more productive and easier than relying on manual operator intervention or writing time-consuming static initialization statement definitions.

Parallel Sysplex Technology: Enhancements are provided to:

- Detect hang conditions in XES processes that require exploiter responses. Messages to the operator are issued to assist in resolving hang conditions.
- The XCF IXCMSGO service to allow sending of messages longer than 61K. This is useful to application developers.

ISPF: Enhancements in ISPF will improve your productivity in application development.

The Program Development Facility (PDF) enhancements include:

- Providing a dialog to specify Configuration Table settings that are now saved in a keyword-driven format in a member of a PDS, and automatically generating the load module containing the new default

values. The new load module does not require any SMP/E updates of any parts shipped with ISPF.
- Providing automated conversion of existing assembler configuration tables to the keyword-driven format.
- Adding CUT and PASTE as supported editor commands. Allow multiple clipboards to exist at one time as well as editing of the data in the clipboards.
- Providing Dialog Tag Language (DTL) Edit models for creating panels, help and tutorial panels, command tables, keylists and messages.

The Software Configuration Library Manager (SCLM) enhancements:

- Provide a service to allow editing of SCLM parts within an SCLM environment. The service automatically parses the part being edited and updates SCLM accounting information as appropriate.
- Provide for creation of PDSE temporary load data sets during Build processing
- Allow the output from one Build step to be used as input to another Build step when building by change code
- Allow SCLM Versioning to optionally not create a delta file if only the sequence numbers in a file change.

Additionally, you can take advantage of new, higher-productivity documentation technology to be more efficient and effective in enhancing ISPF applications in a workstation environment. These enhancements include providing additional softcopy options via the Web and replacing the Examples publication with online, interactive examples.

VisualAge® for ISPF will no longer be shipped as a component of **Interactive System Productivity Facility (ISPF)** starting with OS/390 Release 8. The VisualAge for ISPF component provided a visual GUI approach for creating and updating ISPF panel source.

All panel source created with VisualAge for ISPF can continue to be used and can be maintained with the ISPF PDF Editor. ISPF panel source can continue to be created and maintained on the host using the PDF Editor or Dialog Tag Language (DTL).

Education Support

The appropriate curriculum will be updated, as necessary, to include the enhancements in this announcement.

Updated offerings (may vary by country) may include:

- Introduction to OS/390 — designed for the person new to OS/390
- Transition from MVS/ESA to OS/390 — designed for the experienced MVS systems programmer and subsystem administrators
- OS/390 Installation — designed for someone who has not installed MVS and is installing OS/390 for the first time
- Using ServerPac to Install OS/390 — designed for the experienced MVS person

Contact your local education coordinator for detailed availability and schedule information.

- U.S. customers: Call 800-IBM-TEACH (426-8322)
- World Wide Web:

  http://www.training.ibm.com/ibmedu

Technical Information

Specified Operating Environment

Hardware Requirements: Any processor that supports Enterprise Systems Architecture (ESA) enables you to run basic OS/390. Some examples are listed below.

- All models of the S/390 Parallel Enterprise Servers or S/390 Parallel Transaction Servers (IBM 9672)
- All models of the S/390 Multiprise 2000
- All models of the S/390 Application StarterPak. OS/390 Version 2 Release 7 will be supplied as a preload option on the S/390 Application StarterPak three months after OS/390 Version 2 Release 7 is available
- All models of the ES/9000 Processor Unit 9021, 9121, or 9221
- An ES/3090-9000T processor (Models 15T, 17T, 18T, 25T, 28T) that supports IBM Enterprise Systems Architecture/370™ (ESA/370) and can have optional ESA/390 facilities
- An ES/3090 Model E, S, J, or JH processor at the appropriate engineering change (EC) level that supports the IBM Enterprise Systems Architecture/370
- An ES/4381 Model Group 90E, 91E or 92E processor that supports the IBM Enterprise Systems Architecture/370
- Enhanced LPAR mode operation is supported on all PR/SM™-capable IBM processors in hardware configurations of two or more CPs with the exception of the ES/9000 Processor Unit 9221 Model 200
- PC Server System/390 or RS/6000 with System/390 Server-on-Board

Additional hardware may be required for certain, specific functions.

- Coupling Facility — A Coupling Facility is the common system focal point, in a Parallel Sysplex environment, for data sharing across multiple S/390 systems. It is a function that is implemented in S/390 hardware and Coupling Facility Control Code (CFCC). A CF is established in a S/390 PR/SM™ logical partition dedicated to running CFCC. A Coupling Facility partition can exist on a stand-alone dedicated system such as a 9674 C0x or 9672 G5 R06 model or can run in a partition of a S/390 9672 General Purpose Server or ES/9000 9021 711-based system. For additional information on the 9672 G5 Servers, refer to Hardware Announcement 198-115, dated May 7, 1998.
- Coupling Facility Channels: In a Parallel Sysplex environment, Coupling Facility Channels are required to connect between a Coupling Facility (CF) and production OS/390 or MVS/ESA logical partitions running in multiple S/390 systems. Today there are five types of Coupling Facility Channels or coupling links available depending on the machine type and model:
  - Inter System Coupling (ISC) links
  - HiPerLinks
  - Integrated Cluster Bus (ICB) links
  - Internal Channel (IC) links
  - Integrated Coupling Migration Facility (ICMF) Links

  The choice of links is dependent on configuration, distance, and performance requirements. Coupling

links, of at least one variety, are available on the S/390 Parallel Enterprise Server, the ES/9000 9021 711-based and the ES/9000 9121 511-based systems. For the latest information on the 9672 S/390 G5 Servers, refer to Hardware Announcement 198-115, dated May 7, 1998.

- Sysplex Timer®: A Sysplex Timer is required to synchronize the time-of-day (TOD) clocks in all the CPCs attached to the coupling facility (except for a single CPC Parallel System).
- ICSF: The Triple DES function requires at least a 9672 R*5 Server

  If a customer with a S/390 Parallel Enterprise — Generation 4 Server plans to use the Triple DES support in ICSF, they need the appropriate LIC code (Driver 98 — EC F10640 or EC F10667), the Triple DES feature, and a new enablement diskette that supports Triple DES. (Triple DES is export controlled and restricted to certain industries abroad. It may not be exported except pursuant to an appropriate license.)

  If a customer with a S/390 Parallel Enterprise — Generation 5 Server plans to use the Triple DES support in ICSF, they need the Triple DES feature and a new enablement diskette that supports Triple DES. (Triple DES is export controlled and restricted to certain industries abroad. It may not be exported except pursuant to an appropriate license.)

  A S/390 G5 Server is required if a customer wishes to use Double-Key MAC.

  For related S/390 G5 information, refer to Hardware Announcement 198-115, dated May 7, 1998.

Software Requirements: The OS/390 base is an IPL-able system. There are no hard requirements in order to IPL. Specific functions may require additional products not included in OS/390 base, or in the optional features of OS/390. Refer to information provided below, as well as *OS/390 Planning for Installation* (GC28-1726) for a listing of specific PTF numbers.

Minimum Levels of Related Products: In order to determine the minimum levels of IBM stand-alone products that run with OS/390 Version 2 Release 7, refer to *OS/390 Planning for Installation* (GC28-1726). This publication is also available on the Web at URL:

http://www.ibm.com/s390/os390/installation/

Print Services Facility/MVS: If you decide to use the Print Services Facility/MVS (PSF/MVS) with OS/390 Version 2 Release 7, the minimum required level is PSF for OS/390 Version 3 (5655-B17).

Java for OS/390: With OS/390 Version 2 Release 7, you should be running Java for OS/390 1.1.6, which was made available in December, 1998. Included in it is support for IEEE 754 native instruction execution, exploitation of native operating system services for security enhancements, and continued performance enhancements. For complete information, see the Java for OS/390 Web site at:

http://www.s390.ibm.com/java/

IBM also plans to deliver Java for OS/390 at JDK level 1.1.8 later this year.

Virtual Storage Requirements: Virtual storage requirements will be provided at general availability. Your IBM marketing representative should be consulted at general availability.

Compatibility

OS/390 Coexistence: To give you optimum compatibility and flexibility as you migrate systems in a multisystem complex or Parallel Sysplex configuration, OS/390 supports the coexistence of up to four consecutive OS/390 releases. For example, OS/390 Releases 4, 5, and 6 can coexist with OS/390 Release 7. Since OS/390 allows the JES element to be separately staged, OS/390 also supports the coexistence of certain lower-level OS/390 JES releases with the JES release provided with OS/390 R7. For information on the general OS/390 coexistence policy, as well as the specific OS/390 and JES releases that can coexist in a multisystem complex or Parallel Sysplex configuration, refer to *OS/390 Planning for Installation*. This publication is also available on the Web at URL:

http://www.ibm.com/s390/os390/installation/

Customers running OS/390 in a multisystem configuration need to ensure they are appropriately positioned for supported software migrations. Some customers may have elected to freeze their software due to Year 2000 considerations. Since each OS/390 release can be ordered for only a six-month window, it is very important that OS/390 users be positioned for a supported migration path in the Year 2000 and beyond. A Planning Guide for Multisystem Customers: OS/390 Coexistence and Planning Considerations Through the Year 2000 is available on the Internet to help customers make informed decisions about their software levels with complete understanding of IBM's supported coexistence and migration scenarios. The URL is

http://www.s390.ibm.com/stories/year2000/coexist.html

The planning guide contains information that is vitally important for every OS/390 customer, whether freezing for Year 2000 or not.

Note that specific functions may only be available on the up-level systems, or it may be necessary to up-level all systems to enable some functions.

OS/390 Coexistence with MVS: Currently, OS/390 and supported MVS releases (including certain MVS JES releases) can coexist in a multisystem complex or Parallel Sysplex environment. IBM plans to discontinue this support effective with the OS/390 release that will be made generally available in the first-half of 2000. IBM recommends that customers, currently running MVS or MVS JES releases along with OS/390 in a multisystem complex or Parallel Sysplex environment, plan to upgrade their MVS and MVS JES systems to any release of OS/390 or OS/390 JES that has been made generally available no later than second-half 1999 and falls within the four consecutive release coexistence period. This will give such customers the maximum flexibility to upgrade their MVS and MVS JES systems to OS/390 in a nondisruptive manner using rolling IPLs. Customers should note that There is a Difference™ between how long a release is serviced and how long IBM will ensure toleration and coexistence within a multisystem complex or Parallel Sysplex environment. The plan to withdraw coexistence for supported MVS or MVS JES releases with OS/390 will not affect service support for these MVS or MVS JES releases.

For information on the MVS and MVS JES releases that can coexist with any release of OS/390 that has been made generally available no later than second-half 1999, refer to *OS/390 Planning for Installation*. This publication is also available on the Web at URL:

http://www.ibm.com/s390/os390/installation/

Customers running MVS with OS/390 in a multisystem configuration, as well as customers who are running MVS in a multisystem configuration and have not yet migrated to OS/390, need to ensure they are appropriately positioned for supported software migrations. Since each OS/390 release can be ordered for only a six-month window, it is very important that users be positioned for a supported migration path in the Year 2000 and beyond. *A Planning Guide for Multisystem Customers: OS/390 Coexistence and Planning Considerations Through the Year 2000* is available on the Internet to help customers make informed decisions about their software levels with complete understanding of IBM's supported coexistence and migration scenarios. The URL is:

http://www.s390.ibm.com/stories/year2000/coexist.html

The planning guide contains information that is vitally important for every OS/390 customer.

Note that specific functions may only be available on the up-level systems, or it may be necessary to up-level all systems to enable some functions.

Note: OS/390 Version 2 Release 7 is upward compatible from prior OS/390 releases and MVS/ESA Version 5 Release 2.2.

For information on the releases of JES2 or JES3 that are supported with OS/390 as well as information on compatibility PTFs that may be required, refer to *OS/390 Planning for Installation*. This publication is also available on the Web at URL:

http://www.ibm.com/s390/os390/installation/

OS/390 General Migration Considerations: Because the components of OS/390 are integrated into a single package with compatible service levels, customers must install and migrate to an OS/390 release in its entirety before entering into production on that release. For the JES2 or JES3 component, the migration can be staged to remain compatible with other systems.

Customers using the CBPDO delivery option, will only have to install those elements and features of OS/390 which are at a higher level than their existing system. For example, MVS/ESA SP 5.2.2 customers with DFSMS/MVS 1.5 installed, must install the new OS/390-level of the Base Control Program (BCP), but do not have to reinstall DFSMS/MVS.

Note: Customers will need to perform *usual* release-to-release migration activities for any element that they install.

JES Migration Considerations: For information about JES2 and JES3 migration considerations refer to *OS/390 Planning for Installation*. This publication is also available on the Web at URL:

http://www.ibm.com/os390/installation/

Performance Considerations: Additional information on OS/390 performance will be available at general availability. You should consult your IBM representative at or after general availability.

User Group Requirements: Over **380** requirements have been either fully or partially satisfied by the first six releases of OS/390. This announcement of OS/390, Version 2 Release 7, satisfies or partially satisfies another **31** requirements from IBM customers and one or more of the worldwide user group communities, which include Australasian SHARE/GUIDE (ASG), COMMON, COMMON Europe, GUIDE International, G.U.I.D.E. Europe, Japan GUIDE/SHARE (JGS), Guide Latin American (LAG), SHARE EUROPE, and SHARE Inc. Requirements satisfied include:

- **OS/390**
  - REQ00059079 — Unify program directories
  - REQ00060670 — Machine readable books on the Internet
  - REQ00060962 — Standard vendor information access vehicle
  - REQ00064840 — Euro support for VM, VSE, OS/390 and associated products
  - REQ00065429 — Euro support for VM, VSE, OS/390 and associated products
  - REQ00065438 — Euro support (partial)
  - REQ00065438_1 — Euro support
  - REQ00066611 — Customer Offering driver should support ISD of 2003 Multiprise
  - REQ00067843 — Enhance OS/390 ServerPac Customerpac report to include fmid detail
  - REQ00067133 — ServerPac option for not a complete system replacement
  - REQ00068629 — ServerPac ordering checklist (partial)
- **DCE**
  - REQ00071035 — Eliminate need to hardcode unsupported "netaddrs" in "envar" files.
- **eNetwork Communications Server**
  - REQ00063756 — TCP/IP for MVS to support MVS Symbolics in a sysplex environment
  - REQ00063756_1 — TCP/IP for MVS to support MVS Symbolics in a sysplex enviroment
  - REQ00063756_2 — TCP/IP for MVS to support MVS Symbolics in a sysplex enviroment
  - REQ00068385 — Need to be able to define more than 65K Network addresses
- **HCM**
  - REQ00059353 — HCM should visualize and consider the ESCD matrix
  - REQ00059598 — SMP/E should manage the modules in SYS1.SCBDCOMM
  - REQ00061509 — HCM should visualize and consider the ESCD matrix
  - REQ00064726 — All direct connections between two ESCDs are shown every time
  - REQ00057628 — UIM for RS6K should allow a path definition from each LPAR
  - REQ00067369 — Support for ESCON director migration
  - REQ00061509 — Provide ability to show VTS (3494 tape library) configuration
  - REQ00065533 — Improve CF cable labels produced by HCM
  -
- **RMF**
  - REQ00032357 — Provide RMF (online) support of Cache Controller Activities
- **SMP/E**
  - REQ00029070 — SMP/E Global Zone FMID List Add Product number & Description
  - REQ00031020 — SMP/E Comment Area for FMID entries
  - REQ00032066 — SMP/E Support for CLIST target dataset RECFM
  - REQ00058371 — SMP/E Support of sequential datasets
  - REQ00065093 — Represents Product, release and feature information in CSI

- REQ00071752 — SMP/E Option to choose VB/FB RECFM for CLIST/REXX Libraries

Planning Information

Direct Customer Support: Installation and technical support is provided by the S/390 Support Family of offerings. For more information on available services, call 800-IBM-4YOU (426-4968).

Packaging: OS/390 Version 2 Release 7 contains the WebSphere Application Server for OS/390 (formerly delivered as Domino Go Webserver for OS/390). The specification of a security feature is required — it is strongly recommended that the IBM HTTP Server feature with the highest allowable security level be ordered and installed.

The IBM HTTP Server North America Secure feature supports Triple DES. (Triple DES is export controlled and restricted to certain industries abroad. It may not be exported except pursuant to an appropriate license.) Systems installed outside the U.S. and Canada can be ordered with IBM HTTP Server Export Secure. IBM HTTP Server France Secure is for import into France. For further information, contact your Export Regulation Coordinator (ERC) or Export Regulations Executive (ERE).

Refer to the **Ordering Information** sections in the previous and current OS/390 announcements for specific details on feature numbers.

As the cryptographic export regulations are changing, for the most current export regulations, refer to the following Web site URL:

http://w3.ibm.com/chq/ero.nsf

System Integrity

IBM will accept APARs where the installation of OS/390 introduces an exposure to system integrity. Refer to IBM Software Announcement P81-174, dated October 21, 1981.

Security, Auditability, and Control

Data security and auditability in the OS/390 environment are enhanced by the functions available in the RACF part of the optional OS/390 Security Server feature.

B1/C2 Security: The most recent MVS system formally evaluated by IBM and the US government using the B1 Trusted Computer Systems Evaluation Criteria (TCSEC) comprised MVS/ESA 3.1.3, RACF 1.9, and selected other MVS components in a non-networking configuration. Since then MVS and the evaluated components have undergone many changes. MVS has grown to include Parallel Sysplex and UNIX functionality and has further evolved into OS/390 with the incorporation of many new components. In addition, over the years the nature of networking has changed and the importance of networking has grown, with increased usage of TCP/IP communications and connection of OS/390 systems to the Internet and extranets to conduct e-business. Although IBM has not undertaken further formal security evaluations of OS/390, we maintain our strong focus on security during the design, development and testing of OS/390. While we continue to consider the B1-related requirements when making enhancements to the key components from the earlier-evaluated package, for the newer components of OS/390 we have focused mainly on those security aspects that we consider more important to our commercial customer set: the functions of user authentication, access control, auditing, and object reuse required by the C2 level of the TCSEC. Also, IBM continues its security commitment with its Security APAR process, described below.

Security APARs: IBM accepts Security APARs for OS/390. Security APARs are for reporting problems in existing security mechanisms where the problem descriptions do not meet the precise definition of system integrity, but do constitute an exposure to the security of the system as a whole or to an IBM product which runs on the system. Originally announced in Software Announcement 289-581, dated October 24, 1989.

Ordering Information

Current Licensees

The following information only provides new and changed ordering information for OS/390 Version 2 Release 7. For ordering information previously announced for OS/390 Version 2 Releases 4, 5, and 6, refer to Software Announcement 297-355, dated September 9, 1997, Software Announcement 298-049, dated February 24, 1998, and Software Announcement 298-278, dated August 18, 1998. Any new or changed ordering information for OS/390 Version 2 Release 8 will be made available by its general availability date, September 24, 1999.

For OS/390 Version 2 Release 7 price proposals, the CFSW configurator stand-alone path for 5647-A01 is updated to support Release 7.

OS/390 media is only shipped via OS/390 Customized Offerings (ServerPac, SystemPac and CBPDO). CFSW configuration and order entry capability for ServerPac, SystemPac, and CBPDO for OS/390 Version 2 Release 7 will be available beginning March 12, 1999, and continue until Version 2 Release 8 becomes orderable during September 1999.

To allow for adequate order processing time, it is recommended that all OS/390 Version 2 Release 6 orders be submitted no later than March 6, 1999, so that they can meet the process deadline of March 11, 1999.

Production of OS/390 Version 2 Release 7 orders will begin on the general availability date, March 26, 1999. Shipment dates for orders will be based on order sequence, Customized Offering selected, production capability, and customer-requested arrival date. Due to the amount of customization of ServerPac orders, shipments will begin approximately two weeks after general availability. Due to the amount of additional customization of SystemPac orders, shipments will begin approximately four weeks after order and data input verification. For CBPDO orders, shipments will begin one week after general availability. In all cases, no delivery commitments are to be made to the customer until confirmed arrival dates are in AAS.

Note: For all OS/390 orders, the current customer install base of the OS/390 Customized Offering 5751-CSx (not the install base of 5645-001 or 5647-A01) must be retained to determine the OS/390 version/release level most recently ordered.

New ServerPac Ordering Information: Support for 3490E media has been added to the ServerPac (5751-CS9) offering. The selection of this media will reduce the number of tapes shipped with a ServerPac order.

Program Reorder Form: Current Licensees of OS/390 Version 2 (5647-A01) will be sent a memo and Program Reorder Form (PRF). The mailing of these PRF forms is scheduled to be completed by April 2, 1999.

The PRF is used to obtain deliverables, refreshed from the previous release, that are not shipped via OS/390 Customized Offerings (ServerPac, SystemPac, CBPDO). These deliverables include hardcopy publications, tapes, diskettes, CD-ROMs.

The PRF can be activated by one of the following methods:

- Ordering OS/390 Version 2 Release 7 via one of the OS/390 Customized Offerings will automatically initiate the PRF without the need to return the form.
- Returning the PRF to Software Delivery Solutions (SDS), who will process it within ten (10) work days of receipt. The customer may wish to do this if they want earlier delivery of these materials prior to the OS/390 Customized Offering delivery.
- Calling Software Delivery Solutions at 800-879-2755.

The PRF method REMOVES the need to cancel/reorder (MES) multiple feature codes for current licensees to obtain materials refreshed from previous release that are not delivered with the OS/390 Customized Offerings.

Current licensees who wish to order a feature that is NEW to OS/390 between their Version 2 Releases 4, 5, and 6 and Version 2 Release 7 need to order these features (via ADD MES action).

- In addition to the new OS/390 Release 7 feature numbers (refer to the **Optional Machine-Readable Material** section), OS/390 Release 4 customers will need to consider the following additional feature numbers offered between OS/390 Release 4 and OS/390 Release 7:

OS/390 Function Description	9/6250 Tape	3480 Cartridge	4-mm DAT
Security Server LDAP Server DES	5778	5779	5780
OS/390 Print Server	5772	5773	5774
OS/390 Print Server Japan	6706	6707	6708
OS/390 Print Sever Spanish	6150	6151	6152

- In addition to the new OS/390 Release 7 feature numbers (refer to the **Optional Machine-Readable Material** section), OS/390 Release 5 customers will need to consider the following additional feature numbers offered between OS/390 Release 5 and OS/390 Release 7:

OS/390 Function Description	9/6250 Tape	3480 Cartridge	4-mm DAT
OS/390 Print Server Spanish	6150	6151	6152

- OS/390 Release 6 customers need only consider OS/390 Release 7 new feature numbers beyond the Program Reorder Form they receive. For a list of these feature numbers, refer to the **Optional Machine-Readable Material** section.

New Licensees

For OS/390 Version 2 Release 7 price proposals, the CFSW configurator stand-alone path for 5647-A01 will be updated to support Release 7 on February 22, 1999.

OS/390 media is only shipped via OS/390 Customized Offerings (ServerPac, SystemPac and CBPDO). CFSW configuration and order entry capability for ServerPac, SystemPac, and CBPDO for OS/390 Version 2 Release 7 will be available beginning March 12, 1999 and continue until Version 2 Release 8 becomes orderable during September 1999.

To allow for adequate order processing time, it is recommended that all OS/390 Version 2 Release 6 orders be submitted no later than March 6, 1999, so that they can meet the process deadline of March 11, 1999.

Production of OS/390 Version 2 Release 7 orders will begin on the general availability date, March 26, 1999. Shipment dates for orders will be based on order sequence, Customized Offering selected, production capability, and customer-requested arrival date. Due to the amount of customization of ServerPac orders, shipments will begin approximately two weeks after general availability. Due to the amount of additional customization of SystemPac orders, shipments will begin approximately four weeks after order and data input verification. For CBPDO orders, shipments will begin one week after general availability. In all cases, no delivery commitments are to be made to the customer until confirmed arrival dates are in AAS.

Note: For all OS/390 orders, the current customer install base of the OS/390 Customized Offering 5751-CSx (not the install base of 5645-001 or 5647-A01) must be retained to determine the OS/390 version/release level most recently ordered.

Shipment will begin on the planned availability date.

- Orders that ship before the planned availability will receive OS/390 Version 2 Release 6.
- Orders that ship after the planned availability date will receive OS/390 Version 2 Release 7.

New users of OS/390 should specify:

Type	Model
5647	A01

Basic License: To order a basic license, specify the program number and feature number 9001 for asset registration. Refer to Software Announcement 298-278, dated August 18, 1998, Software Announcement 298-049, dated February 24, 1998, and Software Announcement 297-355, dated September 9, 1997. When OS/390 Version 2 Release 7 is available, OS/390 Version 2 Release 6 will no longer be available. Specify the feature number of the desired distribution medium shown below.

Single Version Charging: To elect single version charging, the customer must notify and identify to IBM the prior program and replacement program and the designated machine the programs are operating on.

Version-to-Version Upgrade Credit: To upgrade from a prior program acquired for a one-time charge (OTC) to a replacement program using a version-to-version upgrade credit, the customer must notify and identify to IBM the

applicable prior program and replacement program participating in the upgrade credit.

Basic Machine-Readable Material: To order, select the feature number of the desired distribution medium:

There are no changes from previously announced information regarding Basic Machine-Readable Material. Refer to Software Announcement 298-278, dated August 18, 1998, Software Announcement 298-049, dated February 24, 1998, and Software Announcement 297-355, dated September 9, 1997, and Software Announcement 297-194, dated June 8, 1997 (the initial OS/390 Version 2 announcement) for more information.

New licensees should also consult the following announcements for recent changes to pricing information:

- Software Announcement 998-273, dated September 29, 1998 (Software Withdrawal and Changes: Measured Usage License Charges for S/390 Software Products)
- Software Withdrawal Announcement 998-294, dated September 29, 1998 (One-Time Charge (OTC/GOTC) Option for S/390)
- Software Withdrawal Announcement 998-295, dated September 29, 1998 (Selected IBM Basic and DSLO Licensing Options for S/390, MVS, and OS/390)
- Software Announcement 298-355, dated September 29, 1998 (PSLC Level C Price for S/390 Software Reduces the Cost of Growing Workloads)
- Software Announcement 298-357, dated September 29, 1998 (New Usage Pricing for S/390 Software Products)

Optional Machine-Readable Material

To order, select the feature number for the desired distribution medium.

Distribution Medium for OS/390 Version 2 Release 7 Optional Features: Media feature number information remains unchanged from the previous announcements of OS/390 Version 2 Releases 4, 5, and 6, except for the following additions and withdrawals from marketing:

OS/390 Function Description	9/6250 Tape	3480 Cartridge	4-mm DAT
eNetwork Communications Server Security Level 1[11,12] (RC2/RC4, CDMF support)	5786	5787	5788
eNetwork Communications Server Security Level 2[11,12] (DES, SnMPV3 support)	5789	5790	5791
eNetwork Communications Server Security Level 3[11,12,13] (Triple DES, SnMPV3 support)	5792	5793	5794
Open Cryptographic Services[14] Facility Security Level 1 (RC2/RC4/RC5, CDMF support)	5516	5517	5717
Open Cryptographic Services[14] Facility Security Level 2 (RC2/RC4/RC5, DES support)	5798	5701	5702
Open Cryptographic Services[13,14] Facility Security Level 3 (RC2/RC4/RC5, Triple DES support)	5795	5796	5797
Open Cryptographic Services[14] Facility France	5718	5719	5720
System SSL Crypto[13] (Triple DES support)	5731	5753	5506
IBM HTTP Server NA Secure[13,15] (R2/R4, Triple DES support)	5507	5508	5509
IBM HTTP Server Export Secure[15] (R2/R4, DES support)	5510	5511	5512
IBM HTTP Server France Secure[15] (RC2/RC4, CDMF support)	5513	5514	5515

[11] Includes feature number content formerly known as TCP/IP Kerberos, IP Security.

[12] The eNetwork Communications Server Security Level 1,2,3 features are mutually exclusive. Only one needs to be ordered for you to obtain additional security function over what is provided in the OS/390 base.

[13] Triple DES encryption can now be shipped outside U.S./CANADA, if customer is a financial institution, bank, subsidiary of U.S. company, insurance company, Healthcare provider (but not pharmaceutical company), or an online commerce (browsers).

For geographies other than U.S. and Canada, A special export license is required and must be obtained and provided to your IBM representative **before** order submission.

System SSL Crypto contains Triple DES; however, it is **not exportable** from U.S./Canada.

[14] Only one of the Open Cryptographic Services Facility France or Open Cryptographic Services Facility Security Level 1,2,3 features needs to be ordered for you to obtain additional security function over what is provided in the OS/390 base.

[15] The IBM HTTP Server features are mutually exclusive. Only one needs to be ordered for you to obtain additional security function over what is provided in the OS/390 base.

Notes

- France's import regulations require special authorization for all encryption features.
- For Firewall Technologies support, customers need to order OS/390 Security Server with one of the above eNetwork Communications Server Security feature numbers.

Feature numbers withdrawn from marketing effective March 12, 1999:

OS/390 Function Description	9/6250 Tape	3480 Cartridge	4-mm DAT
Domino Go Webserver			
NA Secure	5766	5767	5768
Export Security	5769	5770	5771
France Secure	5775	5776	5777
TCP/IP Kerberos			
Non-DES	5841	5842	5705
DES	5861	5862	5707
IP Security			
CDMF	5747	5748	5749
DES/CDMF	5744	5745	5746
TDES	5782	5783	5784

Feature number remains the same but is available after GA: Preconfigured CD-ROM (5819) for PC Server and RS/6000 with S/390 Server-on-Board System for OS/390 Version 2 Release 7.0 (Available May 21, 1999)

NLS Features

Media feature number information remains unchanged from the previous announcement of OS/390 Version 2 Releases 4, 5 and 6. Refer to Software Announcement 298-278, dated August 18, 1998, Software Announcement 298-049, dated February 24, 1998, and Software Announcement 297-355, dated September 9, 1997 for the list of NLS features in the earlier releases of Version 2.

Unlicensed Documentation

A memo, program directories, and one copy of the following publications are supplied automatically with the basic machine-readable material:

Basic/Unlicensed Publications

Title	Order Number
HLASM Toolkit Feature Installation Guide	GC26-8711
OS/390 Licensed Program Specification	GC28-1728
OS/390 MVS Product Management	GC28-1730
OS/390 LAN Server Installation Guide	GC28-1733
OS/390 LANRES Installation Guide	GC28-1736
OS/390 MVS Conversion Notebook	GC28-1747
OS/390 MVS HCD Planning	GC28-1750
OS/390 MVS JCL Reference	GC28-1757
OS/390 MVS Planning: Workload Management	GC28-1761
OS/390 MVS Routing and Description Codes	GC28-1778
OS/390 MVS System Codes	GC28-1780
OS/390 MVS System Commands	GC28-1781
OS/390 MVS System Messages, Volume 1 (ABA-ASA)	GC28-1784
OS/390 MVS System Messages, Volume 2 (ASB-EZM)	GC28-1785
OS/390 MVS System Messages, Volume 3 (GDE-IEB)	GC28-1786
OS/390 MVS System Messages, Volume 4 (IEC-IFD)	GC28-1787
OS/390 MVS System Messages, Volume 5 (IGD-IZP)	GC28-1788
OS/390 JES2 Commands	GC28-1790
OS/390 JES2 Messages	GC28-1796
OS/390 JES2 Migration Notebook	GC28-1797
OS/390 JES3 Commands	GC28-1798
OS/390 JES3 Conversion Notebook	GC28-1799
OS/390 JES3 Messages	GC28-1804
OS/390 HCD Messages	GC28-1849
OS/390 Security Server (RACF) Planning: Installation and Migration	GC28-1920
OS/390 Installation and Planning Kit	GK2T-6710
OS/390 Print Server Overview	G544-5545
OS/390 C/C++ Compiler Run-Time Migration Guide	SC09-2359
DFSMS/MVS Access Method Services ICF	SC26-4906
DFSMS/MVS Program Management	SC26-4916
DFSMS/MVS Planning for Installation	SC26-4919
DFSMS/MVS DFSMSdfp Storage Administration Reference	SC26-4920
DFSMS/MVS Utilities	SC26-4926
OS/390 NFS Customization Operations	SC26-7253
OS/390 ISPF Users Guide	SC28-1239
OS/390 ISPF Planning and Customizing	SC28-1298
OS/390 DCE Planning	SC28-1582
OS/390 DCE Configurating and Getting Started	SC28-1583
OS/390 DFS Configurating and Getting Started	SC28-1722
OS/390 SMP/E Messages and Codes	SC28-1738
OS/390 MVS Initialization Tuning Reference	SC28-1752
OS/390 JES2 Initialization Tuning Reference	SC28-1792
OS/390 JES3 Initialization Tuning Reference	SC28-1803
OS/390 SMP/E Commands	SC28-1805
OS/390 SMP/E Reference	SC28-1806
OS/390 HCD User's Guide	SC28-1848
OS/390 UNIX System Services Planning	SC28-1890
OS/390 Language Environment for OS/390 Customization	SC28-1941
OS/390 Language Environment for OS/390 and VM Run-Time Migration Guide	SC28-1944
OS/390 RMF User's Guide	SC28-1949
OS/390 eNetwork Communication Server: IP Planning and Migration Guide	SC31-8512
OS/390 eNetwork Communication Server: IP Configuration Guide	SC31-8513
OS/390 eNetwork Communication Server: IP Messages Volume 1	SC31-8517
OS/390 eNetwork Communication Server: SNA Network Implementation	SC31-8563
OS/390 eNetwork Communication Server: SNA Resource Definition Reference	SC31-8565
OS/390 eNetwork Communication Server: SNA Operations	SC31-8567
OS/390 eNetwork Communication Server: SNA Messages	SC31-8569
OS/390 eNetwork Communication Server: IP Messages Volume 2	SC31-8570
OS/390 eNetwork Communication Server: IP and SNA Codes	SC31-8571
OS/390 eNetwork Communication Server: SNA Planning and Migration Guide	SC31-8622
OS/390 eNetwork Communication Server: IP Messages Volume 3	SC31-8674
HTTP Server Planning, Installation and Using for OS/390	SC31-8690
GDDM Sys Customization and Administration	SC33-0871
DFSORT Installation and Customization	SC33-4034
IBM BookManager Read/MVS Installation Planning and Customization	SC38-2035
OS/390 Printing Softcopy Books	S544-5354

Note: *OS/390 Installation Planning Kit* (GK2T-6710) will be available at general availability and is included in the OS/390 Release 7 new licensee package. Individual

publications in the kit will be available to order shortly after the announcement date. The kit consists of the following hardcopy publications:

- OS/390 Planning for Installation (GC28-1726)
- OS/390 Introduction and Release Guide (GC28-1725)
- OS/390 Information Roadmap (GC28-1727)
- OS/390 Information What's New (GC28-1985)

Optional Publications: The following optional publications will be available at general availability.

Note: Specifying the 8xxx feature number will supply the publications library, in hardcopy, for the listed OS/390 element or optional feature. These libraries are supplied in softcopy displayable format as part of the basic softcopy publications. A complete list of the titles can be found in *OS/390 Information Roadmap* (GC28-1727), and in the Sales Manual description for OS/390 on HONE.

Library Title	Feature Number
OS/390 Hardcopy Licensed Publications	8006
OS/390 Hardcopy Unlicensed Publications	8007
OS/390 HLA Toolkit Publications	8008
OS/390 C/C++ Publications	8009
OS/390 DFSMSrmm Publications	8010
OS/390 DFSMShsm Publications	8011
OS/390 JES3 Publications	8012
OS/390 RMF Publications	8013
OS/390 Security Server Publications	8014
OS/390 DFSORT Publications	8021
OS/390 SDSF Publications	8023
OS/390 DFSMSdss Publications	8024
OS/390 Print Server Publications	8028
OS/390 HCM Publications	8029

Optional Unlicensed Publications: Specifying the 8xxx feature numbers below will supply the following optional unlicensed material, which will be available from IBM at product general availability for a fee.

Hardcopy Unlicensed Publications (feature number 8007)

Title	Order Number
OS/390 SOM® Objects Getting Started	GA22-7248
OS/390 Parallel Sysplex Recovery	GA22-7286
Planning for the System/390 Open Systems Adapter Feature	GC23-3870
OS/390 ICSF Overview	GC23-3972
DFSMS/MVS General Information	GC26-4900
HLASM MVS and VM and VSE General Information	GC26-4943
OS/390 ISPF Messages and Codes	GC28-1326
OS/390 MVS Programming: Resource Recovery	GC28-1739
OS/390 MVS Dump Output Messages	GC28-1749
OS/390 MVS IPCS Commands	GC28-1754
OS/390 MVS IPCS Customization	GC28-1755
OS/390 MVS IPCS User's Guide	GC28-1756
OS/390 MVS JCL User's Guide	GC28-1758
OS/390 MVS Planning: Global Resource Serial	GC28-1759
OS/390 MVS Planning: Operations	GC28-1760
OS/390 MVS Programming: Assembler Services Guide	GC28-1762
OS/390 MVS Programming: Authorized Assembler Services Guide	GC28-1763
OS/390 MVS Authorized Assembler Services Reference ALE-DYN	GC28-1764
OS/390 MVS Authorized Assembler Services Reference ENF-ITT	GC28-1765
OS/390 MVS Authorized Assembler Services Reference LLA-SDU	GC28-1766
OS/390 MVS Authorized Assembler Services Reference SET-WTO	GC28-1767
OS/390 MVS Programming: Callable Services for High Level Languages	GC28-1768
OS/390 MVS Programming: JES Common Coupling Services	GC28-1770
OS/390 MVS Programming: Sysplex Services Guide	GC28-1771
OS/390 MVS Programming: Sysplex Services References	GC28-1772
OS/390 MVS Programming: Workload Management Services	GC28-1773
OS/390 MVS Programming: Writing Servers for APPC/MVS	GC28-1774
OS/390 MVS Programming: Writing Transaction Programs for APPC/MVS	GC28-1775
OS/390 MVS Programming: Writing Transaction Schedulers for APPC/MVS	GC28-1776
OS/390 MVS Recovery Reconfiguration Guide	GC28-1777
OS/390 MVS Setting Up a Sysplex	GC28-1779
OS/390 MVS System Data Set Definition	GC28-1782
OS/390 MVS System Management Facility	GC28-1783
OS/390 MVS Planning: APPC/MVS Management	GC28-1807
OS/390 SOM Objects Configuration and Administration	GC28-1851
OS/390 Parallel Sysplex Overview	GC28-1860
OS/390 Parallel Sysplex System Management	GC28-1861
OS/390 Parallel Sysplex Hardware/Software Migration	GC28-1862
OS/390 Parallel Sysplex Application Migration	GC28-1863
OS/390 MVS Programming: Assembler Services Reference	GC28-1910
OS/390 Language Environment Concepts Guide	GC28-1945
OS/390 TSO/E General Information	GC28-1964
OS/390 TSO/E Messages	GC28-1978
OS/390 eNetwork Communication Server: IP User's Guide	GC31-8514
Web Traffic Express User's Guide	GC31-8645
High Speed Access Services User Guide	GC31-8676
General Information Manual for VisualLift	GC33-6690
WebSphere Application Server for OS/390 Getting Started	GC34-4757
ICKDSF R16 User's Guide	GC35-0033
OS/390 MVS System Commands Summary	GX22-0040
OS/390 JES2 Commands Summary	GX22-0041
Standard Packaging Rules for MVS-Based Products	SC23-3695
OS/390 ICSF Application Programmer's Guide	SC23-3976
OS/390 ICSF Messages	SC23-3977
OS/390 Encina Toolkit Executive Guide and Reference	SC24-5832
OS/390 OE DCE Programming Guide	SC24-5833
OS/390 OE DCE Configuration and Administration Guide	SC24-5834

Title	Order Number
OS/390 Encina Transactional RPC Support for IMS	SC24-5874
OS/390 OCSF Application Developer's Guide and Reference	SC24-5875
OS/390 OCSF Service Provider Module Developer's Guide and Reference	SC24-5876
OS/390 Cryptographic Services System SSL Programming Guide and Reference	SC24-5877
OS/390 LDAP Client Application Development Guide and Reference	SC24-5878
DFMSMS/MVS OAM Planning, Installation, and Storage Administration Guide for Tape Libraries	SC26-3051
DFSMS Implementation Systems-Managed Storage	SC26-3123
MVS/ESA SML: Managing Data	SC26-3124
MVS/ESA SML: Managing Storage Groups	SC26-3125
MVS/ESA SML: Leading a Storage Administration Group	SC26-3126
HLASM Installation and Customization Guide	SC26-3494
DFSMS/MVS Install Exits	SC26-4908
DFSMS/MVS Using ISMF	SC26-4911
DFSMS/MVS Macro Instruction DS	SC26-4913
DFSMS/MVS Managing Catalog	SC26-4914
DFSMS/MVS DFM/MVS Guide Reference	SC26-4915
DFSMS/MVS OAM Application Programmer's Reference	SC26-4917
DFSMS/MVS OAM Planning, Installation and Storage Administration Guide for Object Support	SC26-4918
DFSMS/MVS DFSMSdfp Advanced Services	SC26-4921
DFSMS/MVS Using Data Sets	SC26-4922
HLASM MVS and VM and VSE Language Reference	SC26-4940
HLASM MVS and VM and VSE Programmer's Guide	SC26-4941
OS/390 Naviquest User's Guide	SC26-7194
OS/390 NFS User's Guide	SC26-7254
OS/390 NFS Performance Tuning Guide	SC26-7255
OS/390 ISPF Dialog Tag Language Guide/Reference	SC28-1219
OS/390 ISPF Services Guide	SC28-1272
OS/390 ISPF Dialog Developer's Guide/Reference	SC28-1273
OS/390 ISPF Examples	SC28-1282
OS/390 ISPF Getting Started	SC28-1294
OS/390 ISPF Reference Summary	SC28-1308
OS/390 ISPF Edit and Edit Macros	SC28-1312
OS/390 ISPF Library Management Facility	SC28-1317
OS/390 ISPF SCLM Developer's Guide	SC28-1318
OS/390 ISPF SCLM Project Manager's Guide	SC28-1319
OS/390 ISPF SCLM Reference	SC28-1320
OS/390 DCE Administration Guide	SC28-1584
OS/390 DCE Command Reference	SC28-1585
OS/390 Open Edition DCE User's Guide	SC28-1586
OS/390 DCE Application Development Guide: Introduction and Style	SC28-1587
OS/390 DCE Application Development Guide: Core Components	SC28-1588
OS/390 DCE Application Development Guide: Directory Services	SC28-1589
OS/390 DCE Application Development Reference	SC28-1590
OS/390 DCE Messages and Codes	SC28-1591
OS/390 DFS Administration Guide and Reference	SC28-1720
OS/390 DFS Messages and Codes	SC28-1724
OS/390 LAN Server Configuration Files and Commands	SC28-1732
OS/390 LANRES Configuration Files and Commands	SC28-1735
OS/390 BDT Installation	SC28-1742
OS/390 BDT Commands	SC28-1744
OS/390 BDT Messages and Codes	SC28-1745
OS/390 MVS Initialization and Tuning Guide	SC28-1751
OS/390 MVS Install Exits	SC28-1753
OS/390 JES2 Initialization and Tuning Guide	SC28-1791
OS/390 JES2 Install Exits	SC28-1793
OS/390 JES2 Macros	SC28-1795
OS/390 OSA/SF User's Guide	SC28-1855
OS/390 UNIX System Services User's Guide	SC28-1891
OS/390 UNIX System Services Command Reference	SC28-1892
OS/390 UNIX System Services Programming: Assembler Call Services Reference	SC28-1899
OS/390 UNIX System Services Programming Tools	SC28-1904
OS/390 UNIX System Services Messages and Codes	SC28-1908
OS/390 UNIX System Services File System Interface	SC28-1909
OS/390 Language Environment for OS/390 and VM Programming Guide	SC28-1939
OS/390 Language Environment for OS/390 and VM Programming Reference	SC28-1940
OS/390 Language Environment for OS/390 and VM Debugging Guide and Run-Time Messages	SC28-1942
OS/390 Language Environment for OS/390 and VM Writing Interlanguage Applications	SC28-1943
OS/390 TSO/E Customization	SC28-1965
OS/390 TSO/E Command Reference	SC28-1969
OS/390 TSO/E Programming Services	SC28-1971
OS/390 TSO/E System Programming Command Reference	SC28-1972
OS/390 TSO/E CLISTs	SC28-1973
OS/390 TSO/E REXX Reference	SC28-1975
OS/390 SOMobjects Messages/ Codes/Diagnosis	SC28-1996
OS/390 eNetwork Communications Server: IP Diagnosis	SC31-8521

Title	Order Number
OS/390 eNetwork Communications Server: SNA Resource Definition Samples	SC31-8566
GDDM Messages	SC33-0869
GDDM Diagnosis	SC33-0870
VisualLift MVS, VS, VSE, OS/390 Users Guide	SC33-6691
OS/390 VisualLift Run-Time Environment	SC33-6693
OS/390 UNIX System Services Parallel Environment MPI Programming and Subroutine Reference	SC33-6696
OS/390 UNIX System Services PE Operations and Use	SC33-6697
OS/390 ISPF Application Server User′s Guide and Reference	SC34-4619
OS/390 ISPF VisualAge for ISPF User′s Guide and Reference	SC34-4620
DFSMS/MVS Remote Copy Guide and Reference	SC35-0169
IBM BookManager Build/MVS Installation Planning and Customization	SC38-2037
OS/390 HCD Reference Summary	SX22-0043
DFSMS/MVS Summary of Access Method Service-ICF	SX26-3807
OS/390 eNetwork Communication Server: Operations Quick Reference	SX75-0121
DFSMS/MVS DFSMSdfp Diagnosis	SY27-9605
OS/390 BDT Diagnosis Reference	SY28-1081
OS/390 MVS Diagnosis: Procedures	SY28-1082
OS/390 MVS Diagnosis: Reference	SY28-1084
OS/390 MVS Diagnosis: Tools and Service Aids	SY28-1085
OS/390 JES2 Diagnosis	SY28-1086
HLA Toolkit Publications (feature number 8008)	
HLASM Toolkit IDF Users Guide	GC26-8709
HLASM Toolkit Feature User′s Guide	GC26-8710
HLASM Toolkit Feature Debug Reference Summary	GC26-8712
C/C++ Publications (feature number 8009)	
Debug Tool Users Guide and Reference	SC09-2137
Debug Tool Reference Summary	SX26-3840
OS/390 C/C++ Users Guide	SC09-2361
OS/390 C/C++ Programming Guide	SC09-2362
OS/390 C/C++ IBM Open Class Library User′s Guide	SC09-2363
OS/390 C/C++ Run-Time Library Reference	SC28-1663
OS/390 C Curses	SC28-1907
OS/390 C/C++ Reference Summary	SX09-1313
DFSMSrmm Publications (feature number 8010)	
DFSMSrmm Guide and Reference	SC26-4931
DFSMSrmm, DFSMShsm Implementation/Customization	SC26-4932
DFSMSrmm Application Programming Interface	SC26-7272
DFSMSrmm, DFSMShsm Commands Reference Summary	SX26-6016
DFSMSrmm, DFSMShsm Diagnosis Guide	SY27-9615

Title	Order Number
DFSMShsm Publications (feature number 8011)	
DFSM/MVS Managing Data Availability	SC26-4928
DFSMShsm Storage Administration Reference	SH21-1075
DFSMShsm Storage Administration Guide	SH21-1076
DFSMShsm Managing Own Data	SH21-1077
DFSMShsm Implementation and Customization	SH21-1078
DFSMShsm User Commands Reference Summary	SX26-3806
DFSMShsm Storage Administration Reference Summary	SX26-3808
JES3 Publications (feature number 8012)	
OS/390 JES3 Commands Summary	GX22-0042
OS/390 JES3 Initialization Tuning Guide	SC28-1802
OS/390 JES3 Customization	SY28-1089
OS/390 JES3 Diagnosis	SY28-1090
OS/390 JES3 Diagnosis Reference	SY28-1092
RMF Publications (feature number 8013)	
OS/390 RMF Messages and Codes	GC28-1948
OS/390 RMF Report Analysis	SC28-1950
OS/390 RMF Performance Management Guide	SC28-1951
OS/390 RMF Programmers Guide	SC28-1952
OS/390 RMF Reference Summary	SX22-0044
Security Server Publications (feature number 8014)	
OS/390 Security Server (RACF) Introduction	GC28-1912
OS/390 Firewall Technologies Guide and Reference	SC24-5835
OS/390 Security Server (RACF) LDAP Server Administration and Usage Guide	SC24-5861
OS/390 Security Server (RACF) System Programmers Guide	SC28-1913
OS/390 Security Server (RACF) Security Administrator′s Guide	SC28-1915
OS/390 Security Server (RACF) Auditor′s Guide	SC28-1916
OS/390 Security Server (RACF) Messages and Codes	SC28-1918
OS/390 Security Server (RACF) Command Language Reference	SC28-1919
OS/390 Security Server (RACF) Command Syntax Summary	SX23-0027
OS/390 Security Server (RACF) Diagnosis	SY27-2639
DFSORT Publications (feature number 8021)	
DFSORT R14 Panels Guide	GC26-7037
DFSORT R14 Tuning Guide	SC26-3111
DFSORT R14 Getting Started	SC26-4109
DFSORT Messages, Codes, Diagnosis	SC26-7050
DFSORT Application Programming Guide	SC33-4035
DFSORT R14 Reference Summary	SX33-8001
SDSF Publications (feature number 8023)	
OS/390 SDSF Guide and Reference	SC28-1622
OS/390 SDSF Customization and Security	SC28-1623
DFSMSdss Publications (feature number 8024)	
DFSMS/MVS DFSMSdss Storage Administration Reference	SC26-4929
DFSMS/MVS DFSMSdss Storage Administration Guide	SC26-4930

Title	Order Number
Print Server Publications (feature number 8028)	
IBM NetSpool™ Guide	G544-5301
OS/390 Print Interface Configuration Guide	G544-5544
IBM IP PrintWay Guide	S544-5379
OS/390 Print Server Users Guide for Windows	S544-5511
OS/390 Print Server Users Guide for OS/390 UNIX System Services	S544-5543
HCM Publications (feature number 8029)	
OS/390 HCM User's Guide	SC33-6595

Additional copies of unlicensed publications will be available for a fee after availability. These copies may be ordered from your IBM representative, or by direct order.

Displayable Softcopy Publications: OS/390 publications are offered in displayable softcopy form, in both BookManager and PDF format. The displayable publications are part of the basic machine-readable material and are shipped on CD-ROM. Terms and conditions for use of the machine-readable files are shipped with the files.

Displayable publications on the OS/390 Collection (SK2T-6700) and the OS/390 V2 Licensed Product Library (LK2T-2499) can be used with the BookManager READ in any of the supported environments or with the IBM Library Readers for DOS, OS/2, and Windows. These are included at no charge on the CD-ROMs. The Softcopy Print element in OS/390 enables hardcopies of these publications to be printed.

Displayable publications on the OS/390 V2R7.0 PDF Library Collection (SK2T-6718) can be used with one of the Adobe Acrobat readers to view and print high-quality hardcopy books that look very similar to the printed books ordered from IBM. This reader is available at the URL:

http://www.adobe.com

This collection contains PDF files for unlicensed Version 2 Release 7 books for the OS/390 base and optional features. The OS/390 V2 Licensed Product Library (LK2T-2499) contains PDF files as well as BookManager files for the OS/390 Version 2 licensed books.

Basic Softcopy Publications on CD-ROM

Title	Order Number
OS/390 V2 Licensed Product Library	LK2T-2499
OS/390 Collection	SK2T-6700
OS/390 V2R6.0 PDF Library Collection	SK2T-6718

Optional Softcopy Publications On Tape: This deliverable contains all OS/390 licensed and unlicensed publications for the base and optional features. The softcopy publications on tape are a one-time shipment to the customers of that release. They are not refreshed. Softcopy publications on CD-ROM are refreshed quarterly if there are changes.

Specify the feature number for the media type desired.

Title	Media	Feature Number
Product Library on Tape	6250 Tape	7003
	3480 Cartridge	7004
	3480 Compressed	7005
	4-mm	7006

Softcopy Optional Unlicensed Publications: Subscriptions to the following CD-ROMs may be ordered for a fee by specifying the feature numbers listed:

Title	Order Number	Feature Number
S/390 Redbooks Collection	SK2T-2177	8005
OS/390 Security Server (RACF) Information Package[16]	SK2T-2180	8004

[16] Available to users of the OS/390 Security Server optional feature on April 9, 1999

Note: When the S/390 Redbooks Collection and the OS/390 Security Server (RACF) Information Package are ordered as features of OS/390, the special subscription price includes automatic shipment of all updates made while the product version is in service.

The S/390 Redbooks Collection contains over **300** technical bulletins, in BookManager format, that are related to the S/390 platform. The bulletins are *redbooks* produced by the International Technical Support Center (ITSO) and *orange and yellow books* produced by the Washington Systems Center and Networking Systems Center.

The OS/390 Security Server (RACF) Information Package includes over **830** unlicensed online books from a wide variety of S/390 operating system and application product libraries that reference RACF and OS/390 Security Server, as well as ITSO redbooks (technical bulletins related to RACF system security), flyers, education course listings, sample code, PDF (Portable Document Format) files for OS/390 Security Server (RACF) Version 2 Release 7 manuals, and more.

Licensed Documentation

Optional Licensed Publications: Specifying the 8006 feature numbers below will supply the following optional licensed material, which will be available from IBM at product general availability for a fee.

Hardcopy Licensed Publications (feature number 8006)

Optional Licensed Publications	Order Number
DFSMS/MVS DFSMSdfp Diagnosis Reference	LY27-9606
DFSMS/MVS DFSMShsm Diagnosis Guide	LY27-9607
DFSMS/MVS DFSMShsm Diagnosis Reference	LY27-9608
DFSMS/MVS DFSMSdss Diagnosis Guide	LY27-9609
OS/390 eNetwork Communications Server: SNA Diagnosis, Volume 1	LY43-0079
OS/390 eNetwork Communications Server: SNA Diagnosis, Volume 2	LY43-0080
OS/390 eNetwork Communications Server: SNA Customization	LY43-0110

Subsequent updates (technical newsletters or revisions between releases) to the publications shipped with the product will be distributed to the user of record for as long as a license for this software remains in effect. A separate publication order or subscription is not needed.

Terms and Conditions

The terms for OS/390 Version 2, as previously announced (refer to Software Announcement 298-278, dated August 18, 1998) licensed under the IBM Customer Agreement are unaffected by this announcement.

Support Line: S/390 Current charges are unaffected by this announcement.

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To identify your local IBM Business Partner or IBM representative, call 800-IBM-4YOU.

Note: Shipments will begin after the planned availability date.

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