

# AIX®

## “From Strength to Strength”

### A summary of upgrade benefits

This reference document summarises the functional enhancements and new system support added at each update of AIX. Information contained is for initial guidance only — the RS/6000® configurator together with full announcement information should be used prior to any system orders being placed.

Upgrades within a version of AIX (e.g. 4.2 to 4.2.1 or 4.3 to 4.3.3) are available to licensed users for a media charge only. Upgrades between versions (e.g. 3.2.5 to 4.3 or 4.2 to 4.3) are available for an upgrade charge and a media charge.

### AIX 4.3.3 Update (Announced 13-Sep-99, GA 24-Sep-99)

#### Scalability and Capacity

- Doubling of number of processors supported from 12-way to 24-way and memory support from 32 GB to 64 GB
- Performance enhancements including a combination of improvements to processor performance, SMP Design, kernel scalability and cache hit rate
- AIX Workload Management system provides a policy-based method for managing system workload and system resources, including:
  - ◆ System resource allocation with fine granularity to specific jobs
  - ◆ Logical job separation on the server
  - ◆ Permits applications to remain in memory for more predictable performance
  - ◆ Resource targets and resource limits
  - ◆ Policies can be set by the system administrator once, with no further interaction required. The system will automatically apply the specified policies and adjust for changing conditions
  - ◆ Control options include minimum and maximum percentage limits, shares, or a combination of both

#### System Security

- AIX Directory Exploitation allows AIX user and group information to be optionally stored, replicated and retrieved in an IBM SecureWay® Directory for fast access (local or remote), expandability and reliability
- IBM SecureWay Directory 3.1.1 (an open, cross platform server, optimized to support Lightweight Directory Access Protocol-enabled applications that integrate enterprise systems)
- A port of the Sun Solaris 2 NIS+ network information management system is provided in addition to the current NIS support, which remains unchanged. This new naming service provides enhanced capabilities for security management in a distributed system environment
- Sendmail upgraded to V8.9.3 which features anti-spamming

#### Network Security

- IP Security enhancements include:
  - ◆ Dynamic tunnels can be defined at one time then only activated when traffic matching criterion is sent or received, thus reducing overhead.
  - ◆ IKE (Internet Key Exchange) Tunnels can be created over multiple IP addresses
  - ◆ Web-based System Manager interface for filters and managing manual tunnels is now consistent across IP Security and is NLS enabled
  - ◆ Logic allows better tracing of the IP Security and IKE messages to better determine security attacks
  - ◆ Certificate-based use of Digital Signatures for IKE authentication scheduled to ship in November, 1999 through service
- AIX SOCKS API allows generic TCP/IP applications to connect to hosts through a generic TCP/IP proxy using V5 of the SOCKS protocol

#### Java Security

- The Security Migration Aid provides the more robust policy-based security model of the Java 2 platform in the Java 1 platform

#### Networking Performance and Scalability

- Increased the performance and scalability of e-business support with web serving acceleration, AIX's implementation of Cisco's EtherChannel, and Quality of Service (Qos) administration and support

- The Dynamic Host Configuration Protocol product has been enhanced with a programming interface to the DHCP server for user extension or third party software integration
- New kernel extension HTTP GET Engine enhances performance of web serving by serving web pages from the AIX network file cache
- New Dynamic Load Name Resolver APIs included in AIX 4.3.3 allow users to define their own Name Resolver module in addition to the existing Name Resolver methods such as local, DNS/Bind, NIS, and NIS+. Users can create a module which may have one or all the following five map types: services, protocols, hosts, networks and netgroup
- TCP/IP network interfaces support the new thread mode on SMP systems, which allows IP incoming packets to be queued and picked by threads, thus shortening interrupt time
- TCP connections tuned on a "per interface" basis in order to benefit from the unique characteristics of the network's physical layers
- ARP (Address Resolution Protocol) capability will propagate hardware address changes and let AIX manage duplicate IP address assignment
- TCP Checksum Offload for PCI Gigabit Ethernet Adapter along with zero copy network file cache capability will result in Non Data Touching (by CPU) architecture. This functionality should greatly benefit applications that transmit large blocks
- Path Maximum Transmission Unit (PMTU) discovery is now the default
- TCP Selective Acknowledgements (SACK) helps TCP recover from multiple packet losses within the TCP window
- Multiple-protocol over ATM (MPOA) provides improved management and performance of an ATM LAN Emulation network

#### Reliability, Availability and Serviceability (RAS) / Storage

- Improvement in system availability with support for concurrent striping and mirroring (RAID 0 + 1) in software
- Online Journal File System (JFS) backup will enable the backup of a mirrored file system while it is still in use
- The restriction that a dump device can not be a mirrored logical volume has been removed by allowing the dump to be written to and read from the primary mirror of a mirrored logical volume
- AIX treats system console messages as critical system information, logging them to a file with timestamps
- The file system, system dump processor, and other areas have been enhanced to make it easier to diagnose problems when they occur
- Enhanced AIX Diagnostic package with new Diagnostic Event Log.
- Diagnostic exerciser added for processors to enhance problem determination
- Enhancements to performance analysis tools, including support for workload management and upgrading of Performance Toolbox Agent (PTX) with the ability to process performance metrics by activity, rather than by a fixed name
- Enhancements to programming support including Replaceable Malloc, AIX support for KDB, Fast Single Instruction Patch and Pthread debug library
- AIX 4.3.3 includes an additional option with the sar command: the -d option will provide useful statistics such as throughput, average queue depth, etc.

#### System Management

- Enhanced ease of use capabilities including SMIT and Web-based System Manager interface support for: NIS+, IBM SecureWay Directory (directory exploitation — users and group information), Logical Volumes (RAID 0 + 1), AIX Workload Management, and Web QoS (Differentiated Services and RSVP). New web-based System Manager TaskGuides include Base Operating System (BOS) install, creating a system backup on CD-ROM, and software updates on both standalone AIX systems and RS/6000 SP systems
- Documentation library services which support the reading, navigating and searching of HTML documentation. AIX and customer written HTML documentation can be registered and used
- Support of AIX system backup (mksysb) onto recordable CDs
- AIX 4.3.3 provides some building blocks to begin to unite the install solutions across the RS/6000 family. Improvements are being put in place in the network installation manager (NIM) by adding scalability features

such as replication of resources and improved NIM master process handling

- Perl 5, a popular free scripting language, ships with AIX. Perl is often used in system management tasks and for Web development
- Enhancements to National Language Support including IBM Internationalized Classes for Unicode and support for ISO8895-15
- Enhancements made to Taiwanese Input Method and Korean Input Method
- Addition of four new locales: Italian-Switzerland, English-Australian, English-Belgium and English-South Africa
- AIX 4.3.3 integrates various Japanese fixed fonts and Japanese printers support previously provided by separate LPP, Japan Kit V2 (5607-E30) which is available for Japan only

#### **Interoperability**

- AIX Fast Connect Release 2.1.1 for Windows and OS/2 includes integration with DCE/DFS.

#### **Base / Standards**

- IBM AIX Developer Kit, Java™ Technology Edition, Version 1.1.8

#### **Graphics**

- X11R6.3 — the “Broadway release” — allows a web server to run X Windows system client applications on a remote host
- GLX support of V1.3, the latest level approved by the OpenGL Architectural Review Board, available on GXT2000 & GXT3000 graphics adapters. New functionality includes rendering access to offscreen adapter memory and enhanced X visual and resource selection and management
- OpenGL performance enhancements, including improved positional lighting and additional extensions
- OpenGL applications thread enablement
- graPHIGS enhancements include improved CPU utilization during swaps, faster clipping, increased large program support and full input and output support of the Japanese IBM 943 encoding

#### **Other**

- Bonus Pack\* updated
- **Additional RS/6000 Systems Supported\*\*\***
  - ◆ RS/6000 7017-S80 Enterprise Server S80
  - ◆ RS/6000 7046 Model B50

#### **AIX 4.3.2 Update (Announced 08-Jun-99, GA 18-Jun-99)**

- Bonus Pack\* updated

#### **AIX 4.3.2 Update (Announced 16-Mar-99, GA 26-Mar-99)**

- AIX Fast Connect for Windows and AIX Fast Connect for OS/2 — separately priced higher-performance file and print features of AIX 4.3.2 or later that support Microsoft Windows 95, 98, and NT and/or OS/2 clients. Using AIX services for efficiency, scalability, and reliability with throughput among the fastest of the file and print servers commercially available on AIX.
- ISAKMP, also known as Internet Key Exchange (IKE), now supported under IPv4. IKE dynamically changes session keys for IP security tunnels. Available initially on IPv4 — not supported yet in IPv6.
- IPv6 Gateway capability now supported as well as IPv4. Routing and forwarding capabilities added to the host capability initially shipped.
- AIX 4.3.1 with B1/EST-X V2.0.1 from Groupe Bull is under evaluation at EAL4/F-B1 security level (Common Criteria V2.0). Groupe Bull B1/EST-X Version 2.0.2 for AIX Version 4.3.2 is available as a PRPQ from IBM to complement the security features of AIX.
- AIX 4.3.1 TCSEC Evaluated C2 Security PRPQ is available to provide a US Department of Defense 5200.28.STD C2 evaluated version of AIX V4. This PRPQ is a specific offering of an operational subset of AIX 4.3.1 which has been evaluated.
- *Tape media options for new-products/upgrades withdrawn 18-Jun-99 for AIX products (except RS/6000 SP products announced on tape only).*
- *Note: On 18-Jan-99, AIX 4.3.1 was certified at C2 Security level of trust, assessed under rigorous standards in accordance with TCSEC.*
- Bonus Pack\* updated

#### **AIX 4.3.2 Update (Announced 01-Dec-98, GA 11-Dec-98)**

- Bonus Pack\* updated

#### **AIX 4.3.2 (Announced 05-Oct-98, GA 23-Oct-98)**

- Scaleability is significantly enhanced in a number of complementary functions:
  - ◆ 32 GB of real memory tested and supported on 64-bit SMP servers.
  - ◆ Deferred paging space algorithm significantly decreases paging space required with large physical memory.
  - ◆ Maximum networking buffer pool (thewall) from 128 MB to 1 GB.
  - ◆ Maximum data space for kernel data from 256 MB to 512 MB.
  - ◆ Message queues, semaphores, and shared memory regions from 4,096 to 131,072.
  - ◆ LVM maximum disks in Volume Group (VG) from 32 to 128, maximum logical volumes in VG from 256 to 512. Up to 130,048 physical partitions per VG (relaxes 1,016 LVM partitions limit).
  - ◆ Improved scheduler responsiveness to control in managing heavy CPU users on heavily loaded systems — scheduler treats value of the AIX “nice” command as directive instead of suggestion.
  - ◆ ODM database enables up to 1,000 device configurations.
  - ◆ Print queue management now has six digit job numbers.
  - ◆ Enhancements made in base operating system to improve Java performance, scaleability, and robustness.
- Lightweight Directory Access Protocol (LDAP) upgraded to V2.1 with enhancements in these major areas:
  - ◆ DB2® V5 included for use of the directory data storage facility
  - ◆ Aliases now supported
  - ◆ Concept II GUI
  - ◆ Web servers Apache, Lotus Domino Go, Netscape FastTrack and Netscape Enterprise supported for LDAP administration
  - ◆ Improved search and ACL support
  - ◆ Improvements to scaleability, replication and performance
  - ◆ Millions of entries supported with peak sub-second response time for searches
- Binder library (libld.a) supports operations on 32-bit objects from 64-bit applications and on 64-bit objects from 32-bit applications.
- Networking subsystem enhanced:
  - ◆ New PCI network device drivers
  - ◆ Automatic memory of mapping from virtual addresses to physical addresses for entire networking buffer pool
  - ◆ “Zero copy network file cache” send\_file reuses cached data
  - ◆ “Thundering herd” wasted CPU cycles problem overcome
  - ◆ V6.0 of Merit GateD now supported in IPv4 and IPv6.
- LVM Online Mirror Backup enhanced with concurrent mode support (when using HACMP™) together with special device file support for the designated online backup copy that allows filesystem access and access using standard commands and programming interfaces.
- Network Installation Manager (NIM) enhanced for system installations and customizations of NIM groups - allowing a limit for machines being installed/customized at a single time and a time limit for processing.
- Standard AIX messaging facility can be used for 1,000 byte NLS-enabled messages in error log templates.
- TTY remote reboot allows systems administrator to reboot a remote system.
- RS/6000 Welcome Center enhanced in content with interface options for boot sequence assistance and day-to-day use. Optional areas such as the arcade demonstration may be uninstalled to reclaim disk space.
- HTML-based configuration applications can be launched from AIX Web-based System Manager interface via command line or AIX-supplied GUI.
- Application added to Web-based System Manager interface to format/certify some hard disks and read-write optical media, and run hardware problem determination.
- “Tivoli Ready” capabilities when Tivoli Management Agent (TMA) installed from Bonus Pack.
- Error log analysis allows specification of previous days to analyse from 1 to 60 days.
- BIND package is upgraded to V8.1.2.
- C++ Runtime V3.6.4 included

- JDK V1.1.6 with the IBM JIT Compiler V3.0 includes euro currency symbol support and performance enhancements.
- Enhancements to graphics capabilities:
  - ◆ POWER GXT3000P™ 3D PCI Graphics Accelerator supported (using either OpenGL or graPHIGS)
  - ◆ OpenGL (V1.1 and 1.2) and graPHIGS have been enhanced to improve performance in several areas, especially rendering of primitives.
  - ◆ OpenGL has added support for OpenGL V1.2 (only on the GXT3000P) and new extensions: MultiDraw Array, Texture Mirrored Repeat, and Color Blend.
  - ◆ Virtual Frame Buffer rendering now supported on the SP.
- AIX 4.3.2 is EuroReady and respects the euro currency formatting conventions, including the euro symbol.
  - ◆ Strategic euro currency symbol support based on new Unicode locales. Microsoft code page 1252 (extension of Latin-1 ISO 8859-1) euro currency symbol supported as a single byte migration option.
  - ◆ Supplied locales include keyboard definitions using the euro currency symbol. Tools and facilities provided for customers to create their own custom locale.
- Unicode - equivalent set (to existing AIX locales) of locales based on UTF-8 (File System Safe Transformation Format for Unicode) provided.
- Code Page 943 provided to support interoperability with Microsoft Windows clients in Japan.
- AIX Documentation Search extended to add capability to search specified DBCS codesets in Japanese, Korean, Simplified Chinese, and Traditional Chinese.
- AIX 4.3.2 is Year 2000 ready.
- AIX 4.3.2 branded UNIX 98 by The Open Group: this mandates requirements to support standardized threads, real-time, large file system APIs, is Year 2000-ready, 64-bit clean, and architecturally neutral.
- AIX 4.3 re-evaluated and re-certified at the European E3/F-C2 security level with strength of mechanisms "high" according to ITSEC.
- AIX 4.3 has become first server operating system to receive ICSA VPN certification.
- Bonus Pack\* updated
- **Additional support for High Availability Cluster Multi-Processing (HACMP)**
  - ◆ AIX 4.3.2 Supports HACMP 4.3 capabilities that include scaling to 32 nodes and the new RS/6000 Cluster Technology (RSCT), which allows customers to define their own high-availability events and become proactive with their clusters instead of just reactive. Developers can use this technology to make their applications more cluster-aware and take advantage of event monitoring and group services provided by HACMP 4.3.
- **Additional RS/6000 Systems Supported\*\*\***
  - ◆ RS/6000 701X-S7A Enterprise Server S70 Advanced
  - ◆ RS/6000 43P Models 150 and 260 (7043-150, 7043-260) SP Systems supported natively by AIX 4.3.2

#### **AIX 4.3.1 Update (Announced 23-Jun-98, GA 31-Jul-98)**

- Bonus Pack\* updated

#### **AIX 4.3.1 (Announced 06-Apr-98, GA 24-Apr-98)**

- Conforms to The Open Group UNIX98 Specification
- IEEE POSIX 1003.1-1996 (1003.1c) threads support, including M:N threads
- Web-based System Manager (full release)
- eNetwork™ LDAP Directory V1.1.1 (full release) supports up to 4 million directory entries
- Scalability enhancements:
  - ◆ Total open files per system from 200,000 to 1,000,000
  - ◆ Open files per process from 2,000 to 32,767
  - ◆ Threads per process from 512 to 32,767 (M:N)
  - ◆ Maximum size for shared or mapped files per memory segment from 256 MB to 2 GB
  - ◆ Mbuf size limit from 64 MB to 128 MB
  - ◆ IPSEC filtering from limited to unlimited rules
  - ◆ Threaded support makes DHCP server more scaleable.

- JDK V1.1.4 and IBM's JIT Compiler V2.01
- LVM online backup
- Streamlined JFS locking where two processes concurrently read different parts of the same file
- AutoFS
- Additional printer support
- IP Security enhancements
- Kerberos 5 authentication support for several TCP/IP commands
- NFS performance improvements
- Sendmail 8.8.8
- cm CP enhancements including support of classless interdomain routing (CIDR)
- Graphics enhance - 64-bit indirect rendering OpenGL support
- Graphics enhance - Virtual Frame Buffer rendering
- HTML-based publications can be mounted and installed
- Additional value added to AIX 4.3.1 base (content varies by geography): IP security (IP Sec), LDAP with DB2, Concurrent IPv6 and IPv4, Stand-alone performance tools, Mountable publications, JDK and JIT compiler, Systems Management
- Bonus Pack\* updated

#### **AIX 4.3 (Announced 06-Oct-97, GA 31-Oct-97)**

- *Program number 5765-C34*
- 64-bit hardware and application support
- 32-bit/64-bit application coexistence and concurrent execution
- Binary compatibility with AIX 3.2.5, 4.1 and 4.2.x environments
- Creation of 64-bit applications on all supported systems, execution/debugging of 64-bit applications on 64-bit hardware
- 16 GB Real memory support on RS/6000 S70
- Designed to support UNIX98
- Central service provided until 31 December 2001
- AIXwindows environment is upgraded to X11R6.1 and Motif 2.1
- OpenGL/GL 3.2 for AIX 4.3 and PHIGS for AIX 4.3 included as part of base AIX V4.3 (PEX API removed and not supported)
- IP V6 support containing 128-bit IP addresses, dynamic autoconfiguration and redundant routing
- IP security supporting network authentication and encryption for IPv4 and IPv6 and IP filtering
- CacheFS from the ONC+ suite included
- Alternate disk installation for new release or maintenance level of AIX
- LVM creation of logical volumes in concurrent mode (performance of mirror resynchronization in concurrent mode improved)
- Tools, formerly in Performance Toolbox, now at no additional charge: *bf*, *fdpr*, *filemon*, *fileplace*, *lockstat*, *netpmon*, *rmss*, *stem*, *svmon*, *tprof*
- Unicode enhanced with broader support for Unicode 2.0, Unicode TrueType font and Java 1.1 Unicode classes
- IBM AIX Developer Kit, Java™ Technology Edition, V1.1.2 with IBM Just-in-Time Compiler
- New Configuration Assistant providing a TaskGuide application
- Telnet server performance significantly improved
- Login performance significantly improved for very large numbers of user accounts
- Direct I/O supported bypassing the normal I/O buffers
- IBM Network Computer and Network Station™ Management support
- Network Station Manager support of "carry your environment"
- RS/6000 Welcome Center update themed "RS/6000 on Mars"
- Most RS/6000 online documentation libraries converted to HTML and provided on documentation CDs
- HTML documentation library and search support in base AIX can be used to support management of custom HTML documentation
- LDAP Directory V1.1 (as initial technology release)
- Web-based, Java-based System Manager (as initial technology release)
- Bonus Pack\* included
- **Additional RS/6000 Systems Supported\*\*\***
  - ◆ RS/6000 701X-S70 Enterprise Server; 397 Desktop

- ◆ SP Systems supported (in binary compatible mode only) on AIX 4.3 from 06-Mar-98
- ◆ Note: ThinkPad® Power Series 7247-821, 7247-822, 7247-823, 7249-851, and Notebook 7249-860 — NOT SUPPORTED

#### **AIX 4.2.1 Update (Announced 13-Sep-99, GA 24-Sep-99)**

- Bonus Pack\* updated

#### **AIX 4.2.1 Update (Announced 16-Mar-99, GA 26-Mar-99)**

- Bonus Pack\* updated

#### **AIX 4.2.1 Update (Announced 01-Dec-98, GA 11-Dec-98)**

- Bonus Pack\* updated

#### **AIX 4.2.1 Update (Announced 05-Oct-98, GA 23-Oct-98)**

- Bonus Pack\* updated

#### **AIX 4.2.1 Update (Announced 23-Jun-98, GA 31-Jul-98)**

- Bonus Pack\* updated

#### **AIX 4.2.1 Update (Announced 06-Apr-98, GA 24-Apr-98)**

- AIX 4.2.1 to be withdrawn from marketing effective 31-Dec-99
- Normal program service will cease on 31-Mar-2000 (or 30-Jun-2000 for Scaleable POWERparallel® Systems "SP")
- Limited fee-based program service extension available beginning 1-Apr-2000 and ending no sooner than 30-Sep-2001\*\*
- Bonus Pack\* updated

#### **AIX 4.2.1 Update (Announced 06-Oct-97, GA 31-Oct-97)**

- Bonus Pack\* updated

#### **AIX 4.2.1 Update (Announced 26-Aug-97, GA 29-Aug-97)**

- AIX V4 update CDs can be ordered under 5692-AIX product number
- Printer support for IBM Network Station on V4 update CD
- Bonus Pack\* updated

#### **AIX 4.2.1 Update (Announced 24-Jun-97, GA 27-Jun-97)**

- Bonus Pack\* updated

#### **AIX 4.2.1 (Announced 15-Apr-97, GA 25-Apr-97)**

- New terms, conditions and program number (5765-C34):
  - ◆ Most RS/6000 systems include 1-2 user full-function AIX 4 at no additional charge
  - ◆ Usage payment caps, above which users are no-charge, set for Processor Group: D5 = 40; E5, F5 and G5 = 80; P5 = 160
- NFS updated to include support for NFS V3, NFS over TCP, Multi-threaded NFS server, WebNFS, improved file locking and improved performance
- TCP/IP enhanced to support: Multicast IP routing, Path MTU Discovery for Internet Protocols, Multilink PPP, PPP BSD protocol data compression and PPP SNMP MIBS function
- Mail server enhanced to support POP3 and IMAP4
- Network Install Manager (NIM) supports software installation over ATM and TCP/IP-based networks
- Web browser diagnostic interface GUI allows remote diagnostic of AIX
- Native AIX security enhanced via Administrative Roles function
- A number of AIX system libraries are thread-safe
- Asynchronous I/O supports greater than 2 GB of memory.
- Shared memory regions enhanced
- IBM Network Station supported as network boot server, dynamic network configuration server, and emerging application servers
- Bonus Pack\* updated
- **Additional RS/6000 Systems Supported\*\*\***
  - ◆ J50, R50, F40, F50, H10, 140, 240, F3L

#### **AIX 4.2 Update (Announced 08-Oct-96, GA 22-Nov-96)**

- Program Services for AIX 4.2 and Ultimeia Services V2.1 (when running with AIX 4.2) extended to 31 December 1999
- Run-time components for run-time linking, dynamic module handling and Shared Library Hookable Symbols PRPQ included
- Bonus Pack\* updated
- **Additional RS/6000 Systems Supported\*\*\***

- ◆ 595; 166 MHz 604e processor for Models E20, E30, F30, and 43P (Models 100, 120, 132)
- ◆ SP Systems supported on AIX 4.2 from 17-Dec-96

#### **AIX 4.2 (Announced 23-Apr-96, GA 17-May-96)**

- Program number 5765-655 (later superseded by 5765-C34)
- Data Files greater than 2 GB
- Program executables greater than 256 MB
- Designed for device support up to 1 terabyte.
- Dynamic loading APIs
- LVM and CLVM functions merged
- Supports XOpen's UNIX95 (Spec 1170)
- Central service provided until 31 December 1999
- Common Desktop Environment 1.0 (CDE) X/Open branded
- Graphical Workspace Manager enhances CDE usability and management.
- X Window System XTEST Extension allows automated testing
- NIM enhanced to manage groups of logically-related machines and resources
- System backup image over the network using NIM
- SMIT screens assist NIM in software installation/maintenance
- Albanian, Estonian, Latvian and Lithuanian language support
- Traditional Chinese Code Page 950 (Big5) support
- PPP Authentication support
- Network Time Protocol
- Sendmail update to V8.7
- Async supports speeds on native serial ports up to 115.2 Kbps
- Entry Client Package — reduced function client at lower price.
- Bonus Pack\* included

#### **AIX 4.1.5 Update (Announced 06-Apr-98, GA 24-Apr-98)**

- AIX 4.1.5 to be withdrawn from marketing effective 31-Dec-98
- Normal program service will cease on 31-Mar-99 (or 30-Sep-99 for Scaleable POWERparallel Systems "SP")
- Limited fee-based program service extension available beginning 1-Apr-99 and ending no sooner than 31-Jan-2001\*\*
- Value Option\* updated

#### **AIX 4.1.5 Update (Announced 06-Oct-97, GA 31-Oct-97)**

- Value Option\* updated

#### **AIX 4.1.5 Update (Announced 26-Aug-97, GA 28-Aug-97)**

- IBM AIX Developer Kit, Java™ Technology Edition, V1.1.2, with IBM's JIT compiler included
- AIX 4 Update CDs can be ordered under 5692-AIX product number
- Printer support for IBM Network Station on AIX 4 update CD

#### **AIX 4.1.5 Update (Announced 15-Apr-97, GA 25-Apr-97)**

- New terms, conditions and program number (5765-C34):
  - ◆ Most RS/6000 systems include 1-2 user full-function AIX 4 at no additional charge
  - ◆ Usage payment caps, above which users are no-charge, set for Processor Group: D5 = 40; E5, F5 and G5 = 80; P5 = 160
- Value Option\* updated

#### **AIX 4.1.5 (Announced 08-Oct-96, GA 08-Nov-96)**

- Program Services extended to 31 December 1998
- Run-time components for run-time linking, dynamic module handling and Shared Library Hookable Symbols PRPQ included
- RS/6000 Welcome Center optionally pre-installed
- Value Option\* introduced
- **Additional RS/6000 Systems Supported\*\*\***
  - ◆ 595, F40, 140, 240, Notebook 860; 166 MHz 604e Processor for E20, E30, F30, and 43P (Models 100, 120, 132)

#### **AIX 4.1.4 (Announced 10-Oct-95, GA 20-Oct-95)**

- Asynchronous PPP and DHCP protocols
- TCP/IP Point-to-Point Protocol (PPP)
- TCP/IP Dynamic Host Configuration Protocol (DHCP)
- Diskless/dataless support of RS/6000 40P
- Double Buffer Extension V1.0 (DBE) for X-Windows

#### ■ **Additional RS/6000 Systems Supported\*\*\***

- ◆ E20

#### **AIX 4.1.3 (Announced 19-Jun-95, GA 07-Jul-95)**

- Further performance tuning for the G30, J30, and R30
- Support added for 6-way and 8-way J30 and R30 systems
- Data Link Protocol Interface - LLC type 2 function
- Extends concurrent users from 2 to 16 users for base server licences on Processor Group D5
- CDE includes Development Environment plus fully supported Mail, Calendar, and Terminal Emulator
- AIX CDE 1.0 is default graphical interface for AIX V4.1.3.
- Simplified Chinese and Catalan languages
- Base services of DCE and DFS now included:
  - ◆ DCE Client Configuration Runtime, DCE Client Security Runtime, DCE Client Cell Directory Services Runtime, DCE Client Time Services Runtime, DCE Client RPC Runtime, DCE Client Time Zone Runtime DCE Client Administration Runtime, DCE Distributed File System (DFS) Base Services

#### ■ **Additional RS/6000 Systems Supported\*\*\***

- ◆ Personal Computer Power Series 800; ThinkPad Power Series 850 and 820; 42T, 42W, C20 and 43P Series (Models 100, 120, 132)
- ◆ SP Systems supported on AIX 4.1.3 from 18-Aug-95

#### **AIX 4.1.2 (service update only)**

#### **AIX 4.1.1 (Announced 04-Oct-94, GA 28-Oct-94)**

- Software support for SMP hardware
- Brazilian Portuguese language support
- Full international language support

#### ■ **Additional RS/6000 Systems Supported\*\*\***

- ◆ G30, J30, R30

#### **AIX 4.1 (Announced 26-Jul-94, GA 12-Aug-94)**

- *Program number 5765-393 (later superseded by 5765-C34)*
- Support for greater than 2 GB file systems
- JFS fragmentation and compression
- Disk Striping available in LVM
- Security improvements including enhancements to password management and login controls
- Performance analysis and monitoring tools
- Network Install Manager (NIM)
- Many components automatically installed via hardware detection
- Systems Object Model (SOM) Base Toolkit included
- National Language Support enhancement
- Improvements to loader, binder, and linker functions
- AIX kernel threads included enabling SMP capabilities
- TTY function changed to a streams base
- FDDI function included (previously ordered separately)
- Functions packaged (previously charged for): X Station Manager, AIXwindows 2D
- New GUI based on the Common Desktop Environment
- Migration tools to assist in migrating from AIX 3.2
- Standards compliance now includes: POSIX 1003.1, POSIX 1003.2, POSIX 1003.4a Draft 7 and XPG4

#### **AIX 3.2.5 (Announced 21-Sep-93, GA 15-Oct-93)**

- *Program number 5756-030*
- *AIX Version 3 original announce date 15 February 1990*
- *Withdrawn from marketing 31 January 1997*
- *Central service ended 31 December 1997*
- *AIX 4 is supported on all adequately configured RS/6000 systems except:*
  - ◆ RS/6000 7016 POWERserver® Model 730
  - ◆ RS/6000 7007 Notebook Workstation Model N40
  - ◆ POWERnetwork Dataserver 7051
  - ◆ RS/6000 7249 Models 851 and 860
  - ◆ RS/6000 7247 Models 821, 822, and 823

#### **Notes:**

\* Bonus Pack and Value Option are not part of AIX but are delivered at no extra charge when RS/6000 systems are ordered with media.

\*\* Year 2000 AIX code defects on the most recent AIX service levels of AIX 4.1 and AIX 4.2 will be handled separately and will be fixed without charge until January 31, 2001. Customers may be asked to agree in advance to pay the prevailing AIX Support Line fees for researching and/or resolving the reported problem if it is determined that the reported problem is not an AIX Year 2000 problem. All versions of AIX from 3.2.5 onwards can be made Year 2000 ready with the addition of the appropriate PTFs.

\*\*\*New system support is only shown for the major release unless a specific update is also announced for previous releases. To keep this document to a manageable size, feature-level support information is generally not included.

#### **Delivery Method Changes**

This Table shows the status of selected AIX functions which changed delivery method from AIX 4.3.1 onwards.

(LPP= Licensed Program, BP = Bonus Pack, VO =Value Option)

<b>Content</b>	<b>AIX 4.3.1+</b>	<b>AIX 4.2.1</b>	<b>AIX 4.1.5</b>
■ IP security (IP Sec)	in base\$	N/A	N/A
■ LDAP with DB2	in base\$	N/A	N/A
■ Concurrent IPv6 & IPv4 in base		IPv4 only	IPv4 only
■ Stand-alone perf tools	in base	LPP	LPP
■ Mountable publications	in base	LPP	LPP
■ JDK and JIT compiler	in base	BP	VO
■ OpenGL & PHIGS APIs in base		LPP	LPP
■ Systems Management	Web+SMIT	SMIT	SMIT
■ Publications	HTML(base)	Private	Private
■ DCE 2.1 Client	BP	in base	in base
■ WorkGroup Conf'ing	BP (4.3.2)	N/A	N/A

(§) Was previously in the AIX 4.3.0 Bonus Pack

#### **AIX 4.3 functions not supported on SP systems**

- Alternate disk installation while AIX is running — this is a process that involves installing a mksysb (install) image onto an alternate disk using NIM or a mksysb tape. Customers planning on integrating an S70/S70 Advanced into an SP system will not be able to make use of this capability.
- C2 Security Evaluation - This is support for 64-bit system and auditing enhancements. It is supported on the SP system with limitations. These functions can only be invoked under a C2 predefined configuration. The SP system is not part of the evaluated system and therefore the new functions cannot be installed or invoked by SP programs. These functions are supported as part of the base AIX evaluated system.
- IPv6 - IPv6 is the next generation Internet Engineering Task Force (IETF) networking protocol that will become the industry standard network protocol for the Internet. IPv6 is the change that will extend the maximum number of Internet addresses to handle the ever increasing Internet user population. IPv6 is not supported on the SP system. No IPv6 networks (or IPv6 gateway capability via "gated") can be run on SP nodes. IPv6 should not be configured on S70/S70 Advanced systems that are to be integrated into an RS/6000 SP system.

## New Volume Limits

This table is provided as an easy reference to the new volume limits.

	AIX 4.3.1	AIX 4.3.2
Max Disks in VG	32	128
Max Logical Volumes in VG	256	512
Max Physical Partitions per VG	32,512	130,048

4.3.1 & 4.3.2 factor	Partitions per disk	4.3.1 Max # disks	4.3.2 Max # disks
1	1016	17-32	65-128
2	2032	9-16	33- 64
4	4064	5- 8	17- 32
8	8128	3- 4	9- 16
16	16256	1- 2	5- 8
32	32512		3- 4
64	65024		1- 2

### Physical Partitions per AIX 4.3.1 Volume Group Limit

= 32 x 1016 = 32,512 partitions

### Physical Partitions per AIX 4.3.2 Volume Group Limit

= 128 x 1016 = 130,048 partitions

## AIX Software Processor Charge Groups

(Groups are primarily used in determining the applicable "User Cost Cap" above which additional users are not charged on that system)

**Group D5 (40 users):** 7006-all, 7008-all, 7009-all, 7011-all, 7024-all, 7025-F30, 7025-F40, 7026-H10, 7043-140, 7043-150, 7043-240, 7247-all, 7248-all, 7249-all, 7317-all, 7596-001

**Group E5 (80 users):** 7012-all, 7025-F50, 7026-H50, 7030-all, 7043-260, 7046-B50, 7317-F3L

**Group F5 (80 users):** 7013-5xx, 7013-Jxx, 7016-all

**Group G5 (80 users):** 7015-all, 7051-all, 7017-all, 7013-Sxx

**Group P5 (160 users):** 9076-all (RS/6000 SP)

## Information Pointers

Detailed announcement information can be found via Offerings Information at <http://www.ibm.link.ibm.com/>. For information relating to versions of other IBM software products for AIX and the RS/6000, please refer to the Availability List at <http://www.rs6000.ibm.com/software/Apps/LPPmap.html> which is regularly updated. For general information, news and recent announcements concerning RS/6000, visit the RS/6000 "home page" at <http://www.rs6000.ibm.com>.

To automatically receive new announcements that match your selected information types and interest areas via Internet e-mail on announcement day, register with IBM's iSource site at <http://isource.ibm.com> – based on the information types you select, you can receive titles of documents or documents in their entirety.

Definitions of year 2000 ready and information on the Year 2000 status of all IBM products can be found on the IBM Year 2000 web site at <http://www.ibm.com/year2000>.

Further Information on euro readiness and the status of IBM products can be found on IBM's EuroReady Product Database at <http://www.euro.raleigh.ibm.com>

Statements made in this document regarding Year 2000 are "Year 2000 Readiness Disclosures" under the Year 2000 Information and Readiness Disclosure Act of 1998, A U.S. Statute enacted on October 19, 1998.

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## AIX Bonus Packs

AIX Bonus Packs (named “Value Option” on AIX 4.1.5) complement the AIX product offering. One is delivered at no additional charge when RS/6000 systems are ordered with media. Bonus Packs can be ordered or updated separately for existing AIX licensees for a modest media refresh charge. You benefit from packaged software and additional value for AIX.

Updated versions are published with new releases of the contents. Bonus Pack announcements and shipments are not tied to AIX.

Bonus Pack content can vary by country or geography.

Typical releases include:

- *Development tools*
- *Software supporting e-business*
- *Interoperability*
- *Browsers*
- *Java and Internet application development*
- *Evaluation software*
- *Network management utilities*
- *Country-specific security encryption*

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### AIX 4.3.3 (Announced 13-Sep-99, GA 24-Sep-99)

**Bonus Pack\* updated to edition ‘9909’**

- Chili!Soft ASP V3.0 (*Developer's Edition*) added
- SCO Tarantella V1.4.0.0 (*evaluation software*) added
- AIX Fast Connect (*60 day evaluation software*) updated to Release 2.1.1
- Netscape Communicator updated to 4.51
- DB2 Universal Database (*evaluation software*) updated to V6.1

### AIX 4.3.2 (Announced 08-Jun-99, GA 18-Jun-99)

**Bonus Pack\* updated to edition ‘9906’**

- AIX Fast Connect V2.1 (*60 day evaluation Software*) added
- WebSphere™ Application Server V2.02, Standard Edition (with IBM HTTP Server V1.3.3) added
- GraphOn GO-Joe V2.2.0.0 and GraphOn GlobalHost V1.0.8.0 added
- Web-based System Manager V4.3.2 now available in France
- Java Media Framework updated to V1.1.0.1
- Novell Network Services 4.1 for AIX (*evaluation software*) updated to V2.2.1
- DCE Client V2.1 **removed**
- IBM WorkGroup Conferencing for AIX **removed**

### AIX 4.3.2 (Announced 16-Mar-99, GA 26-Mar-99)

**Bonus Pack\* updated to edition ‘9903’**

- Geodesic Systems Great Circle 3.1 (*Try and Buy*) added
- The Kernel Group ZeroFault Dynamic Debugger V2.3, *Evaluation Software* added
- Oracle8 Server, *30-Day Trial Software* added as supplemental program
- VisualAge for Java Entry updated to V2.0.0.3 (EuroReady)
- IBM Java Media Framework (JMF) updated to V1.1.0.1
- IBM WorkGroup Conferencing for AIX updated to V1.1.0.3
- Netscape Navigator, with IBM techexplorer Hypermedia Browser *Introductory Edition* V2.0 plug-in, updated to 4.08
- Netscape Communicator, with IBM techexplorer Hypermedia Browser *Introductory Edition* V2.0 plug-in, updated to 4.08
- Ultimedia Services updated to V2.2.1.2

### AIX 4.3.2 (Announced 01-Dec-98, GA 11-Dec-98)

**Bonus Pack\* updated to edition ‘9812’**

- DB2 Universal Database V5.2 for AIX - *Evaluation Software*
- Java Media Framework V1.1
- Netscape Communicator 4.07 with IBM techexplorer Hypermedia Browser *Introductory Edition* V2.0 plug-in
- IBM WorkGroup Conferencing for AIX updated to V1.1.0.2
- Netscape Navigator, with IBM techexplorer Hypermedia Browser *Introductory Edition* V2.0 plug-in, updated to V4.07
- ADSTAR® Distributed Storage Manager (ADSM) for AIX **removed**

### AIX 4.3.2 (Announced 05-Oct-98, GA 23-Oct-98)

**Bonus Pack\* updated to edition ‘9810’**

- Tivoli Management Agent (TMA) V3.2 added
- techexplorer Hypermedia Browser *Introductory Edition* V2.0 plug-in added (packaged with Netscape Navigator)
- VisualAge® for Java Entry, V2.0 added (availability 12/98)
- Web-based System Manager Security V4.3.2 added
- WorkGroup Conferencing for AIX V1.1.0 added
- Netscape Navigator updated to V4.0.6
- Ultimedia Services (UMS) updated to V2.2.1
- TotalNET Advanced Server (TAS) *Evaluation Software* updated to V5.3
- Novell Network Services 4.1 for AIX *Evaluation Software* updated to V2.1.1
- Lotus Domino Go Webserver updated to 4.6.2.5
- Netscape Navigator V3.0.4 **removed**
- Netscape FastTrack Server V3 **removed 12/98**

### AIX 4.3.1 Update (Announced 23-Jun-98, GA 31-Jul-98)

**Bonus Pack\* updated to edition ‘9807’**

- Netscape FastTrack Server updated to V3
- Lotus Domino Go Webserver updated to 4.6.2.3
- ADSTAR Distributed Storage Manager (ADSM) for AIX, V3.1 *Evaluation Software* added
- Network Station Manager removed and replaced by Network Station Manager V1.3 available as a no-charge licensed program (5648-C05).

### AIX 4.3.1 (Announced 06-Apr-98, GA 24-Apr-98)

**Bonus Pack\* updated to edition ‘9804’**

- Adobe Acrobat Reader updated to 3.0.1
- Lotus Domino GO Webserver updated to 4.6.1
- Netscape Navigator updated to 3.0.4
- Netscape Navigator updated to 4.0.4
- Ultimedia Services updated to 2.2.0.1
- Novell Network Services 4.1 for AIX V2.2 added (*Evaluation Software*)
- Syntax TotalNET Advanced Server V5.2 added (*Evaluation Software*)

### AIX 4.3 (Announced 06-Oct-97, GA 31-Oct-97)

**Bonus Pack\* included**

- Ultimedia Services V2.2
- Adobe Acrobat Reader, V2.01
- Lotus Domino Go Webserver 4.6 (was IBM ICSS)
- Network Station Manager (NSM) V1.2
- DCE Client V2.1
- IP Security, 40-bit DES
- LDAP-SSL V3, 40-bit Encryption
- Netscape Navigator 4.0.3 (browser only)
- Netscape Navigator 3.0.3
- Netscape FastTrack Server 2.01

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### AIX 4.2.1 (Announced 13-Sep-99, GA 24-Sep-99)

**Bonus Pack\* updated to edition ‘9909’**

- IBM AIX Developer Kit, Java™ Technology Edition, updated to V1.1.8 with Just-in-Time updated to V3.5
- Netscape Communicator updated to 4.51
- DB2 Universal Database (*evaluation software*) updated to V6.1

### AIX 4.2.1 (Announced 16-Mar-99, GA 26-Mar-99)

**Bonus Pack\* updated to edition ‘9903’**

- Geodesic Systems Great Circle 3.1 (*Try and Buy*) added
- The Kernel Group ZeroFault Dynamic Debugger V2.3, *Evaluation Software* added
- Oracle8 Server, *30-Day Trial Software* added as supplemental program
- VisualAge for Java Entry updated to V2.0.0.3 (EuroReady)
- IBM Java Media Framework (JMF) updated to V1.1.0.1
- Netscape Navigator, with IBM techexplorer Hypermedia Browser *Introductory Edition* V2.0 plug-in, updated to 4.08
- Netscape Communicator, with IBM techexplorer Hypermedia Browser *Introductory Edition* V2.0 plug-in, updated to 4.08
- Ultimedia Services updated to V2.2.1.2

#### **AIX 4.2.1 Update (Announced 01-Dec-98, GA 11-Dec-98)**

##### ***Bonus Pack\* updated to edition '9812'***

- DB2 Universal Database V5.2 for AIX - *Evaluation Software*
- Java Media Framework V1.1
- Netscape Communicator 4.07 with IBM techexplorer Hypermedia Browser *Introductory Edition* V2.0 plug-in
- IBM AIX Developer Kit, Java™ Technology Edition, updated to V1.1.6
- Netscape Navigator, with IBM techexplorer Hypermedia Browser *Introductory Edition* V2.0 plug-in, updated to V4.07
- ADSTAR Distributed Storage Manager (ADSM) for AIX **removed**

#### **AIX 4.2.1 Update (Announced 05-Oct-98, GA 23-Oct-98)**

##### ***Bonus Pack\* updated to edition '9810'***

- Tivoli Management Agent (TMA), V3.2 added
- techexplorer Hypermedia Browser *Introductory Edition*, V2.0 plug-in added (packaged with Netscape Navigator)
- VisualAge for Java Entry, V2.0 added (availability 12/98)
- Netscape Navigator updated to V4.0.6
- Ultimedia Services (UMS), updated to V2.2.1
- TotalNET Advanced Server (TAS) *Evaluation Software* updated to V5.3
- Novell Network Services 4.1 for AIX *Evaluation Software* updated to V2.1.1
- Lotus Domino Go Webserver updated to 4.6.2.5
- IBM AIX Developer Kit, Java™ Technology Edition, updated to V1.1.6 with Just-In-Time updated to V3.0
- eNetwork LDAP Directory, updated to V2.1
- Netscape Navigator V3.0.4 **removed**
- Netscape FastTrack Server V3 **removed 12/98**

#### **AIX 4.2.1 Update (Announced 23-Jun-98, GA 31-Jul-98)**

##### ***Bonus Pack\* updated to edition '9807'***

- Netscape FastTrack Server updated to V3
- Lotus Domino Go Webserver updated to 4.6.2.3
- ADSTAR Distributed Storage Manager (ADSM) for AIX, V3.1 *Evaluation Software* added
- Network Station Manager removed and replaced by Network Station Manager V1.3 available as a no-charge licensed program (5648-C05).

#### **AIX 4.2.1 Update (Announced 06-Apr-98, GA 24-Apr-98)**

##### ***Bonus Pack\* updated to edition '9804'***

- Adobe Acrobat Reader updated to 3.0.1
- IBM AIX Developer Kit, Java™ Technology Edition, updated to V1.1.4 with IBM's JIT 2.01
- Netscape Navigator updated to 3.0.4
- Netscape Navigator updated to 4.0.4
- Ultimedia Services updated to 2.2.0.1
- Lotus Domino GO Webserver 4.6.1 added
- IBM eNetwork LDAP Directory V1.1.1 added
- LDAP-SSL V3 added
- Novell Network Services 4.1 for AIX, V2.2 added (*Evaluation Software*)
- Syntax TotalNET Advanced Server V5.2 added (*Evaluation Software*)
- Internet Connections Secure Server V4.2.1 removed

#### **AIX 4.2.1 Update (Announced 06-Oct-97, GA 31-Oct-97)**

##### ***Bonus Pack\* updated***

- Ultimedia Services updated to V2.2
- Network Station Manager V1.2 added
- Netscape Navigator 4.0.3 (browser only) added
- Netscape Navigator 3.0.3 updated

#### **AIX 4.2.1 Update (Announced 26-Aug-97, GA 29-Aug-97)**

##### ***Bonus Pack\* updated***

- IBM AIX Developer Kit, Java™ Technology Edition, updated to V1.1.2 and includes IBM's JIT compiler

#### **AIX 4.2.1 Update (Announced 24-Jun-97, GA 27-Jun-97)**

##### ***Bonus Pack\* updated***

- NLS support for Internet Connection Secure Servers V4.2
- IBM AIX Developer Kit, Java™ Technology Edition, updated to V1.1.1

#### **AIX 4.2.1 (Announced 15-Apr-97, GA 25-Apr-97)**

##### ***Bonus Pack\* updated***

- Netscape Navigator 3.0 supports German and French
- Netscape FastTrack Server updated to 2.0.1
- includes a 60-day evaluation copy of ADSM
- IBM Internet Connection Secure Server updated to V4.2
- Ultimedia Services updated to V2.1.6

#### **AIX 4.2 Update (Announced 08-Oct-96, GA 22-Nov-96)**

##### ***Bonus Pack\* updated***

- Ultimedia Services V2.1.5 with speech dictation included
- Netscape Navigator updated from V2.0 to V3.0
- Netscape FastTrack Server
- IBM AIX Developer Kit, Java™ Technology Edition, updated to V1.02 and includes IBM's Just-in-Time (JIT) compiler

#### **AIX 4.2 (Announced 23-Apr-96, GA 17-May-96)**

##### ***Bonus Pack\* included***

- IBM Ultimedia Services V2.1.4
- Netscape Navigator V2.01
- Sun's Java programming environment V.1.0
- Adobe Acrobat Reader V.2.1
- Netscape FastTrack Server
- IBM Internet Connection Secure Server (ICSS)

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#### **AIX 4.1.5 Update (Announced 06-Apr-98, GA 24-Apr-98)**

##### ***Value Option\* updated***

- IBM AIX Developer Kit, Java™ Technology Edition, updated to V1.1.4 with IBM's JIT 2.01
- Netscape Navigator updated to 3.0.4
- Netscape Navigator updated to 4.0.4
- Ultimedia Services updated to V2.2.0.1

#### **AIX 4.1.5 Update (Announced 06-Oct-97, GA 31-Oct-97)**

##### ***Value Option\* updated***

- Ultimedia Services updated to V2.2
- Netscape Navigator updated to V3.0.3

#### **AIX 4.1.5 Update (Announced 15-Apr-97, GA 25-Apr-97)**

##### ***Value Option\* updated***

- Netscape Navigator 3.0 supports German and French
- 60-day evaluation copy of ADSM included
- IBM Internet Connection Secure Server updated to V4.2
- Ultimedia Services updated to V2.1.6

#### **AIX 4.1.5 (Announced 08-Oct-96, GA 08-Nov-96)**

##### ***Value Option\* introduced***

- IBM Ultimedia Services V2.1.5
- Netscape Navigator V3.0

##### ***Note:***

\* Bonus Pack and Value Option are not part of AIX but are delivered at no extra charge when RS/6000 systems are ordered with media.

#### **Programs From Other Program Suppliers**

The following programs contained in AIX Bonus Pack are licensed under the terms and conditions of the program supplier:

- Netscape Communicator 4.51
- Adobe Acrobat Reader 3.01
- Syntax TotalNET Advanced Server V5.3, Evaluation Software
- Geodesic Great Circle V3.1, "Try and Buy"
- The Kernel Group ZeroFault Dynamic Debugger V2.4, Evaluation Software
- GraphOn GO-Joe V2.2.0.0
- GraphOn GlobalHost V1.0.8.0
- Chili!Soft ASP V3.0 Developer's Edition
- SCO Tarantella V1.4.0.0, Evaluation Software

Trial software and evaluation software provided by program suppliers may contain a disabling device that will prevent it from being used at the expiration of the license



## Limited Warranty

The following products are not warranted by IBM. Warranty, if any, is provided by the program supplier. IBM makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

- Netscape Communicator 4.51
- Adobe Acrobat Reader 3.01
- Syntax TotalNET Advanced Server V5.3, Evaluation Software
- Geodesic Great Circle V3.1.2, "Try and Buy"
- The Kernel Group ZeroFault Dynamic Debugger V2.3.4, Evaluation Software
- Oracle8i Server, 30-Day Trial Software (Supplemental Program media)
- GraphOn GO-Joe V2.2.0.0
- GraphOn GlobalHost V1.0.8.0
- Chili!Soft ASP V3.0 Developer's Edition
- SCO Tarantella V1.4.0.0, Evaluation Software

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