IBM i 7.4 Technology Refresh 1 enhances the IBM i portfolio of products

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Overview

IBM(R) i, the integrated operating environment that runs on IBM Power(R) Systems with a reputation for robust architecture, exceptional security, and business resilience, is enhanced. IBM i 7.4 Technology Refresh (TR) 1 for the IBM i portfolio of products offers clients new features and enhancements across many of the components, such as:

- The Integrated Web Server (IWS) environment can now be deployed in a user-specified subsystem, giving users better control and management of system resources. The IWS has also improved the programmatic deployment functionality.
- The Digital Certificate Manager (DCM) has added a new GUI that simplifies and improves certificate management on IBM i.
- IBM i System Transport Layer Security (TLS) is enhanced to comply with emerging industry standards for TLSv1.3 and improve support for TLSv1.2.
- Cluster administrative domain has increased the monitored resource entries (MREs) limit. This allows room for cluster growth and increases usability of key functions, such as support to replicate an encrypted password. It also enables changes to the synchronization option on inactive nodes and adds a new format to the Retrieve Monitored Resource Information (QfpadRtvMonitoredResourceInfo) API to provide sorting, subsetting, and a continuation option.
- IBM Db2(R) for i includes new and improved SQL capabilities with attributes that are valued by business computing solutions.
- IBM Db2 Mirror for i has new capabilities, such as the initial version of the application evaluation support tool and support for Live Partition Mobility and the S922.
- IBM PowerHA(R) SystemMirror(R) for i brings several enhancements to the PowerHA portfolio, including:
  - Improvements to the administrative domain, such as support for replicating user-profile passwords that have been set with the QSYSUPWD API
  - Increased capacity of the administrative domain with support for synchronizing up to 200,000 monitored resources
  - Faster and easier management of the administrative domain so users can easily sort and filter monitored resources with the WRKCADMRE command
  - Simplified setup and implementation of the administrative domain with a streamlined way to easily find and add many resources using a single command

  - Integrated and streamlined recovery from a data center outage in a HyperSwap(R) with a LUN-level switching environment that enables HyperSwap protection to be restored with a single command
- IBM Backup, Recovery, and Media Services for i (BRMS) provides virtual tape image catalog and backup administration improvements.
- The RPG language of IBM Rational(R) Development Studio for i (RDS) includes overloading for procedure calls. RPG now has a framework to generate many other data languages, such as XML, JSON, YAML, and HTML from RPG data structures, that help enhance programmer productivity.
- IBM Rational Developer for i (RDi) includes refactoring functionality and improved indexing and searching within the preferences support.
- IBM i Access Client Solutions (ACS) schema support provides better search and find capabilities. Additionally, "Run SQL Scripts" has been enhanced with many updates, including content assist, integrated save-as favorites, timestamps showing query execution times, and more.
- With new open source enhancements, popular technologies for messaging between application components, storing data, and so on are easily available in RPM form.
- A new generation of enterprise 2.5-inch solid-state drives (SSD) improves enterprise-class reliability, endurance, and capacity characteristics.
- IBM i 7.4 TR1 supports PCIe3 x8 SSD NVMe adapters that provide multiple capacity points for enterprise workloads on selected Power servers with POWER9™ technology. Support is for selected dedicated and VIOS VSCSI attached NVMe devices. This low-latency alternative to dedicated SAS storage fulfills the Statement of Direction from the April 24, 2019, IBM i 7.4 announcement.
- IBM i supports the new processor feature for 11-core or 22-core configurations of the IBM Power System S924 server, which provides additional choices for the scale-out market.
- SR-IOV logical ports can be assigned to IBM i LPARs that are configured with restricted I/O. This allows high-speed, low-latency network adapter usage while still being able to use Live Partition Mobility. This new support also enables the use of RoCE for IBM i on the IBM Power System S922 server.

  Note: RoCE is required for the IBM Db2 Mirror for i product.

- License keys can be added to an IBM i LPAR through the HMC or Novalink interface. This saves time for administrators because they no longer need to sign in to each individual LPAR when additional keys are required. Managers of multitenancy environments with multiple servers will find this especially helpful, as will those migrating to a new server.

Key requirements

IBM i 7.4 TR1 is supported on selected IBM Power Systems servers with:

- IBM POWER9 technology-based processors
- IBM POWER8(R) technology-based processors

Clients using blades or IBM PureFlex(R) systems, and those using servers with IBM POWER7(R), IBM POWER7+, or earlier processors, need to move to newer systems to take advantage of the new features in IBM i 7.4 TR1.

For up-to-date information on all types of code levels needed for support of a particular feature, see the Power Systems Prerequisites website.

See the Technical Information section for specific hardware and software prerequisites.

Planned availability date

Description

IBM i 7.4 TR1 offers clients new features and enhancements across many of the components in the IBM i portfolio of products. As in previous releases, the enhancements are delivered through a set of PTF groups, known as a Technology Refresh, and provide significant enhancements to developers and administrators.

Technical detail for IBM i enhancements delivered with IBM i 7.4 TR1 can be found on the IBM i developerWorks® Technology Updates wiki. This wiki is organized by subject matter.

To make it easy to find IBM i 7.4 TR1-specific enhancements, see the aggregated list of enhancements found on the developerWorks wiki landing page.

IBM i Operating System (5770-SS1)

Integrated Web Server (IWS)

The IWS is enhanced in several ways to help clients with the automated deployment of REST APIs, as well as customizations to give better control and management capabilities of the system resources:

- Users can now deploy the IWS server into user-created subsystems. This gives users control of the memory and processing resources being used by the IWS environment.
- Users can now deploy the IWS servers and other servers automatically using the scripting interfaces. A property file is required for deployment, and this new script enables users to programmatically generate the property file as part of the automatic deployment.

For additional details on these new updates, see the Integrated Web Services for IBM i wiki landing page.

Digital Certificate Manager

Users that need to work with digital certificates on IBM i can now leverage a new, modern user interface. Users can easily see all the certificates in their stores, filter and sort them for quick identification, and visually see those that are expiring or already expired. Additionally, users can manage the application definitions and easily assign certificates to them as required.

To access this new GUI, apply the required PTFs and enter the following into your browser: http://hostname:2001/DCM

Details can be found on the IBM i Technology Updates wiki landing page.

Enhanced unmap support for IBM Spectrum® Virtualize

The SCSI unmap support in IBM i for storage based on Spectrum Virtualize is enhanced to enable the processing of the unmap commands to occur in the background. This can improve performance for systems that may have been driving a lot of SCSI unmap commands to storage. A background task now frees the storage that has been deallocated from an IBM i perspective and allows for better management of data reduction pools.

Dynamic LUN expansion with the IBM DS8900 storage controller

IBM i now supports the changing of the size of the LUN that comes on an IBM DS8900 storage controller. If the LUN type on a DS8900 is a variable LUN size (models 050 and 099), that LUN can increase in size. The IBM i host does not fully recognize the size change immediately but begins processing to prepare the internal

structures for the size increase. After the next IPL, the full capacity of the new LUN size is usable. This can be utilized on all disks, including the load source.

Networking enhancements

IBM i System Transport Layer Security is enhanced to comply with emerging industry standards for TLSv1.3 and improve support for TLSv1.2.

- The native IBM i JSSE provider includes support for TLSv1.3 protocol.
- TLSv1.3 and TLSv1.2 support elliptic curve Diffie-Hellman key exchange using Curve25519(x25519) and Curve448(x448).
- TLSv1.2 supports ChaCha20 Poly1305 cipher suites.
- Online Certificate Status Protocol (OCSP) stapling support is added to TLSv1.3 and TLSv1.2.
- RSASSA-PSS certificate type is added to TLSv1.3.

Clustering enhancements

With system administrators in mind, several enhancements have been made to the cluster administrative domain:

- The limit of MREs is increased from 45,000 to 200,000 to allow more resources to be replicated. This benefits clients who already have a large number of user profiles they may want to replicate.
- Support is added to replicate an encrypted password that was previously set through the QSYSUPWD API. Before, the use of the QSYSUPWD API caused the user profile to be inconsistent, and manual intervention was required to correct it. Now users can change to the synchronization option when a cluster node is inactive, increasing flexibility for the timing of synchronization.
- A new format for the QfpadRtvMonitoredResourceInfo API is used to retrieve a subset of monitored resources, provide a continuation option to retrieve more entries, and retrieve the monitored resources in a sorted order. These enhancements can improve performance and efficiency by returning a subset instead of all monitored resources in a desired sorted order that makes it easier for users to find or look at certain MREs.

Db2 for i

With IBM i 7.4 TR1, Db2 for i focuses on new and advanced SQL capabilities and the ability to use SQL to access IBM i operating system details.

Application developers using IFS for source code control can utilize embedded SQL with CCSID 1208 source code on ILE C and ILE C++ SQL Precompilers.

In the tradition of recent Technology Refreshes, IBM i services are added and enhanced, providing useful SQL-based alternatives to IBM i commands and APIs:

- SQL alternatives to the Display Program (DSPPGM) and Display Service Program (DSPSRVPGM) control language (CL) commands enable the use of SQL for application impact analysis, application implementation management, and many other application-specific use cases.
- The IFS_OBJECT_STATISTICS() UDTF table function is added, bringing an SQL alternative to the Retrieve Directory Information (RTVDIRINF) command. This new, general-purpose SQL table function can be used to find and manage objects within the integrated file system (IFS).
- The IFS_JOB_INFO, IFS_OBJECT_USAGE_INFO, and IFS_OBJECT_USAGE_JOBS table functions are added as SQL alternatives to Retrieve Object References (QP0LROR) and Retrieve Referenced Objects (QP0LRRO) APIs. These new SQL table functions make it easy to capture essential detail about IFS usage for systems-management and application-management use cases.

These and other enhancements are delivered through Db2 for i PTF Group SF99704. For Db2 for i PTF Group details, see the Db2 for IBM i PTF Group wiki landing page.

See the IBM i Technology Updates wiki on developerWorks to learn more about these and other Db2 for i enhancements.

Licensed Program Products

Db2 Mirror for i (5770-DBM)

The Db2 Mirror product provides continuous availability for our IBM i community. The Db2 Mirror products is extended to allow a wider array of IBM i environments. Additionally, users can now simplify the access point to the Db2 Mirror environment from their front facing applications. The following include details on what has been included:

- Support for the IBM Power System S922. With the 940 firmware for the S922, SR-IOV logical ports for RoCE can be assigned to the IBM i LPAR on an S922. This functionality enables Db2 Mirror for i to be configured on the S922.
- Support for Live Partition Mobility of a node configured for Db2 Mirror. With the 940 firmware, an SR-IOV logical port is allowed to be assigned to an IBM i LPAR that is in restricted I/O mode. To perform LPM, you have to DLPAR remove the SR-IOV logical port, perform the migration and then add the SR-IOV port back. During the time the LPAR does not have an SR-IOV RoCE logical port, one of the nodes that is designated the primary should be tracking changes. You can choose if you want to migrate the primary or secondary node.
- Application Evaluation Support Tool. IBM is providing the initial version of the application evaluation support tool. For clients with Db2 Mirror installed, this addition to the Db2 Mirror GUI interface provides a better understanding of applications and how to incorporate them into Db2 Mirror environments.

PowerHA SystemMirror for i (5770-HAS)

PowerHA SystemMirror for i 7.4 adds several improvements to the administrative domain that simplify the deployment and management of high-availability environments.

Increased administrative domain capacity

The administrative domain in PowerHA is used for automatically synchronizing security-related and configuration-related objects, such as user profiles, system values, and device descriptions, between nodes in a PowerHA cluster. A change to a resource on one node results in the same change occurring on the other nodes in the cluster.

PowerHA previously had a limit of 45,000 resources that could be monitored by the administrative domain. However, environments continue to increase in size, and very large environments with more than 45,000 resources may require additional independent solutions to manage the additional level of resources, which increases the complexity of managing the entire environment. With PowerHA V4.0.1, the administrative domain's monitored resource entry limit has increased by over 340% to support up to 200,000 monitored resource entries, enabling support for the largest environments.

Faster and easier monitoring and management of the administrative domain

As the number of resources monitored and synchronized by the administrative domain has grown, the challenge of finding specific resources of interest in the administrative domain also has increased. PowerHA has improved the Work with Cluster Administrative Domain Monitored Resource Entries (WRKCADMRE) command to provide fast and easy searching, filtering, and sorting of resources. This enables administrators to find monitored resource entries of interest with a few keystrokes.

The WRKCADMRE command is enhanced with new parameters that enable filtering based on several criteria, including monitored resource, library, resource type, and global status. These filters can be combined and support generic wildcards.

Previously, initial configuration and setup for the administrative domain in PowerHA required adding individual resources into the administrative domain one at a time,

or using additional utilities provided by IBM Lab Services. With the PTFs available December 2019, the Add Cluster Administrative Domain Monitored Resource Entry (ADDCADMRE) command has been enhanced to support *ALL and wildcards on the monitored resource and library parameters. In addition, an omit parameter has been added. These new options are supported for user profiles, authorization lists, classes, job descriptions, and subsystem descriptions. Now, many resources can be added to the administrative domain with a single command, simplifying administrative domain setup.

Additional administrative domain enhancements

Other enhancements to the administrative domain include:

- Support for replicating encrypted passwords set with the QSYSUPWD API. Previously, the use of the QSYSUPWD API caused the user-affected profile to be marked as inconsistent within the administrative domain.
- Improved control over changing the synchronization option for an administrative domain using the CHGCAD command. Previously, all nodes in the administrative domain had to be active in the cluster to change the synchronization option. The synchronization option can now be changed even when some nodes in the administrative domain are inactive. When combined with the source node parameter on the STRCAD command, this gives full control over how monitored resources are synchronized throughout the administrative domain, both when starting the administrative domain and when starting cluster nodes.
- The WRKCADMRE command has been enhanced to work even when clustering is inactive. With this function, users can view monitored resources within an administrative domain on a local node even during maintenance windows.

Improved integrated and streamlined data center outage recovery in a HyperSwap with LUN-level switching environment

HyperSwap provides near-continuous availability in the event of a storage outage. This enables applications to continue running with minimal impact to end users. When combined with LUN-level switching, the solution also provides protection against server hardware outages, operating system and software outages, and local data center outages. Before, if a data center outage occurred in a HyperSwap with LUN-level switching environment, the environment switched to the backup data center. However, restoration of HyperSwap protection after the original data center came back online required several manual steps. PowerHA is enhanced to integrate and automate the restoration of HyperSwap protection in these scenarios by using a single command for simplified recovery.

To get started, see the IBM PowerHA SystemMirror for i wiki page for more information.

Backup, Recovery, and Media Services for i (5770-BR1)

BRMS has added the following new enhancements:

- Improved virtual tape image catalog management for backups using a virtual device. When BRMS uses a virtual device for a backup, the device will be unloaded from the image catalog and varied off to free up any resources that were used by the BRMS backup process.
- The select user-space support now includes cumulative incremental *ALLUSR backups. Starting in IBM i 7.2, BRMS changed to use the save/restore LIB(*SELECT) parameter to utilize a select user-space to specify the libraries to back up. This allows for more than 300 libraries in a single save command. The initial support did not include *ALLUSR cumulative incremental backups. The restriction of an *ALLUSR cumulative incremental has been removed.
- Added the Change Control Group Attributes (Q1ACHGCGA) API. BRMS has added a new customer API that provides a program call to specify the control group attributes for the devices and media policies to use for the backup.
- Enhanced volume selection for concurrent backup-tape reservations. Scheduling concurrent backups in a BRMS network using the same shared tape resource can cause volume selection collisions. The BRMS volume selection process has been

changed to better manage concurrent volume selection to protect against two backups selecting the same volume.

- Improved the backup omit processing to combine GUI web omits and green screen backup policy omits for libraries. BRMS used a hierarchy of precedence for processing backup omits. Omits created with the GUI would be given precedence over other omits. This hierarchy has been changed to provide a way to combine GUI omits with backup omits.
- Enhanced the backup control group exit program with the ability to run at the end of a control group. The BRMS control group exit program can now run at the end of a control group, in addition to after each item is backed up. This enables new exit-program processing for control-group failures.

Rational Development Studio for i (5770-WDS)

RPG is the most widely used programming language for IBM i development. Rational Development Studio for i delivers additional enhancements requested by new RPG programmers familiar with many open source languages. These enhancements focus on making RPG programmers even more productive.

- A new OVERLOAD keyword has been added to prototypes so programmers can list procedures and programs that they want to use when calling an overloaded prototype. Users can define simple prototypes, such as Print, and depending on the parameters passed, the actual program or procedure called is determined by the signature of the passed parameters.
- A new DATA-GEN opcode has been added to provide a robust and flexible infrastructure to create many new data documents, such as XML, JSON, YAML, and HTML, based on the contents of an RPG data structure. This is accomplished by using a generator program that does the processing. DATA-GEN is a similar technology to the DATA-INTO opcode previously provided.
- New parameter option OPTIONS(*EXACT) causes the RPG compiler to be stricter about the parameters that can be passed on a prototyped call. With OPTIONS(*EXACT), parameters passed by reference must exactly match the prototype. Parameters defined with CONST or VALUE must be able to be converted to the prototyped parameter type without loss of data, either through decimal truncation, string truncation, or CCSID conversion.

For more information, see the RPG Cafe website.

Rational Developer for i (5733-RDW)

Continuous focus on developer productivity and ease-of-use modern programming yields improved RDi features and usability.

The following new features have been delivered in RDi 9.6.0.7:

- Improved SQL formatting and SQL syntax verification
- New preference index that enables you to search all the preferences and shows you the structure of the preferences
- Addition of a library list control that adjusts the library list being used within a connection
- Continued expansion and enhancements of the refactoring support within RDi

For more information on these and other enhancements, see the IBM Rational Developer for i Hub wiki on developerWorks.

IBM i Access Client Solutions (5733-XJ1)

ACS interface enhancements are focused on improving the tools used by database engineers and system managers to manage and access the necessary information on IBM i.

- Schemas: The filter and search capabilities within schemas are improved to make finding things faster and more intuitive. Additionally, schemas support is enhanced for quick positioning, so users can rapidly move about the list based upon a keystroke.

- Run SQL Scripts: In this Technology Refresh, features are added that help SQL users create, save, and better understand their SQL statements.
  - Users can now get assistance on the tables and columns to select when building SQL statements.
  - The query execution timestamp within a Run SQL Scripts Results window is now displayed.
  - Users can extract the SQL used to create a Run SQL Scripts Results window.
  - To improve the user experience by seeing results appear quickly, ACS SQL scripts do a partial load (100 at a time) of resulting records before displaying. Upon a scroll action, additional records are displayed.
  - Users can easily add their own "Insert from Examples" with the click of a button. Users can customize "Insert from Examples" categories and descriptions, as well as provide additional locations for saved scripts.
  - Users can see the source script for "Insert from Examples".
  - Useful examples for every new SQL service are provided in this Technology Refresh.

Open source

ZeroMQ

The ZeroMQ core engine in C++ (libzmq) has been delivered in RPM form. ZeroMQ is an open source universal messaging library. It is an important building block, as numerous applications rely on this technology. For more information, see the ZeroMQ website.

The Python bindings (pyzmq) are also available, making the ZeroMQ capabilities easily available to Python applications on IBM i. For more information, see the PyZMQ Documentation website.

Redis

The open source in-memory store mechanism is now available in RPM form. It has several uses, such as a message broker, cache, or database. It helps with enabling applications that use this technology or is commonly used to support new development of web applications, particularly Node.js. For more information, see the Redis website. For more information on how to get started with RPMs, see the IBM i RPM Open Source Git repository.

Hardware and firmware

IBM i 7.4 TR1 supports FW940, which provides the most up-to-date POWER9 functionality.

Several enhancements provide operational efficiency and increased configuration flexibility:

- A new generation of enterprise 2.5-inch solid-state SSDs, which incorporates the latest 3D NAND technology.
- Dedicated support for selected PCIe3 x8 SSD NVMe adapters that provide an alternative to dedicated SAS storage.
- Support for VIOS virtual SCSI drives that are backed by selected NVMe devices and provide an alternative to SAS storage.
- A new processor feature for 11-core or 22-core configurations of the Power System S924 server, which provides additional choices for the scale-out market.
- The HMC or Novalink command-line interface can be used to add license keys to an IBM i LPAR.
- Dynamic LPAR (DLPAR) can be used to assign SR-IOV logical ports to LPARs that are configured with restricted I/O. This configuration has the benefit of high-speed, low-latency traffic, which enables users to later make use of Live Partition Mobility. DLPAR can also be used to remove the SR-IOV logical ports from the LPAR prior to the LPM action. This support enables the use of RoCE for IBM i on the Power System S922 server.

Note: RoCE is required for the IBM Db2 Mirror for i product.

Additional details about these and other hardware-related enhancements can be found on the IBM i developerWorks Technology Updates wiki landing page.

Statement of general direction

IBM Db2 Mirror for i planning insights

IBM plans to introduce the support for internal disk as a storage option to the Db2 Mirror for i product.

Statements by IBM regarding its plans, directions, and intent are subject to change or withdrawal without notice at the sole discretion of IBM. Information regarding potential future products is intended to outline general product direction and should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for IBM products remain at the sole discretion of IBM.

Reference information

For additional information on IBM i, see:

- Software Announcement ZP19-0548, dated October 8, 2019(IBM PowerVM(R) 3.1.1, IBM PowerVC V1.4.4, and IBM Virtual HMC (vHMC) 9.1.940 offer new enhancements)
- Hardware Announcement ZG19-0085, dated October 8, 2019(IBM POWER9 and IBM POWER8 technology-based systems deliver hardware enhancements)

Program number

Program number	VRM	Program name
5770-SS1	7.4	IBM i 7.4 TR1

Offering Information

Product information is available on the IBM Offering Information website.

Publications

None

Services

Global Technology Services

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings for the efficient installation, implementation, or integration of this product.

Technical information

Specified operating environment

Hardware requirements

IBM i 7.4 TR1 is supported on selected Power Systems servers with POWER9 or POWER8 processors. Clients using blades or PureFlex systems, and those using servers with POWER7, POWER7+, or earlier processors, need to move to newer systems to take advantage of the new features in IBM i 7.4 TR1.

For up-to-date information on all types of code levels needed for support of a particular feature, see the Power Systems Prerequisites website.

For additional information, see theSystem to IBM i mapswebsite.

Software requirements

To find the supporting technical details for the topics found in this announcement letter for IBM i 7.4, see the TR1 enhancements website.

IBM Support

IBM Support is your gateway to technical support tools and resources that are designed to help you save time and simplify support. IBM Support can help you find answers to questions, download fixes, troubleshoot, submit and track problem cases, and build skills. Learn and stay informed about the transformation of IBM Support, including new tools, new processes, and new capabilities, by going to the IBM Support Insider.

You can also access the Service requests and PMRs website for additional support options.

Planning information

Packaging

This offering is delivered through the internet and as physical media.

Security, auditability, and control

IBM i uses the security and auditability features of IBM i.

The client is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Ordering information

Consult your IBM representative.

There is no new ordering information in this release.

Charge metric

Not applicable

Terms and conditions

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License Information number

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Limited warranty applies

Yes

Limited warranty

IBM warrants that when the program is used in the specified operating environment, it will conform to its specifications. The warranty applies only to the unmodified portion of the program. IBM does not warrant uninterrupted or error-free operation of the program or that IBM will correct all program defects. You are responsible for the results obtained from the use of the program.

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Program support

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Money-back guarantee

If for any reason you are dissatisfied with the program and you are the original licensee, you may obtain a refund of the amount you paid for it, if within 30 days of your invoice date you return the program and its PoE to the party from whom you obtained it. If you downloaded the program, you may contact the party from whom you acquired it for instructions on how to obtain the refund.

For clarification, note that for programs acquired under any of IBM's On/Off Capacity on Demand (On/Off CoD) software offerings, this term does not apply since these offerings apply to programs already acquired and in use by you.

Volume orders (IVO)

No

Passport Advantage applies

No

Usage restrictions

Yes

See the License Information documents web page on the IBM Software License Agreement website for more information.

Software Subscription and Support applies

Yes. All distributed software licenses include Software Subscription and Support (also referred to as Software Maintenance) for a period of 12 months from the date of acquisition, providing a streamlined way to acquire IBM software and assure technical support coverage for all licenses. Extending coverage for a total of three years from date of acquisition may be elected.

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Software Subscription and Support does not include assistance for the design and development of applications, your use of programs in other than their specified operating environment, or failures caused by products for which IBM is not responsible under this agreement.

IBM Operational Support Services - Support Line

No

System i Software Maintenance applies

Yes

Variable charges apply

No

Educational allowance available

Yes. When ordering through the program number process, a 15% education allowance applies to qualified education institution clients.

Education Software Allowance Program applies when ordering through the program number process.

ESAP available

Yes, to qualified clients.

Statement of good security practices

IT system security involves protecting systems and information through intrusion prevention, detection, and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, or misappropriated or can result in misuse of your systems to attack others. Without a comprehensive approach to security, no IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a regulatory compliant, comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective.

Important: IBM does not warrant that any systems, products, or services are immune from, or will make your enterprise immune from, the malicious or illegal conduct of any party.

Prices

There is no new prices information in this release.

Announcement countries

All European, Middle Eastern, and African countries, except Islamic Republic of Iran, Sudan, and Syrian Arab Republic.

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