IBM i 7.4 Technology Refresh 6 delivers significant enhancements

Overview

IBM[(R)] i 7.4 Technology Refresh 6 (TR6) contains enhancements to many base operating system components and to the Licensed Program Products in the IBM i Portfolio. Some of the new capabilities are described here.

Base operating system

Security

- Digital Certificate Manager (DCM) has multiple enhancements to improve the user experience and provide additional functions to the base security components.

Compression

- The ZLIB algorithm is allowed on selected commands to provide an additional option for data compression to produce a smaller result and to improve performance when running on an IBM Power10 processor.

Application development

- With IBM i 7.4 TR6, some significant changes are made to the Integrated Web Services Rest API engine, including increasing the number of parameters to 248 and updating capabilities of the IWS logging to include Access logging capabilities.
- To support many new markets for IBM i, the range of CCSIDs has been increased.

System administration

- IBM Navigator for i offers additional tasks and features to provide administrators with more information than previous versions.
- It takes less time to perform Cluster Resource Group (CRG) switchover for selected configurations.

I/O and virtualization

- Enterprise PCIe4 NVMe disk in U.2 form factor.
- IBM i 7.4 now exploits VIOS NPIV multiple queues for virtual Fibre Channel adapters to improve I/O throughput, reduce latency, and achieve more I/O requests per second.

Db2[(R)] for i

- Db2 for i provides additional functions for HTTP requests to publish or consume web services.
- Db2 for i is providing more advanced and easy-to-use tooling for the database engineer (DBE).
- IBM i Services, the strategic method for gaining access to IBM i objects, system information, and much more, is expanding to provide useful SQL-based alternatives to IBM i commands and APIs.
- Db2 for i increases the number of working examples and tools in the SYSTOOLS schema.

Open Source for IBM i

- In response to community requests, IBM is making various options available for application serving with IBM i. Many of these have support available from IBM Technical Support Services.

LPPs

- In Rational[R] Development Studio, RPG IV is responding to requirements from the development community and offering some new message-handling operations.
- The IBM i Access Client Solutions (ACS) interface is updated and enhanced with three major updates to the core ACS product: Group Views, Customize the GUI content, and a Run SQL Scripts tab capability.
- IBM PowerHA[R] SystemMirror[R] for i brings a new set of enhancements centered around simplification, reporting, and performance.
- IBM Backup, Recovery, and Media Services for i (BRMS) is enhanced to improve both the user experience and usability.

Key requirements

IBM i 7.4 TR6 is supported on selected IBM Power[R] servers with IBM Power8, IBM Power9, and Power10 technology-based processors.

Clients using servers with earlier processors need to move to newer systems to take advantage of the features in IBM i 7.4.

For up-to-date information about 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

May 24, 2022

Availability within a country is subject to local legal requirements.

Description

The *i* in *IBM i* stands for integration of the many components in the suite. Updates have been made to all aspects of the portfolio in this announcement, including the operating system and Licensed Program Products.

For technical details for IBM i enhancements delivered with IBM i 7.4 TR6, see the IBM i Technology Updates wiki.

To make it easy to find IBM i 7.4 TR6-specific enhancements, see the aggregated list of enhancements on the IBM i 7.4 TR6 wiki landing page.

Base operating system

The term *IBM i* encompasses a suite of products, including the base operating system. This section highlights the enhancements to the base operating system.

Security

Digital Certificate Manager

Digital Certificate Manager (DCM) has multiple enhancements to improve the user experience and provide additional functions to the base security components.

- Full replace of the UI for object signing, providing new functions:
  - Support for object signing store, applications, and actions related to signing objects
  - Support for the signature verification store and actions related to verifying signatures
- Browse and select buttons have been added to multiple panels, eliminating the need to manually type IFS paths and file names. Examples include:
  - Browse and select certificate from local file system for import
  - Browse and select certificate from an IFS path for import
  - Browse and select from a local file system for export
  - Browse and select an IFS path for export
  - Browse and select a KDB file when opening a certificate store
  - Browse and select files for object signing support
- To better manage the certificate objects residing in the Upload and Download directory used for import and export functionality:
  - Items in the Upload directory
  - Items in the Download directory
- Provide the ability to remove the default certificate assignment for the *SYSTEM certificate store.
- Added current industry Root and Intermediate CA certificates from well-known certificate providers for the Populate Certificate Store functionality.

For more information about DCM, see the Digital Certificate Manager topic in IBM Documentation.

Compression

ZLIB algorithm

The ZLIB algorithm provides an additional option for data compression. Test results show it is often faster than previously available algorithms and generally produces a smaller result, though actual results will vary, depending on the compressibility of the data. The new algorithm automatically uses the on-chip Nest Accelerator (NX) GZIP when running in Power10 compatibility mode on a Power10 processor and is therefore faster and less CPU-intensive than previously available compression options.

The ZLIB option has been implemented for this use case:

- Geographic Mirroring synchronization

See the following topics in IBM Documentation for more information:

- Start Disk Management Operation (QYASSDMO) API
- Open List of ASPs (QYASPOL) API
- Materialize Resource Management Data (MATRMD)

Application development

Integrated Web Services (IWS)

The industry has seen significant change in the Rest API landscape, and IBM is delivering some significant changes to the Rest API engine in IBM i. These are the key changes:

- Previously, the number of supported parameters on an API call was limited to 7. This forced developers to change their backend code to leverage data structures to pass more data. In this release, changes to the Call Services Program Procedure API (QARUCLSP) raise the limitation to 248 parameters. Existing IWS services will see no change and behave as they did previously. New services can now specify the increased number of parameters. Calling this API directly will require special attention to the format required for specifying the increased number of parameters. See QZRUCLSP in IBM Documentation for more information.
- Prior to this release, IWS logging was limited to error-centric or debug-centric logging. In this release, updates to the logging support within IWS enable additional functions:
  - The data written to the logs can now be written in JSON format. This enables these logs to be easily consumed by many standard market log understanding tools such as Splunk or Elastic Stack.
  - Access logging can now track more information about usage of each Rest API, such as who is calling, from where they are calling, and what is being requested.
  - HTTP message logging takes two forms, both are captured in the access log:
    -- HTTP Header Logging enables HTTP header attributes to be written to the access log.
    -- HTTP Message Logging writes details about the request and what key items are being returned within the content of the message payload for each Rest API called.

Globalization

Many updates and additions have been made to the portfolio of CCSIDs available in IBM i.

The IBM i CCSID conversion support for moving dates to and from Unicode has been updated for data stored in EBCDIC CCSIDs 1377 (Traditional Chinese) and 1388 (Simplified Chinese). This new support reflects some new Unicode assignments for existing CCSID 1377 and 1388 characters. To preserve the current mapping, IBM provides two new CCSIDS. The new CCSIDS to use are:

- Use CCSID 13676 instead of 1388.
- Use CCSID 5473 instead of 1377.

CCSID 1379 provides additional support for Traditional Chinese, including some Simplified Chinese support. CCSID 1210 adds limited support for UTF-EBCDIC. This is applicable only on the iconv_open() and QtqIconvOpen() conversion APIs, which can enable legacy applications running on IBM i to process Unicode data containing variant characters without losing those characters.

System administration

IBM Navigator for i

The new version of IBM Navigator for i was announced in September 2021. With this announcement, Navigator for i is further enhanced. New tasks and features provide administrators with additional information not available in previous versions, including:

- Support for configuring and updating the Simple Network Time Protocol service (SNTP)
- Support for configuring and updating the Simple Mail Transfer Protocol support (SMTP)
- Support for Virtual Private Networking, including properties, defaults, and IP Security Policies
- Internet Key Exchange (IKE)
- Support to configure, create, and update LDAP servers for IBM i
- New and improved views for looking at Authority Collection information
- IASP support for Custom Charts metrics
- Ability to review Audit Journal details using rich graphical views to better understand audit issues to determine what issues need to be reviewed at a granular level
- Update to Performance Data Investigator to significantly improve user navigation with easy tree-like navigation

For the latest on this new interface, see the IBM Navigator for i web page.

Note: To support customer security requirements, the function usage value **QIBM_NAV_ALL_FUNCTION** has been changed from *ALLOWED to *DENIED. This means that users that may have had access to the new Navigator may now be denied access. Administrators will need to take action to give users access to IBM Navigator for i. For function usage details, see the IBM Navigator for i - Function Usage IDs website.

Time reduction to perform CRG switchover

When performing a switchover of a device Cluster Resource Group (CRG), the job queue that is specified in the job description for the interactive user that is performing the switchover is used to vary off and on the Independent Auxiliary Storage Pool (IASP). This may result in the switchover taking longer than expected if the user profile performing the switchover has the job queue set to a queue that is either held or has a low maximum limit of active jobs. For example, if the user performing the switchover has QDFTJOBD set as the job description, the IASP vary jobs will be submitted to the QBATCH job queue.

Because the QBATCH job queue may be held or may allow only one active job at a time, the switchover may be held up for a long time. The behavior has been changed such that both planned switchovers, performed with the Initiate[R] Switchover API, and failovers will automatically use the QSYSNOMAX job queue for IASP vary on and off operations, regardless of the user profile initiating the operation. For selected configurations, this reduces the amount of time required to perform the CRG switchover because there will not be a limit on the number of active jobs.

Note: This does not affect CRG user exit programs; the job queue referenced by the user profile specified in the CRG will continue to be used. The job queue specified in the user profile's job description is used for submitting user exit programs, regardless of the user initiating the planned switchover operation.

I/O and virtualization enhancements

With IBM i 7.4 TR6, IBM i supports new I/O and virtualization offerings for Power:

Enterprise PCIe4 NVMe disk

There is a new generation of Enterprise PCIe4 NVMe disks in U.2 form factor for Power9 servers.

IBM i exploits VIOS NPIV multiple queues for virtual Fibre Channel

Fibre Channel (FC) adapters with high bandwidth, such as 16 Gb or 32 Gb, support multiple request and completion queues for storage I/O communication. Use of

multiple queues in the physical FC stack significantly improves the input/output requests per second (IOPS) due to the ability to drive the I/O operations in parallel through the FC adapter.

The recently announced IBM PowerVM^(R) VIOS support for multiple queues for the interfaces between virtual FC client and server adapters exposed the physical FC adapter capabilities to the client operating system. Now IBM i takes advantage of that support to utilize multiple request and response queues in the IBM i virtual FC client adapter to provide increased parallelism throughout the entire virtual I/O stack. This has the potential to improve overall virtual FC I/O throughput, reduce latency, and achieve higher IOPS. This function is supported for both Power10 and Power9 servers. See NPIV Multiple-Queue support in IBM Documentation for more information.

Db2 for i

Db2 for i, the integrated database for IBM i, known for containing the attributes valued by business computing solutions, is enhanced to include new capabilities for SQL application developers, DBEs, and anyone interested in modern and advanced security management.

Db2 for i enhancements

With this new release of IBM i, Db2 for i provides additional functions for HTTP requests to publish or consume web services. These functions enable the SQL programmer to use Representational State Transfer (RESTful) through SQL, including Embedded SQL.

The additional functions are based in QSYS2 and have advantages over the established and widely used SYSTOOLS HTTP functions in that the new functions do not rely upon Java^{TM} and that they include other ease-of-use benefits.

- New QSYS2-based HTTP functions that provide the ability to modify the resource include:
  - HTTP_PATCH() Scalar function
  - HTTP_PATCH_VERBOSE() Table function
- TRY_CAST() is a new built-in scalar function that provides an easy and reliable technique for using SQL to evaluate the veracity of existing data. DBEs can use TRY_CAST to "try casting" a data element to a specific data type and discover whether the data adheres to the rules of that data type. In this way, invalid data can be rooted out and corrected.

Db2 for i Services

Db2 for i is providing more advanced and easy-to-use tooling for the DBE:

- MTI_INFO returns details about Maintained Temporary Indexes (MTI), turning an abstract topic into a very easy and straightforward topic for the DBE.
- Some other additional Db2 for i Services have also been enhanced.

These and other enhancements are delivered through the Db2 PTF Group.

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

IBM i Services

IBM i Services, the strategic method for gaining access to IBM i objects, system information, and much more, continues to grow. Leveraging the power of SQL and the Db2 for i SQL Query Engine (SQE), application developers, DBEs, and system managers have an easy pathway to explore IBM i objects and data in ways that were not possible with previous technologies.

In this release, IBM i Services are added and enhanced, providing useful SQL-based alternatives to IBM i commands and APIs.

- SPOOLED_FILE_INFO: Matches the speed and usability of the Work with Spooled Files (WRKSPLF) CL command.
- ACTIVATION_GROUP_INFO: Discover the deep details about activation groups within the current or target job.
- ASSOCIATE_JOURNAL_RECEIVER: Use SQL to re-establish the relationship of journal receivers with a journal.
- REMOTE_JOURNAL_INFO: Discover the existence and attributes of remote journals on other IBM i systems associated with journals on this IBM i system.
- JOURNAL_RECEIVER_INFO: Discover the existence and attributes of journal receivers.
- SQL_CHECK_SPECIAL_AUTHORITY: Easily determine if the current user has a specific special authority.
- SQL_CHECK_FUNCTION_USAGE: Easily determine if the current user is allowed to use a specific function usage.
- CHANGE_USER_SPACE: Use SQL to change the contents of a *USRSPC object.
- CHANGE_USER_SPACE_ATTRIBUTES: Use SQL to change the attributes of a *USRSPC object.
- ADD_USER_INDEX_ENTRY: Use SQL to add an entry to a *USRIDX object.
- REMOVE_USER_INDEX_ENTRY: Use SQL to remove an entry from a *USRIDX object.
- ELECTRONIC_SERVICE_AGENT_INFO: An SQL alternative to the Verify Service Agent (VFYSRVAGT) CL command.

Db2 for i provides working examples and tools in the SYSTOOLS schema. As IBM has done in previous technology refreshes, SYSTOOLS is enhanced to help clients take a step forward with extreme automation using SQL. One of the functions that has been enhanced is Audit Journal functions. Table functions unique to specific audit journal entry types are added to SYSTOOLS. The table functions return the basic audit journal detail but also extract the entry-specific detail into easily consumed return columns.

For details on these enhancements and the other IBM i Services enhancements, see the IBM i Services wiki.

Open Source for IBM i

Application serving

IBM i continues to enable several open-source Java application servers on IBM i. Some examples include WildFly, Eclipse Jetty, and Apache Tomcat. WildFly is an open source version of JBoss[(R)]. It is actively developed by Red Hat[(R)]. It offers a simple upgrade path to JBoss Enterprise Application Platform (JBoss EAP) if needed. Apache Tomcat is one of the most popular application servers on IBM i and has been in use for over a decade. Eclipse Jetty is a lightweight web server that brings both scalability and ease of use. For more information about these options, see the Open Source Java Application Servers GitHub.

Support is offered as part of IBM's open-source support offering. For more information, see the Open Source Support for IBM i website.

LPPs

Rational Development Studio (5770-WDS)

New features have been added in this release to the ILE compilers, specifically RPG IV. Responding to requirements from the development community, IBM i has added some new operations in RPG IV. Two of the enhancements are:

- SND-MSG opcode: Send a message to the joblog.
- ON-EXCP opcode: Monitor for specific messages and take an action.

For details on these and many more updates, see the RPG Cafe website.

IBM i Access Client Solutions (5770-XJ1) (ACS version 1.1.9.0)

The Access Client Solutions interface is updated and enhanced to fulfill requests from IBM i administrators. The major updates to the core ACS product are:

- Group support: A new Groups View has been added to ACS, enabling administrators to manage or view multiple systems as a group. From System Configuration, it is easy to define new groups and move or add systems into these groups for a simpler way to organize multiple systems. Administrators can choose to work with systems using the traditional ACS view, or they can leverage the new Groups View.
- Control the Information Displayed on GUI: System administrators can choose to limit the columns displayed on the GUI to just those of most interest for their environment. Additionally, it is possible to simplify the main GUI appearance by hiding the right pane.
- Run SQL Scripts Tab Support: Multiple SQL scripts may now be opened within a single window/connection. Each script is displayed in its own tab. This can be accomplished by doing a drag and drop on one or more SQL files from Windows™ Explorer or macOS Finder to have each opened in a new tab. Additionally, dragging and dropping a folder that contains multiple SQL scripts will open each script in its own tab. Additionally, it is now possible to save the contents of a script while it is actively running.

IBM PowerHA SystemMirror for i (5770-HAS)

IBM PowerHA SystemMirror for i 7.4 TR6 brings a new set of enhancements centered around simplification, reporting, and performance.

Geographic Mirroring Compression (planned availability date for this feature is June 24, 2022)

Geographic mirroring performs disk-level replication. This means that all changes on disk in an Independent Auxiliary Storage Pool (IASP) are replicated over the TCP/IP network to the target system. When PowerHA performs a synchronization, whether for the initial synchronization, after an unplanned failure, or when resuming from a suspend operation, PowerHA replicates data over the TCP/IP network.

With this enhancement, PowerHA can now compress geographic mirroring data during resynchronization, reducing the data transfer required. In addition, on Power10 systems running in Power10 compatibility mode, PowerHA uses the on-chip NX GZIP accelerator, which provides hardware-accelerated compression.

Reduction in time required to perform CRG switchover for selected configurations

IBM PowerHA for i is building additional enhancements on top of the newly enhanced clustering capabilities of the base operating System of IBM i 7.4. The time required to perform a Cluster Resource Group (CRG) switchover for some configurations is reduced.

Recently released enhancements

The PowerHA product continues to provide enhancements through PTFs several times a year. The following enhancements were released in December 2021:

Simplified IP Address Switching

Previously, in a PowerHA environment, users could configure a server takeover IP address associated with an IASP device in a device cluster resource group (CRG). This IP address follows the primary node in the CRG and enables users and applications to access the correct primary system at any point in time.

Environments with many IP addresses often required a custom-coded user exit program attached to the IASP vary-on and vary-off exit points. PowerHA now allows

users to add up to 256 IP addresses to a device CRG by using a new device type of *IPA. This simplifies a PowerHA implementation by enabling simple switching of IP addresses without custom coding, exit programs, or scripts.

Integrated switchover progress monitoring

Previously, PowerHA introduced switchover progress monitoring through a new command, Display CRG Activity (DSPCRGACT), which shows the progress of a switchover. This progress monitoring has been enhanced:

- Integrated into the CHGCRGPRI command to automatically display progress during a switchover.
- A new action required step indicates when a job queue is held or a subsystem is inactive.

Performance improvements

While PowerHA has always required minimal resources on nodes in the environment, PowerHA continues this trend by providing improved performance for many operations with the following enhancements:

- Performance improvements for SVC-based storage communication, reducing the time required to perform operations.
- Performance improvements related to temporary user spaces and user queues with up to a 48% decrease in CPU usage and up to a 90% decrease in the number of user spaces created for certain PowerHA operations.

Additional enhancements

There are several other enhancements to PowerHA. For more information about these enhancements and to get started, see the IBM PowerHA SystemMirror for i wiki page.

IBM Backup and Recovery Media Services (5770-BR1)

Backup, Recovery, and Media Services for i (BRMS) is enhanced to improve both the user experience and usability.

- BRMS SQL Services now give users the option to view, order, and subset the BRMS control group backup status. This new view reports control group information, including the number of objects saved and not saved, backup size, volumes used, and duration of the backup.
- BRMS has been enhanced with a new append to media volume selection, which uses the same media policy retention for backups. The purpose of this new volume selection algorithm is to provide a way to maintain the same retention period for a volume set when appending backups using the same media policy.
- BRMS using IBM Cloud(R) Storage for i has been enhanced to improve BRMS network support. The purpose of this support is to ensure duplicate volume names are not generated when any system in the BRMS network is in restricted state or when the BRMS network synchronization job is not working.
- BRMS recovery report has been enhanced to provide improved reporting for H/A environments. This support will provide a way to generate a single BRMS recovery report using tapes from your backup and production systems in an H/A environment.

The BRMS PTF that delivers these enhancements will be released in mid-May 2022. It is IBM i 7.4 - SI78290.

To discover more detail on these and other BRMS enhancements, see the Enhancements to BRMS wiki.

IBM Web Enablement for i (5722-WE2 and 5733-WE3)

In order to allow clients more flexibility in staying current with IBM Web Enablement for i products, clients can download IBM Web Enablement for i (5722-WE2 and

5733-WE3) from the Entitled System Support site for no additional charge. IBM Web Enablement for i is no longer ordered, preloaded, or available on physical media.

Reference information

- For information about IBM i 7.5, see Software Announcement ZP22-0088, dated May 3, 2022.
- For information about IBM Power Systems Enhancements, see Hardware Announcement ZG22-0053, dated May 3, 2022.

Program number

Program number	VRM	Program name
5770-SS1	7.4	IBM i 7.4 TR6

Offering Information

Product information is available on the IBM Offering Information website.

Publications

None

Services

IBM Systems Lab Services

Systems Lab Services offers infrastructure services to help build hybrid cloud and enterprise IT solutions. From servers to storage systems and software, Systems Lab Services can help deploy the building blocks of a next-generation IT infrastructure to empower a client's business. Systems Lab Services consultants can perform infrastructure services for clients online or onsite, offering deep technical expertise, valuable tools, and successful methodologies. Systems Lab Services is designed to help clients solve business challenges, gain new skills, and apply best practices.

Systems Lab Services offers a wide range of infrastructure services for IBM Power servers, IBM Storage systems, IBM Z(R), and IBM LinuxONE. Systems Lab Services has a global presence and can deploy experienced consultants online or onsite around the world.

For assistance, contact Systems Lab Services at ibmsls@us.ibm.com.

To learn more, see the IBM Systems Lab Services website.

IBM Consulting™

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businesses to lead change with confidence and deliver continuous improvement across a business and its bottom line.

For additional information, see the IBM Consulting website.

IBM Technology Support Services (TSS)

Get preventive maintenance, onsite and remote support, and gain actionable insights into critical business applications and IT systems. Speed developer innovation with support for over 240 open-source packages. Leverage powerful IBM analytics and AI-enabled tools to enable client teams to manage IT problems before they become emergencies.

TSS offers extensive IT maintenance and support services that cover more than one niche of a client's environment. TSS covers products from IBM and OEMs, including servers, storage, network, appliances, and software, to help clients ensure high availability across their data center and hybrid cloud environment.

For details on available services, see the Technology support for hybrid cloud environments website.

IBM Expert Labs

Expert Labs can help clients accelerate their projects and optimize value by leveraging their deep technical skills and knowledge. With more than 20 years of industry experience, these specialists know how to overcome the biggest challenges to deliver business results that can have an immediate impact.

Expert Labs' deep alignment with IBM product development allows for a strategic advantage as they are often the first in line to get access to new products, features, and early visibility into roadmaps. This connection with the development enables them to deliver First of a Kind implementations to address unique needs or expand a client's business with a flexible approach that works best for their organization.

For additional information, see the IBM Expert Labs website.

IBM Security$^{(R)}$ Expert Labs

With extensive consultative expertise on IBM Security software solutions, Security Expert Labs helps clients and partners modernize the security of their applications, data, and workforce. With an extensive portfolio of consulting and learning services, Expert Labs provides project-based and premier support service subscriptions.

These services can help clients deploy and integrate IBM Security software, extend their team resources, and help guide and accelerate successful hybrid cloud solutions, including critical strategies such as zero trust. Remote and on-premises software deployment assistance is available for IBM Cloud Pak$^{(R)}$ for Security, IBM Security QRadar$^{(R)}$/QRoC, IBM Security SOAR/Resilient$^{(R)}$, IBM i2$^{(R)}$, IBM Security Verify, IBM Security Guardium$^{(R)}$, and IBM Security MaaS360$^{(R)}$.

For more information, contact Security Expert Labs at sel@us.ibm.com.

For additional information, see the IBM Security Expert Labs website.

Technical information

Specified operating environment

Hardware requirements

IBM i 7.4 TR6 is supported on select Power servers with Power8, Power9, or Power10 processors. Clients using blades or IBM PureFlex$^{(R)}$ systems, and those using servers with IBM Power7, IBM Power7+, or earlier processors, need to move to newer systems to take advantage of the features in IBM i 7.4 TR6.

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

For additional information, see the System to IBM i mapping website.

Software requirements

To find the supporting technical details and software requirements for IBM i 7.4, see the TR6 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.

Additional IBM support

IBM Client Engineering for Systems

Client Engineering for Systems is a framework for accelerating digital transformation. It helps you generate innovative ideas and equips you with the practices, technologies, and expertise to turn those ideas into business value in weeks. When you work with Client Engineering for Systems, you bring pain points into focus. You empower your team to take manageable risks, adopt leading technologies, speed up solution development, and measure the value of everything you do. Client Engineering for Systems has experts and services to address a broad array of use cases, including capabilities for business transformation, hybrid cloud, analytics and AI, infrastructure systems, security, and more. Contact Client Engineering for Systems at sysgarage@ibm.com.

Planning information

Packaging

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

Ordering information

Consult your IBM representative or IBM Business Partner.

Charge metric

Not applicable

Terms and conditions

The information provided in this announcement letter is for reference and convenience purposes only. The terms and conditions that govern any transaction with IBM are contained in the applicable contract documents such as the IBM International Program License Agreement, IBM International Passport Advantage$^{(R)}$ Agreement, and the IBM Agreement for Acquisition of Software Maintenance.

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IBM International Program License Agreement including the License Information document and Proof of Entitlement (PoE) govern your use of the program. PoEs are required for all authorized use.

Software Maintenance

The IBM Agreement for Acquisition of Software Maintenance (Z125-6011) applies for Subscription and Support (also referred to as Software Maintenance) and does not require client signatures.

Licenses under the IBM International Program License Agreement (IPLA) provide for support with ongoing access to releases and versions of the program. IBM includes one year of Software Subscription and Support (also referred to as Software Maintenance) with the initial license acquisition of each program acquired. The initial period of Software Subscription and Support can be extended by the purchase of a renewal option, if available. Two charges apply: a one-time license charge for use of the program and an annual renewable charge for the enhanced support that includes telephone assistance (voice support for defects during normal business hours), as well as access to updates, releases, and versions of the program as long as support is in effect.

License Information number

Follow-on releases, if any, may have updated terms. See the License Information documents website for more information.

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.

IBM provides you with access to IBM databases containing information about known program defects, defect corrections, restrictions, and bypasses at no additional charge. For further information, see the IBM Support Guide.

IBM will maintain this information for at least one year after the original licensee acquires the program (warranty period).

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)

Yes. Contact your IBM representative.

Passport Advantage applies

No

Usage restrictions

Yes

For usage restrictions, see the License Information documents listed in this Terms and conditions section.

Software Subscription and Support applies

For operating system software, the revised IBM Technology Support Services - Support Line for IBM Z offering provides usage and how-to support for those operating systems and associated products that are not available with the Software Subscription and Support (Software Maintenance) offering.

This can ensure total support coverage for your enterprise needs, including IBM and selected non-IBM products. For complete lists of products supported under both the current and revised offering, see the Supported Product List website.

System i Software Maintenance applies

No

Variable charges apply

Yes

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.

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Corrections

(Corrected on June 7, 2022])

The Description section was revised.