

IBM i Memo to Users  
7.5

*Memo to Users*



**Note**

Before using this information and the product it supports, read the information in [“Notices” on page 59.](#)

This edition applies to version IBM® i 7.5 (product number 5770-SS1) and to all subsequent releases and modifications until otherwise indicated in new editions. This version does not run on all reduced instruction set computer (RISC) models nor does it run on CISC models.

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# About IBM i Memo to Users

This information describes the changes in version 7, release 5, modification 0 (IBM i 7.5) that could affect your programs or system operations. Use the information in this memorandum to prepare for changes on your current release and to use the new release.

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## Who should read this memorandum

The IBM i 7.5 Memo to Users contains information that is critical for several audiences.

This memorandum has four sections:

- **Read this first** provides information to be considered before you install IBM i 7.5. This section is intended for system and application programmers and for the person responsible for system management.
- **Operating system** contains new release changes to basic operating system functions. This section includes changes to systems management functions, such as configuration and tailoring the system, and changes that could affect the way things operate or appear in the new release. This section is intended for all users of the IBM i.
- **Options** provides information about new release changes that affect specific program options of the operating system. This section is intended for all users of the IBM i.
- **Licensed programs** contains new release changes that might affect existing applications. These changes might also affect applications that are saved on an IBM i 7.5 system to be restored on a previous release server. This section is intended for application programmers and system programmers who use the IBM i and its licensed programs, as well as for businesses with complex networks or application development businesses that have systems at different releases.

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## Additional incompatibility information

After the publication of the IBM i Memo to Users, updates to this document will be available in the English Internet version of the IBM Docs under IBM i 7.5 at this Web site:

<https://www.ibm.com/docs/en/i/7.5?topic=information-memo-users>

Technical changes to the text are indicated by a vertical line to the left of the change.

For Preventive Service Planning - PSP information go to :

1. <https://www.ibm.com/support/pages/node/667567>
2. Select **IBM i 750 PSPs**.

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## What's new

The following revisions or additions have been made to the Memorandum to Users documentation since the first IBM i 7.5 publication. These entries will be found only in the English version of the memo to users.

### What's new

The updates for each Memo to Users entry were made at the specified time frame for the section. The actual release date of some changes documented may not be until the next Technical Refresh (TR) date. Check dates on the PTF specified for each entry to verify release dates.

#### May 2023

- ["Db2 Mirror suspend due to storage threshold"](#) on page 47 was added.

#### April 2023

- [“Heritage Digital Certificate Manager is disabled” on page 48](#) was added.
- [“QMGTC user profile deleted in a future release” on page 30](#) was added.
- [“GROUP\\_PTF\\_INFO view requires \\*USE authority” on page 30](#) was added.
- [“SQL ILE RPG precompiler change for BOOLEAN support” on page 20](#) was added.
- [“STACK\\_INFO unauthorized access default behavior change” on page 21](#) was added.
- [“Generate Data Definition Language \(QSQGNDDL\) API will now produce SQL table names for VIEW and MQT definitions” on page 21](#) was added.
- [“ADDPFTRG/CHGPFTRG command changes” on page 14](#) was added.
- [“CREATE TRIGGER and ALTER TRIGGER - MIRROR YES option removed” on page 21](#) was added.
- [“Password parameters removed from db2mtool command” on page 46](#) was added.

### October 2022



- [“SQE Symmetric Multiprocessing Changes” on page 17](#) was modified with additional PTF information for more recent changes.
- [“Db2 Mirror resume processing change” on page 47](#) was added.
- [“CHGDEVTAP UNLOAD change now allowed while device is varied on” on page 14](#) was added.
- [“SM \(Systems Management Change\) audit journal entry change” on page 25](#) was added.
- [“DNS changes” on page 40](#) was modified.
- Changes to [“Backup Recovery and Media Services \(5770-BR1\)” on page 54](#).
- [“\\*JOBCTL special authority is required to view Java jobs” on page 30](#)
- [“Access to lazy-load tables through NEWNAV in QNEWNAVSRV” on page 43](#) was added.

### May 2022

- [“STRQMORY command changes” on page 30](#) was added.
- [“CRTQMORY and CRTQMFORM command changes” on page 30](#) was added.

## How to see what's new or changed

To help you see where technical changes have been made, this information uses:

- The  image to mark where new or changed information begins.
- The  image to mark where new or changed information ends.

To find other information about what's new or changed this release, see the [Memo to users](#).

## Installing IBM i 7.5 over IBM i 7.3

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If you are installing IBM i 7.5 over IBM i 7.3, you should also read the *IBM i Memo to Users* for IBM i 7.4. It contains incompatibility-related information about the new functions and enhancements incorporated in IBM i 7.4.

You can also view the IBM i 7.4 *IBM i Memo to Users* in IBM Docs under the IBM i 7.4 release :

<https://www.ibm.com/docs/en/i/7.4?topic=information-memo-users>

## Discontinued support for certain software and hardware

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It is important that, as a customer, you review and understand all new software release considerations.

This is especially true of discontinued support for selected software and hardware products or features. This information is contained within the IBM i announcement material. To get the most current information about discontinued products or features along with suggested replacements, go to "Planning to upgrade to IBM i 7.5" at:

<https://www.ibm.com/support/pages/node/6554580>

## PTF numbers in this memorandum

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Program temporary fix (PTF) numbers in this memorandum might have been superseded.

## Memorandums for previous releases

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How to access Memorandum to Users from previous releases.

You can view these documents on the IBM Documentation site by selecting the IBM i release:

<https://www.ibm.com/docs/en/i>

## Prerequisite and related information

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Use the [IBM Documentation site](#) as your starting point for looking up IBM i technical information.

The IBM Docs site contains information about important topics such as Java™ (TM), TCP/IP, Web serving, secured networks, logical partitions, high availability, control language (CL) commands, system application programming interfaces (APIs), and IBM i Services. It also includes links to related IBM Redbooks® and Internet links to other IBM web sites such as the IBM home page.

With every new hardware order, you receive the IBM i Access Client Solutions CD. IBM i Access Client Solutions replaces its predecessor IBM i Access for Windows. IBM i Access Client Solutions may be used for console connections and is capable of running directly from the CD. See the Getting Started document in the Documentation directory on the IBM i Access Client Solutions CD for more information. The IBM i Access Family offers client/server capabilities for connecting personal computers to IBM i.

The IBM i Prerequisite tool provides compatibility information for hardware features and helps to plan a successful system upgrade by providing prerequisite information for currently available features and features to be added to the system at a later date.

The IBM i Prerequisite site can be accessed here: <https://www14.software.ibm.com/support/customer/ipt/home>

## How to send your comments

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Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this memorandum or any other IBM i documentation, use the **Feedback** link at the start of the page on the web location at [IBM Documentation for IBM i Memo to users page](#).

If your comments are content-specific to a particular page, select the **Feedback** action on that page. The email will be auto-filled with the URL of that page, and will be routed directly to IBM and those responsible for the content.



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## Read this first

Read this section before doing anything else.

### Current customers - read before you install

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Read the [Release Planning pages](#) before you install IBM i 7.5.

Additional information in the following list should be read and understood before you install this release. The sources that are referenced can be found through various links at the following website: <https://www.ibm.com/docs/en/i/7.5?topic=about-i-information>

- The [Installing, upgrading, or deleting IBM i and related software](#) topic on the IBM Documentation site contains software pre-installation information. This topic also has information about installing or upgrading the operating system release, part of the release, or related licensed programs.
- A PTF maintenance strategy is recommended for all IBM i customers. This might reduce the impact to IBM i operations that result from unplanned outages or program failures. See "Maintaining and Managing IBM i and related software" at [https://www.ibm.com/docs/en/ssw\\_ibm\\_i\\_75/rzam8/rzam81.htm](https://www.ibm.com/docs/en/ssw_ibm_i_75/rzam8/rzam81.htm)

**Note:** After the release of IBM i 7.5, updates to IBM i topics contained in the IBM Documentation site will be available in the English Internet version. To review these updates, go to **Information Updates** under IBM i 7.5 on the IBM Documentation page, here: [https://www.ibm.com/docs/en/ssw\\_ibm\\_i\\_75/rzahg/rzahgupdates.htm](https://www.ibm.com/docs/en/ssw_ibm_i_75/rzahg/rzahgupdates.htm).

### Required PTFs before you upgrade to IBM i 7.5

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PTFs might be required before you upgrade to IBM i 7.5.

To ensure your system has the necessary PTFs for your upgrade, see the [Required PTFs for Upgrading to IBM i 7.5 documentation](#) on the support pages.

### Upgrade planning

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Documentation resources important to consult before you upgrade:

- The "Upgrade Planning" web page: <https://www.ibm.com/support/pages/node/668131>, is intended to provide advanced planning information.
- The "System to IBM i mapping" web page <http://www.ibm.com/support/docview.wss?uid=ssm1platformibmi> lists operating system support by model.
- The "Future Planning Information" page: <https://www.ibm.com/support/pages/node/668155>, is to plan future solutions for enhancements, upgrades, or migrations.
- Planning to upgrade to IBM i 7.5: <https://www.ibm.com/support/pages/node/6554580>.
- Systems management planning: <https://www.ibm.com/support/pages/planning>

### Partition sizing recommendations for IBM i 7.5

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As is typical with a new release, the IBM i Operating System has made changes to the underlying infrastructure that may require more resources in the configuration. In some cases when upgrading from an earlier release, infrastructure changes may result in a need to increase the amount of resources to continue to run the same workload. As with any new release, the CPU or I/O signature of any given workload may change.

For an example relating to memory, a very minimal configuration contains just the base operating system with a console. This minimum is proof that you can simply install and IPL the base operating system. The

amount of disk in this configuration is also minimal -- only a protected load source disk. This minimal configuration requires at least 4 GB of partition memory.

Generally, with the need to run useful workloads in production, most realistic small configurations will require additional memory. For example, virtual disk needs more memory than dedicated disk, and communications devices also require larger amounts of memory. If upgrading from an earlier release that is already running with more than this minimum amount of memory, infrastructure changes may still result in a need to increase the amount of memory to continue to run.

A memory-constrained partition may not IPL in the worst case. Rather, it will hang in an early IPL step as the OS is unable to allocate the data structures it requires. Lesser constrained partitions will see excessive paging as work loads start to run. Adding additional memory will alleviate the problem.

For additional sizing guidelines, see:

- [Performance FAQ](#), sections such as Sizing a System, and Memory Questions
- IBM Documentation topic [Identifying and resolving common performance problems](#)

## IBM i 7.5 is not supported on IBM POWER8 systems

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IBM POWER8® systems will not support IBM i 7.5:

- IBM POWER8 8286-42A, 8286-41A, 9119-MME, 9119-MHE, 8284-22A, 9080-MME, 9080-MHE, 8284-21A

## IBM i Tape Library Device virtualization support

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The IBM i Tape Library Device Virtualization support is included in the IBM i 7.5 base, which could increase the number of tape device resources that are eligible to be shared with IBM i client partitions.

If there is already a Network Server Description (NWSD) defined on the server partition to share tape device resources, and the **ALWDEVRS**C parameter is not used to restrict the number of tape device resources that can be shared with the client partitions; then installing IBM i 7.5 may cause existing client tape devices to go to "Not detected" status if the total number of tape resources eligible to be shared now exceeds the limit of 4 tape devices per NWSD.

If needed, additional Network Server Descriptions (NWSDs) that use the **ALWDEVRS**C parameter can be created to allow more than 4 tape devices to be shared with the client partitions.

## Content Manager OnDemand Spool File Archive customers must migrate their data to Common Server Archived Storage Manager (ASM)

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If you still have Content Manager OnDemand Spool File Archive data that has not been migrated to Content Manager OnDemand Common Server Archived Storage Manager (ASM), you must migrate your Spool File Archive data to ASM **before** you upgrade to IBM i 7.5. You will no longer be able to access or manage Spool File Archive data in Content Manager OnDemand for i on IBM i 7.5 unless it has been migrated **prior to** your IBM i 7.5 upgrade. Migration tools have been available since IBM i 5.4. For more information and a link to the migration tools documentation, see [“Spool File Archive command changes” on page 49](#).

## Plan for a Attended IPL - Sign-on required at DST

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During an attended (manual) IPL, the user will be required to sign in to DST. Any valid service tool ID with the service tool privileges listed below is required:

- Dedicated Service Tools (DST) environment
- Operating system initial program load (IPL)

- Install

QSECOFR is the suggested service tool ID to be used. It is important that the current QSECOFR ID password is known. If the QSECOFR ID password is not known, reset the password before starting the LIC install, using the XPF command **CHGDSTPWD PASSWORD(\*DEFAULT)**. If a valid service tool ID is not known, a scratch install may be necessary.

**Important:** The 11111111 (eight 1's) ID and the 22222222 (eight 2's) service tools user IDs are removed on IBM i 7.5. If your current connection uses these Service Tool User IDs, the install upgrade requires entering and using the QSECOFR ID (which has the default password QSECOFR).

**Recovery:** If the Console Information Status screen is shown with the message `Service Tool User ID does not exist or password incorrect`, then press F12 which will display the DST Sign On screen, where the ID QSECOFR and the password QSECOFR can be entered.

The Service Tool QSECOFR ID is shipped as expired but does not need to be changed during the D-mode IPL for a new install. On the following A-mode IPL (if this is a new install), the password needs to be changed before the partition can be IPLed or the OS installed. If this is a release upgrade, the current partition QSECOFR ID password is required and the above recovery may be needed. On an upgrade, the recovery can use any valid Service Tool ID and password.

**Important:** During an attended IPL of the system, if no console has been specified previously, two extra screens are displayed to confirm the setting of the console type:

1. A screen that requires pressing F10 to accept your current console type
2. A screen that shows that a value did not previously exist (a zero is present for the old value) and the new value is shown

Pressing **Enter** exits and sets the console type automatically.

The IPL continues to the "IPL or Install the System" screen.

Having no console specified previously is most likely to occur during the installation of a new partition, but might happen on your first attended IPL of IBM i 7.5. For example, when a console value of zero is found during the A-mode IPL during an upgrade or install (following the restore of Licensed Internal Code).

## Plan for your Operations Console installation or upgrade

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The console features matching the connectivity that you plan to use should be specified as part of the order for your new IBM i or Power® system.

### LAN attached Operations Console prerequisite information

Prerequisite information for LAN attached Operations Console users who are upgrading to, or installing, IBM i 7.5:

The service tool server which includes LAN console removed support for SSLv3 cipher suites in IBM i 7.4, which means the LAN console feature in the IBM i 7.1 Access for Windows client is no longer supported in IBM i 7.4 and later.

IBM i Access Client Solutions is required for LAN console in IBM i 7.4 and later. IBM i Access Client Solutions, which is shipped with the system, should be deployed on your PC before installing the Licensed Internal Code (LIC) on the IBM i. The LAN console feature in IBM i Access Client Solutions can connect to any supported IBM i release.

**Note:** The LAN console feature in the IBM i Access for Windows client works for a D-mode install because SSLv3 cipher suites aren't used during the D-mode IPL. On the following A-mode IPL, the IBM i Access for Windows LAN console will fail to connect. The IBM i Access for Windows client does not need to be removed from the PC but be aware the IBM i Access for Windows console will not work if the system is upgraded to IBM i 7.4 and later.

For all upgrades and installations, you need to establish a connection between the system and the Operations Console PC using a Service Tool User ID and password.

## Using the operator panel for operations console service functions

Setting up an operations console as LAN attached may require using the operations console service functions. The operator panel functions for cycling through the service function options have changed for IBM i 7.5. If you are on a system that has release IBM i 7.5, and perform the paired 65+21 functions that were used in prior releases, you may be changing something that you did not intend, such as clearing the console configuration.

In prior releases the operations console service functions required sequences of paired functions 65 and 21, often expressed as 65+21 in the documentation. In IBM i 7.5 release, the operator panel function 21 is no longer used after function 65 to cycle through the operations console service options. A series of function 65 alone will cycle through the options. Function 21 is now used only to perform a service function option.

See <https://www.ibm.com/docs/en/i/7.5?topic=network-using-console-service-functions>



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# IBM i operating system

This section describes changes to the IBM i operating system and its functions. Changes to systems management functions, such as configuring and tailoring the system, are also included.

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## Programming Considerations

Release to release programming considerations.

### Output file(OUTFILE) changes

Release to release Output file(OUTFILE) considerations

Applications using **LVLCHK(\*YES)** might be affected by changes to IBM-supplied system output files in this release. IBM commands and APIs that generate database output files might add new fields to the end of record formats, or use all or part of existing reserved fields for additional information returned each release. Adding new fields to the record format, even to the end of the record, changes the level check value for the file. This might cause an application with **LVLCHK(\*YES)** to fail with a level check error. If a level check error does occur, review the application to determine which system file it uses. New fields have been added to IBM-supplied database output files in each release of IBM i.

### Command Output cautions

Release to release Command Output considerations

Applications that specify **OUTPUT(\*PRINT)** or **OUTPUT(\*)** must be able to tolerate changes to the record layout in either the spooled file or the screen output. From release to release, commands can add, change, or remove records from the output. Any application that has a dependency on the record layout for a specific command might have to change.

### Security audit record changes

Release to release Security audit record considerations

Changes made to security auditing for this release might affect applications that read those audit records. Actions that were not audited in previous releases might now be audited. Existing audit records might have been changed by the addition of new fields in a reserved area of the audit record or at the end of the audit record. Existing fields might contain new values. Applications that read the audit records should be changed to tolerate these types of changes.

### Programs that use customized versions of IBM-supplied commands

Release to release considerations for programs that use customized version of IBM-supplied commands

Some IBM i functions that use IBM-supplied control language (CL) commands that are not library-qualified in this release might be changed in a future release to specify a specific library, **\*NLVLIBL** or **\*SYSTEM**, for the library qualifier.

Applications that depend on using their own version of commands instead of the IBM-supplied commands might not work as they had on earlier releases. These applications should be changed to use the retrieve command exit point (**QIBM\_QCA\_RTV\_COMMAND**) or the change command exit point (**QIBM\_QCA\_CHG\_COMMAND**) that allows your exit program to get control and possibly change the command that is used.

## Changes to system printer files and other IBM-supplied objects

Release to release considerations for possible changes to system printer files and other IBM-supplied objects

The **MAXRCDS** parameter for **QSYSPRT** and **QPSAVOBJ** printer device files has always defaulted to 100000. During an upgrade, the default value has not changed for system printer files. Customization of IBM-supplied printer files is lost on a release upgrade. To reestablish any customizations of system printer files, you need to rerun your changes to printer system files each release.

Changes to many types of IBM-supplied objects are lost during an upgrade because the copy of the object in the IBM product library is replaced by the new copy of the object.

## Changes to CL commands sending messages to \*EXT

IBM i CL commands document Escape messages that occur, but other messages issued are not documented.

Diagnostic messages may accompany these messages to provide additional information. Messages reflecting run-time activities or status are also occasionally issued.

These information, status, and diagnostic messages are not documented and can be issued to the joblog, QSYSOPR, QHST, and \*EXT. The type and location of these messages occasionally change to support new function at a release boundary or via PTF.

Customer programs written to retrieve the info, status, or diagnostic messages issued by CL commands may be required to be modified when the CL commands are changed. Unless the changes are related to Escape messages, the changes are not always documented specifically by an update to the Memo to Users (MTU) or in a PTF cover letter.

## IBM i command changes

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Release to release IBM i command changes

### CHGSRVAGTA parameter changes

A new parameter, JOBSCDE, is available on the Change Service Agent Attribute (**CHGSRVAGTA**) command. The JOBSCDE parameter has three options:

**\*YES**

Default Job Scheduler is used.

**\*AJS**

Advanced Job Scheduler is used if Advanced Job Scheduler is installed.

**\*NO**

No Job Scheduler is used. Service agent job scheduler entries will not be created automatically. Follow this technote to manually create job schedulers: <https://www.ibm.com/support/pages/node/635879>

Also, the AUTOPTF parameter is no longer available.

### CHGSMTPA KEEPUNTIL now has two retention time parameters for successful and unsuccessful final status

Before IBM i 7.5, Change SMTP Attributes (**CHGSMTPA**) KEEPUNTIL (1-1240000) set any e-mail tracking information for the specified maximum number of seconds after the e-mail has been put into a final state regardless of the e-mail delivery status. Now with IBM i 7.5, the **KEEPUNTIL** parameter of **CHGSMTPA** supports two parameter elements:

### Element 1

The maximum number of seconds to retain e-mail tracking information after the e-mail has been put into "Successful final state".

### Element 2 (Optional)

The maximum number of seconds to retain e-mail tracking information after the e-mail has been put into "Unsuccessful final state". This is a new parameter for IBM i 7.5.

If only one parameter element is specified, it will be used for the "Successful final state".

With both parameter elements specified, the length of time for "Successful final state" is set to the first value specified on KEEPUNTIL; and the length of time for "Unsuccessful final state" is set to the second value.

**Note:** If the system is upgraded from a previous release, then the maximum retention time for "Successful final state" remains the same value as previously set with the KEEPUNTIL parameter. The maximum retention time for "Unsuccessful final state" will be set to the same value as "Successful final state".

## Save Restore CL commands - parameter change for connection type

The following CL commands for Save Restore have been modified:

- Save Restore Object (**SAVRSTOBJ**)
- Save Restore Library (**SAVRSTLIB**)
- Save Restore Configuration (**SAVRSTCFG**)
- Save Restore Changed Objects (**SAVRSTCHG**)
- Save Restore Doc/Lib Object (**SAVRSTDLO**)
- Save Restore (**SAVRST**)

With IBM i 7.5, a new parameter **CNNTYPE**, is added and the parameter **RMTLOCNAME** is a single element parameter.

Connection type (**CNNTYPE**) - Specifies the type of connection with the remote system. The possible types are:

#### **\*SNA**

Default - The remote system is accessed using a Systems Network Architecture (SNA) address and protocol.

#### **\*IP**

The target system is found using a host name or an internet address over a TCP/IP connection.

#### **\*DB2MIRROR**

The remote system is accessed using the System Object Replication NRG configured by Db2<sup>®</sup> Mirror GUI or Db2 Mirror services.

With certain IBM i 7.4 PTFs installed, upgrading to IBM i 7.5 from IBM i 7.4 may cause a change in the command parameter, **RMTLOCNAME**. IBM i PTF SI73777 introduced an incompatibility by changing the CL parameter **RMTLOCNAME** to an element list and added a second element "Type" to support the \*IP connection type. On IBM i 7.5, the **RMTLOCNAME** is again a single element parameter. The connection type on IBM i 7.5 is now specified by the new **CNNTYPE** parameter.

The following list provides detail on which IBM i PTFs created the change in the parameter, **RMTLOCNAME**, as well as which PTFs removed the compatibility issue:

- With PTF SI73777, SI74970, or SI75827 installed, but not PTF SI76042 (or PTFs which supersede SI76042) installed, upgrading to IBM i 7.5 will cause an incompatible change to the **RMTLOCNAME** parameter.
- With PTF SI73777, SI74970, or SI75827 installed, and also PTF SI76042 (or PTFs which supersede SI76042) installed, there is no change in the **RMTLOCNAME** parameter.

- Without IBM i PTF SI73777, SI74970, or SI75827 installed, there is no change in the **RMTLOCNAME** parameter.
- Certain levels of the IBM i 7.4 Backup Recovery Solutions Group PTF SF99664 may also contain these PTFs.
  - Level 18 contains IBM i 7.4 PTF SI74970.
  - Level 20 contains IBM i 7.4 PTF SI75827.

When upgrading to IBM i 7.5 from IBM i 7.3 there is no compatibility issue.

Any CL scripts or programs that were coded to include the connection type element of **RMTLOCNAME** will need to change to specify the new **CNNTYPE** parameter.

## CHGDEVTAP UNLOAD change now allowed while device is varied on

With IBM i 7.5 PTF MF70244, the **Change Device Desc (Tape)** command (**CHGDEVTAP**) will now allow the UNLOAD (Unload device at vary off) parameter to be modified while the device is varied on.

## ADDPFTRG/CHGPFTRG command changes

In IBM i 7.5 with PTF SI82937, the **MIRROR** parameter for the Add Physical File Trigger (**ADDPFTRG**) command and the Change Physical File Trigger (**CHGPFTRG**) command is modified to remove the \*YES value. This value is no longer supported. Existing physical file triggers with **MIRROR(\*YES)** are not affected.

## Machine Interface Changes

Release to release Machine Interface changes that should be considered

### MATSOBJ MI instruction has new 8-byte object size field

On previous releases, the Materialize System Object (MATSOBJ) MI instruction on IBM i 7.5 could not return a value greater than 2 TB in either of two fields, "Object Size" or the 4-byte field "Object size in basic storage units".

Starting on IBM i 7.5, MATSOBJ can utilize a new 8-byte object-size field, which has been named "Object size in basic storage units". On previous releases, there is a 4-byte field with the same name, "Object size in basic storage units". This field has been renamed "Limited object size" on IBM i 7.5.

If the size of the object is too large to be represented in either of the two smaller fields, "Object size" or the 4-byte "Limited object size", those fields will return a value of zero.

The new 8-byte field, "Object size in basic storage units", will contain the size of the object in units of 512 bytes and is the preferred field to use when retrieving object size.

### Enhanced MI Support to Materialize Locks

MI instructions that materialize locks on IBM i 7.5 set "bytes available" to the storage required for all available locks that match materialization criteria, limited to 2,147,483,647 (if more locks are available than could fit in the template). In prior releases, many instructions limited "bytes available" to the storage required for 32,767 locks, even when more locks were available.

Instructions that materialize object and space location locks (MATAOL, MATOBJLK, MATPRLK, and MATSELLK) on IBM i 7.5, may return as many lock description entries as fit in the input value of "bytes provided". Most of these instructions previously limited results to only the first 32,767 lock description entries even when the template had space for more entries. The actual number of entries returned on IBM i 7.5 is now as many as will fit in the smaller of "bytes provided" and "bytes available".

Instructions that materialize record locks (MATDRECL and MATPRECL) on IBM i 7.5, may return as many lock description entries as fit in the input value of "bytes provided". These templates contain separate arrays for locks held versus lock waits. Results that use 16-bit fields for lock counts will only reliably return lock description entries beyond 32,767 if the result contains entries for either locks held or lock waits (not both). In those cases, the actual number of entries returned is now as many as will fit in the smaller of "bytes provided" and "bytes available".

## APYJRNCHGX command

The Apply Journalized Changes Extended (**APYJRNCHGX**) command will be removed in a future release.

The support for the Apply Journalized Changes Extended (**APYJRNCHGX**) command will be removed in a future release. The (APYJRNCHGX) command was first delivered in V5R2 and provided additional functions that the Apply Journalized Changes (APYJRNCHG) command did not have. In IBM i 7.1 and subsequent releases, the APYJRNCHG command and other CL commands provide the functions that were provided by the APYJRNCHGX command.

## Database changes

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Release to release Database changes that should be considered

### Change to SQL Call Level Interface (CLI) include sqlcli

The value of `SQL_DATALINK` has been changed in the CLI header file `qsysinc/h(sqlcli)`. On previous releases it was **16**, on IBM i 7.5 it is now **-400**.

```
/* C data type to SQL data type mapping */  
#define SQL_DATALINK 16
```

was changed to

```
#define SQL_DATALINK -400
```

This was done to allow a new define, `SQL_BOOLEAN`, to be created for IBM i 7.5 and have its value consistent with other Db2 platforms. Two defines cannot have the same value. The value for `SQL_BOOLEAN` is 16. The value for `SQL_DATALINK` is now -400.

After upgrading to IBM i 7.5, recompile any SQL CLI program coded to use the symbol `SQL_DATALINK`.

An SQL CLI application using hard-coded **16** for `datalink` will not run on IBM i 7.5. Change the program to use `SQL_DATALINK` (or change the hard-coded value to -400).

Do not create programs using `SQL_DATALINK` on IBM i 7.5 using **TGTRLS (V7R4M0)** or earlier `TGTRLS` values.

### Reserved keyword KEY is enforced

Within the SQL support in Db2 for i, some schema names and keywords are considered reserved for the database. The full list can be found in Appendix I of the SQL Reference. In some cases, names are reserved and cannot be used by application programs. In other cases, certain names are not recommended for use by application programs though not prevented by the database manager.

With IBM i 7.5, the reserved keyword `KEY` has change from reserved to reserved with enforcement, failing with `SQLCODE -199` and `SQLSTATE '41601'`.

### QSYS2.USER\_STORAGE view change

With IBM i 7.5, there is a change to the `MAXIMUM_STORAGE_ALLOWED` (`MAXSTG`) column within the `QSYS2.USER_STORAGE` view. In prior releases, for `ASPGRP *SYSBAS`, if there was no maximum amount of allowed storage for the user, the column contained the value 9,223,372,036,854,775,807 (Hex

7FFFFFFFFFFFFFFF) instead of the documented value of null. IBM i 7.5 will correctly return a null for this column when there is no maximum set.

## QSYS2.USER\_INFO and USER\_INFO\_BASIC view change

With IBM i 7.5, there is a change to the MAXIMUM\_ALLOWED\_STORAGE (MAXSTGLRG) column within the QSYS2.USER\_INFO view and the QSYS2.USER\_INFO\_BASIC view. In prior releases, if there was no maximum amount of allowed storage for the user, the column contained the value 9,223,372,036,854,775,807 (Hex 7FFFFFFFFFFFFFFF) instead of the documented value of null. IBM i 7.5 will correctly return a null for this column when there is no maximum set.

## QSYS2.SYSCONROLS view change

In IBM i 7.5, the data type for the LABEL column in the QSYS2.SYSCONROLS catalog view is changed from VARCHAR(50) to VARGRAPHIC(50) CCSID 1200.

## Change to implementation of shared common table expressions for SQL queries

On IBM i 7.5, the query optimizer has changed how it implements queries in which a Common Table Expression (CTE) is referenced multiple times within that same query. This change increases compatibility with the SQL standard, and it may also affect the behavior of some queries that use CTEs. The following detail applies only to queries that reference a CTE multiple times.

On prior releases, the optimizer had two options for implementing these CTEs. The optimizer would choose the option that it estimated would run the fastest.

The options were:

### 1. Capture

"Capture" results set of the CTE. The full CTE is run once by itself, and the resulting data is stored in a temporary data structure to be shared wherever the CTE is referenced in that query.

### 2. Merge

"Merge" each CTE as defined into the tree and handle each CTE reference separately. This would treat each CTE reference as its own entity, duplicating the underlying tree and allowing the optimizer to decide how each reference to that tree is run based on the context of that reference.

It has been determined that option (2) is not consistent with the SQL standard. Because the CTE's underlying tree is duplicated, changes to underlying tables while the query is running may cause a CTE reference to return a different result set. This could cause unexpected results, as an individual CTE is expected to return the same data wherever it is referenced.

To provide consistent query results and to ensure compliance with the SQL standard, the query optimizer will now always use option (1). As a side-effect, some CTE queries that were previously implemented with option (2) may run slower. In other cases, run time may be improved.

In all cases, the CTE query will return predictable results.

Capturing the results set into a temporary data structure also prevents the use of a sensitive cursor or ALWCPYDTA(\*NO) with these queries. Queries that previously were able to run in such an environment because they used option (2) will need to be re-written, or they will now fail with SQLCODE -243 or SQLCODE -527.

For more information on detecting shared CTEs, see [“New database monitor field indicating shared common table expressions for SQL queries” on page 17.](#)

## New database monitor field indicating shared common table expressions for SQL queries

On IBM i 7.5, the query optimizer has added additional information about shared common table expressions (CTEs) to the 3014 Database Monitor record.

As described in “Change to implementation of shared common table expressions for SQL queries” on page 16, CTEs that are shared (referenced more than once in a query) require special handling by the query optimizer in order to maintain compatibility with the SQL standard. In some cases, the special handling may cause queries to perform more slowly than expected. When the database monitor is run or a plan cache snapshot is captured, the QQSMINT1 field of the 3014 record will indicate whether the query has a shared CTE.

This information is intended to help the database engineer or programmer find these queries for remediation. IBM recommends limiting the use of shared CTEs, especially in cases where the CTE is complex or selects a large amount of data. This recommendation holds even if the query is not currently experiencing performance problems. Remediation steps can include using an SQL view in place of the CTE or splitting each CTE reference to use its own CTE definition.

Possible values for QQSMINT1 are:

**0**

Query does not contain CTEs with multiple references. These queries are not considered problematic.

**1**

Query contains at least one CTE with multiple references. These queries may be susceptible to performance problems due to constraints imposed by the SQL standard.

**2**

Query contains at least one CTE with multiple references and at least one of these CTEs is considered complex by the optimizer. These queries are the most likely to suffer performance problems.

A simple example of a query that contains a multiply referenced CTE is:

```
with cte1 as (select col1, col2 from table1)
select * from cte1 where col1 < 100
union all
select * from cte1 where col1 > 1000;
```

This query could be rewritten to avoid the multiple CTE references as:

```
with cte1 as (select col1, col2 from table1)
cte2 as (select col1, col2 from table1),
select * from cte1 where col1 < 100
union all
select * from cte2 where col1 > 1000;
```

## SQE Symmetric Multiprocessing Changes

On IBM i 7.5, the behavior of the **PARALLEL\_DEGREE \*OPTIMIZE** setting is changed for database queries.

When Db2 Symmetric Multiprocessing (SMP) is enabled, the PARALLEL\_DEGREE value \*OPTIMIZE enables the query optimizer to determine the optimal number of parallel tasks with which to run a query.

In most environments, SMP provides the greatest benefit to longer-running queries. With this update, Db2 for i now offers a feature which enables the optimizer to only consider SMP for queries that run for longer than a user-configurable time threshold. This allows the optimizer to apply SMP specifically to those queries that will benefit the most. When running with PARALLEL\_DEGREE \*OPTIMIZE or \*OPTIMIZE%, all queries will initially run without the use of SMP. Only when queries have exceeded the time threshold will they be eligible to use SMP. This feature is delivered with the Db2 for i 7.5 PTF group SF99950 level 3.

### Minimum Runtime for Parallel Queries

A new QAQQINI option, **PARALLEL\_MIN\_TIME**, describes the minimum time in seconds that a query must run before the optimizer may consider using SMP. When **PARALLEL\_DEGREE** option **\*OPTIMIZE** is used, queries will initially execute with a non-parallel implementation. If a query completes within the configured **PARALLEL\_MIN\_TIME** number of seconds, the optimizer will not run the query with SMP. If the query runs longer than the configured amount of time, the optimizer may choose to replace the plan with a parallel implementation. If a parallel implementation is chosen, all subsequent executions of the query will also use SMP. The optimizer retains information about the choice of SMP for each query (identified by its QRO hash) until the plan cache is cleared or until the next IPL.

By default, **PARALLEL\_MIN\_TIME** is set to 60 seconds, and may be set to any integer value between 2 and 100,000, inclusive. In order for **PARALLEL\_MIN\_TIME** to take effect, **PARALLEL\_DEGREE** must be set to **\*OPTIMIZE** or **\*OPTIMIZE %**.

The new behavior does not apply to native queries, when Adaptive Query Processing is disabled, or when **PARALLEL\_MIN\_TIME** is set to **\*NONE**. Under these conditions, all queries using **PARALLEL\_DEGREE \*OPTIMIZE** will consider parallel execution during their initial and all subsequent optimizations, which is the same behavior as prior releases.

#### **QAQQINI Parameter PARALLEL\_DEGREE value \*OPTIMIZE %**

As an additional control, a percentage value may be specified for values of **\*OPTIMIZE** when **PARALLEL\_DEGREE** is configured with a QAQQINI file. The percentage value provides the optimizer with additional instruction when determining the number of tasks used to execute a query. In previous releases, this percentage was applied after optimization finished but before execution began.

Starting in IBM i 7.5, the percentage specified for **\*OPTIMIZE** will be applied prior to optimization. This will provide the optimizer with more accurate information related to the number of tasks a query may run with. Because the number of tasks is taken into account during the creation of the execution plan, the overall execution plan (and degrees contained within the execution plan) may change, affecting query performance. In general, query and system performance are expected to improve, but some individual queries may be negatively affected. If no percentage is specified, the optimizer behavior remains the same as in prior releases.

#### **Maximum System CPU Limits for Parallel Queries**

Starting in IBM i 7.5, the query engine will dynamically adjust the number of tasks used by queries running with **PARALLEL\_DEGREE \*OPTIMIZE**. As these queries run, the query engine will consider the overall system CPU usage.

If the system CPU usage exceeds 80 percent, query tasks will be paused until the system CPU usage falls below 80 percent, at which time the tasks will resume running. At no time will the number of tasks executing for a query be less than one. Queries that run with reduced tasks may run more slowly, but they will continue to run to completion. The purpose of this behavior is to improve overall system responsiveness by providing a reserve level of system utilization.

The desired system utilization level may be modified from the default value of 80 percent by specifying a value for the new QAQQINI parameter **PARALLEL\_MAX\_SYSTEM\_CPU**. A value of **\*NONE** will disable the new function and will allow query tasks to run without respect to system CPU usage, which is the same behavior as prior releases.

## **Queries that compare a numeric value with blanks or an empty string will fail with SQLSTATE/SQLCODE '22023'/-302 or '53045'/-678**

Previously, a query that included an incompatible comparison between a numeric value and blank(s) or a numeric value and an empty string would not result in an SQL failure.

Blank characters and empty strings are both incompatible with numeric values. Any such queries will now fail with SQLSTATE: '22023'/-302 or '53045'/-678.

This change was also made in previous releases with IBM i 7.4 PTF SI76030 and IBM i 7.3 PTF SI76035.



**Note:** The `QIBM_QUERY_CONVERT_BLANK_TO_0` environment variable added to IBM i 7.4 and IBM i 7.3 to allow users to revert back to the incorrect behavior and allow for the comparison of empty strings or blanks to numeric fields, is not supported on IBM i 7.5.

## Removal of IBM Db2 for i: JSON Store Technology Preview

In IBM i 7.5, IBM Db2 for i JSON Store Technology Preview is removed. This includes the following:

### **db2nosql**

The Db2 JSON command line processor and associated components in `/QIBM/ProdData/OS/SQLLIB/bin` including:

- `db2nosql`
- `db2nosql.bat`
- `jline-0.9.93.jar`
- `js.jar`
- `mongo-2.8.0.jar`
- `nosqljson.jar`
- `servlet-api.jar`

### **The Db2 JSON Java API**

Included in `nosqljson.jar`

### **SYSTOOLS.BSON2JSON**

A function to retrieve a JSON document stored within a Db2 for i table

This document describes what was included in the JSON preview: <https://www.ibm.com/developerworks/ibmi/library/i-json-store-technology/>.

To handle JSON data, the following JSON capabilities provided by IBM Db2® for i should be used:

### **JSON\_TO\_BSON**

Converts JSON to BSON

### **BSON\_TO\_JSON**

Converts BSON to JSON, provides same functionality as SYSTOOLS.BSON2JSON

### **JSON\_VALUE**

Returns an SQL value from JSON

### **JSON\_QUERY**

Returns a JSON value from JSON

### **JSON\_TABLE**

Returns a result table from JSON

### **JSON\_ARRAY**

Creates a JSON array

### **JSON\_OBJECT**

Creates a JSON object

### **JSON\_ARRAYAGG**

Creates a JSON array using an aggregate query

### **JSON\_OBJECTAGG**

Creates a JSON object using an aggregate query

## Change in LISTAGG error

This changed behavior affects the `LISTAGG()` SQL aggregate function when no `ON OVERFLOW` clause is specified or when `ON OVERFLOW ERROR` is specified.

On previous releases, when the aggregated result string exceeded the result length, an SQL warning SQLCODE +802, SQLSTATE '01004' would be produced. The LISTAGG result would be in error, and the query would run to completion.

On IBM i 7.5, an aggregated string that exceeds the result length will cause the query to fail with an SQL error SQLCODE -802, SQLSTATE '22001', referencing error type 12: "Result of a concatenation operation on a varying-length field exceeded the maximum allowed length of the result type."

## Generate SQL will now produce SQL table names for VIEW and MQT definitions

With IBM i 7.5, the QSYS2.GENERATE\_SQL and QSYS2.GENERATE\_SQL\_OBJECTS procedures will generate the SQL table names for view and MQT definitions. Previously, the GENERATE\_SQL and GENERATE\_SQL\_OBJECTS procedures would always generate the system file name. With this change the SQL table name will be generated even if the original create statement used the system name.

For an example, the previous output generated the file names like this:

```
FROM CUST_LIB.CUST000001, CUST_LIB.CUST000002
```

The new output could be like this instead:

```
FROM CUST_LIB.CUSTOMER_ID, CUST_LIB.CUSTOMER_ADDRESS
```

## QSYS2.SYSTEM\_STATUS table function, QSYS2.SYSTEM\_STATUS\_INFO view, and QSYS2.SYSTEM\_STATUS\_INFO\_BASIC view changes

In IBM i 7.5, the columns AVERAGE\_CPU\_RATE, AVERAGE\_CPU\_UTILIZATION, MINIMUM\_CPU\_UTILIZATION, and MAXIMUM\_CPU\_UTILIZATION will always return a value of 0. This change improves the performance of the system status services by two seconds or more. These columns have been relocated to a new table function named QSYS2.SYSTEM\_ACTIVITY\_INFO.

In the release after IBM i 7.5, these four columns and the SQL\_CPU\_UTILIZATION column will be removed from the table function and the two views.

## SQL ILE RPG precompiler change for BOOLEAN support

In IBM i 7.5, an embedded SQL statement which references an RPG indicator host variable may have different behavior than on previous releases.

Prior to IBM i 7.5, RPG indicator host variables were partially supported within Db2 for i. When an embedded SQL statement referenced an RPG indicator host variable, the RPG precompiler generated a character of length 1 within SQL. This allowed the RPG indicator host variable to be used within SQL anywhere a character host variable was allowed, even though the RPG indicator data type was not supported within SQL.

In IBM i 7.5, support for a native SQL BOOLEAN data type was added to Db2 for i. Since the BOOLEAN data type matched the RPG indicator data type, the RPG precompiler was changed to generate an RPG indicator host variable as a BOOLEAN. Because of this enhancement, an RPG program with an embedded SQL statement which references an RPG indicator host variable may have different behavior when the SQL program is recompiled on IBM i 7.5. An embedded INSERT, UPDATE, MERGE, SET, or VALUES INTO SQL statement may have different behavior when an RPG indicator host variable is assigned into a character variable or character column. Prior to IBM i 7.5, the value '0' or '1' would be assigned, but in IBM i 7.5, the value 'FALSE' or 'TRUE' is assigned. This may cause an SQL0404 message (SQLCODE -404) when an RPG indicator host variable is assigned into a character variable or character column.

Existing programs which are not recompiled do not change behavior.

If the previous behavior is required, the **TGTRLS(\*PRV | V7R3M0 | V7R4M0)** parameter can be used on the Create SQL ILE RPG Object (**CRTSQLRPGI**) \*CMD.

For additional information on the SQL BOOLEAN data type, refer to <https://www.ibm.com/support/pages/node/6575531>.

## CREATE TRIGGER and ALTER TRIGGER - MIRROR YES option removed

In IBM i 7.5 with PTF SI82637, the **MIRROR YES** option is removed from the **CREATE TRIGGER** and **ALTER TRIGGER** SQL statements. This option is no longer supported.

Existing SQL triggers with MIRROR YES are not affected.

## STACK\_INFO unauthorized access default behavior change

In IBM i 7.5 with PTF SI83049, the default behavior for the QSYS2.STACK\_INFO table function when the specified job cannot be accessed has changed. After application of the PTF, when a user is not authorized to access a job or a job is not found, the QSYS2.STACK\_INFO table function will return a warning condition with an empty result set. An authorization problem is returned as SQLSTATE '01548' and a job not found is returned as SQLSTATE '01532'.

A new optional **IGNORE\_ERRORS** parameter has been added to the table function to control this behavior. If the original behavior is desired, the **IGNORE\_ERRORS** parameter must be specified with a value of 'NO' so an error condition will occur when the job cannot be accessed.

Prior to the application of this PTF, when a user was not authorized to access a job or a job was not found, the QSYS2.STACK\_INFO table function would return an error condition. An authorization problem was returned as SQLSTATE '42501' and a job not found was returned as SQLSTATE '42704'.

## Generate Data Definition Language (QSQGNDDL) API will now produce SQL table names for VIEW and MQT definitions

In IBM i 7.5 base version, the Generate Data Definition Language (QSQGNDDL) API will generate the SQL table names for view and MQT definitions. Previously, the Generate Data Definition Language (QSQGNDDL) API would always generate the system file name. With this change, the SQL table name will be generated even if the original create statement used the system name.

For example, the previous output generated the file names like this:

```
FROM CUST_LIB.CUST000001,  
      CUST_LIB.CUST000002
```

The new output could be like this now:

```
FROM CUST_LIB.CUSTOMER_ID,  
      CUST_LIB.CUSTOMER_ADDRESS
```

## Security Related Changes

Release to release Security changes that should be considered

### System security changes

#### Security system value changes

The Password Level (**QPWDLVL**) system value will be shipped with a default value of 3 or 4 in a future release. This will affect only new system installs.

The System Security Level (**QSECURITY**) system value can no longer be set to a value of 20. If a system currently has a security level of 20, that will not change. However, if the security level is changed to a different value, then the security level cannot be changed back to 20.

When restoring system values and QSECURITY is set to 20 on the save, the QSECURITY system value will not be restored. If the QSECURITY system value is set to 20 on the system prior to the restore, it will stay at 20.

If the System Security Level (**QSECURITY**) system value is set to a value of 10, a user will no longer be able to sign on to the system without having a valid user profile. A user profile will no longer be created for the user name specified at sign-on.

The Retain Server Security Data (**QRETSVRSEC**) system value is now obsolete. The QRETSVRSEC system value no longer needs to be set to '1' to retain the security data needed by a server for authentication. This includes the Server Authentication Entry interfaces and the Validation List (\*VLDL) interfaces. If the system value is set to '0', and the Clear Server Security Data (**CLRSVRSEC**) command is run, it will no longer clear the decryptable authentication information that is associated with user profiles and \*VLDL entries. The **CLRSVRSEC** command will be removed in a future release. The CPF9898 INFO message, "The CLRSVRSEC command is no longer supported because the QRETSVRSEC system value is no longer used"

is sent when the **CLRSVRSEC** command is run.

**APPC communications jobs and commands require QPWLVL 3 or lower when encrypted passwords are used.** Beginning with IBM i 7.5, APPC communications jobs and commands that specify a userid and password will not support QPWLVL 4, unless support is explicitly indicated. Customers who are actively using APPC communications jobs and commands that attempt to automatically sign on with an encrypted password must NOT change to use QPWLVL of 4.

APPC communications that do not use an encrypted password will continue to function as normal. The type of failure and how errors are reported depend on how the specific APPC function or application implements password encryption and substitution.

Examples of applications and commands likely to be affected by no support of QPWLVL 4, are user written programs that send in passwords, and DDM files where the APPC device on the target system has SECURELOC(\*VFYENCPWD) specified. An example of a command that is not supported with QPWLVL 4 is Display Station Pass Through - STRPASTHR RMTPWD().

## **CRTUSRPRF command changes**

The Create User Profile (**CRTUSRPRF**) command has been changed to use \*NONE as the default value for the User Password (**PASSWORD**) parameter. Previously, the default value was \*USRPRF, which set the password to the user profile name.

The Password Expired (**PWDEXP**) attribute will no longer be required to be \*NO if the password is \*NONE. The **PWDEXP** attribute will only apply if the password is not \*NONE and the Local Password Management (**LCLPWDGMT**) attribute is \*YES.

## **WRKUSRPRF \*BASIC interface changes**

Work with User Enrollment (**WRKUSRPRF ASTLVL (\*BASIC)**) interface has been changed to use \*NONE as the default value for the Password field when using the Add and Copy options.

The User field has been changed to allow a 10-character user profile name when using the Add and Copy options.

A 'Directory entry user ID' field has been added to allow specifying an 8-character user ID field that will be used as the User ID parameter on the Add Directory Entry (**ADDIRE**) command call. The 10-character User field will be used as the 'User profile' (**USER**) parameter on the **ADDIRE** command call.

## DMPUSRPRF command change

The Dump User Profile (**DMPUSRPRF**) command will no longer dump information about the previous passwords. If there is a previous password then '\*\*\*\*\*' will be dumped. If there is not a previous password, then '\*BLANK' will continue to be dumped.

## Password authentication message and return code changes

Interfaces that authenticate a user ID and password now send one message or return code for user profile not found and password not correct. For example, green screen sign on will send CPF1120 for user profile not found and password not correct. CPF1107 for password not correct will no longer be sent.

Change User Password (**QSYCHGPW**), Get Profile Handle (**QSYGETPH**, QsyGetProfileHandle), Generate Profile Token (**QSYGENPT**), and Generate ProfileToken Extended (QsyGenPrfTknE) APIs now send CPF22E2 for user profile not found and password not correct. CPF9801 or CPF2204 will no longer be sent when both the user ID and password are specified (special value for password not specified).

## QSYRUPWD, QSYSUPWD, and QSYCUPWD API changes

The data in the buffer returned from the Retrieve Encrypted User Password (**QSYRUPWD**) API is not compatible with previous releases. The API documentation states that the data should not be sent to a system that is at a different release or password level. If the data must be sent from an IBM i 7.5 system to an IBM i 7.4 or 7.3 system, the appropriate PTFs (7.4 = SI76821, 7.3 = SI76822) must be installed so that the Set Encrypted User Password (**QSYSUPWD**) and Check Encrypted User Password (**QSYCUPWD**) APIs can process the QSYRUPWD buffer. Without the PTFs, **QSYSUPWD** and **QSYCUPWD** will return error CPF4AB2

"Receiver variable from QSYRUPWD has been altered"

## Restrict adding or removing an exit program to the password exit points

To add or remove an exit program to the **QIBM\_QSY\_CHK\_PASSWRD** or **QIBM\_QSY\_VLD\_PASSWRD** exit points, the 'Allow add and remove of password exit programs' attribute on the Display Security Attributes (**DSPSECA**) command must be set to \*YES. The attribute can be displayed using the Display Security Attributes (**DSPSECA**) or Display SST Security Attributes (**DSPSSTSECA**) command. The attribute can be changed using the Change SST Security Attributes (**CHGSSTSECA**) command. The default shipped value is \*YES.

## IBM i NetServer LAN Manager password removed

The IBM i NetServer LAN Manager password will be removed from all user profiles when IBM i 7.5 is installed regardless of the current Password Level (**QPWDLVL**) system value. This password has not been supported since Windows XP, which is no longer supported by IBM i. There will no longer be a difference between password levels 0 and 1.

## Modified Validation List objects cannot be saved to previous release

If the encrypted data for an entry in a **Validation List (\*VLDL)** object is added or changed on IBM i 7.5, the \*VLDL object cannot be saved to a release previous to IBM i 7.5.

## List Object Security Protection

By default, on IBM i 7.5, clients and applications might see fewer objects appear when directly or indirectly using an IBM i operating system interface that returns a list of objects compared with previous releases.

The operating system will return the existence of the object only if the user has some authority to the object other than \*EXCLUDE.

The Display Library (**DSPLIB**) command will not return the existence of any object for which the user does not have some authority, other than \*EXCLUDE.

The **QIBM\_LIST\_ALL\_OBJS** and **QIBM\_LIST\_ALL\_OBJS\_SQL** function usage identifiers can be used to override this list object security protection for specific users or groups for some of the system interfaces. The shipped 'Default authority' value for these functions will be \*DENIED.

The system administrator will need to change the default authority for these function usage IDs to **\*ALLOWED** to revert to the previous release behavior. Alternatively, the system administrator can give some users \*ALLOWED access to the function usage IDs. The shipped '\*ALLOBJ special authority' value for the function usage IDs will be \*USED so that users with \*ALLOBJ will be authorized to see all object names.

The **QIBM\_LIST\_ALL\_OBJS** function usage ID can be used to override the security protection for the following interfaces:

- Display Object Description (**DSPOBJD**) **DETAIL (\*NAME)** command
- Open List of Objects (QGYOLOBJ) API
- List Objects (QUSLOBJ) API
- All integrated file system (IFS) interfaces that read directory entries from the QSYS.LIB and IASP QSYS.LIB file systems

The **QIBM\_LIST\_ALL\_OBJS\_SQL** function usage ID can be used to override the security protection for the QSYS2.OBJECT\_STATISTICS and QSYS2.IFS\_OBJECT\_STATISTICS SQL services.

Other SQL services use QSYS2.OBJECT\_STATISTICS to provide a list of objects. They will not return the existence of \*USRPRF objects for which the user does not have some authority other than \*EXCLUDE. Following is a list of some of the SQL services that are subject to behavior change based on the QIBM\_LIST\_ALL\_OBJS\_SQL function usage ID:

- QSYS2.AUTHORITY\_COLLECTION\_OBJECT
- QSYS2.AUTHORITY\_COLLECTION\_LIBRARIES
- QSYS2.OBJECT\_LOCK\_INFO
- QSYS2.OBJECT\_PRIVILEGES
- QSYS2.SYSLIMITS
- QSYS2.SYSSCHEMAAUTH
- QSYS2.SYSSCHEMAS
- SYSIBM.SCHEMATA
- SYSIBM.SCHEMATA\_S
- SYSIBM.SQLSCHEMAS

Other SQL services use QSYS2.OBJECT\_STATISTICS to provide a list of \*USRPRF objects. They will not return the existence of \*USRPRF objects for which the user does not have some authority other than \*EXCLUDE.

- QSYS2.AUTHORITY\_COLLECTION
- QSYS2.AUTHORIZATIONS
- SYSIBM.AUTHORIZATIONS

## Service tools changes

The \*FULL and \*BASIC special values for the service tools user ID have been removed from the Change Service Tools User ID (QSYCHGDS) API.

The \*FULL (22222222) and \*BASIC (11111111) service tools user IDs have been deleted.

## SM (Systems Management Change) audit journal entry change

With Db2 for i 7.5 PTF Group SF99950 level 3 and Db2 for i 7.4 PTF Group SF99704 level 23, the SM (Systems Management Change) audit journal entry is changed when the entry relates to use of the Change DDM TCP/IP Attributes (CHGDDMTCPA) CL command. For this situation, the Entry Type will contain the value 'M' (Change DDM TCP/IP Attributes (CHGDDMTCPA) CL command), where it previously contained 'D' (DRDA).

## QASYSTJ5 model outfile incompatible changes in a future release

The model outfile for the ST (Service Tools Action) audit record will be changed in a future release to remove three field names. This change will cause an incompatibility with code that may be currently using the field names. The field names are being removed because the support to put values into these fields was never implemented.

The fields names being removed from the QASYSTJ5 model outfile are the three listed below. These three 10-character fields will become one 30-character reserved field. If your code references any of these names, the references must be removed:

- STEPTENT
- STEPTOBJ
- STEPTLIB

## Authority other than \*EXCLUDE required to display objects within '/home' directory

In prior releases, only \*R data authority to the '/home' directory was required for a user to process the objects linked in that directory. No authority was required to the objects themselves.

For example, a user with proper authority could display all the contents of '/home' with the Work with Object Links (**WRKLNK**) command, the Qshell 'ls' utility, and many other interfaces. In addition, applications could use various APIs such as readdir() or Qp0IProcessSubtree() to read the entries in the '/home' directory, list the contents of the directory, and report some of the attributes of the objects in '/home'.

Starting in IBM i 7.5, a directory entry in '/home' will only be returned or be visible to these interfaces if the user has some authority other than \*EXCLUDE to the object itself in addition to having \*R authority to the directory. This new authority requirement applies only to the '/home' directory, any variant of '/home' (such as '/HOME', '/Home', or '/HoMe'), and any directory that has ever been '/home' after IBM i 7.5 was installed.

For example, if '/home' was renamed to '/oldhome' and some other existing directory was renamed to '/home', both '/oldhome' and the new '/home' would exhibit the new behavior. In addition, if '/home' is removed from the system, the new authority restrictions would immediately apply to any directory restored to the system as '/home', even if the saved directory originally had a different name, was saved from a different system, or was saved from a previous release.

This new authority requirement could cause applications or system functions to skip over or not include objects that would have been processed in previous releases. This may result in new failures or other unexpected results. Granting additional authority to some objects might be required to ensure results consistent with previous releases.

## Authority requirements change for \*AUTL interfaces

The authority requirements for the following interfaces have been changed to require the user to be the owner of the object, have \*AUTLMGT authority to the authorization list, or have access to the **QIBM\_DB\_SECADM** function ID:

- List Users Authorized to Object (QSYLUSRA) API

- Display Authorization List Objects (**DSPAUTOBJ**) command
- List Objects Secured by Authorization List (QSYLATLO) API
- Retrieve Objects Secured by Authorization List (QGYRATLO) API
- QSYS2.AUTHORIZATION\_LIST\_INFO SQL service

The authority requirements for the following interfaces have been changed to require the user to be the owner of the object or have \*AUTLMGT authority to the authorization list:

- Display Authorization List DLO (**DSPAUTDLO**) command

The authority requirements for the following interfaces have been changed to require the user to be the owner of the authorization list, have \*AUTLMGT authority to the authorization list, or have access to the **QIBM\_DB\_SECADM** function ID to see all authorized users:

- Display Authorization List (**DSPAUTL**) command
- QSYS2.OBJECT\_PRIVILEGES SQL service
- QSYS2.AUTHORIZATION\_LIST\_USER\_INFO SQL service

The following interfaces will no longer send a GR-F \*CHKUSAGE audit entry if the user has access to the **QIBM\_DB\_SECADM** function ID:

- Add Authorization List Entry (**ADDAUTLE**) command
- Change Authorization List Entry (**CHGAUTLE**) command
- Change Object Owner (**CHGOBJOWN**) command
- Change Object Primary Group (**CHGOBJPGP**) command
- Display Authorization List Objects (**DSPAUTOBJ**) command
- Display Object Authority (**DSPOBJAUT**) command
- Edit Object Authority (**EDTOBJAUT**) command
- Grant Object Authority (**GRTOBJAUT**) command
- List Authorization List Objects (QSYLATLO) API
- List Authorized Users (QSYLAUTU) API
- List Objects (QUSLOBJ) API
- List Users Authorized to Object (QSYLUSRA) API
- Open List of Objects (QGYOLOBJ) API
- Retrieve Authorization List Entry (**RTVAUTLE**) command
- Retrieve Authorized Users (QSYRAUTU) API
- Retrieve Objects Secured by Authorization List (QGYRATLO) API
- Retrieve User Information (QSYRUSRI) API
- Remove Authorization List Entry (**RMVAUTLE**) command
- Revoke Object Authority (**RVKOBJAUT**) command
- Work with Objects (**WRKOBJ**) command

## SQL Plan Cache snapshots and event monitor files \*PUBLIC authority changed from \*USE to \*EXCLUDE

Change to \*PUBLIC authority for SQL Plan Cache snapshots and event monitor files.

The \*PUBLIC authority for newly created SQL Plan Cache snapshots and event monitor files is changed from \*USE to \*EXCLUDE.



## Change to authority required for registering Storage Extension and Tape exit programs

All Object (\*ALLOBJ) and Security Administrator (\*SECADM) special authority will now be required to Add or Remove programs for the QIBM\_QTA\_STOR\_EX400 and QIBM\_QTA\_TAPE\_TMS exit points.

## CRTJRN and CRTJRNRCV command changes

The default value of the Authority (**AUT**) parameter of the Create Journal (**CRTJRN**) and Create Journal Receiver (**CRTJRNRCV**) commands has changed from \*LIBCRTAUT to \*EXCLUDE.

## CHGRDBDIRE command authority requirements change

On IBM i 7.5, the authority requirements for the Change RDB Directory Entry (**CHGRDBDIRE**) and Remove RDB Directory Entry (**RMVRDBDIRE**) commands have changed to be consistent with the prior requirements for the Remove RDB Directory Entry (**RMVRDBDIRE**) and Change DDM TCP/IP Attributes (**CHGDDMTCPA**) commands.

Special authorities \*SECADM, \*ALLOBJ, and \*IOSYSCFG are needed to use the CHGRDBDIRE command to change a \*LOCAL RDB directory entry. These requirements are already enforced for remove.

\*IOSYSCFG is needed when changing or removing an RDB entry associated with an IASP.

## QWCLSCDE may return blank in "User profile of entry adder" field

Release to release API changes that should be considered

The List Job Schedule Entries (**QWCLSCDE**) API changed in IBM i 7.5. If the caller of the API does not have job control special authority (\*JOBCTL), and has only \*EXCLUDE authority to the user profile that added the entry, blank will be returned instead of the name for the "User profile of entry adder" field.

## IBM Directory Server for IBM i (LDAP) changes

IBM Directory Server for IBM i (LDAP) changes that should be considered are listed below.

Also see ["Security system value changes"](#) on page 21 for information on **QRETSVRSEC**.

### The QDirSrv share is not created

The QDirSrv share is no longer created by default when installing the LDAP product. If needed, please refer to the IBM Docs site for manually creating the share.

### Attributes ibm-slapdSslCipherSpec and ibm-slapdSslCipherSpecs are obsolete

The LDAP server no longer uses either the configuration attribute ibm-slapdSslCipherSpec or the configuration attribute ibm-slapdSslCipherSpecs to retrieve the configured ciphers.

On IBM i 7.5, the LDAP server relies entirely on System SSL/TLS defaults and application information in DCM to retrieve the ciphers.

Additionally, the setting **LDAP\_OPT\_SSL\_CIPHER** for calls to ldap\_set\_option() and ldap\_get\_option() will fail and return the error code LDAP\_PARAM\_ERROR.

## Change required for network attached printers using SNMPv1

The special value \*V3ONLY of the Allow SNMPv3 support (**ALWSNMPV3**) parameter of the Change SNMP Attributes (**CHGSNMPA**) command will now restrict all SNMP messages sent or received by the IBM i to

SNMPv3. Network attached printers that are using SNMPv1 will not work on IBM i 7.5. To enable the printer to work, there are two options:

1. Configure the printers to use SNMPv3.
2. Change the ALWSNMPV3 parameter of the Change SNMP Attributes (CHGSNMPA) command to a value other than \*V3ONLY.

**Note:** For new IBM i 7.5 installations, \*V3ONLY is the default value of the ALWSNMPV3 parameter.

## QFileSvr.400 authentication error if Kerberos is not fully configured on server

With the File Server and QFileSvr.400 password encryption updates, the QFileSvr.400 client will not be able to connect to the File Server on a system with partial Kerberos support configured. To successfully authenticate using Kerberos, QFileSvr.400 now requires a fully operational Kerberos environment including the use of Enterprise Identity Mapping (EIM).

If Kerberos is configured but not fully operational, or Kerberos is configured and operational but EIM is not, an authentication error will be given by QFileSvr.400 instead of automatically using an alternate authentication method.

To use an alternate authentication method for QFileSvr.400, Kerberos must not be configured.

## DNS security changes

The following changes have been made on release IBM i 7.5 related to security in DNS support.

The \*PUBLIC authorities on the following DNS directories are changed to \*EXCLUDE. A user administrating a DNS server should have permissions to access these directories:

- /QOpenSys/QIBM/ProdData/OS400/DNS
- /QOpenSys/QIBM/UserData/OS400/DNS
- /QIBM/UserData/OS400/DNS

The following commands now require special authority. A user running the following commands should have the required authority to prevent errors:

- Create DDNS Configuration (**CRTDDNSCFG**) - now requires **\*IOSYSCFG**
- Generate DNSSEC DS RR (**GENDNSDSRR**) - now requires **\*SECADM**
- Dynamic Update Utility (**NSUPDATE**) and Run Domain Name System Update (**RUNDNSUPD**) - now both require **\*IOSYSCFG**
- Remote Name Daemon Control (**RNDC**) and Run Remote Name Daemon Control Command (**RUNRNDCCMD**) - now both require **\*SERVICE**

The DNS API (QTOBUPDT) also adds authority checking against \*IOSYSCFG. When using the QTOBUPDT API, a user needs to have \*IOSYSCFG special authority.

## Changes to the event file EVFEVENT

The following applies to event file EVFEVENT created by compile commands which specify OPTION(\*EVENTF), OPTION(\*LSTDBG), or OPTION(\*SRCDBG).

- If the event file does not exist, it will now be created with public authority \*CHANGE + \*OBJALTER. In the past, it was created with public authority \*ALL.

## QNTC Authentication changes

In prior releases, to use Kerberos with QNTC, the user profile's local password management (*LCLPWDMGT*) value had to be set to \*NO. For a user profile with *LCLPWDMGT* set to \*YES, QNTC would use the user profile name and password for authentication on the server.

Starting in IBM i 7.5, it is not required to have the user profile's *LCLPWDMGT* value set to \*NO in order to authenticate on the server using Kerberos in the QNTC file system. Users with *LCLPWDMGT* set to \*YES may now see QNTC use Kerberos for authentication if the user has a valid ticket.

When a user with *LCLPWDMGT* set to \*YES accesses QNTC, QNTC will first attempt to authenticate using Kerberos. If Kerberos authentication fails, QNTC will then use the user profile name and password.

For more information, see [Authentication in the QNTC file system](#).

## Socket applications that use a Unix address family

Changes made to the \*PUBLIC authority for sockets that use the AF\_UNIX or AF\_UNIX\_CCSID address family for this release might affect applications that use Unix sockets.

A change was made in this release to set the default \*PUBLIC data authority of Unix sockets to \*NONE.

Applications that use Unix sockets might experience authority failures unless they are changed to ensure the user profiles running the applications are granted sufficient authority to use the sockets. If the user profiles running the applications do not have sufficient authority to use the sockets, they will get a `permission denied` error. If all of the user profiles running the applications have \*ALLOBJ special authority, no changes will be necessary.

The user profile that created the socket object will own the socket object when it is created. That user profile, or a user profile with \*ALLOBJ special authority, can use various interfaces to change authorities so that other user profiles can perform operations on the socket. The `chmod()` API, `QlgChmod()` API, `QlgChangeAuthority()` API, Change Authority (CHGAUT) CL command, or `chmod` Qshell utility can be used to change the data authorities for \*PUBLIC so that any user can access the socket. If only specific user profiles should be authorized to the socket, the `QlgChangeAuthority()` API or Change Authority (CHGAUT) CL command can be used. Access to Unix socket objects can also be restricted by setting permissions on the directories in the socket object path prefix.

The authorities required to perform various socket operations are as follows:

	Connection-Oriented Unix Socket	Connectionless Unix Socket
<code>bind()</code>	*RW	*RW
<code>connect()</code>	*RW	*RW
<code>sendto()</code>	*NONE	*RW

## INZTAP, DUPTAP, and RMVTAPCTG command authority changes

Save System (\*SAVSYS) special authority is now required to use the Initialize Tape (**INZTAP**), Duplicate Tape (**DUPTAP**), and the Remove Tape Cartridge (**RMVTAPCTG**) commands.

## INZOPT, DUPOPT, and CPYOPT command authority changes

Save System (\*SAVSYS) special authority is now required to use the Initialize Optical (**INZOPT**), Duplicate Optical (**DUPOPT**), and the Copy Optical (**CPYOPT**) commands.

## STRQMQR command changes

The public authority used for creating the output file (OUTFILE parameter) for the Start Query Management Query (STRQMQR) command has changed from \*LIBCRTAUT to \*EXCLUDE.

## CRTQMQR and CRTQMFORM command changes

The default value of the Authority (AUT) parameter of the Create Query Management Query (CRTQMQR) and Create Query Management Form (CRTQMFORM) commands has changed from \*LIBCRTAUT to \*EXCLUDE.

## \*JOBCTL special authority is required to view Java jobs

\*JOBCTL special authority is required to work with Java jobs from the Work JVM Job (**WRKJVMJOB**) Command, Generate JVM Dumps (**GENJVMDMP**), and Print JVM Job (**PRTJVMJOB**) commands. If the user does not have \*JOBCTL special authority, they can work with JVM jobs where the current user of the JVM job matches their user profile name.

The **QSYS2.JVM\_INFO** IBM i Service is changed to return NULL for work management related columns, when the user doesn't have \*JOBCTL special authority, or is not running in the same job as one of the JVM jobs.

Command change PTF numbers:

- IBM i 7.5: SI81190, SI81191
- IBM i 7.4: SI81283, SI81284
- IBM i 7.3: SI81285, SI81286

SQL Service change PTF numbers:

- IBM i 7.3 PTF SI81295
- IBM i 7.4 PTF SI81294
- IBM i 7.5 PTF SI81293

## GROUP\_PTF\_INFO view requires \*USE authority

In IBM i 7.5 with PTF SI82812, the caller must have \*USE authority to use the GROUP\_PTF\_INFO view.

## QMGTC user profile deleted in a future release

The QMGTC IBM-supplied user profile will be deleted when you upgrade to the release after IBM i 7.5. QMGTC is no longer used by IBM i and will be deleted along with any objects it owns.

## Public authority changes for objects

The \*PUBLIC authority has changed from \*CHANGE or \*ALL to \*USE for the following objects. For any objects that also exist in the secondary language libraries (QSYS29xx), the \*PUBLIC authority will be changed for the objects in those libraries as well.

### Object type \*LIB

Objects of type \*LIB

#DFULIB

QAUTOMON

QDCT

QNAE

QMSE

QOAR

## In library QSYS

### Object type \*FILE

Objects in library QSYS of type \*FILE

#ME\$HELP	QAANZLOG	QABNDBND	QABNDMBA	QABNDMCO	QABNDMEX
QABNDMIM	QABNDMPR	QABNDMRE	QABNDMSI	QACJINFO	QACMOTRC
QADALO	QADPGMAD	QADSHLR	QADSPAPY	QADSPDBR	QADSPDE
QADSPFFD	QADSPJR2	QADSPJR3	QADSPJR4	QADSPJRN	QADSPOBJ
QADSPPGM	QADSPPTF	QADSPUPA	QADSPUPB	QADSPUPG	QADSPUPO
QADXERLG	QADXJRNL	QAFSDDS	QAFDACCP	QAFDBASI	QAFDBSC
QAFDCMN	QAFDCSEQ	QAFDCST	QAFDDDM	QAFDDKT	QAFDDSP
QAFDICF	QAFDJOIN	QAFDLGL	QAFDMBR	QAFDMBRL	QAFDNGP
QAFDPHY	QAFDPRT	QAFDRFMT	QAFDSAV	QAFDSELO	QAFDSPOL
QAFDTAP	QAFDTRG	QAFSSETU	QAIFTRCF	QAIWWCEA	QAIWWDAF
QAIWWDKB	QAIWWDKL	QAIWWDVG	QAIWWPDP	QAJBACG	QALZAKEY
QALZALIC	QAMHJLPR	QAMHJLSC	QANFDNTF	QAOBJAUT	QAOCRMTDFN
QAOJRSTO	QAOJSAVO	QAOKNCKO	QAOSDIRB	QAOSDIRF	QAOSDIRO
QAOSDIRX	QAOSDSTO	QAMODFAF	QAMODPAF	QAMODVAF	QAOSILIN
QAOSILOT	QAOSIQDL	QAOSIRCV	QAOSIREF	QAOSIRTV	QAPRERLG
QAPRTELG	QAPTACG	QARZLCOF	QASAVOBJ	QASCCMNT	QASCCPY
QASRRSTO	QASXCAOF	QASXFXOF	QASXPBOF	QASXSDOF	QASXTXOF
QCTIE	QDFRUMSG	QDPARHP	QLESCMNF	QPTIRCV	QSXPRTD
QSXPRTL	QASYADJE	QASYADJ4	QASYAFJE	QASYAFJ4	QASYAPJE
QASYAPJ4	QASYCAJE	QASYCAJ4	QASYCDJE	QASYCDJ4	QASYCHKI
QASYCOJE	QASYCOJ4	QASYCPJE	QASYCPJ4	QASYCQJE	QASYCQJ4
QASYGSJE	QASYDOJE	QASYDOJ4	QASYDSJE	QASYDSJ4	QASYGRJ4
QASYGSJ4	QASYIPJE	QASYIPJ4	QASYJDJE	QASYJDJ4	QASYJSJE
QASYLDJE	QASYLDJ4	QASYMLJE	QASYMLJ4	QASYNAGE	QASYNAGE
QASYNDJE	QASYNDJ4	QASYNEJE	QASYNEJ4	QASYO1JE	QASYO1J4
QASYO2JE	QASYO2J4	QASYO3JE	QASYO3J4	QASYOMJE	QASYOMJ4
QASYOWJE	QASYOWJ4	QASYPAJE	QASYPAJ4	QASYPGJE	QASYPGJ4
QASYPOJE	QASYPOJ4	QASYPSJE	QASYPSJ4	QASYPWJE	QASYPWJ4
QASYRAJE	QASYRAJ4	QASYRJE	QASYRJJ4	QASYROJE	QASYROJ4
QASYRPJE	QASYRPJ4	QASYRQJE	QASYRQJ4	QASYRUJE	QASYRUJ4
QASYRZJE	QASYRZJ4	QASYSDJE	QASYSDJ4	QASYSEJE	QASYSEJ4
QASYSFJE	QASYSFJ4	QASYSMJE	QASYSMJ4	QASYSOJE	QASYSOJ4
QASYSTJE	QASYSTJ4	QASYSVJE	QASYSVJ4	QASYVAJE	QASYVAJ4
QASYVCJE	QASYVCJ4	QASYVFJE	QASYVFJ4	QASYVLJE	QASYVLJ4
QASYVNJE	QASYVNJ4	QASYVOJ4	QASYVPJE	QASYVPJ4	QASYVRJE

QASYVRJ4	QASYVSJE	QASYVSJ4	QASYVUJE	QASYVUJ4	QASYVVJE
QASYVVJ4	QASYYCJE	QASYYCJ4	QASYRJE	QASYRJ4	QASYZCJE
QASYZCJ4	QASYZMJE	QASYZMJ4	QASYZRJE	QASYZRJ4	QATACOF
QATADOF	QATAIOF	QATAIOF2	QATAVOF	QATOSLOG	QATRCJOB
QAVOLSTA	QAWCTPJE	QAWPZSFNT	QAWPZTAD	QAZDCFLG	QAZDERLG
QAZDJRNL	QAZDRTL	QAZDSYLG	QAZMFCF	QAZMFER	QAZMFLG
QAZMFSY	QBEMHOST	QCDSNXPC	QCNDDMF	QCIWSCMN	QCIWSDBS
QCSNADSC	QDALDYN	QDARCDSP	QDCSMDSP	QDDBGDSP	QDDHH22W
QDDHH22T	QDDHK301	QDDJBLOG	QDDSPDCT	QDDSPDLG	QDDSPEXT
QDDSPJRN					
QDDSPLOG	QDDSPMSG	QDDSPOF	QDDSPOVR	QDDSTSRV	QDDSTSTS
QDDUA3CC	QDDUA3CD	QDDUA3CE	QDDUH09A	QDDUH09B	QDDUH09C
QDDUH0AC	QDDUH0AE	QDDUH0AF	QDDUH0AG	QDDUH22S	QDDUH22T
QDDUH22U	QDDUH22W	QDDUH22X	QDDUH3DB	QDDUH3DC	QDDUH40P
QDDUJ0E5	QDDUK301	QDDULTZ0	QDDULTZ1	QDDUPL11	QDDUPL29
QDDUPL30	QDDUPL33	QDDUPL34	QDDUPL35	QDDUPL36	QDDUPL37
QDDUPL38	QDDUPL39	QDDUPL40	QDDUPL42	QDDUPL43	QDDUPL45
QDDUPL46	QDDUPL49	QDDUPL51	QDDUPL58	QDDUPL59	QDDUPL60
QDDUPL61	QDDUPL62	QDDUPL69	QDDUPL71	QDDUPL78	QDDUPL79
QDDUPL80	QDDUPL81	QDDUPL83	QDDUPL91	QDDUPL92	QDDUPLA9
QDDUXYZ1	QDEDIT	QDEM3270	QDFNDATA	QDFSCPY	QDFSPC
QDGDDM	QDIDDU	QDITFICF	QDITFMAI	QDITFOTH	QDLPINST
QDNFBRWS	QDORDSPF	QDORPCOM	QDPAST36	QDPASTHR	QDPDA3P
QDPDAAP	QDPDAAS	QDPDADS	QDPDAFS	QDPDAJS	QDPDAKS
QDPDAMS	QDPDC2P	QDPDC2S	QDPDD1P	QDPDD2P	QDPDD2S
QDPDDKS	QDPDDL	QDPDDRS	QDPDEIS	QDPDFDS	QDPDG3P
QDPDG3S	QDPDG7S	QDPDH0P	QDPDH0S	QDPDH2P	QDPDH2S
QDPDH3S	QDPDH4S	QDPDH5P	QDPDH5S	QDPDH9S	QDPDHBS
QDPDHCP	QDPDHCS	QDPDHES	QDPDHKS	QDPDHLS	QDPDHPS
QDPDHQS	QDPDJ0S	QDPDJ1S	QDPDJ2S	QDPDJAS	QDPDJ9S
QDPDJBS	QDPDJCS	QDPDJES	QDPDJJS	QDPDJPS	QDPDJVS
QDPDJY1	QDPDJY2	QDPDJY3	QDPDJ6S	QDPDK0S	QDPDK1S
QDPDK3P	QDPDKAS	QDPDL2S	QDPDLBS	QDPDLDS	QDPDLNS
QDPDLRP	QDPDLRS	QDPDLTP	QDPDLTS	QDPDLVS	QDPDLYS
QDPDMCS	QDPDMDS	QDPDMES	QDPDNMS	QDPDNPS	QDPDNUS
QDPDP0P	QDPDP0S	QDPDPLS	QDPDSYS	QDPDTAS	QDPDTES
QDPDW8S	QDPDX2S	QDPDY0S	QDPDY1S	QDPDYSS	QDPGMCHG
QDPGMRMN	QDPI3270	QDPTDSP	QDRAHELP	QDRDBDSP	QDSCCPY

QDSELECT	QDSMDKTS	QDSMHELP	QDSMTAPS	QDSPMNU	QDSPSPLF
QDSRODSP	QDUI132	QDUI80	QDUIGRAP	QDWSTYPA	QDWTDSCJ
QEAPRTL	QKSPDKT	QLEMHOST	QLOKAPPC	QLOSCMNF	QMENUSRC
QMNDDCGP	QPAEDSP	QPAEMSG	QPAETRC	QPARCDSP	QPAUTUSR
QPCMD	QPCMPIMG				
QPCSMPT	QPDCDEVA	QPDCCFGL	QPDCNNL	QPDCCOS	QPDCCTL
QPDCDEV	QPDCLINE	QPDCMOD	QPDCNWID	QPDDSSRC	QPDBGDSP
QPDPGM	QPDSPAJB	QPDSPDBR	QPDSPLCS	QPDSPDCT	QPDSRDDL
QPDSPLDG	QPDSRDDM	QPDSRDDSM	QPDSRDDKT	QPDSRDDTA	QPDSRPF
QPDSRPF	QPDSRPFNT	QPDSRJOB	QPDSRDL	QPDSRDLIB	QPDSRDLG
QPDSRPLSM	QPDSRPMNU	QPDSRPMMSG	QPDSRNET	QPDSRDLK	QPDSRDLJNA
QPDSRDLJRN	QPDSRDLPOVR	QPDSRDLPPGM	QPDSRDLPCV	QPDSRDLRKL	QPDSRDLPSBJ
QPDSRDLPSBS	QPDSRDLPSFA	QPDSRDLPSQD	QPDSRDLPSSTS	QPDSRDLPSVL	QPDSRDLPSRV
QPDSRDLSTSTS	QPDSRDLXWRKD	QPDSRDLPEMPRTF	QPDSRDLPGDDM	QPDSRDLPIFTRCF	QPDSRDLJBLG
QPDSRDLJOBLOG	QPDSRDLPMMSGD	QPDSRDLPNFDNTF	QPDSRDLQNETSTS	QPDSRDLQPNFNJE	QPDSRDLQPPGMADP
QPDSRDLQPPGMADMP	QPDSRDLQPOBJAUT	QPDSRDLQPQAPRT	QPDSRDLQPRCLDMP	QPDSRDLQPRTJOB	QPDSRDLQPRTRPYL
QPDSRDLQRTSBS	QPDSRDLQPRSTDLO	QPDSRDLQPSAVDLO	QPDSRDLQPSAVOBJ	QPDSRDLQPSRDLSP	QPDSRDLQPSRODSP
QPDSRDLQPSRVDMP	QPDSRDLQPRTLIBL	QPDSRDLQPRTOBJD	QPDSRDLQPRTRDWT	QPDSRDLQPRTSPLF	QPDSRDLQPRTSPLQ
QPDSRDLQPSRVTRC	QPDSRDLQPSYDALO	QPDSRDLQPSYDSDL	QPDSRDLQPTAPCGY	QPDSRDLQPTAPCTG	QPDSRDLQPTAPDMP
QPDSRDLQPTAPDSP	QPDSRDLQPTAPLAN	QPDSRDLQPTAPSTS	QPDSRDLQPUSRPRF	QPDSRDLQPWCDSKS	QPDSRDLQSCBMKT
QPDSRDLQSCBSRV	QPDSRDLQSYSDDKT	QPDSRDLQSYSRPT	QPDSRDLQSYSTAP	QPDSRDLQTVUCTFS	QPDSRDLQTVUSCR4
QPDSRDLQTVUSCRS	QPDSRDLSEDFDSPF				

### Object type \*CLS

Objects in library QSYS of type \*CLS

QBATCH	QCTL	QSPCICLS	QSYSCLS
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### Object type \*CMD

Objects in library QSYS of type \*CMD

CHGS36PGMA	CHGS36PRCA	CHGS36SRCA	EDTS36PGMA	EDTS36PRCA	EDTS36SRCA
SAVS36F	WRKS36PGMA	WRKS36PRCA	WRKS36SRCA		

### Object type \*DTAARA

Objects in library QSYS of type \*DTAARA

QLEERA_JP	QLEERA_TW	QSAVLIBALL	QSAVCFG	QSAVIBM	QSAVUSRPRF
QSAVSYS	QSAVALLUSR				

### Object type \*JOB

Objects in library QSYS of type \*JOB

QCTL	QCTLIJBD	QJSCCPY
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**Object type \*MENU**

Objects in library QSYS of type \*MENU

PCOMNU

**Object type \*MSGF**

Objects in library QSYS of type \*MSGF

QIWSMSG      QORMSG

**Object type \*PDG**

Objects in library QSYS of type \*PDG

QCJGLGRP      QCJSYSGRP

**Object type \*PGM**

Objects in library QSYS of type \*PGM

QCOEXIT	QESPHONE	QEZCMPP	QFSCPHV	QFSCPVH	QFSCPYM
QFSCRTV	QFSPCFLE	QIZABND	QIZARSTE	QIZARST2	QMNCGPWD
QMNLRMQ	QMNCPYL	QMNPRDWN	QMNRSTE	QMNRSTN	QMNSAVE
QMNSAVN	QMNSRBND	QMNSLO	QOE256TB	QOENLPIN	QQAAUTHR
QSCATTN	QSCBMKTE	QSCBPSP	QSCBSRVE	QSPFNWDR	QSPRMTDR
QTIINSTL	QTIPHONE	QTITELE1	QTITELE2		

**Object type \*SRVPGM**

Objects in library QSYS of type \*SRVPGM

QEFLNL24      QFPIFSFT

**Object type \*TBL**

Objects in library QSYS of type \*TBL

QASCII	QCAS256B	QCAS256C	QCAS256T	QEBCDIC	QSYSTRNTBL
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**In library QGPL****Object type \*FILE**

Objects in library QGPL of type \*FILE

QDKT	QDKTSRC	QPCJPDGPRF	QPRINT	QPRINT2
QPRINTS	QTAPE			

**Object type \*CLS**

Objects in library QGPL of type \*CLS

QBATCH	QDIALOCAL	QFNC	QINDUSR	QINTER	QMAILP
QPGMR	QSNADS	QSPL4	QWCPCSUP		



### Object type \*JOB

Objects in library QGPL of type \*JOB

QINTER            QINTIJBD

## In library QUSRSYS

### Object type \*FILE

Objects in library QUSRSYS of type \*FILE

QAALERT	QAALSOC	QAEABKMT	QAEACRSI	QAEASCRS	QAEASTUI
QAEASTUS	QAEASTUT	QAEBAUDI	QAEBAUDL	QAEBDSCT	QAEBMODI
QAEBMODL	QAEDSPI	QALSDIR	QALSEND	QALSINM	QALSTDB
QAMASDTA	QAMATXTD	QAOKAPOA	QAOKL01A	QAOKL02A	QAOKL03A
QAOKL04A	QAOKL05A	QAOKL06A	QAOKL08A	QAOKL10A	QAOKL11A
QAOKL12A	QAOKL13A	QAOKL27A	QAOKL51A	QAOKL53A	QAOKL9XA
QAOKLABA	QAOKLAKA	QAOKLCLA	QAOKLDKA	QAOKLEAA	QAOKLLGA
QAOKLLKA	QAOKLLNA	QAOKLRKA	QAOKLS2A	QAOKLSNA	QAOKLSRA
QAOKLSTA	QAOKLXDA	QAOKLXOA	QAOKLXPA	QAOKLXXA	QAOSAG09
QAOSAG10	QAOSAG11	QAOSAG14	QAOSAG17	QAOSAG51	QAOSAY00
QAOZL03A	QASNADSL	QASXCALL	QASXDTA	QASXEVT	QASXFRU
QASXNOTE	QASXPROB	QASXPTF	QASXSYMP	QASXURI	QAZCADEV
QAZCADIR	QAZCADSK	QAZCAFS	QAZCAMSC	QAZCANET	QAZCAPRC
QAZCAPRT	QAZCAPTN	QAZCASFW	QAZCASFX	QAZCASTG	QEDLANG

### Object type \*DTAARA

Objects in library QUSRSYS of type \*DTAARA

QESTELE            QRCLSTG            QTITELE

### Object type \*JRN

Objects in library QUSRSYS of type \*JRN

QXJRN

### Object type \*TBL

Objects in library QUSRSYS of type \*TBL

All \*TBL objects that begin with 'Q'

## In library QUSRTOOL

### Object type \*FILE

Objects in library QUSRTOOL of type \*FILE

QATTBAS	QATTCBL	QATTCL	QATTCMD	QATTDDS	QATTPAS
QATTPL1	QATTQM	QATTREX	QATTRPG	QATTSYSC	QATTUIM

QQATTINFO

## In library QGDDM

### Object type \*GSS

ALL

## In library QGY

### Object type \*PGM

Objects in library QGY of type \*PGM

QGYEX12I	QGYEXMRI	QGYEX12M	QGYEXCHK	QGYEXDLT	QGYEXRST
QGYEDAUT	QGYGRAUT	QGYRVAUT			

## In library QIDU

### Object type \*JOB

Objects in library QIDU of type \*JOB

QIDUJOB1 QIDUJOB2

## In library QIWS

### Object type \*FILE

Objects in library QIWS of type \*FILE

QAIWWCEA	QAIWWDAF	QAIWWDKB	QAIWWDKE	QAIWWDVG	QAIWWPDP
QCIWSCMN	QDORDSPF	QDORPCOM	QMENUSRC	QPVPRINT	

### Object type \*PGM

Objects in library QIWS of type \*PGM

QHUINZIF	QHUMWSF	QRQSRV0	QRQSRV1	QRQSRVX
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### Object type \*MENU

Objects in library QIWS of type \*MENU

PCOMNU

### Object type \*MSGF

Objects in library QIWS of type \*MSGF

QORMSG

## In library QPDA

### Object type \*FILE

Objects in library QPDA of type \*FILE

QIXAMLF1	QIXAMLF2	QUEPRT
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(note: authority  
changing from  
'\*USE + \*OBJMGT  
+ \*ADD + \*UPD'  
to '\*USE +  
\*OBJMGT')

## In library QRJE

### Object type \*PGM

QQGTPUTCL

## In library QSYS38

### Object type \*FILE

Objects in library QSYS38 of type \*FILE

QABNDMBA    QADPGMAD    QADSPDE    QADSPPTF    QADSPUPB    QAOJRSTO

### Object type \*CMD

Objects in library QSYS38 of type \*CMD

CLCSTGCFG    DSPSTGCFG    EDTDOC    EDTTXT    ENTADM    PRTDOC

## In library QSMU

### Object type \*FILE

Objects in library QSMU of type \*FILE

QANSCRAC    QANSCRAN    QANSCRCN    QANSCRCR    QANSCRMS

## In library QSVMSS

### Object type \*FILE

Objects in library QSVMSS of type \*FILE

QACQEPIF    QACQFVCX

### Object type \*ALRTBL

QCQALRTB

## In library QSOC

### Object type \*FILE

Objects in library QSOC of type \*FILE

QYYCSVPF

## In library QSR

### Object type \*FILE

Objects in library QSR of type \*FILE

QSVRSVPF

## In library QSYS2

### Object type \*FILE

Objects in library QSYS2 of type \*FILE

SYSLANGS

## In library QSSP

### Object type \*FILE

Objects in library QSSP of type \*FILE

##FCPF	##FH1	##FH2	##FH3	##FH4	##FH5
##FH6	##FHO	##FHP	#HE@001	#HE@002	#HE@003
#HE@004	#HE@005	#HE@006	#HE@007	#HE@008	#HE@009
#HE@010	#HE@011	#HE@012	QD36EE	QDEXOPTM	QDEXRST
QDEXSLST	QPUTMENU	QPUTSFGR			

### Object type \*CMD

Objects in library QSSP of type \*CMD

WRKS36	CHGS36	CHGS36A	DSPS36	RTVS36A
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### Object type \*PGM

Objects in library QSSP of type \*PGM

QOFEELIB	QUTBMENU
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## In library QSYSV7R3M0

### Object type \*FILE

Objects in library QSYSV7R3M0 of type \*FILE

QABNDMBA	QADPGMAD	QADSPDE	QADSPFFD	QADSPJR2	QADSPJR3
QADSPJR4	QADSPJRN	QADSPOBJ	QADSPPGM	QADSPPTF	QADSPUPB
QAFDBASI	QAFDBSC	QAFDCMN	QAFDDDM	QAFDDKT	QAFDDSP
QAFDICF	QAFDLGL	QAFDMBR	QAFDMBRL	QAFDPHY	QAFDPRT
QAFDRFMT	QAFDSAV	QAFDSELO	QAFDTAP	QAOJRSTO	QAOJSAVO
QAOSDIRB	QAOSDIRF	QAOSDIRO	QAOSDIRX	QAOSDSTO	QATAIOF2
QATOSLOG	QAZMFCF	QAZMFER	QAZMFLG	QAZMFSY	

### Object type \*CMD

Objects in library QSYSV7R3M0 of type \*CMD

CHGS36	CHGS36A	CHGS36PGMA	CHGS36PRCA	CHGS36SRCA	CLCSTGCFG
DSPS36	DSPSTGCFG	EDTDOC	EDTS36PGMA	EDTS36PRCA	EDTS36SRCA
EDTTXT	PRTDOC	RTVS36A	SAVS36F	WRKS36	WRKS36PGMA
WRKS36PRCA	WRKS36SRCA				

## In library QSYSV7R4M0

### Object type \*FILE

Objects in library QSYSV7R4M0 of type \*FILE

QADPGMAD	QADSPDE	QADSPFFD	QADSPJR2	QADSPJR3	QADSPJR4
QADSPJRN	QADSPOBJ	QADSPPGM	QADSPPTF	QAFDBASI	QAFDBSC
QAFDCMN	QAFDDDM	QAFDDKT	QAFDDSP	QAFDICF	QAFDLGL
QAFDMBR	QAFDMBRL	QAFDPHY	QAFDPRT	QAFDRFMT	QAFDSAV
QAFDSELO	QAFDTAP	QAOJRSTO	QAOJSAVO	QAOSDIRB	QAOSDIRF
QAOSDIRO	QAOSDIRX	QAOSDSTO			

### Object type \*CMD

Objects in library QSYSV7R4M0 of type \*CMD

CHGS36	CHGS36A	CHGS36PGMA	CHGS36PRCA	CHGS36SRCA	CLCSTGCFG
DSPS36	DSPSTGCFG	EDTDOC	EDTS36PGMA	EDTS36PRCA	EDTS36SRCA
EDTTXT	PRTDOC	RTVS36A	SAVS36F	WRKS36	WRKS36PGMA
WRKS36PRCA	WRKS36SRCA				

## Updated EBCDIC Unicode maps for CCSIDs 1377 and 1388

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The IBM i CCSID conversion support 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 or 1388 characters.

The conversion to the new Unicode mapping will occur automatically with no intervention. If your CCSID 1377 or 1388 data is converted from Unicode, the old codepoints will convert to the same 1388 or 1377 codepoint. But when converted back to Unicode, the new Unicode codepoint will be used.

If you need to preserve the current mapping, two new CCSIDs have been provided to allow the old conversions. The new CCSIDs to use are:

- **CCSID 13676** instead of 1388
- **CCSID 5473** instead of 1377

These new CCSIDs provide the old codepoint mappings for 1377 and 1388 without the new characters.

See [CCSID 1377 conversion update](#) and [CCSID 1388 conversion update](#).

## Asynchronous bring parameter default changed for IFS saves

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The default for the Asynchronous bring (**ASYNCBRING**) parameter for IFS saves has changed to \*YES. ASYNCBRING(\*YES) asynchronously brings objects into memory during IFS save processing which may result in better performance. For more information, see the [Save Object \(SAV\) command](#) and the [Save Object \(QsrSave\) API](#).

## RSTUSRPRF USRPRF(\*ALL) changes

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It is no longer required that all other operations on a system be ended to successfully run **RSTUSRPRF USRPRF (\*ALL)**. Previously if the system was not in a restricted state and USRPRF(\*ALL) was specified, the processing for Restore User Profiles was terminated.

## NFS mount options default to TCP protocol

---

The Network File System (NFS) mount options will now default to use the TCP network transport protocol to communicate with servers. The IBM i NFS client requires that the NFS block input-output daemon is active when an NFS file system using TCP is mounted or accessed.

NFS users will need to start the NFS block input-output daemon with **STRNFSSVR SERVER(\*BIO)** before establishing NFS mounts when the default mount options are used.

Users can return to prior release behavior by adding the **'udp'** option to the **ADDMFS** or **MOUNT** command options string. The switch that was provided to enable TCP support in the NFS client with the **QP0FPTOS** API **\*NFSFORCE** option in prior releases will no longer affect NFS client behavior. The **ADDMFS** or **MOUNT** options must be used instead.

## DNS changes

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IBM i DNS requires IBM i 5770-SS1 option 33 (Portable Application Solutions Environment (PASE)) installed. It also requires access to **openssl** and **libuv** through either a recent PTF or RPM packages.

With IBM i PTF SI80443 applied, IBM i DNS requires install of 5733-SC1 option 1 (OpenSSH, OpenSSH, lib) in addition to IBM i 5770-SS1 option 33.

Without IBM i PTF SI80443 applied, IBM i DNS requires both RPM packages: **openssl** and **libuv**, in addition to IBM i 5770-SS1 option 33.

IBM i DNS server can work only after all the dependent packages are met.

## Changes to the 1940 – 2039 date range for date formats with a 2-digit year

---

The current supported date range for converting or verifying 2-digit year date formats is January 1, 1940 to December 31, 2039. For example, when using a date with only 2 digits to specify the year (for example, \*MDY, \*DMY, or \*YMD), years in the range of 40 to 99 are assumed to be 1940-1999 and years 00 to 39 are assumed to be 2000 to 2039.

On IBM i 7.5, support has been added for a new base year of 1970 which spans 100 years, with a date range of January 1, 1970 – December 31, 2069.

A new environment variable **QIBM\_QBASEYEAR**, can be used to set the base year to either 1970 or 1940. If the environment variable is not present, the default base year will remain as 1940 in IBM i 7.5.

Commands that have a parameter of **TYPE(\*DATE)** will use the base year specified in the **QIBM\_QBASEYEAR** environment variable.

The default base year will change to 1970 in a future release. This support is being made available now so that you can begin preparing for this change. Applications that still use 2-digit date formats may need to change to use a date format that includes the century.

The environment variable can be set at the system level, or at the job level.

**Note:** This environment variable update only effects commands with a parameter of **TYPE(\*DATE)**. Existing RPG or COBOL programs as well as Db2 are not effected by this update. Dates need to be converted to a 4-digit-year value.

To set the base year to 1970 for all jobs in the system:

**ADDENVVAR ENVVAR(QIBM\_QBASEYEAR) VALUE(1970) LEVEL(\*SYS)**

**Note:** Only jobs started after the environment variable is added will have the environment variable set – use **WRKENVVAR** or **DSPJOB**, opt 22 to see if the environment variable is set for a job.

To set the base year to 1970 in your own job:

**ADDENVVAR ENVVAR(QIBM\_QBASEYEAR) VALUE(1970) LEVEL(\*JOB) REPLACE(\*YES)**

The base year is set when the job is started and cached in the job, therefore you must call the following command to update the cached base-year after adding or changing the job-level environment variable (Change the date format to the same date format currently used by your job):

```
CHGJOB JOB(*) DATFMT(*MDY)
```

## Collection Services defaults to auto restart

---

On prior releases, without PM Agent running, there was no automatic restart for Collection Services. On IBM i 7.5, a new program, QYPSCHK will automatically restart Collection Services.

If you were running PM Agent (part of the PM for Power offering, which has been discontinued), a portion of the function automatically restarted Collection Services. QYPSCHK was created to replace that function.

QYPSCHK will run by default. To override this checking program and allow Collection Services to remain inactive if it is stopped for any reason (including manually running ENDPFCOL), add the QYPSCHK environment variable. Collection Services needs to be restarted for the change to take effect. Run the following commands from the command line:

1. Add the following environment variable:

```
ADDENVVAR ENVVAR(QYPSCHK) VALUE('0') LEVEL(*SYS)
```

2. End Collection Services:

```
ENDPFCOL FRCCOLEND(*YES)
```

3. Restart Collection Services if desired:

```
STRPFCOL
```

To resume the function so it once again monitors for Collection Services and restarts it if necessary, remove the QYPSCHK environment variable. Run the following commands from the command line:

1. Remove the QYPSCHK environment variable:

```
RMVENVVAR ENVVAR(QYPSCHK) LEVEL(*SYS)
```

2. End Collection Services:

```
ENDPFCOL FRCCOLEND(*YES)
```

3. Restart Collection Services:

```
STRPFCOL
```

## Collection Services historical performance data collection

---

For a new installation of IBM i 7.5, Collection Services will be configured to automatically generate and maintain a historical performance data collection.

Partitions upgraded to IBM i 7.5 from a prior release will not automatically be configured for Collection Services historical data creation during the upgrade. The Collection Services configuration from the previous release will remain.

See [https://www.ibm.com/docs/en/ssw\\_ibm\\_i\\_75/rzahx/rzahxcshsttdtasupport.htm](https://www.ibm.com/docs/en/ssw_ibm_i_75/rzahx/rzahxcshsttdtasupport.htm) for more information about Collection Services historical data.

## TCP Selective Acknowledgment (SACK) support

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The TCP/IP stack added support for RFC2018 TCP Selective Acknowledgment (SACK) Options.

TCP SACK support allows the TCP stack to handle lost packets and selectively acknowledge the data segments that have been received so that the missing data segments can be retransmitted more quickly by the sender. This can help improve overall TCP throughput for applications dependent on a high volume of TCP data being transferred when there is packet loss in the network.

SACK is enabled by default for the TCP network layer.



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## Options

This sections describes changes to options of the IBM i operating system.

### IBM Navigator for i (5770-SS1 option 3)

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IBM Navigator for i has been re-created in a new framework and user interface that replaces the heritage IBM Navigator for i. This new IBM Navigator for i runs under the **ADMIN1** server and by default listens on port 2002. The URL for Navigator remains: <http://hostname:2001> as this URL now routes to <http://hostname:2002/Navigator>.

Management Central and the heritage IBM Navigator for i are not supported on IBM i 7.5.

For more details on the re-created IBM Navigator for i, see documentation at: <https://www.ibm.com/support/pages/node/6483299>

### New function usage IDs required for new Navigator

IBM Navigator for i now leverages a new set of function usage IDs to give administrators additional control over what functions and features user can access and use.

The function usage IDs specified with Application Administration in heritage Navigator do not apply to the new IBM Navigator for i. None of the function usage IDs set up from Application Administration are used by the new Navigator interface. See <https://www.ibm.com/support/pages/node/6485853> to determine how to set up the new function usage IDs for control of features and function for users within IBM Navigator for i.

### Access to lazy-load tables through NEWNAV in QNEWNAVSrv

IBM Navigator for i will use a lazy-load function to provide large lists of data more efficiently to the user. The lazy-load service uses the NEWNAV procedure which has moved from library QUSRSYS to library QNEWNAVSrv. This process changed in the June 2022 PTFs - HTTP Group PTF for IBM i 7.5 SF99952 level 03, IBM i 7.4 SF99662 level 21, and IBM i 7.3 SF99722 level 40.

When the lazy load function is first set up, the user logged in is required to have enough authority for the NEWNAV service program to be set up in QNEWNAVSrv library. This is a requirement for Navigator.

If the first user is a limited user (\*USER) with no special authorities, the lazy load function will fail with message that there is not enough authority: [Error SQL0551] Not authorized to object QNEWNAVSrv in QSYS type \*LIB

When a subsequent IBM Navigator for i PTF is applied after the QNEWNAVSrv/NEWNAV service program is created, the PTF exit program changes the owner of QNEWNAVSrv/NEWNAV to QWEBADMIN.

The lazy load function is in use by the following tables: active job, users, printer output, event logs, collection authorities, and PTF. Others not listed here will be added as needed.

### Portable Application Solutions Environment - PASE (5770-SS1 option 33)

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#### PASE Utilities OBJECT\_MODE changed to 64-bit

On IBM i 7.5, the default object mode of the following PASE utilities is 64-bit. On previous releases, the default object mode was 32-bit:

- ar

- as
- dump
- ld
- lorder
- nm
- ranlib
- rtl\_enable
- size
- strip

If you use them for 32-bit objects, you need to do one of the following:

- Choose the option `-X32` or `(-b32` for `ld`)
- Set environment variable `OBJECT_MODE` to `32`

If you use them for 64-bit objects, you no longer need to set object mode explicitly.

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## Licensed programs

This section contains information about individual licensed programs that have been modified or changed for IBM i 7.5.

### IBM Db2 Mirror for i (5770-DBM)

---

Release to release Db2 Mirror changes that should be considered.

#### **Attempt now made to associate journal receivers, and add and activate remote journaling after software reclone completes**

During a software reclone, journal receivers associated with a replicated journal on the copy node will be disassociated from the journal. Additionally, remote journaling will be deactivated (if activated) and removed from a replicated journal on the copy node.

On the previous release, after the software reclone completed, the user would have to manually reassociate the journal receivers with the replicated journal; and both add and activate the remote journal associated with the replicated journal.

With IBM i 7.5, an attempt will be made to both reassociate the journal receivers on the copy node and add and activate (if previously activated) the remote journals.

If a receiver is not successfully associated or remote journaling can not be added or activated, the software reclone will not fail, but the user will need to do the associate and other operations manually. Inspect the Object Tracking List (OTL) for failures to determine if any of these steps failed.

#### **Db2 Mirror security changes**

##### **Setup tools default public authority changed to \*EXCLUDE**

In Db2 Mirror for i 7.5, the default public authority of the following list of objects changed to \*EXCLUDE. These objects are used during the set up of Db2 Mirror.

- QSYS/QMRDBAPI \*SRVPGM
- /QIBM/ProdData/QDB2MIR/MRDB/TOOLS/db2mtool.sh
- /QIBM/ProdData/QDB2MIR/MRDB/TOOLS/mrdbSetupTools.jar
- /QIBM/ProdData/QDB2MIR/MRDB/TOOLS/plugin4mirror.jar

##### **Replication Criteria List (RCL) default public authority changed to \*EXCLUDE**

In Db2 Mirror for i 7.5, the default public authority of the Replication Criteria List (RCL) physical table changed to \*EXCLUDE. This affects the following objects:

- QSYS2/MIRROR\_RCL for the system ASP
- QSYS2nnnnn/MIR\_RCLnnn for each database IASP

Due to the default public authority changes to the RCL, the following Db2 Mirror services authority requirements have changed. See the documentation for each service for the detailed authority requirements.

- QSYS2.ADD\_REPLICATION\_CRITERIA
- QSYS2.INSPECT\_REPLICATION\_CRITERIA
- QSYS2.PROCESS\_PENDING\_REPLICATION\_CRITERIA

- QSYS2.REMOVE\_REPLICATION\_CRITERIA
- QSYS2.REPLICATION\_CRITERIA\_INFO
- QSYS2.VALIDATE\_PENDING\_REPLICATION\_CRITERIA

The default authority for the view QSYS2.REPLICATION\_CRITERIA\_INFO was left unchanged with \*PUBLIC \*USE authority.

## Compare services now require \*ALLOBJ special authority

In Db2 Mirror for i 7.5, the authorization required by the Db2 Mirror compare services has been modified to require \*ALLOBJ special authority. This includes the following services:

- QSYS2.MIRROR\_COMPARE\_LIBRARY procedure
- QSYS2.MIRROR\_COMPARE\_NODE procedure
- QSYS2.MIRROR\_COMPARE\_OBJECT table function

## QSYS2.EVALUATE\_PENDING\_REPLICATION\_CRITERIA default public authority changed to \*EXCLUDE

In Db2 Mirror for i 7.5, the service program used to implement the Db2 Mirror Replication service QSYS2.EVALUATE\_PENDING\_REPLICATION\_CRITERIA was changed from QSYS2/QMRDBSSRTV which was shipped with \*PUBLIC \*USE authority to QSYS2/QMRDBSSDBA which is shipped with \*PUBLIC \*EXCLUDE authority.

## Authorization required for QSYS2.COMPARE\_RESYNC\_STATUS() table function changed

In IBM Db2 Mirror for i 7.5, the authorization required to call the QSYS2/COMPARE\_RESYNC\_STATUS() table function has been modified to require a user which is authorized to the Db2 Mirror Administrator (QIBM\_DB2\_MIRROR) function usage of IBM i.

The service program used to implement this Db2 Mirror service was changed from QSYS2/CMPRESENT to QSYS2/QMRDBSSRTV. Both service programs are shipped with \*PUBLIC \*USE authority.

## Password parameters removed from db2mtool command

In Db2 Mirror for i 7.5 with PTF Group SF99951 level 4, some of the parameters for the Qshell **db2mtool** command are removed.

Passing passwords as clear-text parameters to the **db2mtool** command is a security weakness. This is fixed by removing the password-related parameters and replacing them with a new parameter named **promptPasswords**. The **promptPasswords** parameter prompts for the parameters that are requested by the calling user.

Removed parameter	New replacement parameter
csmPassword	promptPasswords=csm
dscli	None. DSCLI not used anymore.
ibmikspass	promptPasswords=ibmik
ksPass	promptPasswords=keystore
lclIBMiPass	promptPasswords=lclibmi
lclPowerHmcPass	promptPasswords=lclhmc

Table 1. Removed parameters and replacement parameters (continued)

Removed parameter	New replacement parameter
lclStgPass	promptPasswords=lclstg
newrestpassword	None. Commands that required the old parameter now always prompt.
powerHMCPass	None. Commands that required the old parameter now always prompt.
preSharedKey	promptPasswords=presharedkey
pwEncrypted	None. Commands that required the old parameter now always prompt.
quorumPassword	promptPasswords=quorum
restpassword	None. Commands that required the old parameter now always prompt.
rmtIBMiPass	promptPasswords=rmtibmi
rmtPowerHMCPass	promptPasswords=rnthmc
rmtStgPass	promptPasswords=rmtstg
setupSrcPassword	None. Commands that required the old parameter now always prompt.

For more information about the db2mtool command, see the [db2mtool command reference](#).

## Db2 Mirror resume processing change

In Db2 Mirror for i 7.5 with Db2 for IBM i PTF Group SF99950 level 3 and IBM Db2 Mirror for i PTF Group SF99951 level 3, active replication between nodes will not resume until all jobs with Db2 Mirror database connections have completed their suspend processing of a previous suspend request. In this case, the replication detail of one of the nodes will show: (8660) - Suspended due to jobs existing which have not completed processing for a prior suspend. A resume request can be re-requested after all jobs have completed their suspend processing. For more information, see [Jobs preventing resume](#).

## Db2 Mirror suspend due to storage threshold

Db2 Mirror for i 7.5 with Db2 Mirror for IBM i PTF Group SF99951 level 4 enables new Db2 Mirror Health Monitor capabilities. The Health Monitor is a feature of Db2 Mirror that is used to continuously monitor for any issues that might arise relating to the Db2 Mirror environment and act when an issue is detected.

One resource the Health Monitor watches is the amount of available storage remaining. It monitors the amount of storage remaining in \*SYSBAS and for each registered database independent auxiliary storage pool (IASP). When the available storage remaining drops below three percent, replication is suspended. The replication detail of one of the nodes will show: (8690) - Suspended due to storage threshold reached. The storage issue must be resolved before active replication can be resumed.

The shipped default setting for available storage threshold is three percent. This threshold is configurable and can be defined by using the AVAILABLE\_STORAGE\_THRESHOLD parameter of the QSYS2.CHANGE\_MIRROR\_HEALTH\_MONITOR SQL procedure for \*SYSBAS and each database IASP registered with Db2 Mirror. Suspending due to an available storage threshold reached can be disabled by using the special value, NONE, for the parameter value.

For more information about the QSYS2.CHANGE\_MIRROR\_HEALTH\_MONITOR procedure, see [https://www.ibm.com/docs/en/ssw\\_ibm\\_i\\_75/db2mi/db2mprocchangehealthmonitor.htm](https://www.ibm.com/docs/en/ssw_ibm_i_75/db2mi/db2mprocchangehealthmonitor.htm).

For more information about the Db2 Mirror Health Monitor, see [https://www.ibm.com/docs/en/ssw\\_ibm\\_i\\_75/db2mi/db2mmonitorhealth.htm](https://www.ibm.com/docs/en/ssw_ibm_i_75/db2mi/db2mmonitorhealth.htm).

## IBM HTTP Server for i (5770DG1)

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Release to release IBM HTTP Server for i changes that should be considered.

QZTCJK.SRVPGM in the QHTTPSVR library is removed on IBM i 7.5. HTTP Server for i will no longer support tomcat plug-in QZTCJK. Please use the latest version of Open Source Tomcat plug-in, mod\_jk.

See detailed steps on how to build Tomcat plug-in mod\_jk on IBM i, in the technical document at <https://www.ibm.com/support/pages/node/6520356>

## Heritage Digital Certificate Manager is disabled

The heritage Digital Certificate Manager is disabled by default when applying the following 5770DG1 PTFs:

- IBM i 7.5: SI81417
- IBM i 7.4: SI81418
- IBM i 7.3: SI81419

It is recommended to use the new **IBM Digital Certificate Manager for i** user interface accessible via URL <http://systemname:2001/dcm>.

If there is a requirement to access the heritage version of Digital Certificate Manager, it can be temporarily enabled by following the steps provided in this support document: <https://www.ibm.com/support/pages/node/6837767>

## IBM Developer Kit for Java (5770-JV1)

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JV1 has added option 19 for Java 11 64-bit on IBM i 7.5.

Note: There are many significant architectural changes coming with this and future versions of Java. While existing Java application may run unchanged in Java 11, it's imperative that Java applications are updated to take advantage of Modularity that is now available in Java 11. Java 11 may support existing Java applications, but future versions of Java will likely cause your Java applications to no longer run without updates.

The following updates may also affect your java applications:

### 1. file.encoding property

The file.encoding property is not a recommended input property in Java 11. The result may be unpredictable. The expected behavior of explicitly setting this property is not the same as the behavior when set for Java 8.

Avoid changing the default charset of file content by setting property file.encoding on the command line: `java -Dfile.encoding=...` Programmers can specify the desired charset explicitly as an argument, as follows:

```
FileReader reader = new FileReader("sample.txt", Charset.forName("Cp037"));
```

### 2. JAVA/RUNJAVA CL command parameter changes

To support modular programs, two new parameters, **MAINCLASS** and **MODULEPATH**, are available on the **JAVA** and **RUNJAVA** CL commands.

The MAINCLASS parameter is to specify if the class name specified by CLASS is in a module. It has two options:

#### **\*NO**

The class name to be run is not in a module

**\*YES**

The class name to be run is in a module

The MODULEPATH parameter is to specify the path used to locate modules. Directories are separated by colons. It has two options:

**\*NONE**

The module path is not specified

**module-path**

Path used to locate modules

For more information about Java on IBM i, see [Java on IBM i](#) and [IBM i Documentation](#).

## IBM Content Manager OnDemand for i (5770-RD1)

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### Spool File Archive command changes

Two commands that were previously used to manage Spool File Archive data are no longer available in Content Manager OnDemand for i on IBM i 7.5. Spool File Archive was the predecessor product of Content Manager OnDemand for i Common Server which became available at V5R1. The Start Report Management Cycle (**STRMCRDAR**) and Migrate Media (**MGRMEDRDAR**) commands have been provided to assist with managing and migrating from Spool File Archive to the Archived Storage Manager (ASM) of Common Server. These commands are no longer available in Content Manager OnDemand for i on IBM i 7.5.

You must migrate your Spool File Archive data to the Archived Storage Manager (ASM) of Common Server **before** you update to IBM i 7.5 because you will no longer be able to access or manage Spool File Archive data in Content Manager OnDemand for i on IBM i 7.5 unless it has been migrated **prior to** your IBM i 7.5 upgrade. For more information on how to use the Media Migration Facility and the Migrate Media (**MGRMEDRDAR**) command to migrate your Spool File Archive data to ASM, see the documentation at [www.ibm.com/support/pages/node/318763](http://www.ibm.com/support/pages/node/318763).

### Monitor exit changes

In previous versions, a data area named QRLMMONQ was used to enable the use of ILE programs for attribute-specific monitor exits, which prevented the unintended use of an ILE program in the monitor's library list. There are now two options for using ILE programs. Both of these options use the data area named QRLMMONEXT. The QRLMMONQ data area is no longer used. You must set up the QRLMMONEXT data area to control the use of ILE programs for attribute-specific monitor exits. Additional capabilities are also provided with the QRLMMONEXT data area. See the Content Manager OnDemand for i Administration Guide for details.

### Message IDs changing

Content Manager OnDemand commands previously issued a variety of messages during processing that might be monitored or reviewed to determine the cause of a failure. On IBM i 7.5, the number of messages has been reduced, in most cases, to simplify the monitoring of failures. For example, in previous releases, the Add Report (**ADDRPTOND**) command might issue one or more of seven messages if an error occurred. On IBM i 7.5, the command issues message

OND0211- ADDRPTOND command ended in error

If message OND0211 is issued or detected by the Monitor Message (**MONMSG**) command, you can then look at other messages in the job log to determine the cause of the failure. If you are currently monitoring for messages in any CL programs, job schedulers, or autostart job entries, you should review the complete list of new and changed messages in the technical document at [www.ibm.com/support/pages/node/6494771](http://www.ibm.com/support/pages/node/6494771).

In addition, if a failure occurs for any Content Manager OnDemand command with a Submit job parameter set to \*YES (**SBMJOB(\*YES)**), the command now issues message OND1338 – Errors occurred on

SBMJOB command. In previous releases, the message ID was CPF1338. (Note the **OND** prefix replaces the **CPF** prefix.) If you are currently monitoring for message CPF1338 in any CL programs, job schedulers, or autostart job entries, you should now monitor for message OND1338 instead.

## **Start instance server (STRSVR) parameter of the Start Archived Storage Management (STRASMOND) command no longer valid**

The Start instance server (**STRSVR**) parameter of the Start Archived Storage Management (**STRASMOND**) command has been removed. As reflected in the help text, this parameter has not been functional since 2014 when an enhancement was added that stores the ASM reports into the system log, which requires the server to be started automatically if it is not already started. You must remove the **STRSVR** parameter from any CL programs, job schedulers, or autostart job entries on your system or the **STRASMOND** command will fail after you upgrade to IBM i 7.5.

## **Output queues in the QRDARS library no longer exist**

All output queues that previously existed in the QRDARS library no longer exist in Content Manager OnDemand for i on IBM i 7.5. The output queues with the same name that exist in the QUSRRDARS library are used instead. If you have any spooled files in any output queues in the QRDARS library when you upgrade to IBM i 7.5, the installation program will copy them to the QUSRRDARS version of the output queues and then delete the output queues in QRDARS. If you are placing any spooled files in output queues in library QRDARS in your own custom programs, you must change your programs to place the spooled files in the output queues in QUSRRDARS instead.

## **Job description QRDARS400 no longer exists**

Job description QRDARS400 no longer exists in Content Manager OnDemand for i on IBM i 7.5. Job description QOND400 is used instead. Any programs, job scheduler entries, or autostart job entries on your system that use the QRDARS400 job description must be changed to use the QOND400 job description or the jobs will fail after you upgrade to IBM i 7.5.

## **User profiles QRDARSADM, QRDARS4001, QRDARS4002, QRDARS4003, QRDARS4004, and QRDARS4005 no longer used**

During the installation of Content Manager OnDemand for i on IBM i 7.5, the installation program will reassign all QRDARSADM group or supplemental group members to the QONDADM group profile. The program will also change object ownership for any objects owned by QRDARSADM, QRDARS4001, QRDARS4002, QRDARS4003, QRDARS4004, and QRDARS4005 to be owned by QONDADM. If all of the changes are performed successfully by the program, it will then delete user profiles QRDARSADM, QRDARS4001, QRDARS4002, QRDARS4003, QRDARS4004, and QRDARS4005. If the installation program is unable to successfully perform any of the updates and deletions, you should manually make these changes as described in the following paragraphs. After completing your upgrade to Content Manager OnDemand for i on IBM i 7.5, check for the existence of any of the user profiles. If any of them exist, then some or all of the changes were not successful.

Prior to your upgrade to IBM i 7.5, you might want to make some or all of these changes manually if you do not want the installation program to make these changes for you. User profiles that have QRDARSADM specified as a group profile or supplemental group should be changed to specify QONDADM as a group profile or supplemental group. If any objects exist on your system that are owned by QRDARSADM, QRDARS4001, QRDARS4002, QRDARS4003, QRDARS4004, or QRDARS4005, you should change the object owner to QONDADM unless you have a specific reason to change the object owner to a different user profile. After these changes have been made, the QRDARSADM, QRDARS4001, QRDARS4002, QRDARS4003, QRDARS4004, and QRDARS4005 user profiles can be deleted from your system.

Regardless of whether the installation program makes these changes or you make them manually, you must change any jobs that run under user profile QRDARSADM to run under user profile QONDADM or they will fail.



**Note:** If you first began using Content Manager OnDemand for i at IBM i 7.5, you will not have user profiles QRDARSADM, QRDARS4001, QRDARS4002, QRDARS4003, QRDARS4004, and QRDARS4005 on your system. If you upgraded from a release earlier than IBM i 7.5, these user profiles might exist on your system.

## ARSXML schema file location changes

ARSXML no longer locates the **ondemand.xsd** schema file based on the `xsi:noNamespaceSchemaLocation` attribute in the input XML file. The `noNamespaceSchemaLocation` attribute is ignored and no longer needed. Instead, the `ondemand.xsd` file is shipped and must remain in the `/QIBM/ProdData/OnDemand/xml` IFS directory. In addition, the `-s` parameter used with the ARSXML EXPORT function to specify the schema location is no longer needed and is removed. If the `-s` parameter is specified, an error message is issued. These changes were released at Content Manager OnDemand server version 10.5 which is the minimum server version that is supported with Content Manager OnDemand for i on IBM i 7.5.

## IBM System Manager for i (5770SM1) and IBM Managed System Services for i (5770MG1) products are withdrawn

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In IBM i 7.5, IBM System Manager for i (5770SM1) and IBM Managed System Services for i (5770MG1) products are withdrawn. A subset of the SM1 commands will be moved to XPF. Any programs that library-qualify these commands with library QSMU will need to change to specify library QSYS (or remove "QSMU/").

The commands shipped in libraries QSMU and QSVMS are not deleted.

Only the QSYS versions of the following SM1 commands are updated when IBM i 7.5 (5770SS1 \*BASE) is installed:

- **ADDPRDLICI** Add License Information
- **CHGPRDOBJD** Change Product Object Description
- **CPYPTFSAVF** Copy PTF to Save File
- **CRTPRDDFN** Create Product Definition
- **CRTPRDLOD** Create Product Load
- **CRTPTF** Create Program Temporary Fix
- **CRTPTFPKG** Create PTF Package
- **DLTPRDDFN** Delete Product Definition
- **DLTPRDLLOD** Delete Product Load
- **GENLICKEY** Generate License Key
- **HLDPTF** Hold Program Temporary Fix
- **PKGPRDOPT** Package Product Option
- **RLSPTF** Release Program Temporary Fix
- **WRKPTF** Work with PTF
- **WRKSPTPRD** Work with Supported Products

**Note:** Installing the IBM i 7.4 5770SM1 product on an IBM i 7.5 partition will cause the 7.5 version of these commands in QSYS to be overwritten with the 7.4 commands.

**Note:** Deleting the IBM i 5770SM1 product from an IBM i 7.5 partition will cause the 7.5 version of these commands in QSYS to be deleted.

**Note:** Product 5770SM1 should be deleted (DLTLICPGM) prior to upgrading to IBM i 7.5.

**Note:** In a Db2 Mirror environment, delete the product from both nodes while replication is active prior to upgrading either node to IBM i 7.5.

## IBM Universal Manageability Enablement (5770-UME)

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### CIM server TLSv1.1 protocol disabled

TLSv1.1 protocol is disabled on IBM i 7.5. The CIM client can only connect to the CIM server using TLSv1.2 or TLSv1.3 protocols. If your CIM client uses TLSv1.1, you need to upgrade the CIM client to support a TLSv1.2 or TLSv1.3 connection.

## IBM Rational Development Studio for i (5770-WDS)

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### ILE RPG changes

#### **%FIELDS is no longer allowed for the UPDATE operation with a subfile record**

Prior to IBM i 7.5, %FIELDS was allowed for an UPDATE operation to a subfile record. However, the subfile record was not updated correctly unless all of the following conditions were true:

- %FIELDS listed all the output-capable fields
- All the output-capable fields were also input-capable
- All the fields listed by %FIELDS were in the same positions for the output buffer and input buffer

Starting in the base of IBM i 7.5, the compiler will no longer allow %FIELDS for an UPDATE operation to a subfile record for TGTRLS(\*CURRENT). The compile will fail with message:

```
RNF7214 %FIELDS is not allowed for a subfile record
```

If you want to continue to use %FIELDS with a subfile record, add the following environment variable when you compile your program. The environment variable is not needed when you run your program.

```
ADDENVVAR QIBM_RPG_DISALLOW_SUBFILE_BIF_FIELDS VALUE('N')
```

On IBM i 7.3 and IBM i 7.4, or on IBM i 7.5 for target releases other than TGTRLS(\*CURRENT), you can cause the compiler to issue a diagnostic message if %FIELDS is used with a subfile record with the same environment variable, but with the value 'Y'.

```
ADDENVVAR QIBM_RPG_DISALLOW_SUBFILE_BIF_FIELDS VALUE('Y')
```

#### **INZ and CTDATA for UCS-2 now use the source file CCSID rather than the job CCSID**

Prior to IBM i 7.5, the ILE RPG compiler processed alphanumeric initialization data for UCS-2 variables using the job CCSID rather than the CCSID of the source file. This may have caused the compiler to interpret some characters incorrectly. Initialization data for UCS-2 variables can be specified using the INZ keyword, or using compile-time data.

Starting in IBM i 7.5, for TGTRLS(\*CURRENT), the ILE RPG compiler processes initialization data for UCS-2 using the source file CCSID.

If you want the compiler to process the initialization data using the job CCSID, add the following environment variable at compile time:

```
ADDENVVAR QIBM_RPG_UCS2_CONSTANTS_USE_SOURCE_CCSID VALUE('N')
```

On an IBM i 7.4 system with TGTRLS(\*CURRENT), or on IBM i 7.5 with TGTRLS(V7R4M0), you can cause the compiler to process the alphanumeric initialization data using the source file CCSID by adding the same environment variable at compile time, but with the value 'Y':

## OpenSSH, OpenSSL, zlib (5733-SC1)

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The following changes for IBM i 7.5 should be considered.

### OpenSSH

OpenSSH is upgraded to version 8.6p1. Refer to <http://www.openssh.com/releases.html> for potential incompatibilities.

Message catalog files are no longer supported. /QOpenSys/QIBM/ProdData/SC1/OpenSSH/msg is removed.

The following IBM i specific parameters are deprecated. They will be removed from sshd\_config and migrated to a separate file in a future release.

- ibmpaseforicntryid
- ibmpaseforilangid
- ibmpaseforienv

### OpenSSL

OpenSSL is upgraded to version 1.1.1.

The following libraries are updated to include both 32-bit and 64-bit library support:

- /QOpenSys/QIBM/ProdData/SC1/OpenSSL/lib/libssl.so.1.1
- /QOpenSys/QIBM/ProdData/SC1/OpenSSL/lib/libcrypto.so.1.1

The following libraries are upgraded from 1.0.2 to 1.1.1. Applications linked with these two libraries require recompilation. They also are not recommended to be used. They will be removed in a future release, since they are the same level as lib\*.so.1.1. Refer to <https://www.ibm.com/support/pages/node/1136584> for recommendations.

- /QOpenSys/QIBM/ProdData/SC1/OpenSSL/lib/libssl.a
- /QOpenSys/QIBM/ProdData/SC1/OpenSSL/lib/libcrypto.a

The following scripts are now removed:

- /QOpenSys/QIBM/ProdData/SC1/OpenSSL/misc/c\_hash
- /QOpenSys/QIBM/ProdData/SC1/OpenSSL/misc/c\_info
- /QOpenSys/QIBM/ProdData/SC1/OpenSSL/misc/c\_issuer
- /QOpenSys/QIBM/ProdData/SC1/OpenSSL/misc/c\_name
- /QOpenSys/QIBM/ProdData/SC1/OpenSSL/misc/tsgetgen
- /QOpenSys/QIBM/ProdData/SC1/OpenSSL/misc/CA.sh

### zlib

zlib is upgraded to version 1.2.11. Refer to <https://zlib.net> for change logs.

## IBM Db2 Web Query for i (5733-WQX)

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To run Web Query on IBM i 7.5, upgrade to Web Query 2.3.0 or later. Web Query for i V2.2.1 and earlier versions are not supported and will not function on IBM i 7.5.

If Web Query 2.3.0 is installed on IBM i 7.5, you will need to apply the Web Query group PTF SF99671 before starting Web Query the first time.

IBM Technology for Java SE 8 64 bit (5770-JV1 option 17) is also required for Web Query on IBM i 7.5. For more information on Db2 Web Query for i, refer to the product wiki at <https://ibm.biz/db2wq-wiki>

## Web Enablement for IBM i 9.0 (5733-W90)

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### Migration requirements if you have Web Enablement for IBM i V8.5 or an earlier version

Web Enablement for IBM i V8.5 and earlier versions are not supported on IBM i 7.5.

- If you currently have Web Enablement for IBM i (WebSphere®) version 8.5 or earlier products installed and are upgrading to IBM i 7.5, you will need to migrate your WebSphere traditional installation and profiles to WebSphere V9.0 at the 9.0.5.11 product fix pack level or higher prior to performing the IBM i 7.5 upgrade.
- IBM Installation Manager (IM) V1.9.2.1 or newer is required to be installed. Refer to the URL:<http://www-01.ibm.com/support/docview.wss?uid=nas8N1022458> for information on how to display the current IM version and how to upgrade it to a newer version if required. IM requires Java 8 SE 32 bit.
- For additional information on the steps to migrate from earlier versions, review the URL: <https://www.ibm.com/support/pages/ibm-websphere-application-server-v90-product-migration-steps>
- For additional information on the support of WebSphere on IBM i 7.5, review the URL: <http://www-01.ibm.com/support/docview.wss?uid=nas8N1020185>

### Java Requirements

- Java SE 8 32 bit (5770-JV1 option 16) and Java SE 8 64 bit (5770-JV1 option 17) are required to be installed on IBM i 7.5. Updating to the latest Java group PTF is recommended. Refer to the URL: <https://www-01.ibm.com/support/docview.wss?uid=nas8N1020692> for information on how to install Java SE 8.
- WebSphere V9.0 is only supported on Java SE 8 64 bit.
- WebSphere Liberty requires a minimum Java SE version of 8.

### Existing WebSphere Installations

- The minimum required version of WebSphere V9.0 is 9.0.5.11.
- The minimum required version of WebSphere Liberty is 22.0.0.3.

### New WebSphere Installations

A new install of WebSphere V9.0 requires version 9.0.5.11 or newer media. A new install of WebSphere Liberty requires version 22.0.0.3 or newer media. This media can be downloaded using ESS. Instructions for ESS WebSphere downloads are located here: <http://www.ibm.com/support/docview.wss?uid=nas8N1010905>

## Backup Recovery and Media Services (5770-BR1)

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### Prior to upgrading BRMS

It is important to ensure no user-created dependencies exist on BRMS files in QUSRBRM before upgrading BRMS. Use Display Database Relations (**DSPDBR**) on all physical and logical files in QUSRBRM to ensure only IBM® BRMS files are listed. If any other non-IBM dependencies exists, they need to be removed before starting an upgrade.

SQL can be used to potentially find user created files in QUSRBRM:

```
select * from table(qsys2.object_statistics('QUSRBRM', 'FILE')) x where OBJOWNER <> 'QBRMS';
```

If using **OUTPUT**(\*OUTFILE) on any BRMS commands, it is recommended that the current outfiles be deleted prior to upgrading or after upgrading to a new release. Changes to files may have occurred and new fields added or changed.

Prior to upgrade, check parameters in BRMS (e.g. target release in control group attributes) if they contain values which may become invalid in the higher release.

If a data area is still used and supported, check 'Data Areas Used in BRMS' at <https://www.ibm.com/support/pages/node/644087>.

It is important to ensure that no temporary PTF objects exist in library **QBRM** before upgrading BRMS. All BRMS PTFs must be *permanently* applied before the upgrade using the following command:

```
APYPTF LICPGM(5770BR1) SELECT(*ALL) APY(*PERM)
```

## WRKMEDBRM Select volumes (TYPE)

The Work with Media using BRM (**WRKMEDBRM**) parameter Select volumes(**TYPE**) special value \*BOTH has been removed and is replaced by special value \*ALL.

## BRMS database

The default for the BRMS shipped database is changing from \*PUBLIC \*USE authority to \*PUBLIC \*EXCLUDE.

## BRMS functional usage model

The default authority for BRMS shipped functional usage is changing from default authority \*ALLOWED to \*DENIED. Use the Set User Usage for BRM (**SETUSRBRM**) command as a starting point to grant system operators and administrators access to BRMS functions and components. Then use the functional usage model to customize access by user.

## BRMS flight recording

The data authority for BRMS shipped flight recording is changing from data authority \*RWX to \*WX.

## SAVBRM command default change

The default for the Save Object using BRM (**SAVBRM**) command parameter Asynchronous bring (**ASYNCRING**) is changing from \*NO to \*YES to match the Save Object (SAV) command default.

## Backup Policy change

The Work with Policies using BRM (**WRKPCYBRM**) TYPE(\*BKU) default value for Asynchronous bring is changing from \*NO to \*YES to match the Save Object (SAV) command.

## Navigating to the BRMS graphical interface

The BRMS component of IBM Navigator for i is used to help you implement a disciplined approach to managing your backups, and provides you with an orderly way to recover lost or damaged data. A new implementation of IBM Navigator for i is included with IBM i 7.5. However, the BRMS component is not available in this Navigator at this time. Keep looking at this space for additional information.

## Initialize BRMS graphical interface

The Initialize BRMS (**INZBRM**) command parameter **OPTION(\*SECUREDMM)** with ACTION(\*SET) has been disabled and will fail with message BRM412B. BRMS encourages using the alternate method of implementing the Add Server Authentication Entry (**ADDSVRAUTE**) command parameter **SERVER(QDDMDRDASERVER)**.

## WRKMEDPCY TYPE(\*MED)

The Work with Media Policies (**WRKPCYBRM \*MED**) command interface to create or change a media policy with a Media Class special value of \*ADSM has been disabled and will fail with message BRM1174.

## PowerHA SystemMirror for i (5770HAS)

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### Installation

The IBM PowerHA® SystemMirror® for i offering is simplified to have a single edition. When upgrading from a prior release, if 5770HAS option 1 is not installed, the manual installation of 5770HAS Option 1 is required either before or after the upgrade.

### Graphical Interface

The PowerHA graphical interface integrated in the IBM Navigator for i interface is no longer available in IBM i 7.5.

### PowerHA Command Changes

#### Command Authority Changes

The public authority for the following commands is now \*EXCLUDE (was previously \*USE):

- Retrieve Cluster (RTVCLU)
- Retrieve CRG (RTVCRG)
- Work with Cluster (WRKCLU)
- Print Admin Domain MRE (PRTCADMRE)
- Retrieve ASP Copy Description (RTVASPCPYD)
- Retrieve ASP Session (RTVASPSSN)
- Retrieve CSM Session (RTVCSMSSN)
- Retrieve SVC Copy Description (RTVSVCCPYD)
- Retrieve SVC Session (RTVSVCSSN)

#### HyperSwap® Storage Description Commands

In IBM i 7.5, PowerHA support for the HyperSwap storage description commands is removed. The deprecated commands no longer available are:

- Add HyperSwap Storage Description (ADDHYSSTGD)
- Change HyperSwap Storage Description (CHGHYSSTGD)
- Display HyperSwap Storage Description (DSPHYSSTGD)
- Remove HyperSwap Storage Description (RMVHYSSTGD)

Modify any CL programs that use the previously listed commands. The following HA Configuration Description commands are the replacements, and provide improved functionality:

- Add HA Configuration Description (ADDHACFGD)
- Change HA Configuration Description CHGHACFGD

- Display HA Configuration Description (DSPHACFGD)
- Remove HA Configuration Description (RMVHACFGD)
- Work with HA Configuration Description (WRKHACFGD)





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