

# Report Manager

Enhancement Summary

Licensed Program 2A55RM1 V2R3M0



Spooled File Distribution

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## Edition

Sixteenth Edition (April 2009)

# ***GUMBO***

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## Installation Instructions

Read the Enhancement Summary to determine if any changes affect your installation.

Follow these instructions to install Report Manager V2R3M0 on your System i:

**Note:** If you have downloaded this software from the web, instructions specific to installing from the download can be found in the file "readme.htm" which is included in the download.

1. Sign on to the system as the security officer (QSECOFR).
2. Verify that your machine is at i5/OS V5R4M0 or later by running:

```
DSPDTAARA DTAARA (QGPL/QSS1MRI)
```

**Note:** If you are running a version of i5/OS earlier than V5R4M0 you can not install Report Manager V2R3M0 on your machine. You must install an earlier version of Report Manager or upgrade the operating system.

3. Verify that user domain objects are allowed in the libraries RPTMGR and QSRV, by running:

```
WRKSYSVAL SYSVAL (QALWUSRDMN)
```

Take option 5 to display the value. If the value is not \*ALL, use option 2 to add libraries RPTMGR and QSRV to the list of libraries where user domain objects are allowed.

**Note:** QSRV is required to correctly process PTFs when they are loaded and applied.

4. Insure that i5/OS will be able to verify the signatures that we apply to our product's objects by installing our Signing Certificate and Root CA Certificate using Digital Certificate Manager. Alternately, insure that signature verification will not prevent the restore operation by running:

```
WRKSYSVAL SYSVAL (QVfyOJBjRST)
```

Take option 5 to display the value. If the value is 3 or higher, use option 2 to temporarily change the value to 1.

5. Mount the distribution media in the appropriate device.
6. Submit the Restore Licensed Program (RSTLICPGM) command to batch:

```
RSTLICPGM LICPGM(2A55RM1) DEV(device-name) LNG(2924)
```

**Note:** "device-name" is the device the media was mounted on and is usually OPT01.

**Note:** During the restore operation the system operator message queue may receive inquiry message CPA3DE4 "Directory not registered. (C G)". Unless you are using a directory naming convention similar to ours (that is the directory specified in the CPA3DE4's second level text is unrelated to our software), You can safely respond with a "G" to reestablish the relationship between the directory and the product. Typically the message will occur three times.

7. Enter your permanent authorization code by following the instructions on your Authorization letter.
8. Determine which PTFs were included on the media by entering the following command:

```
DSPPTF LICPGM(2A55RM1)
```

9. Visit [www.gumbo.com](http://www.gumbo.com) to determine if newer PTFs are available. If so, download and install them. The bottom of our PTF web page also includes a listing of any IBM PTFs that affect the product.

**Note:** Gumbo Software recommends downloading the current cumulative PTF package after installing the software.

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## Enhancements For Report Manager V2R3M0

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### What's In This Section

This section provides information on Report Manager enhancements for release V2R3M0, notes any customer code implications, and describes where to find more information when applicable.

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### Internal Format Of Reports Reorganized For Expansion

**Note: YOU ARE STRONGLY URGED TO MAKE A BACKUP OF THE REPORT MANAGER REPORTS (OBJECT TYPE \*USRIDX) YOU HAVE CREATED, BEFORE INSTALLING AND USING THIS RELEASE. IF THE SYSTEM ENDS ABNORMALLY DURING CONVERSION THE REPORTS MAY BE DAMAGED AND DATA LOST.**

Each Report Manager report is implemented as an i5/OS (object type) \*USRIDX. The internal layout of the \*USRIDX, the way in which subscription, filter, and report information are stored, has been changed significantly to accommodate changes for this release and provide room for future enhancements.

Conversion of reports to the new format is automatic on "first touch", when a report writer is started for example.

During the conversion process a new report with the same name, library, public and private authorizations (but possibly a different owner) is created. The old report is placed in the QRPLOBJ library, and information is then copied from the old report to the new report.

You can perform this processing in advance of using the new release of Report Manager and avoid potential authority problems by running the following command after installation:

```
CVTRPTRL S RPT (*ALL/*ALL)
```

This is the recommended course of action.

---

### Filters Extended With \*AND/\*OR

Report Manager's filtering capability has been extended, individual filters can now contain multiple selection criteria. Each selection criteria is made up of a line number and position on the page, comparison data and a test (\*EQ/\*NE) to perform. The relationship between selection criteria are specified with \*AND or \*OR. For example:

```
ADDRPTFTR RPT (INV320) RPTFTR (REGION12) PAGCMPDTA (3 10 'Branch 7')  
          PAGCMPDTAA ((*OR 3 10 'Branch 8') (*OR 3 10 'Branch 9'))
```

When a filter contains a mixture of \*ANDs and \*ORs, they are processed in the same way that Query processes, i.e. \*ORs separate groups of \*ANDs.

Panels and output records have been modified accordingly.

---

### Product Build Enhancements

The manner in which programs and service programs in our products are compiled and bound has undergone a significant change in order to incorporate and take advantage the \*TERASPACE storage model and \*LLP64 data model added to i5/OS.

You will probably not notice a difference, but you may face an exposure that is worth considering. Several of our products can call programs that you provide to perform processing. SpoolMail "Address mapping programs" and Report Manager "User process programs" are examples of this. If you do not use a "we call you" feature, you are not exposed. When source is compiled and a program bound, it specifies the storage model it uses, the activation group it attaches to and whether or not it is tera space enabled. If you take the default values for these and you are coding in languages other than C and C++ (RPG and CL for example), you are not exposed.

If on the other hand your programs are not tera space enabled (the default for C and C++) and/or you are attaching to our product's activation group either by specifying ACTGRP(\*CALLER) or by specifying our named activation group, your program may fail when we call it. You can avoid this by changing your program to TERASPACE(\*YES) for the first, and compiling with ACTGRP(\*NEW) for the second.

---

## Product Manual "Enhancements"

In a sad passing, the printed manual's command diagrams have been retired. They have been replaced by the output of IBM's Generate Command Documentation (GENCMDDOC) command, the new "normal". While we view them as inferior, they obviate the grueling job of hand maintaining the diagrams. We won't miss the work.

With the change, the printed and green screen version of the manual have been converged. Both are now generated from the green screen UIM help source. In most instances this means that the figures in the printed manual have been degraded to the level available using UIM. Their level was never high to begin with.

The convergence will make it easier to better document the product as it only needs be done once. And being machine generated, the documentation is much easier to manipulate. If you have suggestions for format improvement, we'd like to hear them.

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## Product Integrity Enhancements

Objects are digitally signed by **GUMBO** when they are created on our development system. You can verify that their contents have not been altered or corrupted since they were produced. You do this by first importing our root certificate authority (CA) and object signing certificates to your system and then running the Check Object Integrity (CHKOBJITG) command against them. For detailed instruction on importing certificates for signature verification using the CHKOBJITG command, see IBM's manual "Digital Certificate Manager RZAH-U000".

**Note:** We uniquely name our digital certificates to simplify their management on your system. If you have previously imported digital certificates from us with the same name as those included in this package, you do not need to repeat this step.

Certificates can be found in downloads that contain save files as well as in the product's /doc directory after it is installed.

---

## Add Report Operation Audjrn Support

Report Manager implements reports as \*USRIDX objects, storing filters and subscriptions as index entries and the report definition as the object's associated space. The software was written in 1992 when the only means to manipulate these was with MI Independent Index and Space instructions. These do not generate audit journal entries and therefore make it difficult to mirror reports. Audit journal entry generating API replacements for all the functions used have not been provided in i5/OS. Changes have been made to the code that manages reports, filters and subscriptions to call the QUSADDUI API to "touch" a report after changes have been made to it. The API in turn generates audit journal entries if requested by the system's auditing settings.

---

## CPYRPT Now Informs Report Writers

Reports created with the CPYRPT command were not discovered until the report writer was restarted. Now the report writers are informed of the new reports and are considered in spooled file processing immediately.

---

## CPF6A98 On Add in WRKRPTSUB Panel

While using the WRKRPTSUB panel, adding a subscription would generate a CPF6A98 under some circumstances. The problem is corrected.

---

## Added Status Selection To DSPRPTLOG

New parameter Status (STATUS) has been added to the Display Report Log (DSPRPTLOG) command. The parameter allows you to specify the status of records that are selected for display. This is convenient for displaying only \*ERROR records for example.

---

## WRKRPTSUB List Views Reorganized

The list views presented when option 12=Subscriptions is selected from the Work with Reports (WRKRPT) command panel. have been reorganized. On the first view displayed, "Form type" has been swapped with "Filter"



from the third view, and "Copies" has been swapped with "Subs No." from the second view. Finally the position of the two fields new to the first view have been swapped.

---

### **Example Mass Subscription Change Added**

New example program source for mass subscription change was added to source file RMSOURCE. To access the new example run:

```
WRKMBRPDM FILE (RPTMGR/RMSOURCE) MBR (CHGSUB)
```

---

### **End Writer Fails From WRKRPTWTR List**

Ending a report writer from WRKRPTWTR list would fail and the writer was not ended.

---

### **RPG0202 Call To Program Ended In Error**

The Display Report Log (DSPRPTLOG), Work with Form Types (WRKFRMTYP), and Work with Report Spooled Files (WRKRPTSPLF) commands were failing with RPG0202 when run.

---

### **Network User Now Edited**

In previous releases, the Network user (USRID) parameter of the Add Report Subscription (ADDRPTSUB) command was not edited and accepted any value. With this release, a check is done to see if the supplied value is either a system distribution directory entry or a distribution list. If it is neither, ADDRPTSUB fails.

If yours is a strategy that depends on entering network users that are unknown to the system, you can disarm this edit by changing Report Manager's default settings:

```
CHGRM1DFT VFYUSRPRF (*NO)
```

---

### **User ID Portion Of Network User Quoted**

Holding, releasing, removing or changing a report subscription from the work with panel was impossible for a network user which contained a dash. The User ID portion of network user is now single quoted by the panel when the commands are prompted, solving the problem for the majority of cases.

---

### **Report Create Code Serialized**

The QUSCRTUI api doesn't return a pointer to the created \*USRIDX. To get one, we resolve the newly created object. Stress testing of a different product revealed an exposure in our create/resolve protocol under extreme machine loads. The exposure has been fixed by serializing all report creation with a lock on the product's ICO. The new protocol is lock/create/resolve/release.

---

### **Ping SMTP Mail Server (PINGMAIL) Command Enhanced**

The Ping SMTP Mail Server (PINGMAIL) command has been enhanced to include a from address and to allow SMTP authentication username and password.

Previously, only one email address was accepted by the command and it was used as both the originator and the recipient of the test message. This limited some of the cases of SMTP server behavior that could be tested.

Some internet service providers require SMTP authentication before they will accept out going email from an account. To date, IBM has not implemented this in i5/OS's SMTP stack. When a username and password are specified, PINGMAIL uses them to perform SMTP authentication (PLAIN only). In many cases, you can use this feature to perform SMTP authentication for your System i and i5/OS's SMTP stack will then be able to use the connection to send email through the internet service provider.

---

## Authorization Component Corrections And Updates

- Check Report Manager Authorization (CHKRM1AUT) command wasn't working correctly for non-tiered products.

---

## Encryption Component Corrections And Updates

- ArcFour encryption functions accessible from the product interface were removed and replaced with calls to i5/OS supplied apis. This reduces the product's Export Control Classification Number (ECCN) to EAR99-NLR i.e. innocuous and exportable anywhere.
- Functions implementing the SHA-1 message digest algorithm have been added.

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## Font Processor Corrections And Updates

- F:OCA data stream processor now processes HSF (Horizontal Scale Factor) triplet for MCF (Map Coded Font 2) SFI. These can be found in overlays created using InfoPrint Designer. Function added to retrieve scale.
- Corrected sizing of the bolded counterpart of a font selected by the SCS command SFG which is imbedded (\*FGID).
- Added exports for accessing and processing TrueType fonts made available by the DDS FONTNAME() keyword.
- Added font table to locate fonts referenced through DDS's FONTNAME() keyword to base definition table.
- Corrected CPGID (codepage global identifier) returned for several well know codepages (T1DxBASE) in base definition table resulting in improved "tounicode" maps generated by pdf conversions that use the codepages and embed the fonts.
- Increase Type1 font parser memory allocation to avoid out of memory error for some large font character sets.
- Updated font base data table with additional cpgid - codepage information including recent Polish additions.
- Faulty logic allowed code pages in the process of being parsed to be used as complete during highload stress tests. Incomplete codepages used as complete gave erroneous results.
- Previously, when processing a spooled file's attributes for font specifications, the file's Character identifier (CHRID) setting was ignored and values were derived from the default ccsid in all cases. CHRID is now processed correctly.
- Updated font base data table with additional glyph names.
- Added new functions for accessing IFS based Type 1 fonts.
- Changes to allow correct handling of FGID=0.
- Bold and italic now handled correctly for user defined FGIDs.
- Concurrent timing issues in resolving font resources can lead to failures including Array not found and pointer not set exceptions under unusual circumstances.
- Corrected recent list processing to return the same return code on all calls.
- Font base definition tables were extended to include i5/OS fonts for the new DDS FONTNAME() keyword.
- New functions added to process DDS FONTNAME() keyword.
- Detection for DBCS spooled files has been improved for spooled files that specify IGCDTA(\*NO) but in fact contain DBCS data.
- DBCS font selection improved for spooled files that specify IGCCDEFNT(\*SYSVAL) on a machine where the QIGCCDEFNT system value has not been set. Selection now depends on IGCCPI() and CPI() values specified on the spooled file.

---

## FreeType Component Corrections And Updates

- Initial build. Portions of FreeType.org's FreeType library have compiled into a service program to parse font files and retrieve information from them.

---

## Graphic Object Processing Corrections And Updates

- Chained command sequences that contain an interior begin segment command resulted in extraneous lines. Interior begin segment commands are now treated as NOOPs.

---

## Integrated File System Component Corrections And Updates

- oflag process was expanded in IfsOpen() to provide more fine grain control required by some digital signing methods.

---

## MODCA Processor Corrections And Updates

- MO:DCA data stream processor now processes HSF (Horizontal Scale Factor) triplet for MCF (Map Coded Font 2) SFI. These can be found in overlays created using InfoPrint Designer.
- MO:DCA data stream processor now processes MDR (Map Data Resource) SFIs for font specifications.
- MO:DCA specifies that a print text descriptor is required in an environment group. However some generators (Elixir) omit the descriptor. This is now tolerated when processing the data stream.

---

## Mail Set Up Corrections And Updates

- Option 61 on the Mail Verification And Set Up (MAILSETUP) menu now defaults to \*NO for the purge parameters.
- QtocRtvTCPA() api parameter prototyped as signed instead of unsigned causing potential api in mail set up functions to fail.
- Name of job started when TCPIP is started changed from QTCPIP to QTCPWRK at V6R1. VFYLOCAL command now checks correct name.
- Name of job started when TCPIP is started changed from QTCPIP to QTCPWRK at V6R1. VFYROUTER command now checks correct name.
- Malformed SMTP commands cause PINGMAIL to always fail to send test message.

---

## National Language Support Component Corrections And Updates

- Added new simple string conversion function export.

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## Print Data Stream Processor Corrections And Updates

- Data Stream Seek function returned erroneous results (or a tight infinite loop) under some conditions. These most often occurred during Report Manager filtering i.e negative distance trans buffer move in buffered data stream.
- Error merging spooled files containing mixed SCS/IPDS under some rare circumstances.
- Corrected and & or operations on mismatched page maps.

---

## Program Distribution Corrections And Updates

- Menu option to 'Verify the product is installed correctly' now specifies CHKSIG(\*NONE). Since we digitally sign our objects but most customers do not install our digital certificates, the option gave unnecessarily alarming results. If you have installed our digital certificates, you can run a complete check using:

```
CHKPRDOPT PRDID(2A55RM1) RLS(V2R3M0) CHKSIG(*ALL)
```

- Added function to retrieve a product's installed home directory coded in the requesting job's default ccsid.
- Added function to produce a system wide unique temporary file name. The file is in the product installed home directory's /tmp folder unless /tmp contains variant EBCDIC, as is the case for Japanese ccsid 5026 jobs. In this case the file is placed in the system /tmp directory using a /TMP name.

---

## PTOCA Processor Corrections And Updates

- Odd Elixir splitting of print text data in print resources (\*PAGSEG \*OVL) was previously mishandled resulting in missing data. Parser now correctly handles straddling unchained control sequences.

---

## SCS Processor Corrections And Updates

- Corrected initial position calculated during set horizontal margin (SHM) SCS control code processing.
- Parser now correctly handles emphasis during font imbedding.
- Corrected mixed SCS/IPDS cross parser communication for font stack control.
- Corrected mixed SCS/IPDS cross parser communication for page status, number.

---

## System Distribution Directory Processor Corrections And Updates

- Added functions to test for the existence of user ID in the system distribution directory and in the system distribution lists.
- Search System Directory (QOKSCHED) API performs erroneous conversion on converted data resulting in incorrect directory data for ccsids that do not contain the EBCDIC invariant characters i.e. 5026 Japan.

---

## Spool Indexing Corrections And Updates

- Commands DMPPIP, DSPPAGDTA, and RTVPAGDTA now support specifying spooled file name \*LASTCRT. \*LASTCRT selects the last spooled file created by the current job or thread, using the QSPRILSP api, for processing. processed. This is useful for jobs that create spooled files under other user profiles, which consequently end up in the user's QPRTJOB. When \*LASTCRT is specified, the JOB() and SPLNBR() parameters are ignored.
- The concept of filter sets, sets of page filters joined by \*AND/\*OR conjunctions, has been introduced to indexing. Functions and types to manipulate these have been added. \*AND/\*OR conjunction processing is modeled on QUERY, whereby \*ORs separate groups of \*ANDs.
- Indexer now considers PTOCA transparent data when building spooled file indexes.
- Indexing mishandled spooled files with blank last page causing the page to be dropped.
- Corrected mixed SCS/IPDS cross parser communication for page number during dump/retrieve.

- Uninitialized variable could cause divide by zero error for some SCS/IPDS spooled files during dump/retrieve.
- Added note to Dump Page Index Position output to show "Data position in line = Pos + Data Offset".
- Uninitialized variable caused occasional SIX0021 indexer reset error.

---

## Send Mail Component Corrections And Updates

- To correct the encoding of MIME parameter values for attachment names of unusual length or containing blanks, RFC 2231 was implemented. Not all mail clients have implemented RFC 2231 (outlook 2000, 2002, 2003) resulting in odd attachment names. RFC 2231 encoding is now avoided unless it is required to meet other MIME constraints.
- Attachment names containing blanks or of unusual length resulted in an incorrectly formed mime message. Mime is now correctly formed.
- i5/OS' mail server framework can't find files when the path is encoded in a ccsid that does not contain the EBCDIC invariant characters. The tmpnam() api returns a name containing lowercase letters, which, when run in a ccsid 5026 job aren't in the invariant code points. QmmmSendMail() api requires path names to be in the job's ccsid. Send component was modified to use only uppercase (always invariant) path names when the job's ccsid causes tmpnam() to produce variant characters. Japanese 5026 now can be processed by the MSF.
- Sending an email to a user id/address fails in all cases.
- Sending an email to a user id/address that utilizes an \*ANY entry from the directory to supply the domain name for the email address was inadvertently broken by a change to the code. \*ANY entries are now correctly processed.
- Sending an email that contains no body part such as attached file or message results in malformed email.
- Specifying a variable containing the special value '\*N' on the INCOBJ() parameter to signify "no value" does not work correctly.
- Removed requirement for a primary recipient. This allows all recipients to be specified as CCs or BCCs only.
- Implemented RFC3490 Internationalizing Domain Names in Applications (IDNA). This allows mailing to domains that contain non US-ASCII characters for example schöpe.de.
- Email address parser now supports use of characters outside the US-ASCII range.
- Email address processor now supports \*CURRENT special value for CC(), BCC(), and REPLYTO() parameters.

---

## Space Management Component Corrections And Updates

- QUSCRTUS() api parameter 11's default behavior changed at i5/OS V6R1M0 rendering some uses of large user spaces an error. Call to api changed to specify original behavior.
- Added locking protocol to insure that pointer retrieved during space creation points at newly created space.
- Space locking now uses job default wait time.

---

## Spool Component Corrections And Updates

- Previously the CRTSPLSAVF command could fail with CPF21A0 "\*AUDIT required to create or change libraries" as the CRTLIB command used by CRTSPLSAVF specified CRTOBJAUD(\*NONE). The CRTLIB command now takes the default CRTOBJAUD(\*SYSVAL) and the error is avoided.
- Previously the CRTSPLSAVF command could fail if the printer file, which is included in the saved material, contained functionality that would not save to earlier releases. I.e. a new barcode format. Now when this case arises the printer file is omitted and the save completed.

- Added \*FORMTYPE path special value which substitutes the spooled file's form type.

---

### **Text Generation Corrections And Updates**

- Procedure TxtLoadEndPage() generates MCH3601 or MCH0601 when a sequence of blank pages is converted. The number of sequential blank pages to cause the failure varies with the spooled file lines per page and can be as few as 11 pages with page length 66 lines.
- "Real" blank pages were being suppressed for \*SCS spooled files.