

# Excel-erator

Enhancement Summary

Licensed Program 2A55XL1 V1R8M0



Data Base Conversion

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## Edition

Eight Edition (March 2011)

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## Installation Instructions

Follow these instructions to install Excel-erator V1R8M0 on your System i:

### Prepare

If you are upgrading a previous release (if Excel-erator is currently installed on your System i) perform these steps before installing the software:

1. Read the Enhancement Summary to determine if any changes affect your installation.
2. Insure that the product is not in use, as the installation process must clear the product's library. This will fail if objects such as menus are in use. If the installation fails, the previous release will be restored.

### Install

**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 was included.

1. Sign on to the system as the security officer (QSECOFR).
2. Verify that your machine is at IBM i V6R1M0 or later by running:

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

**Note:** If you are running a version of IBM i earlier than V6R1M0 you cannot install Excel-erator V1R8M0 on your machine. You must install an earlier version of Excel-erator or upgrade the operating system.

3. Verify that user domain objects are allowed in the libraries XLERATOR 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 XLERATOR 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 IBM i 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(2A55XL1) 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.

## Finish

When the RSTLICPGM command completes, library XLERATOR and directory '/Gumbo/ProdData/2A55XL1' contain the new software. To complete the installation:

1. If you have an Authorization letter with your permanent authorization code, enter it now.

**Note:** Excel-erator automatically grants 30 days usage for new installs or 90 days usage for release upgrades.

2. Determine which PTFs were included on the media by entering the following command:

```
DSPPTF LICPGM(2A55XL1)
```

3. 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** recommends downloading the current cumulative PTF package from [www.gumbo.com](http://www.gumbo.com) after installing the software.

4. You can access the Excel-erator menu by entering the following command:

```
GO MENU(XLERATOR/XLERATOR)
```

---

## Enhancements For Excel-erator V1R8M0

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### What's In This Section

This section provides information on Excel-erator enhancements for release V1R8M0, notes any customer code implications with a **COMPATIBILITY WARNING**, and describes where to find more information when applicable.

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### Microsoft's Spreadsheet XML implemented

The Microsoft Office XML formats (not to be confused with Office Open XML) are XML-based document formats (or XML schemas) introduced in versions of Microsoft Office prior to Office 2007. Microsoft Office XP introduced a new XML format for storing Excel spreadsheets and Office 2003 added an XML-based format for Word documents.

**Note:** Above from [http://en.wikipedia.org/wiki/Microsoft\\_Office\\_XML\\_formats](http://en.wikipedia.org/wiki/Microsoft_Office_XML_formats)

A new transform to generate Microsoft XML Spreadsheet files has been added:

**\*XMLSS** Microsoft's Excel specific "XML Spreadsheet format" introduced with Excel 2002 and Excel 2003.

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### \*XMLSS Conversion Details and Limitations

#### Details

The \*XMLSS conversion creates Microsoft's Excel specific "XML Spreadsheet format" introduced with Excel 2002 and Excel 2003. The first rows of the spreadsheet contain the title lines specified on the Sheet title (SHEETTITLE) parameter, followed by column headings specified on the Column headings (COLHDG) parameter, which serve as column headings for the cells in subsequent rows. The generated spreadsheet contains the fields selected from the input file's record format. Fields containing character data (types A, J, E, O, and G) are converted to UTF8 based on the field's coded character set identifier (CCSID).

**Note:** Values specified in the Target coded character set id (TRGCCSID), and Source coded character set id (SRCCSID) parameters are ignored.

The conversion of fields to cells depends on the field's data type:

Data Type	Processing
<b>A (Character)</b>	Convert to a String cell in UTF8 based on the CCSID of the field. Trailing blanks are trimmed.
<b>P (Packed decimal)</b>	Convert to a Number cell.
<b>S (Zoned decimal)</b>	Convert to a Number cell.
<b>B (Binary)</b>	Convert to a Number cell.
<b>F (Floating point)</b>	Convert to a Number cell.
<b>H (Hexadecimal)</b>	Convert to a String cell as a character representation.
<b>L (Date)</b>	Convert to a DateTime cell.
<b>T (Time)</b>	Convert to a DateTime cell.
<b>Z (Timestamp)</b>	Convert to a DateTime cell. The microseconds are truncated to three positions.
<b>J (DBCS-Only)</b>	Convert to a String cell in UTF8 based on the CCSID of the field. Trailing blanks are trimmed.
<b>E (DBCS-Either)</b>	Convert to a String cell in UTF8 based on the CCSID of the field. Trailing blanks are trimmed.
<b>O (DBCS-Open)</b>	Convert to a String cell in UTF8 based on the CCSID of the field. Trailing blanks are trimmed.
<b>G (DBCS-Graphic)</b>	Convert to a String cell in UTF8 based on the CCSID of the field. Trailing blanks are trimmed.
<b>1 (BLOB)</b>	Omit and issue a warning.
<b>2 (CLOB)</b>	Omit and issue a warning.
<b>3 (DBCLOB)</b>	Omit and issue a warning.
<b>4 (Datalink)</b>	Omit and issue a warning.

#### Limitations

Microsoft's XML Spreadsheet format and Excel-erator impose certain limits on the conversion process. These are:

- A spreadsheet may have no more than 64 worksheets.
- XML Spreadsheet format's format strings do not support the features of IBM i's edit words. A trivial translation is performed.

While XML Spreadsheet format does not impose limits on the number of rows or columns in a spreadsheet, various file viewers do, most prominently Excel. For example, Excel 2007 imposes a limit of 1,048,578 rows and 16,384 columns.

---

## Comma Separate Values Implemented

The comma-separated values file format is a set of file formats used to store tabular data in which numbers and text are stored in plain textual form that can be read in a text editor. Lines in the text file represent rows of a table, and commas in a line separate what are fields in the table's row. Different implementations of CSV arise as the format is modified to handle richer table content such as allowing a different field separator character, (which is useful if numeric fields are written with a comma instead of a decimal point); or extensions to allow numbers, the separator character, or newline characters in text fields.

No general standard specification for CSV exists. Variations between CSV implementations in different programs are quite common and can lead to interoperation difficulties. For Internet communication of CSV files, an Informational IETF document (RFC 4180 from October 2005) describes the format for the "text/csv" MIME type registered with the IANA. (Shafranovich 2005)

**Note:** Above from [http://en.wikipedia.org/wiki/Comma-separated\\_values](http://en.wikipedia.org/wiki/Comma-separated_values)

New transforms to generate Comma Separated Values (CSV) files have been added. These are:

- |                  |   |
|------------------|---|
| <b>*CSVUTF8</b>  | Comma Separated Values (CSV) format. Data is converted to UTF-8. Trailing blanks are trimmed.   |
| <b>*CSVUTF8M</b> | Comma Separated Values (CSV) format. Data is converted to UTF-8 and Byte Order Mark xEFBBBF is inserted at the start of the file. Trailing blanks are trimmed.  |
| <b>*CSVRFC</b>   | Comma Separated Values (CSV) format. Data is converted to US-ASCII in strict compliance with <i>RFC4180 Common Format and MIME Type for Comma-Separated Values (CSV) Files</i> . Trailing blanks are trimmed. |

---

## \*CSVUTF8 Conversion Details and Limitations

### Details

The **\*CSVUTF8** conversion creates Comma Separated Values spreadsheets in compliance with *RFC4180 Common Format and MIME Type for Comma-Separated Values (CSV) Files* with the exceptions noted below. The first rows of the spreadsheet can optionally contain column headings as specified on the Column headings (COLHDG) parameter. These serve as column headings for the cells in subsequent rows. The generated spreadsheet contains the fields selected from the input file's record format.

The exceptions are:

- While RFC4180 only allows US-ASCII, fields containing character data (types A, J, E, O, and G) are converted to UTF8 based on the field's coded character set identifier (CCSID). This insures that any and all character data can be included. If the character data happens to all be US-ASCII (all single byte UTF8), the resulting file is strictly compliant with RFC4180.
- While RFC4180 specifies a separator character of comma (','), alternate separator characters can be specified using the CSVSEPCHR() parameter.

**Note:** Values specified in the Target coded character set id (TRGCCSID), and Source coded character set id (SRCCSID) parameters are ignored.

The conversion of fields to values depends on the field's data type. In all cases, quoting rules are applied after conversion, as needed:

- | Data Type            | Processing  |
|----------------------|---|
| <b>A (Character)</b> | Convert to UTF8 based on the CCSID of the field. Trailing blanks are trimmed. Fields with embedded separator characters are enclosed within double-quote characters. Fields with embedded double-quote characters are |



enclosed within double-quote characters, and each of the embedded double-quote characters is represented by a pair of double-quote characters. Fields with embedded line breaks are enclosed within double-quote characters.

<b>P (Packed decimal)</b>	Convert to a UTF8 character value with EDTCDE() or EDTWRD() applied if specified.
<b>S (Zoned decimal)</b>	Convert to a UTF8 character value with EDTCDE() or EDTWRD() applied if specified.
<b>B (Binary)</b>	Convert to a UTF8 character value with EDTCDE() or EDTWRD() applied if specified.
<b>F (Floating point)</b>	Convert to a UTF8 character value in external floating-point format.
<b>H (Hexadecimal)</b>	Copy without conversion.
<b>L (Date)</b>	Convert to a UTF8 character value based on the specified DATFMT() and DATSEP().
<b>T (Time)</b>	Convert to a UTF8 character value based on the specified TIMFMT() and TIMSEP().
<b>Z (Timestamp)</b>	Convert to a UTF8 character value.
<b>J (DBCS-Only)</b>	Converted to UTF8 based on the CCSID of the field. Trailing blanks are trimmed.
<b>E (DBCS-Either)</b>	Converted to UTF8 based on the CCSID of the field. Trailing blanks are trimmed.
<b>O (DBCS-Open)</b>	Converted to UTF8 based on the CCSID of the field. Trailing blanks are trimmed.
<b>G (DBCS-Graphic)</b>	Converted to UTF8 based on the CCSID of the field. Trailing blanks are trimmed.
<b>1 (BLOB)</b>	Omitted and a warning is issued.
<b>2 (CLOB)</b>	Omitted and a warning is issued.
<b>3 (DBCLOB)</b>	Omitted and a warning is issued.
<b>4 (Datalink)</b>	Omitted and a warning is issued.

## Limitations

Comma Separated Value and Excel-erator impose certain limits on the conversion process. These are:

- A spreadsheet may have only one database member.
- Bolding requests are ignored.

---

## \*CSVUTF8M Conversion Details and Limitations

### Details

The \*CSVUTF8M conversion is identical to \*CSVUTF8 in all respects except one. For \*CSVUTF8M a byte order mark of xEFBBBF is placed at the beginning of the generated file.

### Limitations

Same as \*CSVUTF8 limitations listed above.

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## \*CSVRFC Conversion Details and Limitations

### Details

The \*CSVRFC conversion is identical to \*CSVUTF8 in all respect except one. For \*CSVRFC if any data can not be converted to US-ASCII (CCSID=367), the conversion process fails and a spreadsheet is not generated.

### Limitations

Same as \*CSVUTF8 limitations listed above with two additions:

- All data must convert to US-ASCII (CCSID=367).
- The separator character must be \*COMMA (',').

---

## New dynamic path name special value \*TRNEXT

New dynamic path name special value \*TRNEXT has been implemented. When found, the new special value is resolved to a file extension appropriate to the transform specified:

- XLS for \*BIFF8.
- XLS for \*BIFF4.
- csv for \*CSVUTF8.

- csv for \*CSVUTF8M.
- csv for \*CSVRFC.
- xml for \*XMLSS.

SNDFEXCEL's default value for "Attachment file name" was '\*FILE.XLS'. It has been updated to '\*FILE.\*TRNEXT' to take advantage of the new special value. Existing programs using the BIFF transforms will generate the same results as before the change.

---

### Additional \*CSV Warnings

Many command parameters are irrelevant when generating \*CSV and are ignored if specified. Diagnostic messages are now issued for the ignored parameters and processing continues.

---

### Maximum Worksheets Increased

The maximum number of worksheets that can be included in a single spreadsheet has been increased from 32 to 64.

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### Format String Updates

The built-in formats created during \*BIFF4 and \*BIFF8 conversion have been updated to more closely match those created by Excel.

Formats created to implement edit codes for \*BIFF4 and \*BIFF8 conversions have been updated to more accurately reflect the intended appearance.

---

### Column Heading Default Color

Corrected the default, "automatic", border color generated by the Column Heading Format (COLHDGFMT) parameter.

---

### Sheet Title Formatting Corrected

The alignment code for sheet title formatting was inadvertently omitted, resulting in a vertical alignment of "Distributed". The code was added giving the intended "Bottom" alignment and consequently the title spills across cell boundaries instead of folding.

---

### Multiple File Sheet Tab Selection

Only the first sheet tab of the first spreadsheet was set as active in a multiple spreadsheet email. Now the first sheet tab of each spreadsheet is set as active.

---

### Use Correct CCSID for \*COLHDG

Excel-erator was applying field data CCSID to column heading data when \*COLHDG or \*COLHDGBLD were specified on COLHDG() parameter. The CCSIDs for the two are usually the same, but may differ and results were incorrect when they did.

---

### Column Heading Count Calculated By Sheet

Excel-erator was applying largest column heading count from any sheet to all sheets. Excel-erator now calculates number of column headings to generate on a sheet-by-sheet basis.

---

### New Column headings Special Values Added

A new special value \*COLHD1 and its bold equivalent \*COLHD1BLD were added to the COLHDG() parameter. Similar to \*COLHDG and \*COLHDGBLD they use data from the DDS COLHDG() keyword, but generate a single row with multiple lines instead of multiple rows with a single line each.

**Note:** \*BIFF4 does not support this value and it is ignored when TRANSFORM(\*BIFF4) is specified.

---

## Binary Interface File Format Changes

- The size calculation used for SST record memory allocation was in error. As a result, spreadsheets produced from files with many unique strings (character fields) were in error and could not be opened. The example reported contained 10 megabytes of strings in 70 fields over 55,000 records.
- An improved string-hashing algorithm was implemented. With the change, large files with many strings (character fields) see an improvement in processing time.
- \*BIFF4 maximum number of rows was erroneously set to 16,384 with the addition of \*BIFF8. The value has been returned to 65,536.

---

## Comma-Separated Value Changes

- Initial build. Functions to generate Comma Separated Values (CSV) file format were created and compiled into a service program.

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## Glib Changes

- Module optimization turned off. IBM i V6R1 is unable to reencapsulate optimized modules generated by IBM i V5R4 on some machines.

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## Integrated File System Changes

- An internal table was missing '\ ' code points for CCSIDs 1130, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1153, 1154, 1155, 1156, 1157, 1158, 1160, 1164, 1388, 1399, 4971, and 5026. As a result, path normalization from '\ ' to '/' did not work correctly in these ccsids.

---

## Mail Set Up Changes

- Mail verification no longer turns off \*LOOPBACK. At V6R1, the STRTCPIFC command issues message id TCP1B12 as a diagnostic instead of an escape. Our VFYLOCAL command was using the escape to determine if we turned on the interface and if we did, turned it off. Now the \*LOOPBACK interface is left on in all cases.
- DSPMAILLOG no longer assumes the system date format is the same as the job date format when converting \*CURRENT special value.

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## National Language Support Changes

- Added new function to open conversion descriptors that track conversion substitution counts.

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## Microsoft Spreadsheet XML Changes

- Initial build. Functions to generate Microsoft Spreadsheet XML file format were created and compiled into a service program.

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## libxml2 Changes

- Initial build. Portions of libxml2 library have compiled into a service program to provide xml processing.

