

RM v12.20 Supplement

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This document describes, for each component of the RM product set, the changes made in the 12.20 version of the product. In most cases, the changes were the result of a reported product issue. The issue or RPI number is provided for reference.

RM/COBOL

Windows 7/8/8.1/2012R2 no longer supported

With the RM/COBOL V12.20 release, the Windows 7, Windows 8/8.1, and Windows Server 2012R2 (and earlier) platforms are no longer supported. Windows 10, and Windows 11, along with Windows Server 2016 and later are the supported Windows platforms.

RMNet now supports the PATCH HTTP verb

RMNet has been enhanced to support the PATCH HTTP verbs via the *HttpPatch* function. See the RMNet documentation for more information.

RMNet now support the DELETE HTTP verb with a request payload

RMNet has been enhanced to support the DELETE HTTP verbs with a request payload via the *HttpDeleteWithPayload* function. The original *HttpDelete* function is still supported for backward compatibility and also because web services requiring a request payload are uncommon. See the RMNet documentation for more information.

Installing RM/COBOL on Modern Linux Systems

RM/COBOL remains committed to backward compatibility, which is why we build on the oldest supported version of the Linux operating system at the time of the release. Unfortunately, the latest versions of Linux prematurely drop support for these older versions and making it a challenge to install RM/COBOL.

The RM/COBOL install will attempt to determine if there are missing libraries before the installation proceeds. The user will be shown the list of missing libraries and given the option to proceed or abort the installation.

Some common missing libraries are:

- `libncurses.so.5`: Some newer versions of UNIX may not come with version 5 ncurses by default. The solution is generally just to install with yum or an equivalent installation application.

```
yum install ncurses*
```

- However, on some newer system, `libncurses.so.5` may not be readily available. In those cases, it will be necessary to create a symbolic link pointing to `libncurses.so.6`.

```
ln -s /usr/lib64/libncurses.so.6 /usr/lib64/libncurses.so.5
```

- `libtinfo.so.5`: The TermInfo library may be treated like `libncurses`. Use `yum` or an equivalent application to download version 5 of `libtinfo` or create a symbolic link from the version 6 library to create a version 5 library.

```
ln -s /usr/lib64/libtinfo.so.6 /usr/lib64/libtinfo.so.5
```

- Newer versions of Linux come without 32-bit support. 32-bit support can be installed along with the various 32-bit libraries required. (Or install the 64-bit version of RM/COBOL.) This is different on the various versions of Linux, but one example is:

```
sudo yum install glibc.i686 libnsl.i686
```

Issues Fixed in this RM/COBOL Release

RM/COBOL Runtime

284030	<p>In Microsoft Windows 10 and Windows 11, Windows P\$ printing of "top-down" OS/2 style bitmaps fails because of a problem in Windows. The P\$ function reports an error code of 0; this is how Windows 10 reports an invalid bitmap. This problem was introduced with a Windows security hotfix that rejects bitmaps with a negative number of rows, and the problem has been reported to Microsoft as an internal Windows issue.</p> <p>The 12.20 release implements a work-around for OS/2 style RGB 24-bit-per-pixel bitmaps, which are still produced by some scanners. Top-down bitmaps that are not 24 BPP will now report <code>ERROR_INVALID_DATA</code> instead of 0 until a Windows Update fixes the problem for all Windows OS/2-style bitmaps.</p>
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XML Extensions

314028	<p>A problem where the XML Extensions <code>xmlif.so</code> support module on 32-bit Linux could not be loaded has been investigated. This occurs if <code>libz.so</code> is not installed on the machine and does not occur in the 64-bit version (recommended).</p> <p>The RM/COBOL installation checks for required libraries, and if missing, displays a message requesting the missing libraries be installed. These libraries are not part of this check because <code>xmlif.so</code> is an optional component.</p> <p>Running these commands as root resolves the problem:</p> <pre>dnf install libzstd.i686 dnf install libxcrypt.i686</pre>
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WOW Designer

157058	<p>When loading a FORM into the Designer, the size of the FORM is now preserved. Previously, the FORM window would shrink by 8 pixels when loaded. This was caused by a change in the size of Windows borders; this size is now computed dynamically to ensure the problem will not return because of future changes in Windows.</p>
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InstantSQL

124045	<p>In RM/COBOL 12.18, the removal of XP support inadvertently changed the default ODBC behavior of Instant SQL to using the ODBC 3.x behavior. This change had an unintended consequence of enabling SQL Server to change the error code that it returned in this circumstance, although MySQL and Relativity still exhibit the ODBC 2 behavior.</p> <p>In 12.20, the ODBC 2 behavior was restored for all ODBC Drivers. Furthermore, a new <i>InstantSQL</i> API was added, <code>SQL SET ODBCVER</code>, that can select the ODBC 3 behavior, if that is required. Finally, a new configuration option, <code>ODBCVer</code>, was added to change the ODBC default behavior back to the 12.18 behavior. This will allow the behavior to be changed without recompiling the COBOL program.</p>
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Documentation

203011	The code samples in the CodeBridge user's guide were missing and have been restored.
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Relativity

- Support added for a 64-bit Data Server on Windows.
- Support added for a 64-bit Data Manager on Windows.
- Protect password usage in the Relativity Designer and importers with *SecureStrings*.
- Added the ability to the Relativity Designer to scale when moving between displays with different resolutions.
- Added the ability to the Relativity Designer to sort tables and files imported from another data source.
- Added the ability to the Relativity Designer to delete multiple files and tables from the catalog.
- The HP-UX Itanium platform is no longer supported.
- The Windows 7 and Windows Server 2012 R2 platforms are no longer supported.

"Enable Unsigned Integer Columns" is now enabled during Data Manager installation

The Unsigned Integer Columns support for the Data Manager, added in 12.19, has been changed to be enabled by the Data Manager installation.

Issues Fixed in this Relativity Release

Relativity Server Administrator

9139	A large number of DSNs causes the Relativity Server Admin to fail while adding new DSN
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Relativity Driver Administrator

10078	Corrected a problem with the 64-bit UNIX Data Client on AIX, in which the <i>reldriveradmin64</i> utility would experience a memory fault and stop executing.
435011	The Relativity 64-bit Data Client administration programs no longer experience segmentation faults on AIX.

Relativity Data Client

12121	Using the CONVERT function with SQL_DECIMAL type no longer causes a crash in a Python script
415072	Fixed an issue where <i>relclienttest</i> was unable to load <i>libodbc.so.1</i> on Red Hat 7.1.
641532	Fixed an issue where an "Illegal value was successfully inserted" error was reported.

Relativity Data Server

12479	Issues occurred when large volumes put through Relativity Server
415133	The 64-bit Data Server no longer incorrectly reports errors as General Errors. The proper errors are reported.
589019	64-bit Relativity Data Server for Linux installation does not contain a <i>Recover1</i>

JDBC Client

485065	An issue with " ArrayDataSet.next(): Invalid Handle " error for nullable character fields has been fixed. This occurred When fetching rows from a data source using the JDBC client.
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Relativity Designer and DBA

156050	The Relativity Designer and DBA are now aware of the size/scale of each monitor and will rescale themselves to a constant size when the monitor DPI changes, or when moved between monitors with different DPI or scale settings. Note that only the Designer and DBA support this functionality; dialogs and message boxes from the Relativity drivers will not be resized.
156052	Importing an RM/COBOL COB object file that has an extension other than .COB no longer causes an exception.
12392	A new file option, Default FD level numbers , has been added to the File tab. This sets the level numbering hierarchy for imported COBOL FDs.
92073	An issue concerning a bad index on merged record variants has been resolved.
123086	Added a check in "Create View" to check for conflict with existing table and view names. Previously, the CREATE VIEW statement allowed you to create VIEW with the same name as an existing TABLE .
127051	Creating a table in the designer now checks for a name conflict with an existing VIEW in the database. Previously, it was possible to name a TABLE the exact same as an existing VIEW . This action made it impossible to uniquely refer to these resources (in SQL), as, they shared a name.
194109	After updating an FD, viewing data for new table instances failed with "Catalog invalid; no item for item ID" error. Now, some corrupted catalogs can be repaired using the new catalog cleaning editor.
194110	Fixed the issue with table names being truncated in the privileges editor pane.
195102	Fixed an issue with exporting reports from the Relativity Designer that failed due to an incorrect path issue.
364114	Fixed issue with display of warnings/errors in File Definition Editor pane; the display was truncated in record type.
364162	Allow YYYYMMDD transform to be set for COMP-3 data item in the FD form.
372012	An issue concerning flattening multi-dimensional arrays has been fixed. There is a new "Show Subscript Items" check box in the Adding Columns to a Table Definition dialog. The Binding a Column to a Subscript dialog has also been changed, such that there is now a column of check boxes to select subscript items.
382021	The "Merge from Another Data Source" operation did not work properly when the selected table contains a flattened OCCURS . This has been resolved.
430020	Fixed an issue with relative copy book paths referenced from the RST import.
439064	Resolved an issue in the Relativity Designer: the contrast in the FD form cells was not high enough when editing the default column name.
442061	In the Designer preview pane, dates are now shown in short date format.
479008	In the Designer, the allowed cardinality for a table has been increased. This fixes "Login failed for 'admin' on <i>data source name</i> ", when the Status pane reported "Value was either too large or too small for an Int32 . Couldn't store <2242264000> in CARDINALITY_VALUE column. Expected type is Int32 ".
519001	Default values for numeric columns are correctly derived from data item's default value.

RM v12.19 Supplement

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This document describes, for each component of the RM product set, the changes made in the 12.19 version of the product. In most cases, the changes were the result of a reported product incident (RPI) or defect. In those cases, the RPI or defect number is provided for reference.

RM/COBOL

Microsoft Windows 11

RM/COBOL Version 12.19 now supports Windows 11.

OEM-encoded Filenames on Windows 11

Windows 11 introduced a problem that may affect some RM/COBOL users that use extended non-ASCII characters from the OEM character set in filenames. This requires the user of this configuration option to inform Windows that these characters should be converted from OEM to UNICODE:

```
run-files-attr allow-extended-chars-in-filenames=oem
```

Without this configuration option, Windows assumes that 8-bit characters are encoded using the ANSI character set. When specified, this configuration option is passed to Windows and causes filenames to be treated as being OEM-encoded instead of ANSI-encoded.

Microsoft is aware that this functionality no longer works in Windows 11 and is expected to be fixed in a future Windows 11 hotfix or update but no timeframe for the fix has been determined. This problem does not exist in earlier versions of Windows.

To work around this problem:

- Use the ANSI character set to encode all filenames in the program that use non-ASCII extended characters and do not specify this configuration option or specify the **ansi** option in the configuration option.
- Continue to use the OEM character set and call `C$ConvertOemTOAnsi` before

Windows 7 Support

With the RM V12.20 release, currently scheduled for 2023, the Windows 7 platform will no longer be supported.

Relativity

Microsoft Windows 11

Relativity version 12.19 now supports Windows 11.

Support for Unsigned Integer Columns added to Relativity Data Manager

Prior to Relativity 12.19, there was an unknown difference in behavior between the Relativity Data Manager and Data Client. A column defined on an unsigned binary data item (unsigned COMP-4 or BINARY) would be treated as a signed integer column by the Data Manager and an unsigned integer column by the Data Server and Data Client. Thus, a column defined on PIC 9(9) COMP-4 data items that contained the value H"FFFFFFFF", would be stored as 4294967295 by the Data Client and a -1 by the Data Manager. It was determined that the Data Manager was behaving incorrectly, as the picture clause clearly described the data item as unsigned. The Data Manager was corrected in 12.19, but because there might be applications that were relying on this behavior, a configuration option was also added in 12.19 enable that behavior again. See the Relativity Administrator's help file for more information. See the Enable Unsigned Integer Columns option on the Setup Options Page (Global tab) in the Relativity Admin Help file for more information.

HP-UX PA-RISC Removed

The HP PA-RISC platform is no longer supported and has been removed from RM/COBOL and Relativity products.

HP-UX Itanium Support

With the RM V12.20 release, currently scheduled for 2023, the HP Itanium hardware will no longer be supported.

Windows 7 Support

With the RM V12.20 release, currently scheduled for 2023, the Windows 7 platform will no longer be supported.

Relativity Java Client for JDBC 2.1 Removed

JDBC 2.1 is no longer supported and the Java Client for JDBC 2.1 has been removed from the Relativity product.

Support added for 64-bit Data Server on Linux

The Relativity release now supports 64-bit Linux natively.

64-bit Data Client for Linux has a Separate Installation

Prior to the V12.19 release, the Data Client installation installed both the 32-bit and 64-bit Data Clients on a 64-bit Linux system. With the 12.19 release, there are now separate installations for the 32-bit and 64-bit Data Clients. Also, the 64-bit utility programs, such as RelServerAdmin, no longer have a 64 appended to them.

Relativity Data Client for UNIX Installation No Longer Prompts for the ODBC Driver Manager Installation Directory

Prior to the 12.19 release, the Relativity Data Client of UNIX installation prompted for the directory in which the ODBC Driver Manager library was installed, and the installation tested the directory for the necessary files to verify that the given directory was correct. The Relativity Data Client installation now no longer prompts for this directory. It now requires that the ODBC Driver Manager installation is

complete and accessible by the installation script. To verify that the ODBC Driver Manager is accessible, the installation script tests the ODBC Driver Manager using the RelDriverAdmin program. If the installation script discovers that the ODBC Driver Manager can't be loaded by RelDriverAdmin, diagnostic information is printed to assist in correction of the problem and the installation is terminated. Note that there may be other library files that RelDriverAdmin requires, libnsl.so.1 is one of them, and this will also be diagnosed by this process.

CodeWatch

Setting Breakpoints in Nested Programs (DE6380)

A problem in CodeWatch with debugging nested programs has been identified and partially fixed. The problem occurs when, in the text editor:

- You click in the margin before a line number in a nested program to set or clear a breakpoint.
- You click on a line in a nested program and press F9 to set or clear a breakpoint.

Instead of being set in the nested program, the breakpoint is set in the containing program and, because that line is not part of the containing program, execution will not break.

There are two alternative methods that can be used to set a breakpoint in a nested program:

1. Use the **Breakpoint** dialog (**Edit**→**Breakpoints** or **Ctrl+B**) to specify the program name and line number of the nested program along with any additional settings like a pass count.
2. While debugging, click in the log window and use "**B line-number,nested-program-name**" to set a breakpoint. This breakpoint will appear in the breakpoints window as well and remains in effect until cleared.

Prior to 12.19, the breakpoint symbol did not appear in the editor if the breakpoint was set in a nested program. Starting in 12.19, the breakpoint symbol appears on the proper line in the nested program and can be cleared with a mouse click or by pressing F9, but you must use one of the two alternative methods above to set the breakpoint.

RPIs and Defects Fixed in this Release

RM/COBOL Runtime

86019	suse15 and RH8 now uses libncurses.so.6 not libncurses.so.5 - runcobol fails to run
285091	On Windows 11, a COBOL program creates a directory with OEM extended chars does not create the correct file name See "OEM-encoded Filenames on Windows 11" on page 6.
21235	A problem with the return code status not being reliably set by CALL SYSTEM has been fixed.
138259	Only one user can execute the runtime on Ubuntu 20.04 Linux machine To avoid an issue which prevents multiple users having access to the same file under the <i>tmp</i> directory, we have moved the license file under a subfolder in the <i>tmp</i> directory.
86019	suse15 and RH8 now uses libncurses.so.6 not libncurses.so.5 runcobol fails to run RM/COBOL requires libncurses.so.5. This may not be installed on newer versions of linux. In this case, the library can be installed from some other source or rpm.

XML Extensions

285034 RPI1080699	XML extension test for RM/COBOL UNIX 32-bit hangs On some Linux systems, a MOVE where the destination and source areas overlapped would result in corrupted data in the destination area. This problem has been corrected.
286041 RPI1080699	XML extension test for RM/COBOL UNIX 64 bit gets unexpected results. On some Linux systems, a MOVE where the destination and source areas overlapped would result in corrupted data in the destination area. This problem has been corrected.
11565	Apparent memory leak in XML Extensions for 32-bit Linux A memory leak in XML Extensions was corrected.
152019	XML PUT TEXT fails writing to a UNC path in XML Extensions If the current working directory is a UNC path, XML extensions can now read and write from a relative path. UNC paths are only allowed when launching from a Windows shortcut, from within CodeWatch, or from a Powershell console.

InfoExpress

87045	InfoExpress installation on Ubuntu 20 will not start under autostart Infoexpress UG was updated with systemd startup info
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RPC Plus

292054	<p><i>DefaultServer=hostname</i> no longer resolving to the localhost in the RPCPLUS.INI</p> <p>The Wow thin client now properly connects to a server that is specifies a server's name in the <i>DefaultServer</i> entry in the RPCPlus configuration file.</p>
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WOW Thin Client

158034	<p>When installing WoW Thin Client on SUSE 15, apply changes to the systemd files</p> <p>When the WoW thin client is installed on a SUSE 15 or higher OS, the RM installer will configure the <i>rpcplus</i> process so that it started as the system comes up.</p> <p>For other Linux environments the RM installer will setup the <i>rpcplus</i> tasks so that they can start automatically when the system comes up.</p>
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CodeWatch

6380	<p>CodeWatch incorrectly sets breakpoint in nested program</p> <p>See “Setting Breakpoints in Nested Programs (DE6380)” on page Setting Breakpoints in Nested Programs (DE6380)8.</p>
6527	<p>CodeWatch breakpoints "pass" setting doesn't seem to stick when applied in the window</p> <p>The debugger code breakpoint "pass count" can now be adjusted for existing breakpoints using the breakpoints dialog.</p>
272062	<p>CodeWatch animation does not work when the Workspace files are located through a UNC path</p> <p>CodeWatch can now animate source files if the current working directory is specified as a UNC path. Previously, CodeWatch could run programs with the working directory on a UNC volume but the debugger did not display the source while executing because the file names did not match up internally.</p>

RMCONFIG

88018	RMCONFIG is really small on high-DPI displays, needs to be marked as DPI-unaware
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Relativity Designer

146097	<p>Relativity Designer login to ODBC Client data source. Login failed for "USER" on "ClientODBC"</p> <p>The Relativity Designer now tolerates some kinds of bad data in the catalog.</p>
156117	<p>Relativity Designer unhandled exception when updating an FD after clicking the "Add to Catalog" button</p> <p>An issue with updating an FD with a file label has been resolved.</p>
260210	<p>Importing an FD that includes the record length indicator in the file description will result in two instances of the record length indicator being included in the record layout</p> <p>An issue involving duplicated record size items has been resolved.</p>
157119	<p>Importing file that has multiple table instances from another data source loses table names</p> <p>An issue concerning merge tables with multiple instances has been resolved.</p>
182062	<p>Subscript items are not available to add to a table that is based on a record type</p> <p>An issue concerning add subscripts in record types to a table has been resolved.</p>
246030	<p>Merging a table that includes a flattened occurs will cause multiple instances of each singular record to appear in query results</p> <p>An issue concerning merge flattened tables has been resolved.</p>
285072	<p>FILLER cannot be added as a column to a table</p> <p>An issue concerning add FILLER as a column to a table has been resolved.</p>
13082	<p>Ability to configure data source options at the file level</p> <p>Designers may now configure some data source options at the file level.</p>
8512	<p>Improve error message from Designer when user not authorized to update catalog</p>
10391	<p>Report actual error when error occurs opening catalog in designer</p>
163031	<p>Table built on a Relative file record not writable due to overlapping fields</p> <p>Issue concerning writability of relative files with keys has been fixed.</p>

Relativity Data Manager

150075	<p>Data Manager returns -1 for an unsigned field containing 4294967295</p> <p>See “Support for Unsigned Integer Columns added to Relativity Data Manager” on page 7.</p>
11487	<p>Numeric primary keys cause queries to fail in SQL Server</p> <p>The message "The OLE DB provider "MSDASQL" for linked server ... supplied inconsistent metadata for a column" is incorrect. The column ... that was reported to have a "DBTYPE" of 3 at compile time and 19 at run time, occurs when the column is an unsigned integer column. SQLServer does not support unsigned integer columns, hence, this problem is in SQLServer.</p> <p>However, there is a workaround for this problem, and that is to use the Relativity Designer to declare the column as a Decimal column. Decimal columns will support 32-bit integers and SQLServer supports Decimal columns.</p>

Relativity Data Server

150005	<p>Systemd(systemctl) is unable to properly perform start/stop/status for the Relativity Data Server on Red Hat 8.4</p> <p>Linux installations now utilize the <i>systemd</i> service manager when installing the relativity server, when available.</p>
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RM v12.18 Supplement

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This document describes, for each component of the RM product set, the changes made in the 12.18 version of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases, the RPI number is provided for reference.

Windows XP and Windows Vista are no longer supported

As of RM v12.18, support for the Microsoft Windows XP, Windows XP/64, Windows Vista, Windows 2003 Server, and Windows 2003R2 Server operating systems have been dropped. Furthermore, the minimum version of Windows 7 is now Service Pack 1.

Relativity “Classic Designer” and “Classic DBA” Removed

The Relativity Classic Designer and DBA were replaced by re-designed Relativity Designer and DBA applications in the RM v12.17 release. Starting with this release, these obsolete products are no longer installed or supported.

Administrative and Network Installation on Windows

Several problems with the Administrative and Network installation have been corrected. An “Administrative Installation” allows you to install a product and the appropriate licenses on a network share; a subsequent “Network Installation” from that shared network drive or volume configures the product to run from the network on the target computer, using the licenses on the share, with a minimal local installation.

RM/InfoExpress IXViewer Support Tool Removed

The RM/InfoExpress product’s undocumented support tool named IXViewer has been removed. The RM/InfoExpress installation feature **IXViewer** has also been removed.

HP-UX PA-RISC Support

With the RM v12.19 release, currently scheduled for spring of 2022, the HP PA-RISC hardware will no longer be supported.

Relativity Java Client for JDBC 4.3

The Relativity v12.18 release contains an updated Java Client. This Java Client supports JDBC 4.3. This is an early access version of the new Java Client. The installation for the new Java Client is available in the JDBC of the download media. Because the updated Java Client is a work-in-progress, the original Java Client is still available in the JDBC21 directory.

RM/InfoExpress Installation Improved

The RM/InfoExpress installation on Microsoft Windows no longer installs control files in the 32-bit or 64-bit **Program Files** directories. The RM/InfoExpress installation installs the server control file, **rmixsvr.ini**, into **C:\ProgramData\Micro Focus\RM\RMInfoExpressv12** or **C:\ProgramData\Micro Focus\RM\RMInfoExpressv12-64**. This file is also now writable.

The client control file, **rmixlnt.ini**, has been moved to the RM/COBOL installation, since the RM/COBOL runtime is the system that needs to access it. It also is installed in C:\ProgramData\Micro Focus\RM\RMInfoExpressv12 (or C:\ProgramData\Micro Focus\RM\RMInfoExpressv12-64). This file is also now writable.

The RM/InfoExpress installation features **ClnIniFile** and **Verify** are no longer supported.

Furthermore, the RM/COBOL compiler installation now installs **infoxdmo.cbl**, the source for the RM/InfoExpress demonstration program. The RM/COBOL runtime installation now installs **infoxdmo.cob**, the executable for the RM/InfoExpress demonstration program. The RM/COBOL runtime installation now installs the **rmtcp32.cfg** and **infoxdmo.cob** files to **C:\Users\Public\Documents\Micro Focus\RM\InfoExpress** to make them easier to access. The RM/COBOL runtime installation feature **ExternalAccessMethod** now also installs these files. The RM/COBOL compiler installation feature **Verify** now installs **infoxdmo.cbl**.

The **C:\ProgramData** directory is a hidden directory on Window 10, but Windows Explorer will open it if its name is typed into the address field. This directory is normally reserved for programs to store control data, such as an INI file, which makes it appropriate for the RM/InfoExpress to store its INI files there, although RM/InfoExpress does not have a programmatic mechanism to maintain these files. You will still need to use a text editor like Notepad to manipulate these files.

RM/InfoExpress for Windows Service is Now Automatically Started

The RM/InfoExpress server service is now automatically started after installation. Furthermore, the Windows Start menu shortcut that could be used to start the server (although not as a service), has been replaced with a new shortcut that will stop the service and start it again. This is useful when the server's control file, **rmixsrvr.ini**, has been modified.

RM/InfoExpress for UNIX Server is Now Automatically Started as a Daemon

The RM/InfoExpress server program on UNIX now installs an **init.d** script named **rmservertcp** that is installed to automatically start the RM/InfoExpress server as a daemon following installation and following a reboot. The **rmservertcp** script supports options to start, stop, restart, conditional restart and display the status of the server.

Note: this script is also used on AIX. RM/InfoExpress does not support the SRC Subsystem on AIX.

RM/InfoExpress for UNIX Now Supplies an Uninstall script

The RM/InfoExpress installation for UNIX now installs a script that will shut down a running server, remove its **autostart** script, and deletes the server's binaries.

CodeWatch now supports system scaling on high-DPI Displays

Microsoft Windows 8.1 and later support high-DPI displays, which can provide extremely high resolutions and sharper text and graphics. These are displays that have more than 96 dots-per-inch (DPI) of resolution. For example, a 4K 32" display will typically have 144 DPI (150%), and 4K laptop screens may have an even higher pixel density of 200% or more.

For backward-compatibility, Windows 8.1 and 10 support the automatic scaling of applications. The system-wide scale factor is set in the system *Display* settings applet. Typical settings are 100% for no scaling, 125% for 120dpi displays, 150% for 144dpi displays, and 175% or even 200% for higher DPI displays. This causes the running application to appear at about the same visual size as on a regular 96dpi display but, for comfort, the user is free to choose any scale factor. Note that if scaling is enabled, the applications (CodeWatch and the RM/COBOL runtime system) are unaware of the user-set scale factor of the system or the actual DPI of the screen, as these values are always reported as 96 DPI with a scale factor of 100%. The Windows system handles the scaling.

Scaling does have a drawback: fonts and other graphical elements may appear slightly fuzzy or blurry as these elements are displayed larger than the size used to render the elements.

Before version 12.18, CodeWatch was never automatically scaled and windows were always rendered at the native display resolution. This included the RM/COBOL runtime system running under CodeWatch for debugging– the runtime inherits the scaling/no-scaling setting used by CodeWatch. Because the runtime system is always scaled by the system when running outside CodeWatch, if any scale factor other than 100% was in effect, there were differences in the appearance of the runtime system when running in and outside of CodeWatch. This could also affect the appearance and layout of graphical WOW programs running under CodeWatch.

Starting with version 12.18, CodeWatch now has a setting that controls whether the application will be scaled or drawn at the native display resolution (the default). See the [Scale Windows on high-DPI Displays](#) setting on the *Miscellaneous* tab of the *Preferences* dialog box. A change in the scaling setting requires that CodeWatch be restarted, and the setting is persistent.

For compatibility with previous versions of CodeWatch, the default setting is to leave automatic scaling disabled and render all windows (including windows created by the runtime system) as if the scale factor was at 100%.

RMNet now supports PUT and DELETE HTTP verbs necessary for REST support

RMNet has been enhanced to support the PUT and DELETE HTTP verbs via the *HttpPut* and the *HttpDelete* functions. See the RMNet documentation. Some improvements were also made to the RMNet documentation.

RMNet Samples Moved to Public Documents\Micro Focus\RMNet

The RMNet samples have been moved from **Program Files** to **Public Documents\Micro Focus\RM\RMNet** to make them easier to access. The RM/COBOL runtime installation also has a new Start menu item, **Samples**, which will open a Windows Explorer window to the **Public Documents\Micro Focus\RM** folder to make it easier to access all the samples. Look for the **RMNet** folder there.

Compiler Shortcuts to “INI to Registry” and “Registry Configuration” Removed

Both the RM/COBOL Runtime and the RM/COBOL Compiler installations created shortcuts for “INI to Registry” and “Registry Configuration” in the Start Menu. Unfortunately, Windows 10 will only support one shortcut to a target (even if the shortcuts are in different Start Menu groups), and this will result in

a shortcut that was installed by the runtime installation being replaced by the compiler installation. The Compiler installation no longer creates these two shortcuts.

RM/COBOL Documentation Improvements

The RM/COBOL Users Guide has been updated to correct references to **C:\Program Files** to use the current directory names.

The RM/COBOL Users Guide has been updated to correct the links associated the USE-LARGE-FILE-LOCK-LIMIT configuration keyword.

RelServerAdmin Memory Leak

A memory leak has been corrected in the Relativity Server Admin command line program.

RPIs and Defects fixed in this Release

Installation

634779	Network Install: DOVERIFY cannot compile or run called programs
1120591	The Network Installation does not work properly on Windows 10 PCs (licensing error)
640108	Possible licensing error if short pathnames are used to start the compiler
628850	BIS Uninstall orphans sample virtual directories
639685	The Windows runtime installation does not install RMNet Samples
646435	RM Windows installing reporting that Recovery already installed on machine
DE71137	Short cuts disappear from RM/COBOL runtime installation on Windows
628426	Fixed a problem with the 64-bit RM installations. If a system had both a 32-bit and a 64-bit component installed, for example the compiler, and the 32-bit component was uninstalled, its short-cut would remain, although they would not be functional.
DE6549	LiantInstall reports an installation that requires a reboot as a failure
DE88033	Installing the Java Client on Ubuntu generates awk warnings
DE88034	Error messages in BIS installation on Ubuntu 20

Runtime System

1121349	Corrected a problem with C\$GetLastFilename where, if it is used repeatedly in a subprogram to access the file name for a file I/O that occurred in the main program, eventually C\$GetLastFilename will either return a data reference error or cause the COBOL runtime to take a memory fault.
634402	RM/COBOL TAB-STOPS may reference uninitialized data: Fixed a problem with the RUN-SEQ-FILE TAB-STOPS configuration option where a short list of tab stops without a 0 as the last entry could be intermixed with the default list of tab stops, instead of replacing the default list.

RM/InfoExpress

US52099	Enhance RM/InfoExpress for UNIX to autostart the server
644223	RM/InfoExpress Users guide is updated to reflect the current state and has more concise instructions for running the infoxdmo program
646469	Rmixclnt.ini installed in C:\Windows , must be in ProgramData

CodeWatch

628850	CodeWatch starts in Program Files the first time, should be in Public\Documents
645226	CodeWatch problems on multi-monitors with different resolutions / scale
1121078	CodeWatch tries to run the 32-bit compiler instead of the 64-bit compiler if both 32-bit and 64-bit development systems are installed and the 32-bit system or compiler is uninstalled. While this problem has now been fixed in the install, the work-around is to either re-register or repair the 64-bit compiler or change the CodeWatch option to “prefer 64-bit compiler” from “prefer 32-bit compiler”.
645571	When the WOW Designer user interface is being scaled by Windows, tool window drag rectangles (the rubber bands) are not scaled with the rest of the user interface and will appear in the wrong locations. This is a problem in Windows and will be fixed in a future release of the operating system.
647142	A rare problem that occurred when launching CodeWatch with a RUNCOBOL command line has been fixed.
DE85004	Under some circumstances, CodeWatch would exit without warning at the start of a BIS debugging session. This was caused by an incompatibility with Firefox and possibly other tabbed browsers and has been corrected. Note that closing the browser that CodeWatch launches for BIS HTML sessions will no longer terminate the program that is being debugged because the paradigm was changed with tabbed browsing and CodeWatch is not notified when a tab is closed.
DE85002	<p>When debugging a BIS application with CodeWatch, after leaving CodeWatch for a few minutes, CodeWatch might report a connection timeout. This has been corrected by changing the "keep-alive" interval in the CodeWatch HTTP connection from the formerly sufficient 300 seconds to 30 seconds. For earlier versions of CodeWatch, the keep-alive interval can be set to 30 seconds with this registry setting on the client (i.e. CodeWatch) machine:</p> <p>HKEY_CURRENT_USER\Software\Liant Software Corporation\CodeWatch 12\Settings "Keep-Alive FILE Interval (Seconds)" = 30</p> <p>The default setting is -1 (0xFFFFFFFF) which means to use the internal default: this was 300 seconds and starting in 12.18, is 30 seconds.</p>
DE85011	Several problems with CodeWatch remote debugging of 64-bit BIS applications, including opening remote files on a 64-bit BIS server from CodeWatch has been fixed.
DE89001	
DE85001	The CodeWatch for BIS User’s Guide has been revised for IIS version 7.5 and later.

RMNET

1111911	RMNet has been corrected to allow the HttpGet to be used after an HttpPost , HttpDelete , and HttpPut call.
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Documentation

644619	RM/COBOL Users Guide: USE-LARGE-FILE-LOCK-LIMIT Hyperlink does not work
DE74006	TOC in rmrelativity1218_DCU_InsGuide.pdf is out-of-date
DE74008	Double quotes in Relativity Data Client install guide for UNIX
DE76005	Jdbc Installation help document should indicate default install locations
DE85001	The CodeWatch for BIS User's Guide has been revised for IIS version 7.5 and later.

XML Extensions

645032	RM-Install does not install the 64-bit XML Ext License in the proper vault
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Xcentricity Business Information Server

645024	Xcentricity BIS Sample 4 optimized to work in browsers other than Internet Explorer
647278	BISMKAPP crashes on startup if decimal point is comma (for example, on French-language systems).
DE74011	XBIS Samples: IE in Windows 2019 server doesn't like 127.0.0.1 but accepts localhost
DE3729	BIS installation and configuration could make the IIS metabase grow during each installation. This is resolved by removing more metabase entries, like <location path>, during uninstallation.
DE81001 DE85003	The _cw CodeWatch debugging web services endpoint is again properly configured during installation and by the BISMKAPP utility. IIS was creating this as a web application when it must be a simple virtual directory with overridden properties and security to limit access to authenticated users. While there are manual configuration instructions in the appendix of the user's guide, this endpoint is now properly configured during installation and by BISMKAPP.
DE85004	Under some circumstances, CodeWatch would exit without warning at the start of a BIS debugging session. This was caused by an incompatibility with Firefox and possibly other tabbed browsers and has been corrected. Note that closing the browser that CodeWatch launches for BIS HTML sessions will no longer terminate the program that is being debugged because the paradigm was changed with tabbed browsing and CodeWatch is not notified when a tab is closed.
DE85001	The CodeWatch for BIS User's Guide has been revised for IIS version 7.5 and later.

Relativity Data Client

643472	Data Client 64-bit installer doesn't create a 64-bit "Simba Trace" registry key
644470	Query returns nothing on a LONGVARCHAR column with JDBC client
1121226	JDBC nonnumeric error not displayed with large data file: an issue with SQL warnings being lost has been resolved
1120451	Insert of date failing for 64bit relativity ado client, works with 32 bit
644986	64 bit Data Client Relativity Server Admin tool fails to run: must be run elevated (as administrator)
644781	Relativity Server Admin reports "error communicating with server for log-in": must be run elevated (as administrator)
645030	Correctly document how to get and install Java Client
1121369	The new Relativity JDBC client implements the JDBC 4.3 standard and throws SQLFeatureNotSupportedException for any unimplemented methods from JDBC 4.3 Specifications. Also, it does not implement pooled PreparedStatement s.
75003	64-bit RelServerAdmin Help button doesn't work

Relativity Data Server

645252	Possible buffer overrun in the control panel applet: corrected a problem in the Relativity server administrator where garbage characters can appear at the end of the application name in the server status display.
644484	Memory leak in <i>RelServerAdmin</i>
1121486	Fixed a problem where, if a database contains table with a decimal column with a precision that was larger than 9 digits and smaller than 19, and this table and column was accessed using the Relativity for ADO data client, the error "Error in assignment" was returned.

Relativity Data Manager

632823	Relativity Data Manager install will appear to fail if Recover1 is on target PC
646777	Need more specific error message than "Invalid API parameter" The Relativity Data Manager was changed to return the error -4184, "Data source's code page is not supported", when a Windows machine is running with an unfamiliar code page, such as UTF-8, and the data source was created to use the default Code Page.
642966	BIGINT support clobbers the stack, and truncates BIGINT to 32-bits

Relativity Designer

1120379	Changing user/group passwords in the Relativity Designer does not appear to work
1120378	Failed remote COBOL FD import operations return "Object reference" error
1120451	Insert of date failing for 64bit relativity ado client, works with 32 bit
1120604	Unclear error message when logging into data source when not the catalog owner
1120377	The COPYPATH setting does not work when accessing a remote (Data Server) catalog
647210	You cannot rename File Definitions in the new Designer
1121486	"Error in assignment" failure when query executed through SQL 2017 Linked Server
DE325145	Java Client does not return warnings on connection
645252	Relativity Data Server: Possible buffer overrun in the control panel applet
DE8091	Error reported when trying to query standard Backorder table from verify catalog
DE6458	Start Menu shortcuts are confusing/wrong
DE5956	Sort order not numeric on a integer column
DE8658	RM Windows installing reporting that Recovery already installed on machine
DE9291	Data Client 64-bit installer does not create a 64-bit "Simba Trace" registry key
DE9338	Memory leak in <i>RelServerAdmin</i>
DE9668	Need more specific error message than Invalid API parameter
DE10182	Query returns nothing on a LONGVARCHAR column with JDBC client
DE11594	Update the Designer docs to include the fact that offsets are from zero
DE11707	JDBC nonnumeric error not displayed with large data file
DE6981	Character set (.cs) file must be in a directory with a non-spacey name
DE12515	New Designer does not allow you to add YYYYMMDD transform to comp-6 date: there is no longer an issue with setting transforms on COMP data items.
DE133358	New Relativity Designer does not allow you to create 88 conditionals on function
DE8102	Character Set dropdown list box not updated
DE9016	Query plan stops processing using criteria when invalid data found: An issue where data was being cut off when a query had a criteria has been resolved.
DE9117	If an ODBC connection to a remote server is allowed to time out, the Designer does not always recover gracefully
DE13395	Date transform disabled in options error in Relativity Designer: an issue where existing date transforms in a catalog were disabled if the particular transform was not permitted by the options has been resolved
DE1234	Improve error message from DBA when user not authorized to update catalog
DE8321	Re-open of DSN after importing FDs from cob fails with invalid user id
DE13358	New Relativity Designer does not allow you to create 88 conditionals on functions: an issue with adding conditions (88s) to function data items has been fixed.
DE10234	Improve error message from DBA when user not authorized to update catalog: an issue regarding error messages on failed login attempts has been resolved.
645048	Designer, when connected to a Data Client DSN cannot create a table definition
645022	FD Import from CBL source fails
DE80030	Relativity Data Server: RST /relcob on ubuntu compile and core dump issue

RM v12.17 Supplement

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This document describes, for each component of the RM product set, the changes made in the 12.17 version of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases, the RPI number is provided for reference.

Relativity Data Server and Data Client

The Relativity Data Client can now be accessed from 64-bit applications on Linux. Installing the Relativity UNIX Data Client on a 64-bit Linux machine will install two Relativity Data Clients, one for 32-bit ODBC applications and one for 64-bit ODBC applications. There are also 64-bit versions of the *relclientadmin*, *relclienttest*, *reldrdriveradmin*, and *relserveradmin* utility programs.

RMNet for RM/COBOL

RMNet version 12.17 has been updated to include and use LibCurl version 7.68.0 and OpenSSL version 1.1.1g, which is more secure than 1.1.1a.

XML Extensions and Xcentrisity BIS for UNIX

The LIBXML2 and LIBXSLT have been updated to version 2.9.10 and 1.1.34, respectively.

Microsoft Windows XP and Windows Vista Support

Starting with version 12.18, currently scheduled for the spring of 2021, support for the Microsoft Windows XP, Windows XP/64, Windows Vista, Windows 2003 Server, and Windows 2003R2 Server operating systems will be dropped. The RM/COBOL and Relativity products will neither install nor run on these operating systems.

Classic Relativity Designer and DBA

Starting with version 12.18, currently scheduled for the spring of 2021, support for the original Relativity Classic Designer and DBA will be dropped and they will be removed from the product.

RPIs fixed in this Release

RM/COBOL Runtime System, WOW and Panels

1113974 WIN	Corrected a problem where, when using recover1 to convert a file from format 0 to format 4, a 24,02 error would be erroneously generated because the wrong file lock limit was in use during the conversion.
644622 WIN/UNIX	Fixed a problem in the <i>rmdefinx</i> utility: it now sets the "default file lock limit" for version 3 and later files to be 512GB.
639667 UNIX	<i>rmnet</i> now loads properly on 64-bit AIX.

RM/COBOL Development System

632188 WIN	Improved the <i>RM-Install</i> program so that it can install the license certificate for XML Extensions directly rather than requiring a separate manual installation using <i>licverifyall</i> .
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618778 WIN/UNIX	<p>Changed the CodeBridge <i>cbridge</i> utility to be able to be run from a directory with a spacey name. This resolves a problem where <i>cbridge</i> was reporting this error:</p> <p>Incorrect version of data file: "C:\Program Files (x86)\Micro Focus\RM\RMCOBOLv12\dllgen.in"</p>
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CodeWatch

1065692 WIN	CodeWatch now remembers the program animation setting across sessions. This is a global setting, not a workspace property.
1098983 WIN	<p>Problems related to how CodeWatch handles filenames in the workspace have been fixed: in the session wizard/workspace properties, you can now enter "." or an absolute pathname to search the working directory for COPY files in the RMPATH and object files in the RUNPATH; you can enter filenames in quotes (useful for copy/paste from other sources); filenames in relative directories that path through the root directory are no longer stored workspace-relative (for example, "C:\Program Files"); and any file in the workspace can be forced to be persisted using an absolute pathname by editing the workspace file (when not loaded by CodeWatch) and adding a space and then ";A" to the end of the pathname (spacey pathnames must be quoted).</p>
643387 WIN	A problem running RMNET under CodeWatch has been fixed: after a few consecutive debugging sessions performed without restarting CodeWatch, RMNET caused a crash because of an internal buffer overrun. This only occurred under CodeWatch for 32-bit debugging sessions because of the method CodeWatch uses to load RMNET.DLL into the debugging environment.
1117580 WIN	When running or debugging 64-bit RM/COBOL programs, CodeWatch cannot start a new debugging session until the previous session has completely terminated, a process that takes about 5 seconds. Previously, pressing the <i>Run</i> button within 5 seconds of the previous session ending displayed a message box saying the runtime was still busy, and had the unfortunate side-effect of restarting the 5 second clock. To avoid this, after a debugging session, CodeWatch now disables the <i>Run</i> button and menu until it detects that the surrogate runtime has terminated, and it is possible to start a new debugging session.
582003 WIN	A problem with Watchpoint variables in CodeWatch has been fixed: when a debugged program was restarted, watchpoints in the Watchpoint Window did not refresh until the program executed at least as many steps as on the previous run. This has been corrected and watchpoints are now kept current as expected.
595925 WIN	In the Source Path (RMPATH) list in the Workspace options, absolute paths are no longer converted into Relative paths. This prevents paths that refer to standard locations like (C:\Program Files) from being converted to be relative to the execution directory; and relative paths are left exactly as they are entered. This has no effect on existing projects, but any newly entered paths or edited paths will no longer be altered.
628355 WIN	A problem in the <i>rmsetncls</i> program, and how it interacts with CodeWatch was fixed. <i>rmsetncls</i> sets the default ANSI or OEM character set used by the RM/COBOL compiler, but was not propagating the choice into the CodeWatch default settings. Note that only new CodeWatch workspaces were affected, as the choice is recorded at project creation time and can easily be changed at any time in the workspace properties.

<p>638949 WIN</p>	<p>A problem that affected both CodeWatch and the COBOL WOW Designer has been fixed: dragging a toolbar or tool window on a multi-monitor Windows 10 system left ghost lines on the display. This fix is in Microsoft Windows 10 1809, 1903, and 1909, and is applied by the following updates:</p> <p style="text-align: center;">Version 1903, 1909: March 24, 2020—KB4541335 (OS Builds 18362.752 and 18363.752) https://support.microsoft.com/en-us/help/4541335/windows-10-update-kb4541335</p> <p style="text-align: center;">Version 1809: March 17, 2020—KB4541331 (OS Build 17763.1131) https://support.microsoft.com/en-us/help/4541331/windows-10-update-kb4541331</p> <p>Once these updates are applied, the problem will no longer occur.</p>
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InstantSQL

<p>1118817 UNIX</p>	<p>Fixed a problem in InstantSQL where a SQL statement such as <code>{?=call xyzzy()}}</code>, where the returned parameter is a SQL_INTEGER, would cause an "Data conversion error for output parameter number 1" error to be returned on AIX machines.</p>
<p>1118953 UNIX</p>	<p>Linux builds of RM/COBOL's InstantSQL (libisql.so) now link with unixODBC instead of iodb. UnixODBC is the default ODBC data manager distributed with Linux and we were requiring users to create links to work around this issue. Now, Linux builds will work with unixODBC out of the box (assuming the libodbc.so is in the LD_LIBRARY_PATH). Unfortunately, this means that the Linux builds will not work with iodb without doing the inverse of what was required previously to get the library to work with unixODBC.</p>

Relativity Designer

<p>640075 WIN</p>	<p>The Relativity Designer now supports the Set Default Value functionality. The Default Value support is used when a new row is inserted into a table, but a column either is not defined on a data item, or the column for the data item is not in the inserted row. In this case, the data item in the record is populated with the default item. This value is used in write operations if the data item is not represented by a column in the INSERT statement.</p>
<p>642186 WIN</p>	<p>In the Relativity Designer, an exception occurred if an import was attempted without first opening a catalog. While the importer is disabled, there were still activation paths available like the F12 shortcut. These are all now disabled without an open catalog.</p>
<p>640312 WIN</p>	<p>Fixed issue that prevented the removal of a transform from a File Definition data item. When a user added a transform to a data item on the File Definition form, there was no option to remove the transform. This has been corrected.</p>
<p>645529 WIN</p>	<p>Fixed a problem in the Designer's Merge FD process where a record variant was created with a bad index.</p>

Xcentrisity Business Information Server

<p>628054 WIN</p>	<p>In the Xcentrisity Business Information Server samples, SAMPLE4 (the ASP.NET sample) now looks correct in browsers other than Internet Explorer.</p>
<p>642705 WIN</p>	<p>A problem in the BIS samples installation was fixed: if both the 32-bit and 64-bit versions were installed, the 64-bit SAMPLE4 was being created in the 32-bit application pool. The sample would run but was using the 32-bit version of BIS instead of the 64-bit version.</p>

Relativity Data Client/Server/Manager

1117253 UNIX	The Relativity Data Client can now be accessed from 64-bit applications on Linux. Installing the Relativity UNIX Data Client on a 64-bit Linux machine will install two Relativity Data Clients, one for 32-bit ODBC applications and one for 64-bit ODBC applications. There are also 64-bit versions of the <i>relclientadmin</i> , <i>relclienttest</i> , <i>reldriveradmin</i> , and <i>relserveradmin</i> utility programs.
1117136 UNIX	Fixed Java Client to handle large numbers in columns with SQL type SQL_DECIMAL or SQL_NUMBER.
634323 WIN/UNIX	Reduced the amount of memory the Relativity Data Client uses by freeing more memory when no longer needed.
634783 WIN	Updated and clarified wording in Relativity Admin help documentation.
644662 WIN	Removed the Tab for Micro Focus file handler from the Relativity admin utility, as MF File handler is no longer supported from the RM Relativity product. The Visual COBOL Relativity will enable you to use MF Files.
645052 645053 645054 645056 645057 644987 UNIX	Update and clarified wording in Relativity Data Client for UNIX Installation Guide
645055 UNIX	The RelClientTest utility is linked to only one ODBC Driver Manager. This is iODBC on all UNIX systems, except Linux, where it is now unixODBC.
645315 WIN	Fixed a problem where the Designer, when performing a merge from a catalog using a Client/Server data source, could get into an infinite loop when disconnecting from the data source. (The Designer was ultimately triggering a fault in the Data Client.)

Installation

632188 WIN	Improved the <i>RM-Install</i> program so that it can install the license certificate for XML Extensions directly rather than requiring a separate manual installation using <i>licverifyall</i> .
640070 WIN	The RM/COBOL installations were storing a "definition" file in the program files directory to assist the uninstall. Under some circumstances, these files could not be deleted during the uninstall, causing the uninstall to be rolled back. Now, they are being stored in the C:\ProgramData directory and removed from there when the uninstall is complete.
642468 UNIX	When installing the Relativity Data Server on Ubuntu 18.04 and 19.10, "-e" was displayed before the installation messages. This was strictly a cosmetic problem and has been corrected.
642705 WIN	A problem in the BIS samples installation was fixed: if both the 32-bit and 64-bit versions were installed, the 64-bit SAMPLE4 was being created in the 32-bit application pool. The sample would run but was using the 32-bit version of BIS instead of the 64-bit version.

RM v12.16 Supplement

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This document describes, for each component of the RM product set, the changes made in the 12.16 version of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases, the RPI number is provided for reference.

New Relativity Designer

The 12.16 release introduces a new Designer for Relativity. The new Designer has been completely rewritten, using modern interfaces. The original Designer has been renamed to the Classic Designer and will also be installed in this release, just in case we missed some critical functionality in the rewrite.

Foreign Key Support

Relativity has been enhanced to support the ODBC API call `SQLForeignKeys`. The new Designer can designate a connection between columns in two different tables, creating Foreign Keys. These are columns that may be used in joins, and adding this information will allow SQL tools to optimize generated queries and graphically present the foreign key association.

Note: It is up to the SQL tool to make use of this information and Relativity does not directly use it. Relativity does not validate it. It is up to the database designer to make valid associations.

Micro Focus files are no longer supported

Starting with the Relativity 12.16 release, support for Micro Focus files has been removed from the *Relativity for RM/COBOL* product line. If you use Micro Focus files, please migrate to the *Relativity for Micro Focus COBOL* product, which is equivalent to the MF support in previous versions of *Relativity for RM/COBOL* and adds full support for Visual COBOL. The format of the MF catalog files remains the same.

RMNet for RM/COBOL

RMNet version 12.16 has been updated to include and use LibCurl version 7.64.0 and OpenSSL version 1.1.1a. Note that OpenSSL 1.1.1a has removed some old vulnerable ciphers.

RMNet is supported on all 64-bit RM/COBOL releases, as well as on the 32-bit RM/COBOL releases where it has long been supported.

XML Extensions and Xcentrisity BIS for UNIX

The LIBXML2 and LIBXSLT have been updated to version 2.9.9 and 1.1.33, respectively.

RPIs fixed in this Release

RM/COBOL Runtime System, WOW and Panels

1113630 WIN	A problem in GUI Panels applications that prevented Windows controls from moving/resizing when the containing RM/COBOL window was resized or maximized has been fixed.
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<p>1115357 WIN</p>	<p>A problem in the 64-bit version of the WOW runtime that prevented mouse button events from being propagated into the application has been fixed. This problem only affected applications that were generated by pre-2007 versions of the WOW Designer and the problem does not occur in the 32-bit version.</p>
<p>639387 WIN</p>	<p>A problem in the WOW Panels runtime where a multi-line Edit control in a WOW GUI application could lead to memory corruption has been fixed.</p>
<p>1115711 WIN</p>	<p>A problem in the 12.15 version of the WOW runtime has been fixed: if the following directory does not exist when the WOW runtime system is started:</p> <p style="padding-left: 40px;">"C:\Users\username\AppData\Roaming\Micro Focus"</p> <p>A message box is displayed that reports this directory as missing. Note that WOW runs properly after the message box is dismissed.</p> <p>This situation occurs because the runtime is attempting to create the WOWRT.INI file in this directory:</p> <p style="padding-left: 40px;">"C:\Users\username\AppData\Roaming\Micro Focus\RM\CobolWOW"</p> <p>And is expecting the "Micro Focus" directory to already exist.</p> <p>With 12.15 only, the work-around is to pre-create the "Micro Focus" directory above before launching the runtime system. If the work-around is used, be sure to create the above directory for each separate user that might run the WOW application on the current machine.</p>
<p>639744 WIN</p>	<p>A problem that might prevent x64 RM/COBOL components from being uninstalled has been fixed: depending on the installation method, it is possible that installer-created .DEF files placed into the "Program Files" directory don't have permissions that allow these files to be deleted by the installer during component removal. If this problem occurs in earlier versions, simply delete the .DEF file specified in the error message (administrative privileges will be required) and then uninstall again.</p>

RM/COBOL Development System

1111956 WIN	A problem in CodeWatch that prevented the Workspace Properties "Browse for Program" button from updating the "Program Name" field is fixed. The problem only occurred if the execution directory field was previously set; now the name of the program will be stored relative to the execution directory.
1113506 WIN	The CodeWatch editor now supports high-DPI input devices, like the <i>Microsoft SurfacePro Mouse</i> that support "hyper-scrolling" or "accelerated vertical scrolling". Previously, very small scroll-wheel events were ignored.
1113507 WIN	In the WOW Designer, a problem with erratic mouse scrolling in the <i>Property</i> window, caused by high-DPI input devices, has been fixed.
639787 WIN	The first time that a CodeWatch project is opened from Windows Explorer after CodeWatch is installed, CodeWatch would ask to save the project as Untitled. After the first open, the project opens properly. This behavior has been corrected.

Installation

635887 WIN	A problem in the installation has been fixed: if a custom installation path is selected and a custom install is requested so each component can be separately configured, the individual components were reverting to the default installation path. With this change, the master installation path set in the installation program is now respected.
637060 WIN	When running on Windows 10, when the RM-Install program displays the Certification Activation page, the field displaying the Current Local Time was not big enough and wraps the time. The field was enlarged to prevent the wrap.

Relativity Data Server

635497 WIN	A heavily loaded Data Server would generate an ASSERT to its log. This message would occur while the connection was being closed, and customers would not be aware it was happening, unless they inspected the log. The problem that induced the message has been corrected.
639916 WIN	A rare problem that might prevent the data server from being uninstalled has been fixed. The symptom was an error configuring the Windows firewall, and caused the uninstall to roll back.

Relativity Designer

1102444 WIN	In the Table Filter Properties form, the Condition Item list does not contain 88-level conditionals. This is corrected in the new Designer.
1107564 WIN	A COBOL FD with an OCCURS would create the columns on the fields in the OCCURS with all the columns for the same data item grouped together, rather having the columns grouped by subscript value. The new Designer now provides an option to sort them in a subscript item centric order.
1114074 WIN	The FD merge utility was failing to match FILLER data items that had not changed. The new Designer now performs this match correctly.
1114501 WIN	The Designer was not creating values in 88 items with the correct type, causing the selection criteria for valid records to fail. The new Designer now creates the values with the correct type.

Other Notes

RM v12.16 Supplement

For developers: under Microsoft Windows, RM/COBOL version 12.16 uses the libraries and tools that are included with Microsoft Visual Studio 2017 development system. These libraries are compatible with those used by RM/COBOL version 12.14 and 12.15. If you are migrating from earlier versions of RM/COBOL, please see [Visual Studio 2015 Upgrade](#) below.

RM v12.15 Supplement

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This document describes, for each component of the RM product set, the changes made in the 12.15 version of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases, the RPI number is provided for reference.

RPIs fixed in this Release

RM/COBOL Runtime System

1113847 WIN	<p>In Windows 10 version 1709 (released September 2017) and 1803 (released April 2018), a problem was introduced that causes the RM/COBOL runtime system to become unresponsive at startup if two conditions are met:</p> <ol style="list-style-type: none">1. Windows 7 or Windows 8 compatibility mode is set for the compiler or runtime system,2. A toolbar is configured. <p>There may be other similar scenarios. Microsoft has confirmed that this problem will be fixed in a future Windows update, but a work-around has also been implemented in the 12.15 compiler and runtime. Until the issue is fixed in Windows, RM/COBOL versions older than 12.14 will continue to exhibit this issue.</p>
634651 WIN	<p>A problem with the "Command Line Options" compiler and runtime configuration property (set by the <i>rmconfig</i> program) was fixed: if a command line option value was set for the "Current User" but no option was set for "All Users", the setting had no effect. These options can now be set individually or together -- if both are specified, the default "All Users" is added to the command line, then "This User", and then the operation is repeated for settings that specify the name of the main program.</p>
621415 UNIX	<p>The RM/COBOL runtime for Linux is no longer statically linked with <i>ncurses-4.2</i> but instead uses the <i>ncurses</i> that is installed on the machine. It is recommended that this be <i>ncurses 4.2</i> or later.</p>
629775 ALL	<p>A problem in the runtime processing of the COBOL LIKE phrase has been corrected: certain malformed regular expressions could cause the COBOL runtime system to loop until terminated.</p>
1098875 WIN	<p>In the WOW extensions for RM/COBOL, a windows activation problem has been corrected: a newly created modal form was not being activated if the window was created in a SETFOCUS event. A click in another application followed by a click in the modal form would work around the problem, but the root cause has now been fixed.</p>
629144 ALL	<p><i>rmucutil</i> no longer warns that "IPX support not available", as this is the normal case and falsely implies there is a problem.</p>
1110594 WIN	<p>A problem that could cause a crash in Windows GDI32.DLL when RM/COBOL Windows Printing calls the Windows function <i>ResetDC()</i> has been fixed.</p>

RM/COBOL Development System

582125 WIN	The RM/COBOL Uninstaller now removes all utility registry entries created during the installation. However, application and program settings created by the RM/COBOL Registry Configuration utility (<i>rmconfig</i>) are purposely not removed.
628719 WIN	On Windows, if the compiler or runtime system components are installed or later registered for "All Users" by using the /REGSERVER command line option, any RM/COBOL component registration information for the "Current User" is now removed. Leaving the user-specific information in the registry could result in a conflict as it overrides the "All Users" setting and the last registration should take precedence.
629060 WIN	On Windows, CodeWatch is now included with the 64-bit development system installation.
629073 WIN	The CodeWatch workspace wizard sometimes displayed empty fields on the "Set Program to Run" page when the wizard was used to load a recent workspace. It was possible to fill the fields by pressing the [Back] button, then the [Next] Button, but this is no longer necessary.
630360 WIN	<p>A problem in CodeWatch, where an attempt to compile a program without first stopping the debug session has been fixed. When a "Build" is started while a program is running, CodeWatch states that this action will stop the build. Accepting this offer ends the debugging session and starts the build. Unfortunately, the build could start before the debugging session ended, and that could cause a spurious licensing error to be reported.</p> <p>In addition, in the above scenario, if the -P "persistent" option is set when the program was launched; the final output window will persist until manually closed. If this window is off-screen, it will appear as if CodeWatch is hung. If the Close or Build operation is repeated, CodeWatch will now pop up a message box requesting the user close the "Persistent" runtime window. Once the window is closed, the previous operation (Build or Exit) will be performed.</p>
1110621 WIN	When a CodeWatch project that referred to missing source files was compiled, the missing file and all files after the missing file were being associated with the build information from the previous successfully compiled file. This problem has been corrected, and missing files are now diagnosed with a "compiler initialization error", as expected. Note that the compiler will be reset and reloaded when this error occurs, so projects that contain missing files will build somewhat more slowly than complete projects.
1110681 ALL	A problem in the COBOL compiler has been corrected: if the first line number of the Procedure Division was larger than 65535 and the program contained no features that required the object version level to be set to 12 or greater, then neither the run-time debugger nor CodeWatch would show the correct line in that program while debugging. Such programs can now be debugged once they are recompiled with the current compiler.

<p>1111271 WIN</p>	<p>CodeWatch no longer intermittently reports a fatal error if a compiled program is open in the CodeWatch editor and the user then edits and compiles the source file outside of CodeWatch. The fatal error occurred only if the program contained lines with multiple COBOL statements. Note that if the above sequence is performed while debugging or animating the program that is edited and recompiled, CodeWatch will reload the source file, but because the previous version of the object program is still running, CodeWatch may show incorrect lines until the program is cancelled and reloaded, or restarted. Note that we do not recommend editing and recompiling programs that are being debugged outside of CodeWatch, but it is possible to swap out programs in a run unit if they are not currently active.</p>
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WOW Extensions Designer

<p>628144 WIN</p>	<p>For the WOW Extensions Designer, the <code>cblwow.ini</code> and <code>wowrt.ini</code> files have been moved from <code>%APPDATA%\Liant\CobolWOW</code> to the new standard user “application” roaming data directory: <code>%APPDATA%\Micro Focus\RM\CobolWOW</code>. At startup, if these files do not exist, the WOW Designer will look in the old location. If the older <code>.ini</code> files exist, the WOW Designer will copy and upgrade the files, thereby migrating settings. The original file is not removed to allow for compatibility with older versions but note that settings changed in v12.15 or later will not be picked up by older versions.</p>
<p>1105267 WIN</p>	<p>The WOW Extensions Designer could unexpectedly terminate if a project was opened using a UNC pathname (i.e. <code>\\server\share\project.wpj</code>). This is because the WOW designer sets the current working directory to the network share, but also attempts to change the drive letter. This problem has now been fixed, but it is likely that some programs will not work unless the working directory has a drive letter, especially programs that use non-COBOL subprograms. There may also be ActiveX controls that will not run without a current drive letter.</p> <p>We strongly recommend that when projects reside on a network share, a drive letter be mapped to the share. For example, executing this command before launching the WOW Designer:</p> <p style="text-align: center;">NET USE W: \\server\share</p> <p>will allow the above project to be loaded as <code>"W:\Project.wpj"</code>.</p>

XML Extensions

<p>1110846 ALL</p>	<p>A problem has been fixed in the XML Export File where, if the model file described a data area that is larger than the data area being exported, the export could reference outside of defined memory and cause a memory fault. When the model file description exceeds the size of the data area, this is now detected and a new error is returned:</p> <p style="text-align: center;">74 - exported DataItem smaller than data structure in ModelFile</p>
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Xcentrity Business Information Server

<p>616032 ALL</p>	<p>Two new server variables have been added in both BIS for Windows and BIS for UNIX: SESSION_ID and SESSION_FILEID.</p> <p>The SESSION_ID is the character string that is sent in the BISKIT cookie and uniquely identifies the currently active session on this server. The string consists of characters in the “Base64” character set as defined in RFC 4648 without padding, and may therefore contain ‘/’ and ‘+’ characters.</p> <p>The SESSION_FILEID is a translated, but still unique, version of the SESSION_ID that may be used for URLs and filenames. It uses the “Base64 for URL” character set variant also defined by RFC 4648, where ‘+’ (plus) characters are replaced with ‘-’ (dash) and ‘/’ (forward slash) characters are replaced with ‘_’ (underline).</p> <p>The SESSION_FILEID may be safely used in the client program to create names for temporary files, and those names may be referenced either in the XML exchange file or embedded in the rendered response by using <code>{{Value(SESSION_FILEID)}}</code>. By using the SESSION_ID for such filenames, limiting access to the files by using ACLs, and restricting the lifetime of the files offers some security, as the names are difficult to guess.</p> <p>Note that there is no automatic cleanup for such temporary files, so the program must track and remove such files when they are no longer needed.</p>
<p>629106 WIN</p>	<p>When installing Xcentrisity BIS on a Windows XP machine, the <i>BISMkApp</i> program is no longer installed because this program is not compatible with the version of Internet Information Server (IIS) that is provided with Windows XP. <i>BISMkDir</i> continues to be installed and should be used instead of <i>BISMkApp</i>.</p>
<p>633979 UNIX</p>	<p>The BIS Request Handler now uses the standard <i>inet_ntop</i> system call rather than the Apache Portable Runtime (APR) routine <i>apr_inet_ntop</i>, which has been removed from the APR on SUSE.</p>
<p>634010 WIN</p>	<p>In the RM-Install's custom <i>Installation Folders</i> page, the default <i>Destination Folder</i> is now C:\Program Files (x86)\Micro Focus\RM.</p>
<p>634011 UNIX</p>	<p>The Xcentrisity BIS installation on SUSE 12 no longer reports “<i>command not found</i>” at the end of the installation. It also properly edits the xbis.conf file to have a <i>LoadModule</i> directive with the location of the request handler. This corrects the <i>BISTraceDirectory</i> message when starting Apache.</p>
<p>634117 WIN</p>	<p>In <i>BISMkApp</i>, if the program is launched from the 64-bit BIS Start menu, it will now default to configuring 64-bit BIS. Previously, <i>BISMkApp</i> always tried to configure 32-bit BIS. A problem where <i>BISMkApp</i> sometimes selected a 32-bit BIS ISAPI extension when configuring 64-bit BIS, and both were installed, has been corrected.</p>
<p>634179 WIN</p>	<p>BIS now includes a new script in the <i>SupportTools</i> installation directory: “Install-IIS.bat”. When run as an administrator, this script automatically installs and configures IIS with the components that are required by BIS.</p> <p>This is a Windows batch file, so it can also be customized and used to prepare IIS in BIS deployments.</p>

634225 WIN	Starting with this version, there are now shortcuts on the <i>Start</i> menu to configure the BIS "Run As" identity for the 32-bit and 64-bit service engine, which configures the identity that is used to run COBOL services. This operation can still be performed with the command " XBIS /REGSERVERO " from a command prompt.
1112654 UNIX	In Xcentricity BIS for Linux, added support for the 3.1 version of the Linux Standard Base code specification's system initialization, which is what Debian and Ubuntu implement.

Relativity Data Manager

601794 ALL	Inserts to Line Sequential and Binary Sequential files will now append data to the file. Updates will work as well. Line Sequential files must be padded to the full length of the expected field or NULL values will be returned for the row.
609761 WIN	A problem with the Help button not being enabled when configuring a Micro Focus data source in the 32-bit ODBC administrator has been fixed.

Relativity Data Server

1110593 ALL	An INSERT into a table defined on a sequential file no longer fails with COBOL error 48,1 .
1111966 ALL	Fixed a problem in the 64-bit Data Client, both standard and ADO, where it would crash if a 64-bit Excel's Data Connection Wizard was used to import tables from a Relativity Data Source.
1112175 ALL	Added support for 64-bit C integer (SQL_C_SBIGINT and SQL_C_UBIGINT). Note that this does not include support for 64-bit (BIGINT) columns, however DECIMAL(20,0) columns will contain a SQL_C_SBIGINT . A <i>SQLGetData</i> with a <i>TargetType</i> of "-25 " no longer causes a Data Client crash.

Relativity Designer

629765 WIN	Several problems with launching various helper programs from the <i>Relativity Designer</i> Tools menu have been corrected. Previously, some of these tools were not available unless the Designer was run as an administrator and other programs were not available because of changes within Windows. These tools include the <i>Server Administrator</i> (if installed), the <i>Relativity Configuration Tool</i> (also available in the control panel), and the <i>ODBC Administrator</i> for 32-bit and (now) 64-bit data sources.
629766 WIN	The <i>Relativity Designer</i> Tools menu can now launch both the 32-bit and 64-bit ODBC Database Administrator. Note that launching the 64-bit administrator requires administrative privileges.

629769 WIN	<p>A problem that could cause the Relativity Designer to stop responding when "DBMS Help File" was selected from the Help menu has been corrected.</p> <p>The Designer and DBA configuration files RELDBDSN.INI and RELDBDBA.INI have been relocated out of the C:\WINDOWS directory. Previously, these files were always created in C:\WINDOWS (or <LocalAppData>\VirtualStore\Windows for non-administrators). With this release, these files are now created in the local application data directory here:</p> <p style="text-align: center;">%LOCALAPPDATA%\Micro Focus\RM\Relativity</p> <p>Where %LOCALAPPDATA% is the AppData\Local subdirectory of the user's home directory.</p> <p>In addition, the user-created RELD BUTL.INI file that is used for database merges should also now be created in the above location instead of C:\WINDOWS.</p>
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Other Notes

On Windows, RM/COBOL version 12.15 is now being built with Microsoft Visual Studio 2017. The libraries are compatible with the previous version of Visual Studio that RM/COBOL version 12.14 used. If you are migrating from earlier versions of RM/COBOL, please see [Visual Studio 2015 Upgrade](#) below.

From 12.16 onwards (currently scheduled for the Spring of 2019), support for Micro Focus files will be removed from the Relativity for RM/COBOL product line. If you use Micro Focus files, please therefore migrate to the Relativity for Micro Focus COBOL product, which is equivalent to the current MF support in Relativity for RM/COBOL, but with support for Visual COBOL. The format of the MF catalog files remains the same.

RM v12.14 Hotfix 1 Supplement

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This document describes, for each component of the RM product set, the changes made in the 12.14 Hotfix 1 version of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases, the RPI number is provided for reference.

RPIs fixed in this Hotfix

RPI **1098875** — A WOW runtime problem with input being disabled on modal forms has been fixed.

RPI **1110594** — A runtime problem that could cause a crash in Windows GDI32.DLL when RM/COBOL Windows Printing calls the Windows function ResetDC has been fixed.

RPI **1110621** — When a CodeWatch project that referred to missing source files was compiled, the missing file and all files after the missing file were being associated with the build information from the previous successfully compiled file. This problem has been corrected, and missing files are now diagnosed with a "compiler initialization error". Note that the compiler will be reset and reloaded when this error occurs, so projects that contain missing files will build slightly more slowly than complete projects.

RPI **1110681** — A problem in the COBOL compiler has been corrected: if the first line number of the Procedure Division was larger than 65535 and the program contained no features that required the object version level to be set to 12 or greater, then neither the run-time debugger nor CodeWatch would show the correct line in that program while debugging. Such programs can now be debugged once they are recompiled.

RPI **1110846** — A problem has been fixed in the XML Export File where, if the model file described a data area that is larger than the data area being exported, the export could reference outside of defined memory and cause a memory fault. When the model file description exceeds the size of the data area, this is now detected and a new error is returned:

74 - exported DataItem smaller than data structure in ModelFile

RPI **1111271** — CodeWatch no longer sometimes reports a fatal error if a compiled program is open in the CodeWatch editor, and the user then edits and compiles the source file outside of CodeWatch. The fatal error occurred only if the program contained lines with multiple COBOL statements. Note that if the above sequence is performed while debugging or animating the program that is edited and recompiled, CodeWatch will reload the source file, but because the previous version of the object program is still running, CodeWatch may show incorrect lines until the program is cancelled and reloaded, or restarted. Note that we do not recommend editing and recompiling programs that are being debugged outside of CodeWatch, but it is possible to swap out programs in a run unit if they are not currently active.

RM v12.14 Supplement

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This document describes, for each component of the RM product set, the changes made in the 12.14 version of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases, the RPI number is provided for reference.

RM Product Documentation

The RM product documentation files have been updated and the .PDF files have been renamed to be more descriptive.

RM Product Installation

The RM Windows installation program, formerly named LiantInstall.exe, has been renamed to RM-Install.exe. Many of the RM product icons on Windows have been updated.

RPI **615846** — In the RM/COBOL and Relativity installation, the samples have been moved to the **Public\Micro Focus\RM** directory on the system. Furthermore, the RM/COBOL compiler installation now creates shortcuts to the new folders, to make it easier to locate them. The shortcut "RM Samples" opens a Windows Explorer window to the Verify suite, and "Xcentrisity Samples" to the Xcentrisity samples suite.

RPI **622508** — A problem that caused incorrect permissions on some installed files has been corrected.

RPI **628208** — A problem where the 64-bit installations would not install if they were started by merely opening them in Windows Explorer has been corrected. They would install if run under **RM-Install**, but, unlike the 32-bit installations, you couldn't start them manually.

Relativity Product Installation

RPI **1110022** — A problem in the Relativity Data Clients, and Data Manager installations where if there were both regular and ADO data sources already existing for a Driver, when it is uninstalled and then reinstalled, an error would occur in the **LiantLoadODBCDriverTables** custom action.

Relativity Data Manager

RPI **625359** — Relativity was reporting a key not found error when trying to delete a record. Changed the Delete row logic to not perform a **READ RANDOM** followed by a **DELETE CURRENT**. Not every file manager can support. The standard COBOL technique is to perform a **READ RANDOM** with lock and follow it by a **DELETE RANDOM**.

RPI **1109516** — A problem where using Relativity as a data source for a mail merge with *Microsoft Word 2016* was causing it to crash. *Microsoft Word 2013* does not crash, but it was reporting that it was unable to retrieve the column names for the table. This fix corrected both of those issues.

Relativity Data Server

RPI **622603** — The Relativity Data Server installation used to ask "Do you wish to set the Data Server to autostart at machine reboot?" when it was installed in **INITTAB**. When it was changed to install as a daemon in **init.d** that question was no longer asked and the Data Server was always set to autostart. Beginning with this release the question is once again asked during installation so that the customer can reply "no" if they wish and **init.d** will not be modified.

RPI **625167** — Fixed the ADO Data Client to return the same status information on a Date Truncation error, as the 12.07 version of the Relativity product. In the 12.07 version, a **SQLExecDirect** on the following statement:

```
SELECT TS_COLUMN1 FROM TSTTABLE WHERE CONVERT(TS_COLUMN1,SQL_DATE) > '1999-09-02 12:12:12'
```

Will return a **SQL_SUCCESS_WITH_INFO** and no other indication as to what the **INFO** actually was. This problem was corrected in the ODBC 3.5 support, but that changed the behavior of the ODBC 2.5 (aka ADO) data client although not the ODBC 2.5 data manager. For consistency sake, we're returning the behavior of the 12.07 product to the data client.

RPI **629140** — Fixed a problem that was causing the 64-bit version of the Relativity Server Administrator to crash when attempting to create a catalog.

Relativity Designer

RPI **1105716** — The Relativity Designer previously had the ability to launch the Data Server Administrator application from a menu. However, it was not properly detecting that an updated version of this component was installed. This has been corrected.

RM/COBOL CodeWatch for Windows

RPI **618775** — A problem in CodeWatch that would allow two workspaces to be opened at the same time has been corrected.

RPI **624990** — Several problems with the "Set Program to Run" dialog in the Workspace Wizard have been corrected. You can now browse for a program without first setting an execution directory, and if found (or a path is typed or pasted into the "Program to Run" box), the initial execution directory defaults to the directory that contains the chosen program.

RPI **1107857** — If a file where the last line does not end in a newline is compiled, it is possible for CodeWatch to throw an exception when the source file is subsequently loaded into the editor. This is especially likely if the last line is some multiple of 16 characters in length. This problem has been corrected in 12.14, and can be avoided in earlier versions of CodeWatch by ensuring that the last line in each source file ends in a newline.

RM/COBOL Compiler

RPI **619546** — If you start Windows Explorer and right click on an RM/COBOL source or object file, and then select Properties, the Properties will have tabs that will allow you to change the RM/COBOL

configuration. Unfortunately, 64-bit Windows can't support property sheet pages for 32-bit products. Thus the tabs that were installed as part of a 32-bit RM/COBOL runtime and compiler did not function on a 64-bit version of Windows. And, if they were installed after the 64-bit property sheet pages, they would cause the 64-bit property sheet pages to cease to function. The "fix" for this is to not install the property sheet pages for the 32-bit version of RM/COBOL on a 64-bit operating system. However, these properties can still be accessed via the Registry Configuration short-cut on the Start Menu.

RPI 623289 — Problems that could cause the compiler to terminate prematurely when multiple compilers are running and that could cause the compiler to crash have been fixed.

RPI 623390 — There is a problem in the initial release of Microsoft's "Universal CRT" (**UCRTBASE.DLL**) version 10240 library that may cause a very occasional hang when the RM/COBOL compiler, runtime, or recover1 is started on Windows Vista and later operating systems. This problem is fixed in updated versions of **UCRTBASE.DLL**. This DLL is serviced by Windows Update, so any up-to-date system will have a fixed version. However, because Windows Vista is no longer serviced by Windows Update, we recommend that customers manually install a more recent version of **UCRTBASE.DLL** on this platform if version 10240 is present. The most recent version can be downloaded here:

<https://www.microsoft.com/en-us/download/details.aspx?id=50410>

These files are Windows Update files, and can be installed by running the .MSU installer for the current operating system (x86/x64) from Windows Explorer. To determine which version of **UCRTBASE.DLL** is installed, start Windows Explorer, navigate to **C:\Windows\System32**, and find **UCRTBASE.DLL**. Right-click and select "*Properties*", then click the "*Details*" tab. If the version is 10.0.10240.1639, then we recommend installing an updated version using the above link. The fix is contained in 10.0.10586.15 or any later version.

RPI 623520 — A problem where the compiler or runtime reported the following error has been fixed. The problem only occurred when the license vault was located on a network share, being accessed from Windows Vista.

```
Error invoking unlicensed RM/COBOL compiler.
Error code = 1 (0x1).
Incorrect function.
```

RPI 626321 — A problem that caused a segmentation fault running the 32-bit RM/COBOL compiler on SUSE 12 SP2 Linux has been fixed.

RPI 627663 — If the compiler terminates abnormally, all of the pending source records might not have been output to the printer or listing file. This has been corrected.

RM/COBOL Runtime

RPI 609527 — A bug that caused **READ PREVIOUS** to return file status "90" instead of "10" on an OPTIONAL relative or indexed file opened INPUT when the file does not exist has been fixed.

RPI 619546 — If you start Windows Explorer and right click on an RM/COBOL source or object file, and then select Properties, the Properties will have tabs that will allow you to change the RM/COBOL configuration. Unfortunately, 64-bit Windows can't support property sheet pages for 32-bit products. Thus the tabs that were installed as part of a 32-bit RM/COBOL runtime and compiler did not function on a 64-bit version of Windows. And, if they were installed after the 64-bit property sheet pages, they would cause the 64-bit property sheet pages to cease to function. The "fix" for this is to not install the property sheet pages for the 32-bit version of RM/COBOL on a 64-bit operating system. However, these properties can still be accessed via the Registry Configuration short-cut on the Start Menu.

RPI 619550 — On Windows, in the RMCONFIG utility, the "Scope" area has been modified to change "All Users" to either "All 32-bit Users" or "All 64-bit Users" depending on whether you are running the 32-bit utility or the 64-bit utility. Also, "This User" has been changed to "This User (32&64)". These changes make it clearer that changing "All Users" settings only affect applications of the same bitness as the RMCONFIG utility you are running, whereas changing "This User" settings affect both 32-bit and 64-bit applications regardless of the bitness of the RMCONFIG utility.

RPI 622565 — The **C\$GETSYSINFO** routine, called by the **SYSINFO** sample program, now returns correct major and minor OS version numbers for AIX, HP-UX, and Linux machines.

RPI 623390 — There is a problem in the initial release of Microsoft's "Universal CRT" (**UCRTBASE.DLL**) version 10240 library that may cause a very occasional hang when the RM/COBOL compiler, runtime, or recover1 is started on Windows Vista and later operating systems. This problem is fixed in updated versions of **UCRTBASE.DLL**. This DLL is serviced by Windows Update, so any up-to-date system will have a fixed version. However, because Windows Vista is no longer serviced by Windows Update, we recommend that customers manually install a more recent version of **UCRTBASE.DLL** on this platform if version 10240 is present. The most recent version can be downloaded here:

<https://www.microsoft.com/en-us/download/details.aspx?id=50410>

These files are Windows Update files, and can be installed by running the .MSU installer for the current operating system (x86/x64) from Windows Explorer. To determine which version of UCRTBASE.DLL is installed, start Windows Explorer, navigate to C:\Windows\System32, and find UCRTBASE.DLL. Right-click and select "Properties", then click the "Details" tab. If the version is 10.0.10240.1639, then we recommend installing an updated version using the above link. The fix is contained in 10.0.10586.15 or any later version.

RPI 623520 — A problem where the compiler or runtime reported the following error has been fixed. The problem only occurred when the license vault was located on a network share, being accessed from Windows Vista.

```
Error invoking unlicensed RM/COBOL runtime.
Error code = 1 (0x1).
Incorrect function.
```


RM/InfoExpress Server

RPI **620010** — When RM/InfoExpress was installed on a non-server machine, it displayed a message which incorrectly stated the minimum version of the Windows Server machines. This message has been corrected.

RPI **625303** — A problem that sometimes caused the RM/InfoExpress Display program to crash trying to display the Files display has been fixed.

WOW Extensions for RM/COBOL

RPI **622656** — A problem with the WOW Designer not being able to read a Panels library involving not finding the cobolrpc.ini file has been fixed.

RPI **1074870** — A problem in WOW has been fixed: if a control that has a tool tip creates a new window, the control might not relinquish the mouse when the new window gains activation. This prevented the new window from being activated until the user clicks on another application and then clicks in the new window. As a side-effect, tool tips will now appear when the user hovers over a control that has a tool tip in either an active or an inactive window, which is the best practice for such tool tips.

RPI **1080041** — In WOW, from a modal window, you can once again use WOWSETPROP to check a radio button in one of the non-modal (i.e. disabled) windows.

Xcentrisity® Business Information Server (BIS)

RPI **625384** — The Xcentrisity Business Information Server (BIS) "Tutorial" samples include a sample database named "officecodes". The tutorials demonstrate how to access this database using various BIS techniques. However, some of the dates in the database records were invalid (i.e. 2001/03/32), which caused exceptions if a validating client was used to issue the SOAP requests. The dates have now been corrected.

RPI **1102351** — XBIS mishandles HTML "names" that contain illegal characters for XML elements. A HTTP POST request to BIS can contain an input field with a name that corresponds to a data name in the COBOL program. This name is converted to an XML Element name in an XML document by the BIS Request Handler. If this input name contains characters or format that makes it an invalid XML Element name, the application did not detect this and the resulting XML document was invalid.

Examples:

The customer has a form that has an <input> object named, "files[]". When submitted, this name becomes an XML element with an illegal name. From www.w3schools.com/xml/xml_elements.asp

XML elements must follow these naming rules:

- Element names are case-sensitive.
- Element names must start with a letter or underscore.
- Element names cannot start with the letters xml (or XML, or Xml, etc)
- Element names can contain letters, digits, hyphens, underscores, and periods.
- Element names cannot contain spaces.

The code now has a routine to validate the name passed in through the POST request.

- Any proposed name that starts with a digit or a form of the string “XML” will be prepended with an underscore (“_”)
- Any character in the string that does not pass the Alpha or Numeric test and is not a hyphen, underscore or period will be replaced by an underscore.

Examples:

Input field name is “xmlData”; converted to “_xmlData”

Input field name is “9fooBar”; converted to “_9fooBar”

Input field name is “pollywog[]”; converted to “pollywog__”

Input field name is “8&#![]”; converted to “_8_____”

RPI **1103382** — The BISMKAPP utility now has an "Enable CodeWatch Debugging" option that, when checked, creates the web application that CodeWatch uses to debug BIS/IIS COBOL programs. BISMKDIR has this option but this utility is superseded by BISMKAPP.

RPI **1107682** — The BIS for Apache installation now properly supports the Ubuntu version of Linux.

Liant v12.13 Supplement

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This document describes, for each component of the Liant product set, the changes made in the 12.13 version of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases, the RPI number is provided for reference.

Liant Installation

RPI 1104347 — Windows 10 SmartScreen filter will no longer block downloading of Liant product self-extracting files. The files are now digitally signed with SHA2 certificates.

RPI 622321 — In the summer of 2015, Microsoft initiated a major change in the way the "C runtime" is packaged with their operating systems. Prior to that date, it was the responsibility of the software vendor to install the desired "C runtime" for their product. To some extent, that is still true, but one important piece, called UCRTBASE, has now been declared to be a part of the operating system, and it is now kept up to date using Windows Update. The one exception to this is Windows XP, which is no longer receiving Windows updates.

For most other Windows operating systems, if the system is being kept up to date with Windows Update, the RM/COBOL and Relativity products should install without incident. However, if UCRTBase is not already installed on a system, the following changes have been made to the RM/COBOL and Relativity 12.13 product releases:

- 1) If the product is being installed on Windows XP, the Liant installations will automatically install a UCRTBASE.
- 2) If the product is Window 7 (not Windows 7 Update 1) or Windows 8 (not Windows 8.1), the Liant products can no longer support these platforms as UCRTBASE is not supported there.
- 3) If the product is installed via Liant Install and there isn't an UCRTBase present on the system, Liant Install will automatically install the UCRTBase for the product.
- 4) If the product is installed using the MSI directly and there isn't an UCRTBase on the system, the installation will fail with a message indicating the problem.

If you have problems installing your RM/COBOL or Relativity product, there is a redistributable directory in your installation media. Within that there are two EXE's that can be used to install the proper C Runtime. Execute `vc_redist.x86.exe` to install the C Runtime on a 32-bit Windows system or execute `vc_redist.x64.exe` to install the C Runtime on a 64-bit Windows system.

Relativity Data Server

RPI 619392 — Fixed SQLDisconnect so that, on UnixWare and Open Server 6 machines, it will not hang when called from the iODBC driver manager.

RPI 619609 — A misleading message in the instructions for manually starting the server has been fixed.

RPI 619610 — When installing a server on a system where a version 12.12 or later server is already installed, fixed an error message that occurs when creating a symbolic link from the `/etc/init.d.reldbsrv` script to the `/etc/rc?.d` directories. This fix restores the previous ability to have multiple Relativity Data Servers installed on the same machine at the same time.

RPI 619611 — The server install script once again prompts for the user under which the server should run, and runs the server with that user ID. This fix restores the previous behavior of allowing the server to run as the selected user rather than just as root.

Relativity Designer

RPI 610692 — When the Relativity Designer displays a dialog to allow a user to browse for a file on the server, the server name and port are now correctly displayed. Previously, it showed "??.?".

RM/COBOL Compiler

RPI 619822 — The RM/COBOL compiler will now detect 32-bit overflow when computing the total program object size. The overflow was not previously detected and the compiler could generate an object program that would cause a crash when run. The documentation of compiler message 344 should revise the last sentence to say the following:

"If the error occurs after the end of the program, the sum of the data defined by the program plus the temporary data generated by the compiler or the total generated object size exceeds the limit. When the total generated object size exceeds the limit, the summary listing line for the total size will say 'Total generated object size: {32-bit overflow!} bytes'".

RPI 620956 — An error in the RM/COBOL compiler code that could cause a rare segmentation fault has been fixed.

RM/COBOL Runtime

Visual Studio Version Upgraded to 2015

RM/COBOL for Windows is built with Microsoft Visual C 2015 (MS VC v14). Prior versions of RM/COBOL were built with Microsoft Visual C 2010 (MS VC v10) and, earlier still, 2005 (MS VC v8). For the most part, this does not affect users of RM/COBOL. An area where this might affect users is when they have user DLLs built with a different version of Microsoft Visual C than the RM/COBOL product they are using. Visual C 2015 uses the C runtime `msvcr140.dll`, since it is version 14, and Visual Studio 2010 uses the C runtime `msvcr100.dll`, since it is version 10. The following issues may exist for your user written DLL:

- (1) The DLL may use a different C runtime than the RM/COBOL Runtime is using. This is generally not a problem except for certain cases where the C runtime has data settings that are not shared between the two different C runtimes. An example of this is the `_fmode` (file mode) variable that tells the C runtime whether files are to be opened as text or binary on Windows. The RM/COBOL runtime sets the file mode to binary while running COBOL programs, but resets the file mode to the Windows default of text when calling a non-COBOL program, as in calling a user DLL, and restores the binary mode after the non-COBOL program returns. When the C

runtime is different in the DLL, then the DLL depends on the Windows default for the file mode. In such cases where the C runtime has a state variable that the user expects to be consistent between RM/COBOL and their user DLL, it might be necessary to rebuild the user DLL with Visual C 2015 before using it with RM/COBOL version 12.13 or later.

- (2) Uninstalling an older version of RM/COBOL and installing a newer version could delete C runtime files from Windows\System32 or Windows\SysWOW64 directories that are considered no longer needed by the installer during the uninstallation. Since user DLLs are not often installed from an MSI that registers the shared DLLs needed by the user DLL, uninstalling the RM/COBOL product may cause the C runtime DLL (for example `msvcr100.dll`) referenced by the user DLL to be deleted during the uninstallation of RM/COBOL. This would happen if RM/COBOL was the only product installed that used the shared DLL for the C runtime. After the deletion, the user DLL would not load because it has an unsatisfied dependency on the older C runtime that is no longer present. This usually presents itself as a “not found” error for the CALL statement in the RM/COBOL program that calls the user DLL; the DLL is actually found but cannot be loaded and the search continues for a DLL that can be successfully loaded; when the search ends without success, the “not found” error is reported. To fix this issue, the older C runtime DLL must be added back manually or the user DLL rebuilt with the same Visual C version used to build the RM/COBOL product. (RM/COBOL installs the Visual C runtime appropriate to its build, which is now the `msvcr140.dll` for MS VC v14 (Microsoft Visual C 2015)).

RPI 622430 — Data reference error 109 was not documented in the list of data reference errors in *Appendix A: Runtime Messages, Data Reference Errors*. Data reference error 109 should be added to that list after data reference error 108 and before data reference error 110 with this description:

- 109 A reference to a subscripted data item has a composite subscript value that exceeds the maximum value possible for the data item referenced. Data reference error 109 only happens for programs compiled with the SUBSCRIPT-CHECKING keyword of the COMPILER-OPTIONS configuration record set to the value YES. See the description of the SUBSCRIPT-CHECKING keyword in *Chapter 10: Configuration, COMPILER-OPTIONS Configuration Record* for additional information regarding data reference error 109.

RM/COBOL 64-bit Windows Runtime System

Native 64-bit WOW extensions library DLLs, **wowrt.dll** and **wowmfcr.dll**, are now available for use with the 64-bit RM/COBOL runtime system. For details, see “WOW Extensions for RM/COBOL” later in this document.

RM/COBOL 64-bit Unix Systems

Beginning with this release, a 64-bit version of RM/COBOL is supported on HP-UX PA-RISC 2.0 systems. This is in addition to the 64-bit versions of RM/COBOL already supported on HP-UX Itanium, Solaris SPARC, AIX, and Linux.

In addition, InstantSQL is now supported on all 64-bit RM/COBOL releases.

RMNet for RM/COBOL

RMNet version 12.13 has been updated to include and use LibCurl version 7.49.1 and OpenSSL version 1.0.2h. Note that OpenSSL 1.0.2h has removed some old vulnerable ciphers and added some new ciphers compared to OpenSSL 1.0.1m used in prior versions of RMNet for RM/COBOL.

RMNet is supported on all 64-bit RM/COBOL releases, as well as on the 32-bit RM/COBOL releases where it has long been supported.

InstantSQL for RM/COBOL

InstantSQL is supported on all 64-bit RM/COBOL releases, as well as on the 32-bit RM/COBOL releases where it has long been supported.

WOW Extensions for RM/COBOL

The WOW extensions library DLLs, **wowrt.dll** and **wowmfcr.dll**, are now available in a 64-bit version. These are described in a separate supplement PDF document titled “*WOW Extensions v12 Release Notes*”. Note that 32-bit ActiveX controls may not be used with 64-bit WOW extensions. If available, 64-bit versions must be obtained from the vendor and compatibility cannot be guaranteed. There are also minor differences in the appearance of the native Windows controls in WOW forms. It is suggested that WOW programs remain as 32-bit programs unless the 4GB process limit is an impediment, or interaction is required between COBOL programs and 64-bit non-COBOL programs.

RPI **621387** — The WOW Designer no longer initially sets the logging level to an invalid value. The Runtime tab can now be closed as expected in the Options dialog.

RPI **609620** — A problem with button-type ActiveX controls that are contained within other buttons and create modal forms has been corrected. Previously the newly created modal form was not being given the mouse focus.

Xcentricity® Business Information Server (BIS)

RPI **622529** — If BIS attempted to run on a webserver without IPv6 support, an empty webpage with an error of ERR_EMPTY_RESPONSE will be returned. Changed BIS's IPv6 support to tolerate IPv4 web servers.

XML Extensions for RM/COBOL

XML Extensions is supported on all 64-bit RM/COBOL releases, as well as on the 32-bit RM/COBOL releases where it has long been supported.

Liant v12.12 Supplement

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RM/COBOL 64-bit Windows Runtime System

Beginning with this release, a native 64-bit Windows version of the RM/COBOL runtime system is available for 64-bit Windows deployments.

The 64-bit runtime system is installed separately from the 32-bit runtime, and will co-exist with the 32-bit runtime and 32-bit development system. All Liant-supplied runtime programs and extensions, like RECOVER1, RMCONFIG, and the XML Extensions, are also available as 64-bit programs but the development tools (RM/COBOL compiler and CodeWatch IDE) are still 32-bit programs, although CodeWatch can now also run 64-bit COBOL programs (see *CodeWatch for Windows*, below). Xcentrity® Business Information Server is currently only available as a 32-bit program.

No special compilation options are required to build 64-bit COBOL programs – compiled .COB files are fully compatible with either 32-bit or 64-bit **runcobol**. However, non-COBOL programs not supplied by Micro Focus (specifically, DLLs) must be rebuilt as 64-bit programs to be loaded by the 64-bit runtime.

Installation Locations

On 64-bit Windows, the 64-bit runtime is installed in “**C:\Program Files\Liant**”, while the 32-bit runtime is installed into “**C:\Program Files (x86)\Liant**”. Shared 64-bit components are installed into “**C:\Program Files\Common Files\Liant Shared**”, while 32-bit shared components are installed into “**C:\Program Files (x86)\Common Files\Liant Shared**”.

If these programs are installed into custom locations, it’s critical that 32-bit components and 64-bit components are separated and not installed in the same directory.

Windows Registry and Properties

The *Windows Registry* section of chapter 3 of the *RM/COBOL User’s Guide, Second Edition* describes *runcobol* properties that may be set by the RMCONFIG utility.

- Properties set for “**This User**” affect both the 32-bit and 64-bit runtime. Either version of RMCONFIG may be used to set these options.
- Properties set for “**All Users**” are different. The Win32 version of RMCONFIG sets properties that only affect Win32 programs. The Win64 version of RMCONFIG sets properties that only affect the Win64 version of the runtime system. This is only a concern if both Win32 and Win64 runtime systems are installed.

When configuring for “**All Users**”, it’s best to use the 32-bit RMCONFIG utility to configure 32-bit runtime systems, and the development system; use the 64-bit RMCONFIG utility only to configure the 64-bit runtime.

Either RMCONFIG utility may be used to configure Windows for “**This User**”.

Note that it is possible to configure programs by selecting “Properties” from the system menu in the runtime window. The above rules apply to that as well. The executing runtime can always configure itself, but only changes made for “This User” will affect the runtime with the opposite “bitness”.

File Associations

Windows can run RM/COBOL programs from the shell – for example, by processing double-clicks on a COBOL program (.COB file) in a Windows Explorer window. Because the Windows shell can only associate file extensions with one program at a time, the last-installed runtime system will be invoked when a .COB file is double-clicked. Please note that we do not recommend applications be launched in this way except on dedicated machines like point-of-sale terminals, as an application from another vendor can take over ownership of .COB files at any time.

Liant Runtime Registration

The Liant runtime system is registered during the installation. However, some customer deployment scenarios do not use the installer and in those cases, manual registration is required. This section only applies to these deployments.

Registration can now be performed only for the current user instead of per-machine basis. This type of registration does not require the user have administrative privileges. “**RUNCOBOL /REGSERVER**” silently registers the runtime only for the current user if per-machine registration fails due to a lack of permissions. However, current user registration could not be forced if the current user is an administrator. This can now be explicitly controlled.

To register the runtime only for the current user, use this Windows system command:

```
regsvr32 /n /i:user path\RMCL12R.DLL
```

Specify **/u /n** to unregister for the current user (this also does not require administrative privileges).

Omit **/n** to register both for the machine and the user. This does require the user have administrative privileges.

Omit **/n /i:user** to register for the machine, and if not possible, then just for the current user. This is also what **RUNCOBOL /REGSERVER** does.

Note that, if both the 32-bit and 64-bit runtime systems are installed, both must be registered independently.

RM/COBOL 64-bit Unix Systems

Beginning with this release, three new platforms are supported by a 64-bit version of RM/COBOL. This is in addition to 64-bit **Linux Intel** which has been supported in many previous releases. The three new platforms are **IBM AIX**, **Sun Solaris SPARC**, and **HP-UX Itanium**. You can determine whether your operating system supports 64-bit applications by running the commands shown below. The command will display **64** if 64-bit applications are supported, otherwise it will display **32**.

```
AIX:          getconf KERNEL_BITMODE
HP-UX:       getconf KERNEL_BITS
Solaris:     isainfo -b
```

The only limitation is that InstantSQL is not currently supported on these three new 64-bit platforms.

Note that the 32-bit version of RM/COBOL is still available and supported on these Unix platforms.

Relativity Data Manager

RPI **582134** — The installation guide has been updated to describe how to run the 32-bit ODBC Administrator on a 64-bit Windows operating system. The 32-bit ODBC Administrator is located at %windir%\SysWOW64\odbcad32.exe.

Relativity Designer

RPI **610205** — A problem in the VB designer has been corrected. In the RST import step, the "Select 01's" dialog allows a subset of the FD and 01-level items to be chosen. These settings are remembered for each item; however, an attempt to re-examine the values caused a runtime error. This has been corrected and the values may now be adjusted more than once, if so desired.

RM/COBOL Compiler

RPI **615505** — The RM/COBOL compiler will now display the full pathname of the file in the 'Open error for file "xxx".' message (xxx is replaced with the full pathname of the file that could not be opened).

RPI **1099924** — The RM/COBOL compiler ignores reference modification when setting the length field of a pointer data item from a referenced modified variable in a SET statement. This is by design. The length field was intended as a way to prevent overrunning the memory that a pointer refers to and is not a general solution to managing lengths.

RM/COBOL Runtime

RPI **609192** — A possible crash while accessing RM/COBOL properties has been fixed. A Windows registry key was sometimes being closed twice.

RPI **617399** — The compiler (rmlibcmp.dll), runtime (rmlibrun.dll), and BIS service engine (xbisse.dll) DLLs in previous releases were excluded from being digitally signed. This has been fixed and all released executables on Windows are digitally signed with a Micro Focus certificate.

RPI **1099943** — A problem with print dialog settings not being maintained when accessing a dynamic printer has been fixed. After being initially set, printer properties such as orientation, number of copies, and other such properties are now doubled-checked and re-set to the desired values if necessary.

RPI 1103326 — The **C\$OSLockInfo** subprogram has been modified to return a value of zero if the process id value will not fit in the number of digits defined by the COBOL data item. In Appendix F of the RM/COBOL User’s Guide in the section for **C\$OSLockInfo** the *processid* argument is described as “a four-byte, unsigned COMP-4 numeric item”. We recommend that *processid* be defined as **PIC 9 (10) BINARY (4)**. That will be a four-byte (32-bit) numeric item of ten decimal digits. We further recommend that the COBOL program test for a returned value of zero to indicate that a valid process id could not be returned, probably because the COBOL data item has too few digits to contain the value. Note that prior versions of RM/COBOL would store only the low-order digits of the process id if it did not fit in the item, for example, an item described as **PIC 9 (4)** would contain the value 2345 when the actual process id was 12345. The COBOL program would then be referring to the wrong process, a bad situation. Beginning with version 12.12 the value zero will be stored in the case where the item has too few digits to contain the entire process id.

RMSETNCS Utility on Windows

The Windows version of RM/COBOL has a utility named `rmsetncs.exe` for setting the native character set of the compiler and runtime to ANSI or OEM, setting whether a GUI or Console compiler should be used by default and the CodeWatch INI file in the Windows directory. With the advent of User Access Control (UAC) in Windows Vista and later, it should be noted that this utility modifies files in the protected Windows directory and in the installation directory, which is normally a protected directory such as “Program Files” or “Program Files (x86)”. Thus, the utility must be run as administrator with highest privileges when UAC is on (the default state). The utility modifies the `runcobol.exe` file in the same directory as the utility itself. The 64-bit and 32-bit runtimes can be modified separately and need not have the same default character set, but if both exist on a system they should have the same default character set for consistency.

InstantSQL for RM/COBOL

RPI 1101636 — A problem with an incorrect error code being reported when inserting a duplicate key using 64-bit InstantSQL on Linux has been fixed. In InstantSQL, SQL DESCRIBE ERROR has been changed to return the correct error codes on 64-bit machines. When a valid ODBC error used InstantSQL, rather than returning the correct error, SQL DESCRIBE ERROR would instead return 2301, which is an internal error.

WOW Extensions for RM/COBOL

RPI 1098617 — A problem with the Properties Edit Dialog in the WOW Designer has been fixed. Newer Microsoft compilers defaulted to Vista style file dialog boxes which prevented custom templates from working correctly. The use of custom templates has now been corrected.

Xcentricity® Business Information Server (BIS)

IPv6 is now supported in BIS for UNIX.

RPI 615660 — In BIS for UNIX, the tag `{{Value(HTTP_URL, GETQUERYSTRING)}}` now works the same as it does on Windows. The `HTTP_URL VALUE` now returns the query string and `GETQUERYSTRING` now returns the leading ?.

XML Extensions for RM/COBOL

XML Extensions has been fixed so that a second reference to an undefined stylesheet or schema file name will not crash. Previously, the first failed load of the stylesheet or schema document was cached even though the load was unsuccessful. A subsequent reference to the same file name tried to use the NULL document pointer stored in the cache and a crash would happen. A failed load now removes the failed document file name from the cache.

XML Extensions has been improved to include more information with errors when the XML GET STATUS-TEXT is used after the error happens. Information about the element name and content, model data name, document name and so forth is provided in the status text provided on separate lines. The operation in which the error happened, such as export, import or transform is also provided. This additional information will likely reduce the need to turn on tracing (with the XML TRACE statement) to determine where a problem happened in a program that uses XML Extensions.

XML Extensions has a new runtime error code for when the trace file name specified in the XML TRACE statement cannot be opened. This resolves an issue where XML Extensions would crash if the trace file could not be opened.

73 Error - trace file open failed

The trace file name specified in an XML TRACE statement could not be opened. The most common cause of this error is that a directory name that does not exist is specified as part of the file name. Other errors that could cause this are access denied (because the file is read-only or the user does not have permissions to the file) or the program does not have permission to write to the directory specified. The program can continue, but tracing will be disabled. This error is only returned when the XML TRACE statement opens the trace file for the first time. Subsequent trace file open failures while the program is running other XML Extensions statements cause tracing to be suppressed.

CodeWatch for Windows

CodeWatch has been enhanced to support the debugging of an RM/COBOL program with the 64-bit runtime system on Windows.

- There is now a “64-Bit” checkbox next to the “Program to Run” field in the Workspace Wizard and the Workspace Properties “Program” page:

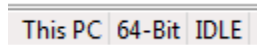


This checkbox is only available if both the 32-bit and 64-bit RM/COBOL runtime system are installed. The selection may be changed at any time and takes effect the next time the runtime system is launched.

If only one system is installed, the 64-Bit checkbox is disabled but is checked if only the 64-bit runtime is present, and not checked if only the 32-bit runtime is present.

If both runtime systems are available, you may choose which will be used for debugging by checking or unchecking the box. The most recent selection is saved in the workspace file. If that workspace file is moved to another system with only one runtime, the saved option is ignored and the installed runtime system will be used.

- There is an indicator on the status bar that indicates the selected runtime system: **32-Bit** or **64-Bit**:



(Note that “My Computer” now says “This PC” for non-BIS debugging.)

Additional Notes:

- If a 64-bit runtime is selected, it is run as a separate process by CodeWatch – specifically, in the DLLHOST.EXE surrogate host process. Note that the 32-bit runtime is executed in-process as before.

Because of the different execution environment, there may be some minor differences in the way that 64-bit COBOL programs function under CodeWatch. One example: runtime-created Windows can appear behind the CodeWatch window. In some cases, it's possible that the program may have displayed a message box or may be waiting for an ACCEPT and that will cause CodeWatch to appear suspended. If, while debugging, you don't see the runtime window, please move the CodeWatch window or use Alt-Tab or the task bar to bring the runtime window to the front. Note that running CodeWatch on a second monitor avoids this situation completely and is highly recommended.

- When running on Windows 8 and later, 64-bit programs being debugged will be loaded into memory using large base addresses (that is, the program and data will reside above the 4GB line and have a base address that cannot be stored in 32-bits). If your program calls 3rd-party non-COBOL 64-bit programs, these will also be loaded at large base addresses.

Because some 64-bit non-COBOL programs are converted 32-bit programs and may still store pointers in 32-bit integers, such 64-bit programs will not tolerate being loaded into the upper reaches of memory. This may cause them to fail when running under CodeWatch, but may run normally or fail intermittently when not running under CodeWatch. To debug such a 3rd-party program, start CodeWatch, run to the point where the 3rd-party program is loaded, and then attach Visual Studio to the DLLHOST.EXE process (not the CodeWatch RMCW.EXE process) and set breakpoints in the code.

Liant v12.11 Supplement

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Liant Installation

On Windows, the Start Menu items installed by Micro Focus Liant products are no longer installed under a single top level Start Menu item named "Liant". There are now up to six top level Start Menu items starting with the word "Liant" and incorporating the product name from the second level menu from previous releases:

"Liant BIS v12"

"Liant Relativity v12"

"Liant RMCOBOL v12"

"Liant RMInfoExpress v12"

"Liant WOW Designer v12"

"Liant WOW Thin Client v12".

Relativity Data Server

RPI **1097632** – A problem was corrected with starting the Data Server service when there is a "C:\Program" file on the machine. The Data Server now tolerates the existence of the "C:\Program" file when it is started. (Note that Windows recommends against having the "C:\Program" file on a machine and prompts the user to rename it to "C:\Program1" when Windows is started.)

Relativity Data Client

UNIX Driver Manager installation removed

The binaries and installation of the unixODBC and iODBC Driver Managers is no longer available on the Relativity installation media. Relativity now requires a pre-installed Driver Manager, either unixODBC or iODBC. The Data Client installation will ask for the directory name where the Driver Manager has been installed.

RM/COBOL Compiler

RPI **1099805** — A compiler issue with numeric temporary data items created by the compiler in nested programs was corrected. The error could cause an incorrect data overflow termination of the compiler and might have caused incorrect re-use of numeric temporaries in the nested program.

RM/COBOL Runtime

RPI **1099261** — A file manager issue causing long running programs to occasionally report 98,27 errors on indexed files was corrected.

A new field has been added to the RMInformation group returned by the **C\$GetRMInfo** routine. The new field is named RM-Bitness and is defined in the **rminfo.cpy** file supplied with RM/COBOL. The value is either 32 or 64 and specifies the bitness of the runcobol executable running the COBOL program. The RMINFO utility program supplied with RM/COBOL has been updated to report the RM-Bitness field. The following is an excerpt from rminfo.cpy showing the new RM-Bitness definition:

```

02  RM-BISValue                Picture X.
    88  RM-BISIsPresent        Value 'Y'
                                     When False 'N'.
02  RM-ThinClientValue        Picture X.
    88  RM-ThinClientIsPresent Value 'Y'
                                     When False 'N'.
02  RM-Bitness                 Picture 999 Binary(1) .
    88  RM-COBOL-32-BIT        Value 32.
    88  RM-COBOL-64-BIT        Value 64.
02  RM-Reserved                Picture X(18) .
02  RM-LicenseProduct          Picture X(80) .
02  RM-LicenseIssuedBy         Picture X(80) .
02  RM-LicenseIssuedTo        Picture X(80) .
02  RM-LicenseType             Picture X(20) .
02  RM-LicenseValidThru       Picture X(20) .

```

RMNet

RMNet v12.11 uses libcurl version 7.42.1 and OpenSSL version 1.0.1m. RMNet v12.11 includes a new function, **HttpSetSSLVersion**, which sets CURLOPT_SSLVERSION that specifies the TLS or SSL security protocol version. See **rmnet.pdf** for complete details.

RPI **1098827** – RMNet will no longer report "SSL Connect Error" on some websites on SCO Open Server 6. The issue was that in previous versions not all allowed ciphers were supported on SCO Open Server 6, librmnet.so now supports the same set of ciphers as other Unix platforms and Windows.

RPI **1099015** – RMNet includes a new function, **HttpSetSSLVersion**, which allows the SSL version to be set, for example, to SSLv3. Some older servers do not correctly handle TLS negotiation and cause a

failed connection. Calling `HttpSetSSLVersion` to set SSLv3 before calling `HttpPost` will cause the connection to use SSLv3 rather than any TLS version and will allow the connection to succeed.

Xcentricity® Business Information Server (BIS)

Previous versions of BIS required that, for IIS 7 and later, “IIS 6 Metabase Compatibility” be enabled when IIS is installed. This is because the installer and the **BISMkDir** program used the *Active Directory Services Interface (ADSI)* to configure IIS and create virtual directories.

Starting with v12.11, BIS includes a new program called **BISMkApp**, which natively creates IIS applications without using ADSI. This means that “IIS 6 Metabase Compatibility” is no longer required and corrects other problems that were caused by the IIS 6 metabase translation layer, such as the IIS configuration files becoming larger with each installation or configuration.

Both **BISMkApp** and **BISMkDir** are installed with BIS, provide similar functionality, and either may be used if IIS 6 metabase compatibility is installed on IIS 7 and later. However, **BISMkDir** is deprecated and will be removed in a future release.

Note that IIS 7 was introduced with Windows Vista and Windows Server 2008.

RPI 601316 – BIS for UNIX now works properly when it is installed in a version of Apache that uses a multithreaded MPM. The Apache “child” processes run a Multi-Processing Module (MPM) which is normally selected when the copy of Apache is built. In Apache 2.0 and 2.2, the default MPM was always **prefork**, which processes a single request at a time in each MPM process. In Apache 2.4, the default MPM is either **worker** or **event**, depending on the capability of the operating system. Both of these use threads to increase performance. Prior versions of BIS required the **prefork** MPM. This requirement is now eliminated.

RPI 609456 – In BIS for UNIX, a change has been made in how BIS processes “sequenced” requests -- that is, requests for pages that use “`{{FormActionTarget}}`” as a target, along with the automatically-generated “`_xmlexch=abcd`” query parameter in the URL.

Starting with version 12.11, if a request that includes a non-empty `_xmlexch` query parameter is issued for a page that results in the creation of a new session (either because the current session has expired, or no session ever existed), then service is denied with an error code of 500 (“Internal Server Error”).

This change addresses a problem encountered by users of BIS Express: there may be workstations that send refresh requests in the background every minute to keep sessions open. However, if the server is reset, those refresh requests (which include the last known sequence) will create new sessions and start programs that are not in a state where processing can resume, wasting server resources. Those sessions then persist until they time out, but some unattended clients create such new sessions every minute, potentially swamping the server. With this change, such sessions are not created and the refresh requests for defunct sessions from unattended machines are effectively ignored. This change modifies behavior in an error case should not impact normal use of XBIS.

There is not a configuration option to cause BIS to revert to the previous behavior.

XML Extensions for RM/COBOL

RPI **611430** – XML Extensions run time errors 68 to 71 were added in v12.06 as part of eliminating temporary files during export operations, but were not documented. Here is the documentation for those errors:

68 Error in function: AddAttribute.

An attribute node could not be added during export of a document. Attributes are only added by XML Extensions when the XML ENABLE ATTRIBUTES statement has been executed. This error will not normally happen. One cause could be that the XML engine did not have enough memory to add the attribute node to the document.

69 Error in function: AddElement.

An element node could not be added during export of a document. This error will not normally happen. One cause could be that the XML engine did not have enough memory to add the element node to the document.

70 Error in function: AddText.

A text node could not be added during export of a document. This error will not normally happen. One cause could be that the XML engine did not have enough memory to add the text node to the document. The error can also happen if incorrect parameters are passed to the XML EXPORT FILE or XML EXPORT TEXT statement.

71 Error in function: ValidateDOMDocument.

An attempt to validate a document failed. This normally means that the document is not valid, but could also mean the supplied schema is not a valid schema or there was not enough memory to validate the document. Additional error lines are produced to indicate why the validation failed.

Liant v12.10 Supplement

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This document describes, for each component of the Liant product set, the changes made in the 12.10 version of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases the RPI number is provided for reference.

CodeWatch for RM/COBOL

RPI **602896** – A problem that displayed an error message box when attempting to save a workspace file has been fixed.

RPI **603544** – If CodeWatch was launched with a relative path to the Workspace (.CWF) file from the working directory, that path was being interpreted relative to the directory that contained the workspace file instead of the working directory. This prevented CodeWatch from starting properly and the problem has been corrected.

RPI **603951** – In previous versions, if compilation failed with an initialization error (for example, if an invalid listing or object directory is specified), CodeWatch reported a "[-1] Internal Error". Now, a "250 Initialization Error" is reported, and a descriptive message like "Cannot open object file" appears in the output window.

RPI **604388** – A problem in CodeWatch was resolved: if you directly edit the command line in the workspace properties, the "base directory" was reset to execution directory, and if that directory was relative to the base directory, it was incorrectly being expanded. Starting with this version, editing the command line does not affect the execution or base directory.

RPI **607264** – A problem with directory browsing and selection on Windows Vista and later has been fixed. In 12.09, a file selection instead of a directory selection dialog would sometimes appear, although you could always manually type in the name of the folder.

RPI **609288** – If the CodeWatch main window or the workspace was closed while a debugging session was active, an error was reported and the COBOL program was not being allowed to terminate. This has been corrected and CodeWatch will now shut down properly.

RPI **609679** – A problem with CodeWatch hanging when terminated more than once with a persistent runtime window open has been fixed.

RPI **1094427** – A problem that corrupted the "current working directory" in CodeWatch workspace files when the workspace properties were examined or changed has been fixed. This also includes fixes to the dropdown in the property sheet. If the "Working Directory" field is left blank, the directory that contains the workspace .CWF file will be used as the working directory. A path relative to the .CWF file may also be entered, or an absolute path may be entered; in the latter case, CodeWatch will attempt to

store the path relative to the .CWF file, if possible, to make the file as portable as possible.

Recover1

New Command Line Option P On Windows

The Windows recover1 utility has a new command line option, P, which may be used to specify the Persistent property. The Persistent property controls whether the recover1 window persists after the utility terminates (see page 84 in Chapter 3 of the RM/COBOL User's Guide Second Edition for a full description of the Persistent property). Unlike the new runtime P option which allows a value of Y or N the recover1 P option allows no value; it is used only to turn Persistent on. The recover1 Q option may be specified to suppress all output. It is usually very important to view the results displayed on the final recover1 screen. Specifying the P option on the recover1 command line may be more convenient than always setting Persistent to True in the Windows Registry via the Properties dialog box.

Relativity Data Client

RPI **1093632** – The SQLGetFunctions API call with a FunctionId of SQL_API_SQLFOREIGNKEYS, now returns the proper value of FALSE. Previously, SQL_API_SQLFOREIGNKEYS returned TRUE and SQLForeignKeys always returned Driver not capable. However, this behavior confused some ODBC applications. It is better to say that Relativity doesn't support SQLForeignKeys, which it doesn't.

UNIX Driver Manager sources removed

The source for the unixODBC and iODBC Driver Managers is no longer available on the Relativity installation media. The modified source for the unixODBC Driver Manager is available on the Internet in the location documented in the file License_Notice_File.txt on your installation media. The modified source of the iODBC Driver Manager is no longer available from Micro Focus.

Relativity Data Manager

RPI **609158** – There is no longer a problem retrieving a number into a SQL_C_NUMERIC when the SELECT contains an ORDER BY or GROUP BY.

RPI **609159** – The SQLColAttribute function in Relativity now returns correct information for each attribute; it no longer returns errors for some attributes.

RPI **1095556** – The Relativity Data Manager installation would terminate with error 1603 in load data source if a system had both user and system Relativity data sources created on it from a previous installation of Relativity. The Relativity Data Manager installation was changed to tolerate this situation.

RPI **1098139** – Changed the Relativity Data Source setup utility to be able to use Fileshare catalogs again. Also fixed using RM/InfoExpress catalogs.

Relativity Data Server

RPI **601967** – The names of the exported symbols in the partially-linked Relativity Data Server for AIX have been corrected.

RPI **107772** – Changed the Relativity Data Source setup utility to be able to use RM/InfoExpress catalogs again.

RPI **1096117** – The problem importing file definitions from a .COB file in the Relativity Designer has been fixed in the Relativity Data Server.

Relativity Designer

RPI **1075713** – The initial dialog no longer shows the Liant logo and a link to www.liant.com.

RM/COBOL Compiler

RPI **608784** — Fixed a compiler issue with an incorrect compilation error 0171 for an ORGANIZATION clause that specified LINE or BINARY following a RECORD DELIMITER clause that specified a corresponding LINE-SEQUENTIAL or BINARY-SEQUENTIAL record delimiting technique. The order of the clauses should not have caused the error when the two clauses agree. The error was not generated if the ORGANIZATION clause preceded the RECORD DELIMITER clause. The RECORD DELIMITER clause produces an error and is ignored when it disagrees with the ORGANIZATION clause.

RPI **1096042** — RM/COBOL Windows EXE files no longer have the "Terminal Server Aware" flag set in their image header. This should allow them to work better in a Terminal Services environment. This change has no effect on non-terminal-services environments.

RM/COBOL Runtime

RPI **1098295** – Fixed a 98,27 error that occurs when a file has been modified a very large number of times.

New command line option P on Windows

The Windows runtime has a new command line option, P, which may be used to specify the Persistent property. The Persistent property controls whether the runtime window persists after the COBOL program terminates (see page 84 in Chapter 3 of the RM/COBOL User's Guide Second Edition for a full description of the Persistent property). The P option may be specified as P=Y to turn Persistent on or as P=N to turn Persistent off. Specifying just the option letter P without a value is equivalent to specifying P=Y. Specifying the P option on the runtime command line is equivalent to calling C\$GUICFG to set the Persistent property at the beginning of your COBOL program (see page 589 in Appendix F of the RM/COBOL User's Guide Second Edition for information about the C\$GUICFG subprogram). Thus, the P command line option value overrides the Persistent property value stored in the registry but only for the current invocation of the runtime. If your COBOL program calls C\$GUICFG to set the Persistent property

then that value will be used when the program terminates. For the Unix runtime the P option continues to be invalid (see page 202 in Chapter 7 of the RM/COBOL User's Guide Second Edition for a table of runtime command line options).

RMNet

RMNet v12.10 for Windows requires normaliz.dll

RMNet v12.10 uses Libcurl version 7.38.0 and OpenSSL version 1.0.1i (see RPI 1091213 below). Libcurl 7.38.0 for Windows requires DLL **normaliz.dll**. This DLL is part of Windows but may not be installed with a fresh install of Windows XP. If **runcobol** fails to load **rmnet.dll** then check your Windows system32 directory (normally C:\Windows\System32) to see whether **normaliz.dll** is missing. If it is missing then run Windows Update and ensure that you have SP3 (service pack 3) and all of its updates. Another way to install **normaliz.dll** is to upgrade Internet Explorer to version 8 or higher.

RPI **1091213** – RMNet will no longer report "SSL Connect Error" on some websites. This was an issue in the OpenSSL used by RMNet. RMNet for RM/COBOL v12.10 now uses OpenSSL version 1.0.1i. It also uses Libcurl version 7.38.0.

RPI **1097466** – Three new functions have been added to RMNet in version 12.10: `HttpSetUsername`, `HttpSetPassword`, and `HttpSetLoginOptions`. These are used to set `CURLOPT_USERNAME`, `CURLOPT_PASSWORD`, and `CURLOPT_LOGIN_OPTIONS` respectively. See `rmnet.pdf` supplied with RM/COBOL and online libcurl documentation for further details.

RM/InfoExpress

RPI **605280** – In prior releases the Unix Infox server read the `rmixsrvr.ini` configuration file only in the current directory. The Infox server, `rmservertcp`, and the `rmixsrvr.ini` file are normally installed together in the `/usr/rminfox` directory. If the Infox server was then started from another directory by entering the command `/usr/rminfox/rmservertcp` then the user would be unaware that the installed `rmixsrvr.ini` was not read and thus the server was running with its default configuration. Beginning in this release, when the Infox server is started it first attempts to read `rmixsrvr.ini` in the current directory. If `rmixsrvr.ini` does not exist in the current directory then it reads `rmixsrvr.ini` in the same directory from which `rmservertcp` was executed, normally the installation directory. This allows easier automatic Infox server startup at boot time and should reduce confusion if the Infox server is started manually.

Xcentricity® Business Information Server (BIS)

RPI **596213** – Starting with this release, invalid or malformed XML requests no longer pass to the service engine. Instead, an informative SOAP fault generates. Note that such rejected requests are not traced, so invalid SOAP cannot be used to deny service (the rejection of invalid XML is very fast).

RPI **601298** – BIS installation on Unix now displays an invalid input message and waits for the user to try again when asking most questions. It also always sets Apache's envvars before running the httpd executable to determine the Apache version and prefork status and then displays better messages when skipping Apaches that cannot be used with BIS.

RPI **601315** – BIS installation now correctly installs its startup script in /sbin/init.d and /sbin/rc*.d on HP-UX systems.

RPI **601422** – A problem that could cause XML responses that contain multi-byte character sequences has been fixed. Beginning with this version, XML content is converted from the host machine's OEM or ANSI character set into UTF-8 (which can represent all characters) and is preserved until the payload is delivered to the user agent. Previously, some multi-byte character sequences could have been altered during output processing.

RPI **601437** – The BIS User's Guide now shows the correct command to stop BIS on AIX:

```
stopsrc -g xbis
```

RPI **601468** – Starting with version 12.10, the command line specified in the `{{StartService}}` tag may be prefaced with either /CS_ANSI or /CS_OEM, separated from the main program name by either spaces or a comma. For more information on these options, see "RM/COBOL for ANSI Codepage on Windows" in the RM/COBOL User's Guide. If neither option is specified, the default is /CS_OEM, which results in unchanged behavior.

RPI **607664** – A problem with the HTTP result code returned with SOAP faults has been addressed. Previously, SOAP faults were returned with a result code of 200 (OK). The standard, however, requires that SOAP faults set the HTTP result code to 500 ("Server Error").

Starting with version 12.10, SOAP faults that are generated by BIS will set the result code to 500. If this new behavior is undesirable, set the following registry entry like this:

```
Windows Registry Editor Version 5.00
[HKEY_LOCAL_MACHINE\SOFTWARE\Liant Software Corporation\BIS\Options]
"SoapFaultResultCode"=dword:000000C8
```

(C8 is 200 in hexadecimal). This should not be required, but is available as an option.

RPI **1095576** – In BIS for IIS, a change has been made in how BIS processes "sequenced" requests -- that is, requests for pages that use `"{{FormActionTarget}}"` as a target, along with the automatically-generated `"__xmlexch=abcd"` query parameter in the URL.

Starting with version 12.10, if a request that includes a non-empty `__xmlexch` query parameter is issued for a page that results in the creation of a new session (either because the current session has expired, or no session ever existed), then service is denied with an error code of 500,10 ("Server Error" with a subcode of "Unexpected").

This change addresses a problem encountered by users of BIS Express: there may be workstations that send refresh requests in the background every minute to keep sessions open. However, if the server is reset, those refresh requests (which include the last known sequence) will create new sessions and start programs that are not in a state where processing can resume, wasting server resources. Those sessions then persist until they time out, but some unattended clients create such new sessions every minute, potentially swamping the server. With this change, such sessions are not created and the refresh requests for defunct sessions from unattended machines are effectively ignored. This change modifies behavior in an error case should not impact normal use of XBIS. However, an option can be set in the registry to cause XBIS to use the previous behavior.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Liant Software Corporation\BIS\Options]
"CreateNewSequencedSessions"=dword:00000001
```

If this registry value is omitted or set to any value other than 1, then the new behavior is in effect.

RPI 1095854 – BIS stylesheets have been updated to use <xsl:stylesheet> instead of <xsl:transform>.

RPI 1095855 – BIS stylesheets no longer refer to the <root> element. For example, raw_payload.xsl now refers to a parameter named Document_Element which has a default value of 'root'.

RPI 1098067 – A problem with the B\$SetInactivityTimeout and B\$SetServiceTimeout calls that was introduced in version 12.09 has been corrected and these functions work properly again.

XML Extensions for RM/COBOL

RPI **604118** – Error 12 improvements. Replace the complete description of error 12 with the following:

The model data-name specified for an import or export (xmlif library) or for the data-name parameter (slicexsy utility) was not found in any symbol table available to the search. When searching a model template file symbol table, the model data-name was not defined in the symbol table contained by the template file. When searching object files, the object files either did not contain an XML Extensions symbol table or the model data-name was not defined in any of the symbol tables found in the object files searched. Note that object files might not contain an XML Extensions symbol table because they were either suppressed when the object files were created or the compiler used to create the object files was not licensed for XML Extensions development. The compiler produces the “Options in effect” listing line “XML compiler (licensed for use with XML Extensions)” when the compiler is licensed for XML Extensions development; if this line is missing from the “Options in effect”, the object files produced by the compiler do not contain XML Extensions symbol tables. When searching object files for a symbol table, the xmlif library counts the number of unlicensed objects that are examined and if this count is greater than zero and the model data-name was not found, an additional status text line similar to the following:

[12] 1 of 1 object files not licensed for XML Extensions

is produced to aid in diagnosing this issue; the “[12]” associates this status text line with the previously reported error 12; the “*n of m*” indicates the number (*n*) of object files examined and the number (*m*) of object files not licensed for XML Extensions development. (See the XML GET STATUS-TEXT statement description for how to get additional status text.)

RPI **607575** – The description of whitespace handling in XML Extensions was not complete. Add the following explanation to the topic “Handling Spaces and Whitespace in XML”:

XML defines whitespace as space, line feed, carriage return and tab characters. XML Extensions has various rules for handling of the individual whitespace characters:

- Space characters are preserved by XML Extensions during import and export, except for leading and trailing spaces as described in the first paragraph of this topic.
- During import all characters received from the parser for XML text nodes for import are preserved. (Note: From about 2009 to 2014, characters less than space, which include line feed, carriage return and tab characters, were unconditionally removed on import when using revision 2.0 model template files; model templates obtained from the object file are considered revision 2.0. Revision 1.0 model template files from version 11 of XML Extensions resulted in the import of all characters received from the parser.) Version 12.10 of XML Extensions provides additional control of how whitespace characters are handled for import; see RPI 1098192 in this document for additional information on this option.

- During export, line feed, carriage return and tab characters present in the exported COBOL data item are preserved in the exported text node. Export to a file may cause LF characters to be translated to a CR/LF sequence on some operating systems (for example, Windows).

The value, “preserve” or “collapse” of the XML reserved attribute XML-space is ignored by XML Extensions unless the parser acts on this attribute.

RPI **1085397** – Error 11: Replace the complete description of error 11 (eliminating the note about error 11 being valid only for versions of XML Extensions prior to version 12) with the following:

The data-name specified for an export (xmlif library) or for the data-name parameter (slicexsy utility) was found more than once in the COBOL object file or library. Additional qualification needs to be provided to unambiguously identify the data-name in the symbol table that is to be exported or sliced.

RPI **1095851** – Fixed a problem where XML Extensions could import data into an area outside the target data area provided. This was likely caused by duplicate names in the symbol table obtained for the program, either from the object file or a supplied model template file combined with insufficient qualification supplied by the imported XML document. Another likely cause was an out-of-date template file that needs to be regenerated with the xmlslice utility using the current revision of the COBOL program. Because of this issue, new warnings were added to alert the user to ambiguous import names and ambiguous model data names. Attempts to store outside the target data area, should they occur, are prevented and an error produced to alert the user.

While fixing this RPI, it was found that the lixmldef.cpy copybook was out-of-date in version 12.09. An updated copybook is supplied with version 12.10. More recent error and warning information, in addition to the new errors and warnings added in the fix for this RPI, are defined in the updated copybook. If the lixmldef.cpy copybook has been deployed to different locations than the installation directory, users are advised to update those copies from the 12.10 installation.

The new errors and warnings documentation, as an addition to Table 1, Summary of Error Messages, Appendix C: XML Extensions Error Messages, is as follows:

-06 Warning -- ambiguous import name.

An element name in an imported XML document is defined more than once in the symbol table determined by the *ModelFileName#DataFileName* parameter of the XML IMPORT statement. Further, the element name is defined more than once subordinate to the model data name. XML Extensions assumes the first of the duplicates found, which is the lexically last defined duplicate, should be used and continues. If that name already has an imported value for the current import, the next duplicate is assumed, that is, a lexically previous duplicate definition. If there is no duplicate name without a previously imported value, a -02 extraneous element warning is produced and the imported text value is discarded.

This warning is not produced if the XML document does not have any text content, after ignoring whitespace, for the element. This warning is also not produced if the XML document contains sufficient qualification, that is, parent element names, to make the reference unique. When a duplicate name is not subordinate to the model data name, this warning is not produced unless all duplicate names are not subordinate to the model data name.

-05 Warning -- ambiguous import target name (model dataname).

The model data name determined by the *ModelFileName#DataFileName* parameter of the XML IMPORT statement is defined more than once in the symbol table determined by that parameter (either in the object program or from a model template file). Additional qualification is necessary to uniquely define the model data name, which is the description of the target data structure for the import. (Note that in the case of nested programs, the program name can be used as a qualifier and might be necessary to differentiate duplicate data-names defined in different programs.)

72 Error -- import offset outside target data structure.

An attempt to store outside the target data structure determined by the *DataItem* parameter of the XML IMPORT statement has been detected. This can happen because of a model template file that is out-of-date with the executing COBOL program; in this case, the model template file needs to be regenerated from the revised COBOL program. Another cause can be duplicate data names in the symbol table and insufficient qualification (parent elements) in the imported XML document to choose the correct data item target for the import. The attempted import is suppressed along with any further import operations for the affected XML IMPORT statement.

Additional text messages produced for warnings and errors have been improved to include the warning or error number that is associated with the additional text. This is helpful when an error terminates the XML Extensions statement, but there are clarifying warnings. For example, an error 72 might terminate an XML IMPORT and there might also be ambiguous name warnings -06 as follows:

```
Error: 72[0] - import offset outside target data structure
[72] Called from line 823 in TestProgram(C:\tests\xml\code\TESTPROGRAM.COB), compiled
2014/11/07 11:27:36.
[-06] Ambiguous import name: ambiguous-data-name Content: N
[72] Element name: ambiguous-data-name Content: N
```

In the example above, a 72 error terminated an XML IMPORT FILE statement; the -06 warning may have been the cause. Note that the additional text frequently provides both the element name and its text content to help resolve the error by reviewing the imported XML document against the provided information.

RPI 1095853 – There was insufficient documentation of how a form or “flat” XML document was imported. Form input can be generated using the form_to_cobol.xsl stylesheet provided with Xcentristy Business Information Server (XBIS) in the samples/common directory. A form document is usually just a list of field-names (element names in the XML document) subordinate to a document element, with no other nesting of element names. The default document element is normally ‘root’, but in 12.10 XBIS, the form_post_to_cobol.xsl stylesheet has a parameter that can be set by the COBOL program to another desired value for the document element name; this document element name usually is the same as the model data name declared in the COBOL program for use as the target data item for the import. A simple example of a form or “flat” XML document with ‘root’ as the document element name follows:

```
<root>
  <field-name-01>Field 01 content</field-name-01>
  <field-name-02>Field 02 content</field-name-02>
</root>
```

Prior to 12.10, XML Extensions failed to validate that the element name in the input XML was subordinate to the model data name when the document element name was 'root'. The 'root' element as the document element was treated as the assumed parent of the field-names, even when the model data name was some other name. The name matching terminated when the 'root' parent element was found and exited without verifying that the field-name was subordinate to the model data name. This was correct only when there were not duplicate names in the COBOL program. When there were two different target areas each having definitions of the same names in the program, XML Extensions could choose the wrong name that wasn't in the target data name for a specific XML IMPORT statement. XML Extensions always chose the lexically last declaration of a duplicate name, which might not be in the target area for the import. In version 12.10, this has been fixed so that even when terminating on the 'root' parent element, XML Extensions verifies that the field-name is defined subordinate to the model data name specified in the XML IMPORT statement. If there are two or more duplicate names subordinate to the model data name, the "-06 Warning -- ambiguous import name" will be produced unless there is no text content, other than whitespace, for the element being imported. Duplicate names subordinate to the model data name should be avoided when using XML Extensions to import data from form or "flat" XML documents.

RPI **1098192** – As noted for RPI 607575 in this document, line feed, carriage return and tab characters were not imported when using revision 2.0 model template files or the XML Symbol table in the object file during import. Version 12.10 of XML Extensions preserves such characters when received from the parser for import. Please note that XML parsers that follow the W3C Recommendation for Extensible Markup Language (XML) translate the two-character sequence CR/LF and any CR that is not followed by a LF to a single LF character. Thus, CR characters are not normally present in imported content. During export to a file, any LF character may be translated to a CR/LF sequence depending on the operating system convention where the parser is running (for example, on Windows).

Because of this change in behavior, additional flag settings have been added to provide compatibility with prior behavior in the unlikely event that the change does cause a customer problem. The flags also provide new whitespace handling capabilities. The flags can be set with the XML SET WHITESPACE-FLAGS statement and their current state can be obtained with XML GET WHITESPACE-FLAGS statement. The lixmldef.cpy file now defines the following whitespace flags constant-names, which can be combined in various ways:

WHITESPACE-DEFAULT-FLAGS (value 0) – No flags set, which is the default when XML Extensions is first initialized and after termination (in case another initialization is done). This constant-name can be used to set the flags back to their default value.

WHITESPACE-STRIP-CONTROL (value 1) – On import, strips all characters less than space as in the 2009 – 2014 XML Extensions implementation, unless one of the preserve flags is set.

WHITESPACE-PRESERVE-TAB (value 16) – When stripping control characters, preserve any TAB characters for import.

WHITESPACE-PRESERVE-LF (value 32) – When stripping control characters, preserve any LF characters for import.

WHITESPACE-PRESERVE-CR (value 64) – When stripping control characters, preserve any CR characters for import. (Note that XML parsers normally translate any CR/LF sequences and any CR not followed by LF to a single LF; thus, CR characters are not normally present and cannot be preserved by this flag setting.)

WHITESPACE-NORMALIZE (value 65536) – On import, collapse any whitespace character sequences (space, LF, TAB or CR) to a single space character. The WHITESPACE-STRIP-CONTROL flag, if set, takes precedence over this flag and this flag, if set, will be ignored in that case.

An example of a meaningful combination of these flags would be 49 as defined by:

78 WHITESPACE-PRESERVE-TAB-LF value WHITESPACE-STRIP-CONTROL +
WHITESPACE-PRESERVE-TAB + WHITESPACE-PRESERVE-LF.

Please note that these flags do not apply when using revision 1.0 model template files from version 11 XML Extensions; for those model template files, only the default flag setting is applicable.

Liant v12 Update 5 (v12.09) Hotfix 2 Supplement

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This document describes, for each component of the Liant product set, the changes made in the v12 Update 5 (or v12.09) Hotfix 2 release of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases the RPI number is provided for reference.

Relativity Data Manager

RPI **1093632** – Fixed the SQLGetFunctions API call with a FunctionId of SQL_API_SQLFOREIGNKEYS to return a value of FALSE. Previously, SQL_API_SQLFOREIGNKEYS returned TRUE and SQLForeignKeys always returned Driver not capable. That behavior confused some ODBC applications, so it is better to report that Relativity does not support SQLForeignKeys.

Relativity Data Server

RPI **1093632** – Fixed the SQLGetFunctions API call with a FunctionId of SQL_API_SQLFOREIGNKEYS to return a value of FALSE. Previously, SQL_API_SQLFOREIGNKEYS returned TRUE and SQLForeignKeys always returned Driver not capable. That behavior confused some ODBC applications, so it is better to report that Relativity does not support SQLForeignKeys.

RPI **1096117** – Fixed the value length problem that caused the Designer to fail with the message “String length exceeds column length Parameter #4 error. Data truncated.” while importing an FD.

RM/COBOL

RPI **1095017** – Added a new configuration file option to force RM/COBOL to ignore the value of the BLOCK CONTAINS clause, just like Visual COBOL does. Normally, RM/COBOL validates the user-specified block size in the BLOCK CONTAINS clause as a fixed file attribute of an indexed file. But when the indexed file was created by Visual COBOL, which ignores BLOCK CONTAINS, then there is no value to validate and RM/COBOL reports a 39,05 error on the OPEN. This new option allows RM/COBOL and Visual COBOL programs to inter-operate on the same RM indexed files without RM/COBOL reporting a 39,05 error. To specify this new option add the following record to your RM/COBOL runtime configuration file:

```
RUN-INDEX-FILES IGNORE-BLOCK-CONTAINS=YES
```

RM/InfoExpress

RPI **1095017** – Added a new configuration file option to force the RM/InfoExpress Server to ignore the value of the BLOCK CONTAINS clause, just like Visual COBOL does. See the discussion of this RPI in the RM/COBOL section above. To specify this new option for the RM/InfoExpress Server add the following to the Options section of your **rmixsrvr.ini** configuration file:

```
[Options]  
IgnoreBlockContains=Yes
```

Liant v12 Update 5 (v12.09) Hotfix 1 Supplement

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This document describes, for each component of the Liant product set, the changes made in the v12 Update 5 (or v12.09) Hotfix 1 release of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases the RPI number is provided for reference.

CodeWatch for Windows

RPI **1094427** – Fixed a problem that corrupted the "current working directory" in CodeWatch workspace files when the workspace properties were examined or changed. This also includes fixes to the dropdown in the property sheet. If the "Working Directory" field is left blank, the directory that contains the workspace .CWF file will be used as the working directory. A path relative to the .CWF file may also be entered, or an absolute path may be entered: in the latter case, CodeWatch will now attempt to store the path relative to the .CWF file, if possible, to make the file as portable as possible.

RPI **603544** – Fixed a problem that occurred when CodeWatch was launched with a relative path to the workspace .CWF file. The path was being interpreted relative to the directory that contained the .CWF workspace file instead of the current working directory. This prevented CodeWatch from starting properly in this instance.

RPI **602896** – Fixed a problem that occurred when **File→Workspace→Save As** was selected. The workspace was saved but a spurious message box stating "Attempted an unsupported operation" was displayed.

Liant v12 Update 5 (v12.09) Supplement

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This document describes, for each component of the Liant product set, the changes made in the v12 Update 5 (or v12.09) of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases the RPI number is provided for reference.

Windows 8.1 and Windows Server 2012R2 Support

Version 12 Update5 (v12.09) has been successfully tested on Windows 8.1 and Windows Server 2012R2.

Windows Development Change

On Windows the various products are now built with Visual Studio 2010 instead of Visual Studio 2005. For the most part, this is just an improvement in the development process. It may have an impact on users that supply their own DLLs developed to interface with RM/COBOL either manually or using CodeBridge. Those customers need to be aware that RM/COBOL now uses the Microsoft Visual C 2010 runtime instead of the Microsoft Visual C 2005 runtime. It would be best, but in most cases not entirely necessary, that the customer supplied DLLs be rebuilt using the Microsoft Visual C 2010 runtime.

Installation

RPI **581766** – Fixed an improper error message that happened during Liant Setup (LiantInstall.exe) when two instances of installation were done at the same time by one Windows user. The error message indicated that the log file could not be written. Now LiantInstall.exe detects a second instance and issues an appropriate error message. Each Windows user can now run only one LiantInstall.exe at a time.

RPI **596671** – Fixed the install.sh script to detect and allow installation of Relativity on HPUX 11.31.

RPI **600978** – The installation script install.sh for RM/COBOL Plus and RM/COBOL Development system on Unix has been fixed to generate a “#!/bin/sh” line as the first line in the generated rpcstart script.

RPI **1086956** – Fixed the install.sh script to detect and allow installation of RM/COBOL on SunOS 5.11 (Solaris 11).

RPI **1087790** – Fixed license verification (licverifyall) so that it works correctly on Solaris for both Intel and SPARC machine architectures.

Relativity Data Client

RPI **595088** – A problem with a hang when accessing a Relativity Data Server from Unix SVR4 was determined to have been fixed by a previous hot fix to the Relativity Data Server for RPI 1088456.

RPI **1088624** – Relativity Data Manager and Data Client/Data Server now correctly handle the Date data type for an ODBC 2 application.

RPI **1089038** – Relativity has been changed with respect to reporting writable columns. The SQLColAttributes ODBC function now reports whether the underlying columns are writable, rather than reporting all columns as read-only.

RPI **1089202** – Relativity now correctly supports the SQL_C_NUMERIC data type.

Relativity Data Manager

RPI **1088624** – Relativity Data Manager and Data Client/Data Server now correctly handle the Date data type for an ODBC 2 application.

Relativity Data Server

RPI **595923** – The Relativity Data Server installation now asks you whether you want to use the default port 1583 anyway even if it is already assigned in /etc/services, which should be to simbaexpress. If you answer Y or y for yes then the installation continues and uses port 1583. (On newer Linux systems, port 1583 is pre-assigned to simbaexpress in /etc/services, which causes the Data Server installation to fail without this fix. Being able to force the override for port 1583, since in most cases customers do not have simbaexpress, allows those customers to take advantage of the default port number when configuring Data Clients.)

RPI **596671** – Fixed the install.sh script to detect and allow installation of Relativity on HPUX 11.31.

RPI **1087607** – The Connect.log file created by Relativity Server for Windows is now placed in the shared ProgramData folder, rather than the installation folder (Program Files).

RPI **1088456** – The Relativity Data Server no longer hangs or returns an invalid return code when retrieving a large result set. (A hot fix was issued for this problem.)

RPI **1088624** – Relativity Data Manager and Data Client/Data Server now correctly handle the Date data type for an ODBC 2 application.

RM/COBOL

RPI **599883** – Fixed an error in the RM Btrieve adapter that truncated a 16-bit flag value in an 8-bit field.

RPI **1086956** – Fixed the install.sh script to detect and allow installation of RM/COBOL on SunOS 5.11 (Solaris 11).

RPI **1087403** – On Windows 7 and above, when an icon file such as runcobol.ico is used, the taskbar icon is not changed to the desired icon when the taskbar buttons are combined. To workaround this you can set the taskbar buttons to “Never combine”. To change this setting: on Windows 7 right click on the Start button, select Properties, select Taskbar, and use the Taskbar buttons drop down menu; on Windows 8 and 8.1 right click on the taskbar and then follow the Windows 7 steps above.

RPI **1091695** – The RM Properties Dialog has been changed such that you must be running elevated in order to modify properties for all users. If you are not running elevated then the "All Users" button in the "Scope" box on the "Select File" tab will be disabled

(grayed out). In this case the "This User" button will always be selected and the user can only modify his own properties stored in HKEY_CURRENT_USER in the Windows Registry. If you are running elevated then the "All Users" button will be available and the user may modify the properties for all users that are stored in HKEY_LOCAL_MACHINE in the Windows Registry. RMCONFIG.EXE has been changed to include a manifest to request execution at the "highestAvailable" level. If your account is a member of the Administrators group or you right-click on the Configuration shortcut and select "Run As Administrator" then the "All Users" button will be available. (This change to RM/COBOL was required because of a Windows 8 and Windows Server 2012 behavior change.)

RMNet

Two new functions have been added to RMNet, `HttpSetConnectTimeout` and `HttpSetTimeout`. `HttpSetConnectTimeout` specifies the maximum number of seconds that a request waits while attempting to connect to the server, it sets `CURLOPT_CONNECTTIMEOUT`. `HttpSetTimeout` specifies the maximum number of seconds that a request is allowed to complete, it sets `CURLOPT_TIMEOUT`. If a timeout expires then the outstanding request is terminated with an error. See `rmnet.pdf` in the RMNet subdirectory installed with the product for details.

The RMNet samples have been updated. The calculator sample has been replaced by the `rmnettest` sample.

RPI **1085433** – The RMNet calculator sample previously attempted to communicate with the non-existent <http://xcentris.org> site. The sample has been replaced as noted above to avoid this issue.

WOW Extensions for RM/COBOL

RPI **600978** – The installation script `install.sh` for RM/COBOL Plus and RM/COBOL Development system on Unix has been fixed to generate a `"#!/bin/sh"` line as the first line in the generated `rpcstart` script.

RPI **1091959** – The WOW Thin Client server, `libtclnt.so` (loaded by `runcobol`), now works correctly on 64-bit Unix platforms (that is, it no longer crashes with a segmentation fault).

Xcentrisity® Business Information Server (BIS)

Xcentrisity BIS v12.09 on Unix now supports Apache 2.4 except on SCO OS/5. Support for Apache 2.2 continues. Support for Apache 2.0 is deprecated and will likely be removed in the next release. Support for Apache 2.0 on Solaris (SunOS) has been dropped already in v12.09. The Apache 2.4 support is limited to an Apache 2.4 linked with the Prefork MPM.

RPI 593222 – Starting in Xcentricity Business Information Server (BIS) v12.09, the Unix BIS logging service is disabled if no log directory is specified in the Service Engine configuration file, or if the specified log directory is "none" (without quotes). The log directory is indicated by the directive "LogDir" in the file /etc/xbis.conf. (BIS for Unix writes log files, one per day, detailing all activity, including session start/end, service start/end, request from Request Handler to Service Engine, response from Service Engine. With this change, if the directory name for these files is omitted from the configuration file or if it is "none", BIS will not write the log files.)

RPI 595337 – The Tutorial2Dictionary.xml file is now installed with the BIS samples.

RPI 595414 – A problem with XML request payloads larger than 49,152 bytes being presented to the COBOL program as an empty request has been corrected.

RPI 595416 – A problem with stack overflow for large requests has been eliminated.

RPI 1082148 – In BIS Sample 4, corrected service program to properly report a namespace error with a SOAP fault.

RPI 1091214 – The cobol_to_wsdl.xsl stylesheet has been fixed to support three or more dimensional arrays (COBOL tables defined with nested OCCURS clauses) when generating a SOAP binding (WSDL). Before this fix, the stylesheet had been ignoring tables of three or more dimensions and thus the generated WSDL was incomplete if the COBOL described such tables.

RPI 1090391 – BIS no longer fails when request queueing is enabled and a session is randomly assigned one of the high internal session numbers. (NB: Request queueing can be turned off by adding "BISQueueRequests Off" to the mod_xbis.conf file.)

RPI 1090979 – BISMKDIR.exe no longer crashes on Windows 8/x64 or Windows Server 2012 x64 when testing for Vista or later. (A hot fix was issued for this problem.)

XML Extensions for RM/COBOL

RPI 598144 – The cleanup script for the examples has been fixed so that it now works on Linux.

RPI 601284 – The ICONV support for character encoding transformations on Unix was fixed for various issues on some Unix platforms.

Liant v12 WS4 (v12.08) Supplement

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This document describes, for each component of the Liant product set, the changes made in the v12 Web Sync 4 (WS4 or v12.08) of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases the RPI number is provided for reference.

Windows 8 and Windows Server 2012 Support

Version 12 WS4 (v12.08) has been successfully tested on Windows 8 and Windows Server 2012.

Relativity Data Client

ODBC 3.5 Support:

The Microsoft Open Database Connectivity (ODBC) interface is a C programming language interface that allows ODBC-enabled applications to obtain access to data from a variety of database management systems (DBMSs). ODBC is a low-level, high-performance interface that is designed specifically for relational data stores. The 3.5 version of the API will permit more ODBC-enabled applications to use Relativity, which previously implemented the 2.5 API version with certain 3.x additions.

In order to be able to access the ODBC 3.5 API, a 12.08 Data Client is required as well as a 12.08 Data Server. A 12.08 Data Server will support Data Clients prior to 12.08, but only at ODBC 2.5 functionality. A 12.08 Data Client will **only** work properly with a 12.08 Data Server. Thus, customers who are upgrading to 12.08 must upgrade the Data Server before upgrading the Data Clients.

Relativity Java Client

RPIs:

1085071 – The `getFetchSize` and `setFetchSize` methods of the `RelativityStatement` class no longer unconditionally throw a `SQLException`. The `setFetchSize` method throws an exception only if passed an invalid row count argument.

Relativity Data Manager

ODBC 3.5 Support:

The Microsoft Open Database Connectivity (ODBC) interface is a C programming language interface that allows ODBC-enabled applications to obtain access to data from a variety of database management systems (DBMSs). ODBC is a low-level, high-performance interface that is designed specifically for relational data stores. The 3.5 version of the API will permit more ODBC-enabled applications to use Relativity, which previously implemented the 2.5 API version with certain 3.x additions.

RPIs:

1074370 — When Relativity processes a query for which the WHERE clause does not specify the value of the first column of any index defined on the table, the first index was used by default; this was sometimes a poor choice. With these changes, Relativity attempts to use information from the WHERE clause, resulting in better performance for some queries.

1082951 — When Relativity creates an index that includes a nullable column that is defined on an item (other than the first) in a set of redundant data items, the index would be defined with a type that was not generally usable. In addition, the index was always marked nonunique, even if it could be unique. These problems have been corrected.

Relativity Data Server

ODBC 3.5 Support:

The Microsoft Open Database Connectivity (ODBC) interface is a C programming language interface that allows ODBC-enabled applications to obtain access to data from a variety of database management systems (DBMSs). ODBC is a low-level, high-performance interface that is designed specifically for relational data stores. The 3.5 version of the API will permit more ODBC-enabled applications to use Relativity, which previously implemented the 2.5 API version with certain 3.x additions.

In order to be able to access the ODBC 3.5 API, a 12.08 Data Client is required as well as a 12.08 Data Server. A 12.08 Data Server will support Data Clients prior to 12.08, but only at ODBC 2.5 functionality. A 12.08 Data Client will **only** work properly with a 12.08 Data Server. Thus, customers who are upgrading to 12.08 must upgrade the Data Server before upgrading the Data Clients.

RPIs:

1083045 — The new PreventWriteStarvation option was not being properly communicated to the RM/COBOL file manager.

Relativity DBA

No changes.

Relativity Designer

No changes.

InstantSQL for RM/COBOL

No changes.

RMNet

No changes.

RM/COBOL

RPIs:

589303 — PDFlib support has been eliminated. This has been deprecated since WS2 (v12.06).

1086913 — Memory is no longer "leaked" when a user program repeatedly calls C\$SETENV to set the same environment variable.

1087442 — The *analysis* utility program for runtime instrumentation (-i option) has been updated to support v11 and later source formats for longer lines (both fixed, with an identification area, and variable, without an identification area). Comments were added to the source, which is supplied, indicating how compiler configuration of the listing can affect instrumentation analysis. Changes were also made to fix file-name case (important for Unix), allow file-names up to 30 characters instead of 8 to match the maximum program-name length and properly scan the listing when the source program contains in-line comments. The analysis program now supports the compiler default of 1024-character source records; because the source is supplied, this can be adjusted shorter or longer if needed because of different compiler configuration settings. In addition, the runtime instrumentation implementation was changed to preserve up to 30 characters for program-names instead of truncating them to 8 characters, which previously resulted in overwriting the output verb count (*.CNT) files if program-names were not unique in the first 8 characters.

XML Extensions for RM/COBOL

RPIs:

588771 — XML Extensions now extracts an object file symbol table to memory instead of a file during export and import operations. This has several benefits:

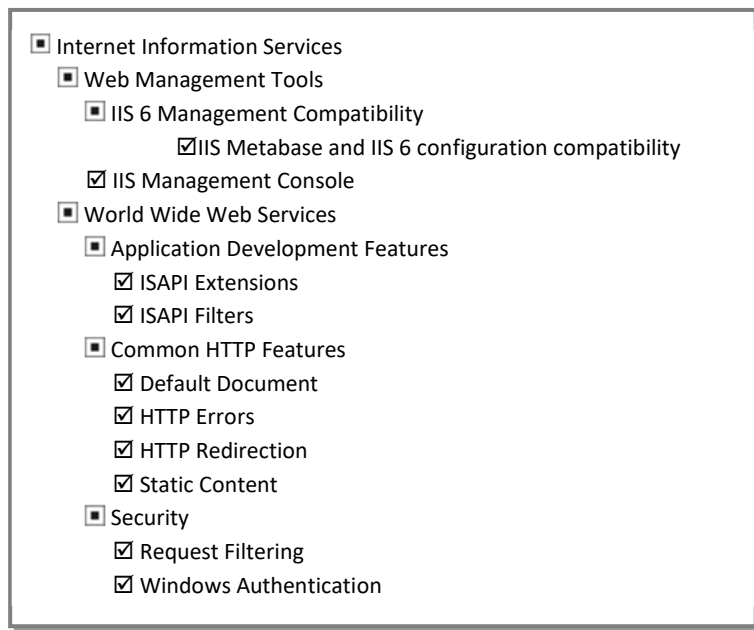
1. Eliminates an unnecessary sequence of write, read and delete file operations, including the permissions problems that can result from these. Not writing a file also eliminates possible file conflicts when multiple processes are run from the same COBOL object file directory simultaneously.
2. Avoids exposing program data layouts in a disk file during execution.
3. Eliminates a bug where a null document pointer could crash XML Extensions during import.
4. Eliminates a bug in file path name manipulations that caused a problem when directory names in the path contained extensions.
5. Eliminates a bug that caused the temporary disk file to be written in the directory containing the directory containing the object file instead of, as documented, the directory containing the object file.
6. Slight performance improvements.

Xcentrity® Business Information Server (BIS)

Installation on Microsoft Windows 8:

This operating system uses a new version of Internet Information Server (IIS): version 8. To configure IIS on Windows 8,

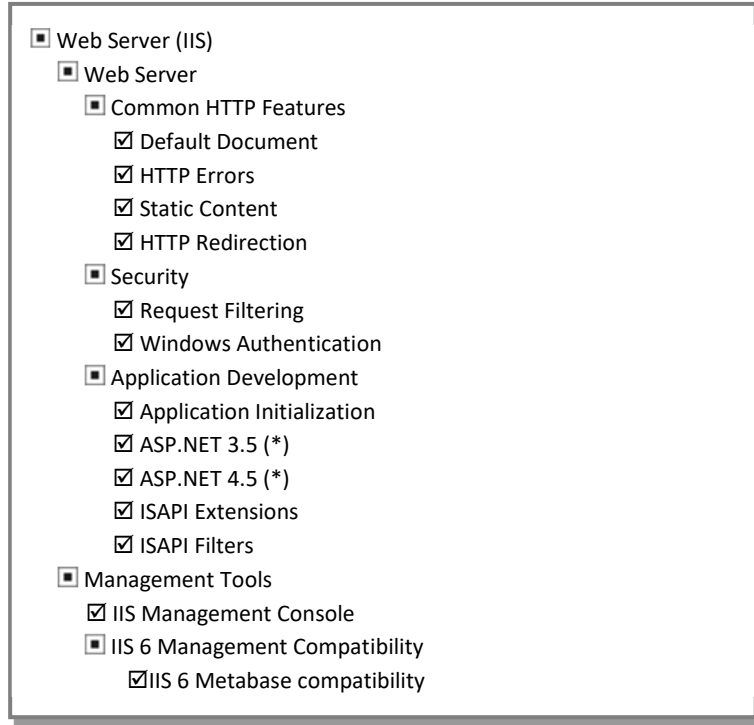
- 1) Open the **Control Panel** and select **Programs and Features**. Or, press the **Windows Key+X**, then select **Programs and Features** from the menu.
- 2) Select **“Turn Windows Features On and Off”** from the side of the window. A list of features will appear.
- 3) Ensure that the items below are checked. Other items may also be checked, but the following checked items are required:



Installation on Microsoft Windows Server 2012:

This operating system uses a new version of Internet Information Server (IIS): version 8. To configure IIS on Windows 2012 Server:

- 1) Launch the **Server Manager**, and click **“Dashboard”**.
- 2) Under **“Select Installation Type”**, click **“Role-Based or feature-based Installation”**.
- 3) Click **Next**, select your server, then click **Next** again.
- 4) Under **“Server Roles”**, select **“Web Server (IIS)”** and
- 5) Select **“Turn Windows Features On and Off”** from the side of the window. A list of features will appear. Ensure that the items below are checked. Other items may also be checked, but the following checked items are required:



* Note: BIS does not require ASP.NET, but installing ASP.NET ensures that the BISMKDIR program can properly configure IIS version 8.

6) Click **Next** and then click **Install**.

BIS Logging:

Starting in Xcentrity Business Information Server (BIS) v12.08, the Windows BIS logging service is disabled by default. It is enabled if a system-wide environment variable is set.

BIS_LOG=[OFF | ON | *directory*]

Values:

OFF disables logging (the same as if **BIS_LOG** is not specified or is blank)

ON enables logging and directs the log files into the default location, which is guaranteed to be writable.

directory enables logging and directs the log files into the specified directory. The user must ensure that it is writable by the BIS request handler.

The directory must be an absolute path or network path. If the specified directory does not exist, BIS will attempt to create it. Note that the containing directory must exist.

The **BIS_LOG** variable is only examined when the BIS application pool is started or recycled. Be sure to restart IIS after changing this variable so it takes effect.

Starting in Xcentrity Business Information Server (BIS) v12.08, the Unix BIS logging service is disabled if no log directory is specified in the Service Engine configuration file, or if the specified log directory is “none” (without quotes). The log directory is indicated by the directive “LogDir” in the file `/etc/xbis.conf`.

XSLT Stylesheets

The XSLT stylesheets that provide 'out of the box' SOAP web service capability have been enhanced to allow the use of a dictionary document to modify the spellings of method names and parameter names. This same dictionary may also be used to specify bidirectional date and time data conversions between typical COBOL representations and standard XML representations.

The dictionary document is specified using an optional additional XSL parameter named 'spellingDictionary'. If used, this XSL parameter must be specified for XML EXPORTs of the WSDL and the SOAP response, as well as the XML IMPORT of the SOAP request. The tutorial supplied with Business Information Server has been updated to use this feature, and the tutorial documentation describes this capability in more detail.

RPIs:

1085819 — The Unix BIS service engine no longer hangs when a large number of requests are received in rapid succession.

1077519 — The Unix BIS request handler has been enhanced to queue requests to a session that is already processing a request, instead of returning an error to the client. This behavior is now the default behavior, but an Apache configuration option of "BISQueueRequests Off" will revert to the original behavior.

RM/InfoExpress Server

No changes.

WOW Extensions for RM/COBOL

No changes.

Liant v12 WS3 (v12.07) Supplement

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This document describes, for each component of the Liant product set, the changes made in the v12 Web Sync 3 (WS3 or v12.07) of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases the RPI number is provided for reference.

Relativity Data Client

No changes.

Relativity Data Manager

RPIs:

581990 — Fixed a problem with the Relativity Configuration applet not loading on XP.

Relativity Data Server

RPIs:

1078614 — Correct the problem caused when "push-down filter" optimization is enabled, if the filter included columns in the selected table index, it was possible that the query might fail with the error, "The key is completely made.".

1080924 — RelativityConnectionPoolDataSource.java has the following new properties:

- `databaseName` – the name of the database (the server data source)
- `description` – the description of this data source
- `portNumber` – the server port number, as a short
- `serverName` – the name or IP address of the server
- `arrayFetchBuffer` – the array fetch buffer size, as a short
- `user` – the user ID
- `password` – the password

The addition of the properties allow WebSphere to connect to a Relativity data source.

1082683 — Fixed a problem in the Relativity Data Client setup control panel applet where the server port number was constrained to less than 32767, when the limit is actually 65535.

1082646 — A new configuration parameter, `PreventWriteStarvation`, is added. Relativity should be configured with the same logical value, 1 to mean YES or 0 to indicate NO, as the associated application's RM/COBOL *RUN-INDEX-FILES* configuration record (see **1082646** below for additional information). This configuration parameter is also added to the Server Administrator dialog.

Relativity DBA

No changes.

Relativity Designer

No changes.

InstantSQL for RM/COBOL

No changes.

RMNet

No changes.

RM/COBOL

RPIs:

589916 — A problem with debugging (command-line or CodeWatch) of external index-names that was introduced in v12 has been fixed.

1078521 — The install.sh script is now correctly invoked from a CD or any other read-only file system. The system attempts to place the log file first into the /var/tmp directory, then /tmp, then /var. The name of the log file is .rmc_install.log.

1078677 — In the compiler, an incorrect compilation error for an INSPECT statement with the CONVERTING phrase that follows an INSPECT statement with the TRAILING phrase was fixed. This fix also fixed other possible incorrect errors in INSPECT statements.

1078804 — In the CodeWatch editor, restore the capability to use F3 to repeat a search.

1080913 — If the Windows Firewall is disabled, the installation of RM/COBOL failed with the message "Error 1722". Now, installation proceeds with no error message if the Windows Firewall is disabled.

1081523 — Fixed a problem when using multiple record locks in a file.

1082646 — Fixed a problem of 'write starvation' on high performance multiple-CPU systems. Write starvation is exhibited when there are enough long-running read processes on a file that they together effectively lock out file modification operations, including any type of OPEN. A new keyword, PREVENT-WRITE-STARVATION, is added to the RUN-INDEX-FILES configuration record. If the value is set to YES, a file locking method that eliminates write starvation by imposing an additional lock on both the read and modification processes will be used. The default value is NO.

XML Extensions for RM/COBOL

RPIs:

585977 — The RM_ENCODING environment variable now supports the values rmlatin1, mflatin1, xmlextlatin1, builtinlatin1, rmlatin9, mflatin9, xmlextlatin9, builtinlatin9, where all the values with the suffix latin1 are as documented for rmlatin1 and all the values with the suffix latin9 are as documented for rmlatin9.

1078725 — Fixed an XML Extensions defect that caused an XML EXPORT FILE or XML EXPORT TEXT statement to fail when applying a literal result element as stylesheet. Now such exports work correctly.

1079580 — Fixed an XML Extensions defect where an XML EXPORT fails if the data structure contains an OCCURS... DEPENDING ON and XML ATTRIBUTES are enabled.

1080699 — Fixed an XML Extensions defect where if an OCCURS data item is nested within another data item that OCCURS, some, occurrences of the nested OCCURS are not output with XML EXPORT.

Xcentricity® Business Information Server (BIS)

RPIs:

1078595 — Restore the Enable CodeWatch Debugging checkbox to the BISMKDIR dialog.

RM/InfoExpress Server

No changes.

WOW Extensions for RM/COBOL

No changes.

Liant v12 WS2 (v12.06) Supplement

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This document describes, for each component of the Liant product set, the changes made in the v12 Web Sync 2 (WS2 or v12.06) of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases the RPI number is provided for reference.

BIS+WOW Thin Client Accept/Display

No changes.

Windows 7 Support

Version 12 WS2 (v12.06) has been successfully tested on Windows 7. Some Windows 7 related issues remaining in the v12.05 product have been fixed in v12.06.

InstantSQL for RM/COBOL

RPIs:

1072711 — Fixed an InstantSQL defect that caused a runtime crash when using bound columns or parameters. The defect used the wrong CodeBridge conversion handle (conversion buffer pointer) for conversion of bound columns and parameters. The defect was masked by the v11 and earlier implementation of CodeBridge, but was revealed by v12 changes to the CodeBridge implementation.

1073475 — Fixed an InstantSQL defect that sometimes caused a runtime crash when using the SQL BIND COLUMN or SQL BIND PARAMETER statements with a large number of columns or parameters. The implementation failed to provide a GIVING or RETURNING argument in a generated argument list. When the generated list was allocated at the beginning of a memory page, a memory access violation could occur when CodeBridge tried to save the non-existent GIVING/RETURNING argument.

Relativity Data Client

RPIs:

573539 — Fixed a problem with the 64-bit data client installation where the data server defined during installation was not available to the server administration control panel applet, thus requiring the data server to be defined again after installation.

581779 — Fixed an installation problem for the Relativity Data Client when the installation is invoked in maintenance mode.

Relativity Data Manager

RPIs:

559726 — Fixed a problem with the global configuration control panel applet on Windows Vista and later versions of Windows that caused the "Program Compatibility Assistant" to ask "Did this control panel work correctly?" The question is no longer asked because a manifest has been added to the control panel applet.

573730 — Fixed an installation problem with the global configuration control panel applet on 32-bit Windows Vista (and later versions of 32-bit Windows) where the applet was not available in v12.05.

1069809 — Fixed a problem in computing the record length when updating a row based on a variable length record. The incorrect record length would cause a 44,7 error or would silently change the record length on relative or indexed files to a potentially incorrect value. The error has been eliminated by correctly calculating the length for the rewrite of the record connected to the updated row.

1075580 — Fixed a byte-order issue that caused big-endian machines (non-Intel memory byte order, LSB in low-order byte) to handle the IF scalar function incorrectly. This affected such big-endian memory architecture platforms as AIX and HP; Intel memory architecture machines (LSB in high-order byte) were not affected by this defect.

1075794 — Fixed a defect that caused an INNER JOIN of two tables, both of which are connected to sequential files, to return a single row when more rows should be returned by the query. Now all the expected rows in this case are returned.

1075939 — Fixed a defect that caused incorrect results from a GROUP BY clause in version 12.05 where version 12.04 obtained the correct results. An oversight in the fix for RPI 1067089 in WS1, another GROUP BY defect, caused this regression.

Relativity Data Server

RPIs:

573352 — The Relativity Data Server does not support using a driver name other than "Relativity Server", but the installation incorrectly allowed the user to change it. There is no evidence that customers actually want this feature, so the Data Server installation was changed to prevent the situation.

581770 — Fixed an installation problem that caused "New Feature" to be displayed where "Query Plan Viewer" should have been displayed. The correct feature name is now displayed.

1069809 — Fixed a problem in computing the record length when updating a row based on a variable length record. The incorrect record length would cause a 44,7 error or would silently change the record length on relative or indexed files to a potentially incorrect value. The error has been eliminated by correctly calculating the length for the rewrite of the record connected to the updated row.

1075580 — Fixed a byte-order issue that caused big-endian machines (non-Intel memory byte order, LSB in low-order byte) to handle the IF scalar function incorrectly. This affected such big-endian memory architecture platforms as AIX and HP; Intel memory architecture machines (LSB in high-order byte) were not affected by this defect.

Relativity DBA

No changes.

Relativity Designer

No changes.

RMNet

Updated RMNet to use more recent cURL and OpenSSL libraries. The cURL library is now 7.21.2 and OpenSSL is 0.9.8o on all platforms on which RMNet is supported.

The TempConvert.cbl example program for RMNet has been slightly enhanced to be a better example.

RPIs:

1077493 — Added two new functions, NetSetSSLKey and NetSetKeyPassword, to RMNet.

RM/COBOL

Language Reference Manual errata:

On page 204, Arithmetic Expressions, Table 20, the first row is incorrect as shown. The first row should contain hash, solid, hash, hash, solid. That is, the second symbol after an operand cannot be an operand, can be an arithmetic operator, cannot be a unary + or -, cannot be an opening parenthesis and can be a closing parenthesis.

RPIs:

578683 — Fixed a license management issue that caused out-dated updates to be left in the license vault when a new update is added to a base license. The license management code was changed to remove existing matching UPDATE amendments from the license vault before inserting new ones.

1067087 — Fixed a CodeWatch editor problem when using “Replace In” set to “Selection”. Text on the remainder of a line at the end of the selection is deleted when text in the selection is replaced. This was a regression from v11.01 and is now fixed.

1072668 — CodeWatch editor has been fixed for a problem with the ‘cut’ operation when characters are selected past the last actual character in the line.

1072678 — Fixed a CodeWatch editor problem that caused incorrect coloring of literals in the COBOL source program.

1072930 — Fixed a CodeWatch problem that made opening copy files inconvenient because of the File Tab jumping to the expanded Program Files node for a program that uses the copy file and then selecting the copybook in that location. Now the File Tab will remain in the “Copy Files” area for the double clicked copy file name as it did in version 11. In addition, the Source Files and Copy Files lists have also been moved to precede, instead of follow, the Program Files and Library Files lists to reduce shifting of the window under most circumstances.

1074065 — Fixed a problem where correct data item value queries either from CodeWatch or the built-in debugger, erroneously resulted in error messages for some identifiers.

1074083 — Fixed an installation problem that caused an error when the Windows firewall was turned off in Windows Vista or later. For Windows Vista or later a new error code was returned in this case and was not properly handled by the installation process. The error code is now interpreted properly and the installation continues instead of failing.

1074438 — Fixed a problem that caused a compiler core dump when an eight-bit (non ASCII) character was used as the currency symbol. An assertion failed in this case when scanning a PICTURE character-string where the leading character was a ‘B’ followed by the currency symbol

character. The test in the assertion has been fixed to handle the case of eight-bit characters.

1075726 — Fixed incorrect use counting on Windows XP Home, Windows Vista Home and Windows 7 Professional. The runtime counted uses in these operating systems as if they were multi-user server operating systems instead of the single-user workstations they are. In this case, uses were over counted, which caused legitimate (per the license) uses to be incorrectly denied.

1075652 — Fixed a CodeWatch problem that caused the Character Set setting not to be saved when choosing Apply or OK and thus not persisting between sessions. The Character Set setting is now saved and persists between CodeWatch sessions for the same workspace.

1076103 — Improved the behavior of two writers writing to the same file opened EXTEND by reducing the time delay before checking to see if the EOF has been moved by another writer. Since the RM/COBOL file manager is not part of the operating system, multiple writers to the same file opened EXTEND need to cooperate somewhat by not writing records as fast as possible, which effectively locks out other writers because the EOF keeps moving. The COBOL programs need to use C\$DELAY after every write, or after a small number of writes, to the file used by other writers to give the other writers a chance to do their writes.

1076502 — Fixed an installation problem that caused an error when the Windows firewall was turned off in Windows Vista or later. Duplicate of RPI **1074083**.

1077514 — Improved the Administrative installation option of LiantInstall to pre-create a LiantInstall.ini configuration file in the target directory. This new configuration file pre-initializes the components to install, disables retrieving of activation codes and disables the License Certificate, Product Selection and Stale Certificates dialogs during subsequent Network installations.

1077559 — Fixed a compiler defect that caused incorrect code generation for an INITIALIZE statement when the subject of the statement was a group that contained two or more variable occurrence data items. The incorrect code would cause a data reference error 104 at runtime when the INITIALIZE statement was executed. The correct code is now generated in this case.

Compiler — Fixed a defect that could cause an erroneous data overflow error when nested OCCURS DEPENDING ON clauses are specified in the COBOL source program. The defect could also have caused an error in the calculation of the minimum record size for a variable length record containing nested OCCURS DEPENDING ON clauses in its data description entry.

CodeBridge — Fixed a defect in the CobolWindowsHandle data conversion function that treated the Windows handle as a signed quantity. In rare cases where the Windows handle value

included a high order bit, an incorrect SIZE ERROR condition would happen in CobolWindowsHandle.

PDFlib support has been migrated to support for PDFlib 8 (version 8.0.1). Support for PDFlib 6 and PDFlib 7 has been dropped, since licenses for those older versions are no longer available from PDFlib GmbH. On Windows, a version 8 pdflib.dll and license must be obtained from PDFlib GmbH; an existing license for PDFlib 7 and a version 7 pdflib.dll will still work on Windows using rmpdflib8.dll. On Unix, PDFlib 8 is statically linked into the installed rmpdflib8.so in v12.06, but a license must still be acquired from PDFlib GmbH to use the full capabilities of PDFlib. There are about 18 new functions in PDFlib 8 that were not available in PDFlib 7; these new functions are not available when using rmpdflib8.dll or rmpdflib8.so. The rmclock.cbl example program has also been slightly enhanced in v12.06. PDFlib support is deprecated and will be eliminated from future releases.

RM/InfoExpress Server

No changes.

WOW Extensions for RM/COBOL

The WOW Designer was fixed to eliminate truncation of some structured comments after column 72 even when the “Generate Short (72 column) Lines” checkbox in Options/Preferences/Code tab was not selected. The designer was failing to check this setting when generating some structured comments and thus always truncated them after column 72. Now the comments will be truncated after column 72 only when the short lines option is selected. Note that the maximum line is 240 characters and thus structured comments longer than 240 characters will be truncated.

RPIs:

1066776 — The incorrect statement in the WOW Extensions User’s Guide that said the TEXT-METRIC structure is defined in **windows.cpy** when it is actually defined in **txtmetric.cpy** was noted in the supplement document for Web Sync 1.

XML Extensions for RM/COBOL

XML Extensions previously wrote temporary files during the execution of the XML EXPORT TEXT, XML IMPORT TEXT, XML TEST WELLFORMED-TEXT and XML VALIDATE TEXT statements. These temporary files are no longer written and the operation of these statements is entirely in memory (except for the external stylesheet input file, if one is specified).

XML Extensions has been enhanced with an XML TRANSFORM TEXT statement that transforms a document in memory to another document in memory. The three parameters for this statement are the input document pointer, the XSLT stylesheet file name and the output document pointer, in that order (the **lixmldef.cpy** file briefly documents this new statement in comments). No temporary files are written during the operation of the XML TRANSFORM TEXT statement. The memory area for the output document is allocated by the XML TRANSFORM TEXT statement and must be freed by using the XML FREE TEXT statement.

XML Extensions no longer supports raw output of XML special characters from FILLER data items; XML special characters in FILLER are now escaped as character references. This was a necessary compromise in the elimination of a temporary file for the XML EXPORT TEXT statement. XSLT stylesheets are a better method of inserting markup text into a result document. The verify sample provided with BIS has been modified from using XML special characters in FILLER to using a stylesheet and is instructive in showing the improved power of using a stylesheet over using XML special characters in FILLER. Associated with this removal of raw XML output, the output of a document prefix feature in XML EXPORT FILE and XML EXPORT TEXT was also removed.

Some examples of XML Extensions, in addition to the previously supplied samples, have been added to the installation. The examples are accompanied by a PDF document describing the examples.

A defect in detecting a “literal result element as stylesheet” (term defined in XML standards) on Windows was fixed that could have caused errors in transcoding the transformed output. The defect assumed that only stylesheets that began with an “xsl:stylesheet” or “xsl:transform” were not literal result element stylesheets. This was the wrong assumption because “xsl” is not required as the namespace prefix for stylesheets. If a different namespace prefix were used as allowed, the wrong decision would be made about the encoding of the result. MSXML6 provides literal result stylesheet transform results in UCS-2 encoding, but normal stylesheet results in the encoding specified by the output element of the stylesheet (a literal result stylesheet cannot have an output element).

A defect in transcoding characters between the Latin 9 local encoding and UTF-8 was fixed. The local character code point 0xA8 was transcribed as if it were Latin Capital U with Macron (code point 0x016a in UCS-2) when it should be Latin Small Letter S with Caron (code point 0x0161 in UCS-2). The defect was symmetric for round trips, but would give the wrong result when a round trip is not done.

RPIs:

578144, 578145 – Fixed problems with an internal data structure size growing wildly large when the COBOL program defined large arrays (COBOL tables), particularly when OCCURS clauses are nested in a data structure. The memory used for the XML Extensions internal data structure in this case has been greatly reduced. The reduction was done in such a way that performance of XML Extensions should also be improved in many cases.

1073539 —Fixed a problem when exporting arrays (COBOL tables) that caused one empty occurrence to be exported when the COBOL table is empty and attributes are enabled. XML Extensions v11 did not export any elements for an empty array when attributes are enabled. The fix restored v11 behavior. Environment variable RM_XML_EXPORT_EMPTY_ARRAY was also introduced to normalize the export behavior for empty arrays:

- When set to the value 'Y', 'y' or '1', an empty array is considered non-optional in the context of the exported document and the empty first element is exported, independently of whether attributes are enabled or not enabled.
- When set to any other single character value, an empty array is considered optional in the context of the exported document the empty array is not exported at all, independently of whether attributes are enabled or not enabled.
- When not set or set to a multiple character value, the v11 behavior is implemented; that is, when attributes are not enabled, the array is non-optional and the first occurrence is exported even if empty; otherwise, when attributes are enabled, the array is optional and an empty first occurrence is not exported.

Regardless of the above, when all occurrences are enabled, all occurrences are exported whether they are empty or not empty and whether attributes are enabled or not enabled.

1074419 – Fixed a defect in XML Extensions that could cause an incorrect error 44, “wrong cobtoxml revision”, when XML INITIALIZE and XML TERMINATE pairs are repeated three or more times in a loop within one run unit.

1074421 – Fixed a V12 regression in XML Extensions where a sparsely populated non-empty, group in a COBOL table would be considered empty and thus not exported unless exporting all occurrences. XML Extensions has been corrected to properly check groups to make sure they are empty before suppressing export of an empty group.

Xcentricity® Business Information Server (BIS)

XML Extensions on Windows writes temporary files to the temporary directory defined by the GetTempPath Windows function. GetTempPath checks for the existence of environment variables in the following order and uses the first path found:

1. The path specified by the TMP environment variable.
2. The path specified by the TEMP environment variable.
3. The path specified by the USERPROFILE environment variable.
4. The Windows directory.

Note that the GetTempPath function does not verify that the path exists. If the path points to a symbolic link, the temp path name maintains any symbolic links.

XML Extensions on Unix or LINUX writes temporary files to the temporary directory defined by the `TMPDIR` environment variable and must have file creation, write and delete permissions for this directory. If the `TMPDIR` environment variable is not defined, the temporary directory defaults to `\tmp` or `\var\tmp` depending on the specific operating system.

XML Extensions is frequently (almost always) used by COBOL service programs run by Xcentrity[®] Business Information Server (BIS). Thus problems with using BIS might be the result of permissions issues with the temporary directory used by XML Extensions.

Error messages produced when running BIS applications are frequently from XML Extensions and are documented in the XML Extensions User's Guide rather than the Xcentrity[®] Business Information Server User's Guide. Also, some problems in using BIS are actually problems with XML Extensions use of temporary files.

BIS has been changed to take advantage of the fact that in WS2, XML Extensions does not write temporary files when the XML EXPORT TEXT and XML IMPORT TEXT statements are used. The BIS request and response documents were previously passed in a file called the "exchange file". BIS now allows the request and response documents to be passed in in-memory strings to avoid writing sensitive information to disk, such as credit card numbers or other personal information. The XML EXPORT TEXT statement can be used to produce a response document in the COBOL service program in memory; note that the COBOL program is responsible for freeing the memory allocated by an XML EXPORT TEXT statement by using a XML FREE TEXT statement, after the response is written to BIS with `B$WriteResponse`. The XML IMPORT TEXT statement can be used to process an in-memory request document in the COBOL program; BIS is responsible for freeing the memory used by a request document. Passing the BIS response and request documents in memory is accomplished by changes to the `B$WriteResponse` and `B$ReadRequest` statements, respectively. A single COBOL pointer data item can be used, much like the single exchange file, but two appropriately named pointers make the program easier to read and maintain.

The `B$WriteResponse` BIS service function supports in-memory exchange of the response document by specifying an optional identifier of a COBOL pointer data item in the USING list of the CALL statement. The new calling sequence is as follows:

```
CALL "B$WriteResponse"
    [ USING ProgramDisposition [ ResponseDocumentPointer ] ]
    GIVING BIS-Status
```

When the `ResponseDocumentPointer` argument is omitted, `B$WriteResponse` assumes the response document is in the exchange file, as before. When the `ResponseDocumentPointer` argument is specified, the response document is assumed to be in the memory area referred to by the pointer value. The pointer value is normally obtained before the `B$WriteResponse` call by using an XML EXPORT TEXT statement to create the response document from a COBOL data structure in the COBOL service program; in that case, it is the COBOL program's responsibility to free the response memory area by using an XML FREE TEXT statement that specifies the `ResponseDocumentPointer` argument after

B\$WriteResponse returns to the calling COBOL program. When specifying the ResponseDocumentPointer for the default program disposition, the ProgramDisposition argument may be specified as OMITTED since the ResponseDocumentPointer argument must be the second USING argument to B\$WriteResponse.

The B\$ReadRequest BIS service function supports in-memory exchange of the request document by specifying an optional identifier of a COBOL pointer data item in the USING list of the CALL statement. The new calling sequence is as follows:

```
CALL "B$ReadRequest"
  [ USING TimeoutInSeconds [ RequestDocumentPointer ] ]
  GIVING BIS-Status
```

When the RequestDocumentPointer argument is omitted, B\$ReadRequest writes the request document to the exchange file, as before. When the RequestDocumentPointer is specified, B\$ReadRequest puts the request document in memory and the RequestDocumentPointer value is set to point to that memory, replacing whatever value the pointer data item had before the call. The pointer value is then normally used in an XML IMPORT TEXT statement to obtain the request information into a COBOL data structure for further processing by the COBOL service program. The memory area referred to by RequestDocumentPointer after the call to B\$ReadRequest belongs to BIS and the COBOL program must not attempt to free that memory. When specifying the RequestDocumentPointer for the default timeout value, the TimeoutInSeconds argument may be specified as OMITTED since the RequestDocumentPointer argument must be the second USING argument to B\$ReadRequest.

Note: The B\$Exchange BIS service function has been deprecated and has not been enhanced to support in-memory document exchanges. Calls to B\$Exchange can be replaced by a call to B\$WriteResponse followed by a call to B\$ReadRequest. B\$Exchange can still be used, but only when using an exchange file containing the response and request documents. B\$Exchange will be removed in a future release.

The BIS installation now (as of WS2) includes a tutorial and accompanying examples that are instructive in how BIS can be used. It is strongly recommended that users new to BIS review the tutorial, but even experienced BIS users will find the tutorial helpful and give them new insights into BIS.

The BIS samples have been modified to demonstrate the in-memory exchange of response and request documents. Further, the verify sample has been changed to demonstrate choosing the display language based on the browser preferred language setting (only English and Spanish are demonstrated to keep the sample brief enough for easy understanding). The ASP sample client for driving sample 4, a web services example, has been enhanced to have better error processing and provide an improved user interface experience, particularly when the session is terminated.

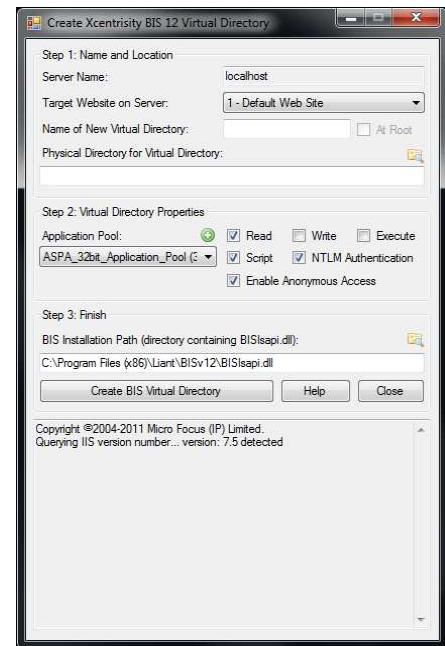
The stylesheets provided for web services have been changed to use the more popular Document/literal wrapped style of SOAP, where they previously used the RPC/encoded style of SOAP. The RPC/encoded stylesheets are still provided, but the names of those stylesheets have been changed to include “_rpcencoded” in the name. The stylesheets have also been simplified through the use of XSLT

parameters that can be set from the COBOL service program because of the v12 addition of the XML SET XSL-PARAMETERS statement in XML Extensions. The BIS web services samples (samples 3 and 4) have been modified to work with the new stylesheets.

Some examples of BIS usage, in addition to the previously supplied BIS samples, have been added to the installation of XML Extensions for RM/COBOL, including some purely XML Extensions examples. The examples are accompanied by a PDF document describing the examples.

RPIs (also see RPIs for XML Extensions):

580776 — The version 12.06 BISMKDIR now properly configures application pool identities in IIS v7.5 (the IIS version delivered on Windows 7 Professional and Windows 2008 R2). BISMKDIR now has a new option for setting the application pool name: `/POOL32 poolname`. If "-" is specified as the *poolname*, then "BISv12-Application-Pool" is used as the application pool name. For IIS 7.5, credentials for a user named "AppPool\poolname" are added to the list of users that are permitted to run BIS applications and access the BIS files. Previously, only IIS_IUSERS and IUSR were granted these permissions. A new button to add application pools is now on the "Create Xcentrinity BIS 12 Virtual Directory" dialog box; an existing application pool may be selected from the drop down list. The dialog varies depending on the version of IIS on the system where BIS is installed.



1077423 -- Fixed a problem in the `cobol_to_wsdl.xsl` and `cobol_to_wsdl_rpcencoded.xsl` stylesheets that caused the generated WSDL to contain "--name" items as output parameters of a method that should not be included. The naming convention intended such "--name" items only as a way to re-name items.

Liant v12 WS1 (v12.05) Supplement

This document describes, for each component of the Liant product set, the changes made in the v12 Web Sync 1 (WS1 or v12.05) release of the product. In most cases, the changes were the result of a reported product incident (RPI) and in those cases the RPI number is provided for reference.

Windows 7 Support

Version 12 WS1 (v12.05) has been successfully tested on Windows 7.

BIS+WOW Thin Client Accept/Display

RPIs:

1069650 —Version 12 WS1 (v12.05) BIS+WOW has removed several dlls from the sample cabinets due to problems with missing Microsoft “c” libraries used by those dlls, which implement Thin Client Accept/Display. The BISplus_HOWTO.doc/pdf contains details of this change.

InstantSQL for RM/COBOL

RPIs:

1069429 —Fixed a defect in InstantSQL, when using a MySQL database on Linux, that caused “glibc detected free(): invalid pointer: 0x08086f2e”. There was a conflict between external symbol names in the RM/COBOL runtime executable and the myodbc shared object. The problem has been resolved by changing the conflicting symbols in the RM/COBOL runtime to be local (static) symbols.

1069445 — Added the InstantSQL documentation, a ZIP file containing the HTML help, to the RM/COBOL development system InstantSQL directory. The file can be unzipped and then browsed by double clicking the [index.htm](#) file in the directory where the zip file is expanded. (NB: The zip file is also available at, and can be downloaded from, the following URL: <http://downloads.microfocus.com/liant/download/isqlhelp.zip>).

1072711 — Fixed an InstantSQL defect that caused a runtime crash when using bound columns or parameters. The InstantSQL defect used the wrong CodeBridge conversion buffer pointer for conversion of bound columns and parameters. The defect was masked by the v11 and earlier implementations of CodeBridge, but was revealed by v12 changes to the CodeBridge implementation to fix memory leaks caused by CodeBridge.

Relativity Data Client

RPIs:

559654 — (not fixed yet; Relativity Data Client segmentation fault when called from InstantSQL on HP-UX PA-RISC systems. On systems other than HP-UX PA-RISC, RPI **1066803** fixed problems with using the Relativity Data Client from InstantSQL).

559679 — Fixed the installation of the Relativity Data Client on Windows to have digitally signed executables.

559727 — Fixed a problem with the server configuration control panel applet on Windows Vista and later versions of Windows that caused the "Program Compatibility Assistant" to ask "Did this control panel work correctly?" The question is no longer asked because a manifest has been added to the control panel applet.

559728 — Created a 64-bit version of the server configuration control panel applet for 64-bit versions of Windows. A 64-bit version is necessary to create the correct registry entries for the 64-bit Data Client introduced in this release.

1066803 — Fixed **SQLDriverConnect** in the Relativity Data Client on some Unix and Linux platforms to not return "success" without doing any work unless **SQL_DRIVER_NOPROMPT** is specified. The data client would crash when a later operation tried to use the uninitialized connection. (NB: SQLConnect worked in the data client, but InstantSQL uses **SQLDriverConnect** with a default of **SQL_DRIVER_COMPLETE** and thus demonstrated the data client failure on the platforms where the problem existed.)

1066963 — Created a 64-bit version of the Relativity Data Client for Windows, which can then be used with 64-bit versions of other database software, such as 64-bit SQLServer, on 64-bit versions of Windows. (The Relativity Data Server remains a 32-bit application and thus no additional database capacity is gained by using the 64-bit client to talk to the server.)

1072464 — Fixed a license certificate issue with Unix Data Server licenses. The issue incorrectly prevented using LiantInstall to install the Relativity Data Client on Windows. The fix has been available in licenses issued since January 5, 2010, when the certificate on the license server was corrected. For Unix licenses issued prior to January, 5, 2010, the Relativity Data Client could be installed on Windows simply by opening the MSI for the data client.

Relativity Data Manager

RPIs:

559675 — Fixed the installation of the Relativity Data Manager on Windows to have digitally signed executables.

559726 — Fixed a problem with the global configuration control panel applet on Windows Vista and later versions of Windows that caused the "Program Compatibility Assistant" to ask "Did this control panel work correctly?" The question is no longer asked because a manifest has been added to the control panel applet.

559729 — The Relativity control panel icon for the DBMS configuration control panel applet is hidden on 64-bit versions of Windows XP, Windows Vista and Windows Server 2008 in a 32-bit Control Panel. On 64-bit XP, the 32-bit Control Panel is opened from the 64-bit Control Panel with the "View x86 Control Panel Icons" icon. On 64-bit Vista and Windows Server 2008, the 32-bit Control Panel is opened from the 64-bit Control Panel with the "View 32-bit Control Panel Items" icon. This release has no 64-bit Data Manager and thus no 64-bit DBMS configuration control panel applet. (NB: See Relativity Data Client in this document for information about the 64-bit Data Client and 64-bit Server Administrator control panel applet.) On 64-bit versions of Windows 7, the 32-bit control panel items are no longer hidden and are shown in the Control Panel with the designation "(32-bit)" appended to the name.

1067065 — Fixed a defect from both v11 and v12 where repeating a certain query multiple times could crash the data manager (or the data server).

1067089 — Fixed a defect with the implementation of the SQL statement **SELECT ... GROUP BY** when applied to a Relativity table based upon multiple COBOL files where an incorrect, and sometimes infinite, result set was returned for the query.

1070016 — Fixed a defect in installation of the data manager that caused the installation to fail when the Micro Focus file manager library (DLL) and its default version could not be found. The error is now simply logged and the installation continues. If the user then attempts to enable Micro Focus file support during installation, the user can locate the library manually with the browse capability on the enablement page.

Relativity Data Server

RPIs:

559039 — Fixed the installation to create registry value named **SvcConfigDir** instead of the misspelled registry value **SvnConfigDir**.

559676 — Fixed the installation of the Relativity Data Server on Windows to have digitally signed executables.

559726 — See discussion regarding this RPI under Relativity Data Manager.

567488 — Fixed server administrator to accept a network name containing a hyphen.

1067065 — Fixed a defect from both v11 and v12 where repeating a query multiple times could crash the data server (or the data manager).

1067089 — Fixed a defect with the implementation of the SQL statement **SELECT ... GROUP BY** when applied to a Relativity table based upon multiple COBOL files where an incorrect, and sometimes infinite, result set was returned for the query.

1070016 — Fixed a defect in installation of the data server that caused the installation to fail when the Micro Focus file manager library (DLL) and its default version could not be found. The error is now simply logged and the installation continues. If the user then attempts to enable Micro Focus file support during installation, the user can locate the library manually with the browse capability on the enablement page.

Relativity DBA

RPIs:

559677 — Fixed the installation of the Relativity DBA on Windows to have digitally signed executables.

Relativity Designer

RPIs:

559678 — Fixed the installation of the Relativity Designer on Windows to have digitally signed executables.

Relativity JDBC Client

RPIs:

3288 (Tracker) — Fixed a problem in the Relativity JDBC Client where the PreparedStatement.setObject method would generate the error “Dynamic parameter #1 type mismatch”.

RMNet

RPIs:

1066670 — Added a programatic way to configure proxy server settings for RMNet. See the description of the NetSetProxyServer function in the rmnet.pdf documentation for further information. Also added a function to disable (and enable) SSL peer certificate verification. See the description of the NetSSLVerifyPeer function in the rmnet.pdf documentation for further information.

1069427 — Included the RMNet documentation in the product as rmnet.pdf. Previously, the documentation was only available on the Micro Focus web site.

RM/COBOL

RPIs:

568496 — Fixed a problem in the implementation of the RUN-FILES-ATTR configuration record USE-PROCEDURE-RECORD-LOCK-TIMEOUT keyword that could cause a file manager hang when a non-zero value is specified for the value of the keyword.

1065891 — Fixed a CodeWatch defect in the Workspace Properties dialog. When an Overriding or Supplemental Configuration file option specified a file path with a space in the name, CodeWatch could not find the specified configuration file.

1066104 — Fixed a CodeWatch defect that caused an unhandled exception crash when Print Preview was used.

1066606 — Fixed a CodeWatch defect introduced in version 12 where a workspace with more than 511 file entries could not be opened.

1066611 — Fixed a COBOL runtime assertion failure when a LIKE relation condition specified the **CASE-INSENSITIVE** option and the regular expression contained a counted character match, that is, an $\{m,n\}$ quantifier on a character match.

1066705 — Fixed a Linux installation defect where cpio returns "Premature end of file." on some Linux distributions.

1066788 — Fixed a **LicVerifyAll** failure when merging a runtime license into a development system installed license vault on HP/UX Itanium systems. Prior to the fix, the message *LicVerifyAll: License install of 'RM/COBOL Runtime System' failed 0xc1000011: The serial number in the license does not match the serial number of the original license.* could be

incorrectly returned.

1066808 — Fixed a COBOL runtime defect when detecting **SIZE ERROR** condition on binary data items where the **PICTURE** character-string specified more digits than supported by the allocation specified by the **USAGE**, as in **COMP-1** data items or other binary data items with a **USAGE** that specified an allocation override. The **SIZE ERROR** condition could be raised when it did not apply or not raised when it did apply for arithmetic results stored in such binary data items. This defect has existed since v7.

1066815 — Fixed a defect on Unix and Linux systems that prevented loading the termcap version of the COBOL runtime because of a spelling error in the function name **RM_TCSETATTRNOW**.

1066909 — Fixed a COBOL compiler problem in the **REPLACE** statement and the **REPLACING** phrase of the **COPY** statement when replacing a single character (for example, an equal sign) that could cause incorrect replacement actions, including replacing that character at the end of a comment line. This also fixed a problem with multiple replacements on the same line, where a latter replacement on the line might not be done when it should, and a problem with incorrect handling of a period following **END-COPY** or **END-REPLACE** (the period is not part of the **COPY** or **REPLACE** statement when the **END-COPY** or **END-REPLACE** phrase is specified, but rather is a period following the statement; v12.02 incorrectly treated the period as part of the statement).

1066914 — Fixed a defect in the administrative install for RM/COBOL to allow installation from a Windows client onto a mapped network drive.

1072048 — Fixed a compiler defect that produced an incorrect warning (0029: W DATA RECORDS data-name not defined for file: <file-name>) about the record-name specified in the **DATA RECORDS** clause of a file description entry. The problem was evident when the file is properly described in two or more nested programs (for example, by using **COPY** statements to copy the same file control and file description entries into the two or more nested programs). There was a compiler error in resolving the file-name that implicitly qualifies the data record-name when the file-name exists in two or more nested programs. The error caused the incorrect compilation warning for all but the first file with the same **DATA-RECORDS** clause.

RM/InfoExpress Server

RPIs:

1066624 — Fixed a problem with I/O errors 30,21 and 90,07 being returned inappropriately when using two InfoExpress servers on the same local area network.

WOW Extensions for RM/COBOL

RPIs:

1065933 — Fixed `WowGetFocus` to allow the user to obtain the handle of an ActiveX child control.

1066530 — Fixed the WOW runtime to work on Windows 2000 systems.

1066812 — Fixed a WOW runtime defect where the scroll bars and `BackColor` on controls were not redrawn for a WOW application when the whole screen was minimized and restored.

1067022 — Fixed a WOW designer defect introduced in version 12. The CONTROL key could cause selected controls to grow larger and repeated use could cause the designer to crash.

1067027 — Fixed a WOW runtime defect with modal forms created with the click event for an edit box or static label not being modal.

1067053 — Fixed a WOW designer defect in the editor that prevented `CTRL+L` and `CTRL+D` from working in version 12 when they previously worked in version 11.

Documentation Correction — The `GetTextMetrics` documentation states that the `TEXT-METRIC` structure is defined in `windows.cpy`. This is inaccurate, it is defined in `txtmetric.cpy`.

XML Extensions for RM/COBOL

XML Extensions on Unix or Linux writes temporary files to the temporary directory defined by the `TMPDIR` environment variable and must have file creation, write and delete permissions for this directory. If the `TMPDIR` environment variable is not defined, the temporary directory defaults to `\tmp` or `\var\tmp` depending on the system. Note that XML Extensions is used by Xcentricity® Business Information Server (BIS). Thus problems with BIS may result from permissions issues with the temporary directory.

XML Extensions statements `XML GET TEXT` and `XML PUT TEXT` were fixed to allow binary data on Windows. Previously, binary data could possibly be truncated, for example, at a 0x1a character in the “text”). Unix and Linux systems already allowed binary data without problems.

RPIs:

1067093 —Fixed a problem with XML EXPORT attempting to allocate more than 2 GB of memory and crashing the runtime. The data structures in XML Extensions were revised to significantly reduce the amount of memory allocated when large occurrence tables (arrays) in the COBOL program are exported.

1069607 — Fixed output of arrays to suppress empty occurrences when attributes are enabled and all occurrences are not enabled. Version 11 suppressed empty occurrences correctly, but version 12 incorrectly output all occurrences whenever attributes were enabled.

1069720 – Fixed problems with algorithms and data structures that caused excessive memory use and slow execution for both XML EXPORT and XML IMPORT when large occurrence COBOL tables (arrays) were exported or imported. The problem was particularly evident when nested tables (tables containing tables) were used in the COBOL program.

Xcentrisity® Business Information Server (BIS)

Xcentrisity® Business Information Server (BIS) makes extensive use of XML Extensions for RM/COBOL. Error messages produced when running BIS applications are frequently from XML Extensions and are documented in the XML Extensions User's Guide rather than the Xcentrisity® Business Information Server User's Guide. Also, some problems with BIS are actually problems with XML Extensions use of temporary files, as explained in the XML Extensions for RM/COBOL topic of this document.

RPIs (also see RPIs for XML Extensions):

559705 — Fixed a request handler crash that occurred if the **IUSR** security principal is selected to serve anonymous requests, but does not have access to the directory containing the service engine programs. The crash is fixed, and the **IUSR** identity is now granted access to the service engine programs during installation and registration. In addition, other enhancements have been made to clearly explain when the **IUSR** identity should and should not be selected during installation or registration.

559768 — Fixed an installation problem on 64-bit systems running IIS 7 that prevented the application pool from being usable after the installation of BIS on those systems. IIS 7 required the application pool to be marked as allowing 32-bit applications on 64-bit systems. The installation now marks the application pool appropriately when necessary.

567867 — Fixed a problem that caused BIS to hang if a malformed IP is specified in the `{{Trace}}` tag of an SRF file.

1066093 — Fixed an intermittent problem where after a few days the Unix or Linux BIS request handler would refuse incoming connections and a restart was required to allow new incoming connections to be processed.

1066143 — Fixed an “access denied” issue when executing BIS applications on non-English Windows systems such as Windows Vista and Windows Server 2003 where the “**AUTHENTICATED USERS**” security ID is translated to the locale of the system (BIS installation incorrectly used the untranslated name “**AUTHENTICATED USERS**”).

1066570 — Fixed the Windows utility **BISMKDIR** to support IIS web site identifiers with a value outside the range 1 – 99. This was a prior restriction, but this release allows site ID values in the range 1 – 2,147,483,647 (= (2 ** 31) – 1).

1066938 — Fixed the BIS Windows installer to create the **XBIS12-Application-Pool** as a 32-bit application pool on 64-bit versions of Windows Vista and Windows Server 2008/2008R2 systems, which allows BIS to run successfully on these systems. The Microsoft KB article <http://support.microsoft.com/?id=895976> has additional information about the issue resolved by this fix.

1067102 — Fixed the Windows utility **BISMKDIR** to properly create virtual directories for a 32-bit compatible application on 64-bit Windows systems that run IIS version 7.

1071467 — Modified xbisctl utility to provide information for BIS error 29 on a LAN (too many IP address blocks). The extra information reflects the kind of license (LAN versus WAN) and, for LAN licenses, the IP address range for the server to aid administrators in diagnosing the error 29.

1072047 — Modified the bis/samples/common/soap_request_to_cobol.xsl stylesheet to correctly support web service array input for Java and PHP. Previously, the stylesheet supported only the Microsoft ASP method of array input for web services as demonstrated in Sample4 of the BIS samples.