Micro Focus Enterprise Developer 4.0 for Eclipse

Release Notes

Contents

Micro Focus Enterprise Developer 4.0 for Eclipse Release Notes

These release notes contain information that might not appear in the Help. Read them in their entirety before you install the product.

> **Note:**
> - This document contains a number of links to external Web sites. Micro Focus cannot be responsible for the contents of the Web site or for the contents of any site to which it might link. Web sites by their nature can change very rapidly and although we try to keep our links up-to-date, we cannot guarantee that they will always work as expected.
> - Check the *Product Documentation* section of the *Micro Focus SupportLine Web site* for any updates to the documentation which might have been uploaded.

Product Overview

Enterprise Developer supports IBM COBOL, IBM PL/I, IBM Assembler, IBM CICS, IBM IMS, IBM JCL, IBM DB2, IBM z/OS file formats and common batch utilities, including SORT. This means that you can develop and maintain the core mainframe online and batch applications under Enterprise Developer. You can then deploy these applications back on the mainframe or migrate them onto one of the Micro Focus Linux, UNIX or Windows-based production platforms.

The *Application Workflow Manager* section in *General Reference* explains the mainframe integration and mainframe modelling features of Enterprise Developer for z Systems.

> **Note:**
> - The Application Workflow Manager is available within all Enterprise Developer variants and provides all the capabilities and tools to develop and maintain Application Workflow models. These models allow you to integrate tools and processes directly into Enterprise Developer. You can use the Application Workflow Manager with the following products:
>   - Enterprise Developer - the Enterprise Developer setup file automatically installs the Application Workflow Manager.
>   - IBM Rational Developer for System z (IDz) - see *Installing Application Workflow Manager into Rational Developer for System z (IDz)* in the installation instructions. This requires that Enterprise Developer Connect is installed and licensed.

Upgrading from earlier Micro Focus products

> **Note:** Windows-only.

Version 4.0 of your product is dependent on a later version of the Microsoft C run-time system than earlier Micro Focus products. This means that COBOL executables (.exe) built with an earlier version of your product might not be compatible with version 4.0 run-time products. If the behavior of your application changes with version 4.0, we strongly recommend that you relink the main executable with version 4.0. This will ensure that the COBOL run-time system fully handles any run-time error conditions that might occur.

A new executable that is fully compatible with version 4.0 can be produced without recompiling the application, as long as the original object code is available and it is relinked with version 4.0.

To allow your executables to benefit from the product's latest programming and performance enhancements, we recommend a full recompilation of your source code.

If you are using Eclipse, Enterprise Developer 4.0 can automatically relink existing projects created with Enterprise Developer 3.0 that have executable link artefacts. Eclipse displays a warning in the **Problems** view that the project requires relinking. It then offers a Quick Fix action for you to execute that will link your project with the most recent version of the Run-Time System.

What's New

This release provides enhancements in the following areas:

- *Integration with Eclipse*
- *Application Server JCA Support for Enterprise Server*
- *Application Workflow Manager*
- *AppMaster Builder*
- *Build Tools for Windows*
- *Code Coverage*
- *Codeset support*
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- *OpenESQL*
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- *Web Service Clients*

Integration with Eclipse

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This release provides the following general enhancements:

- Support for Eclipse 4.7 Oxygen (64-bit) and 64-bit project templates - the 64-bit Eclipse 4.7 is now installed by default. Project templates are available for both 32-bit and 64-bit applications. You can set a default project template (either 32-bit or 64-bit) to use so that all future new projects will use that as the preference. On platforms only capable of building to 64-bit, the 64-bit templates are the default ones.

  The 32-bit Eclipse is still supported on 64-bit Windows platforms, however you need to manually install it and a 32-bit Java.

  Support for Eclipse 4.4 and 4.5 has been discontinued.
- Starting with release 4 Patch Update 4, you can plug Enterprise Developer into Eclipse 4.8 (either 32-bit or 64-bit) installed on your machine. On Red Hat, this requires that you have Red Hat 7 or later.
- Support for SUSE 12 - only the 64-bit SUSE 12 platform is supported and you can only use the 64-bit Eclipse with 64-bit projects on it.
- (Native COBOL projects only) The **Project Settings** page in the project's properties now include a search option. This enables you to find files and build configurations that have settings different from the ones set at project level.

- **Remove File Directives** - a context menu command in the explorer view enables you to reset a file's directives.
- IVP diagnostic tool enhancements - it is now possible to run the server-side IVP diagnostic tool for diagnosing issues with a remote connection from within Eclipse installed at the client side. The IVP tool now also performs a check for whether XTERM is installed on the remote machine.
- IMTK service mappings are now automatically regenerated if you make a change to the interface fields in the underlying program.

The following enhancements are available for JVM COBOL projects and package handling:

- New wizards for creating ENUM, DELEGATE and VALUETYPE types.
- Additional code snippets for Method-Id and Property-Id.
- Showing and grouping packages in the COBOL Explorer view - use the **COBOL JVM Project Presentation** command from the **View** menu in the explorer to either display COBOL categories or packages.
- Refactoring by renaming the package name - available from the context menus in the COBOL Editor and in COBOL Explorer.
- Refactoring by moving source folders, packages or compilation units - available from the explorer context menu.
- Support for switching off the package name mapping using the **Each part of the package name corresponds to a subdirectory** option in the **Build Configuration** page.
- Support for packaging .class files in a .jar file when building COBOL JVM projects.
- **Open Type Hierarchy** and **Open Call Hierarchy** context menu commands - available in the COBOL editor, COBOL Explorer and in the outline views while seeing the packages presentation in the IDE.

The following editor improvements are available:

- A **Properties** context menu command - enables you to access a file's properties directly from the editor.
- A **Show In** context menu command - enables you to locate the file in the COBOL or the PL/I Explorer.
- **Edit > Convert Tabs to Spaces** command - enables you to convert any tabs in your COBOL source files to a specified number of spaces.

Automatic relinking of applications created with Enterprise Developer 3.0:

- Enterprise Developer 4.0 can automatically relink existing projects created with Enterprise Developer 3.0 that have executable link artefacts. Eclipse displays a warning in the Problems view that the project requires relinking. It then offers a Quick Fix action for you to execute that will link your project with the most recent version of the run-time system.

Application Server JCA Support for Enterprise Server

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This release includes the following enhancements:

- COBOL Resource Adapters now support WebSphere 9.0 and WebLogic 12.2.1.
- Tomcat 7.0 support for servlet generation with J2SEBeans.
- NullSearch utility - for COBOL resource adapters, this new utility provides assistance in locating NULL fields in mappings passed to Enterprise Server. When a large number of arguments is provided in the parameters passed to Enterprise Server, it is difficult to locate NULL fields, which are not allowed. The NullSearch utility isolates NULL fields, so the Java application can be corrected.

Application Workflow Manager

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Improvements have been made in the following areas:

- Model editor - now includes:

- A new **Edit** action. Enables you to edit any model component instead of working with the Properties view. The new action enables you to change the attribute values of several model components at a time.
- An Outline and a Relationship Hierarchy view.
- Improved backwards and forwards navigation in the model.
- Automated sequence numbering in the model.
- The context menu of the model editor has been restructured for more clarity.
- Context help.
- Tool creation has been improved. Dependent components are generated from the function package tool definition.
- Development of models:

  - Newly created empty models now contain all categories. The new models also validate without any errors or warnings.
  - A new AWM system type, "Custom System", is available. This system type supports the model development process by facilitating the creation, change, load and reload of a model.
- New modelling features:

  - The "Return Property Value" tool in the function package now supports several additional use cases.
  - The "Transfer File" tool in the function package offers improved support for mass processing.
  - Support for properties with an application-wide scope.
  - A modelling capability to structure the local file cache for copybooks and include files downloaded by the background parser in the editor. Additional tools are provided to check the existence of or clear the file cache for copybooks and include files.

- The product help includes some tutorials showing how to create new models and extend the functionality of existing models. See the *Tutorials Guide*.
- A number of template models are now available and can be used as a base to develop your own models.

AppMaster Builder

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This release includes the following new features:

- AppMaster Builder is now available in the Team Developer Perspective (Technology Preview) - this perspective provides a development environment for your AMB projects that includes much of the functionality available from the AppMaster Builder perspective plus access to the AMB Endevor Interface (Technology Preview).
- AMB Endevor Interface (Technology Preview) - enables you to share and synchronize resources between an AMB project and mainframe Endevor datasets.
- A renumber/unnumber feature in the Data Structure Editor.

Build Tools for Windows

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This release includes Enterprise Developer Build Tools for Windows, a separately-installable component of Enterprise Developer that has been designed to be used in environments where you want to work with your COBOL and PL/I projects but you don't want the overheads associated with the Eclipse IDE.

Build Tools provide a lightweight, easy-to-install development environment that is well-suited for use in Docker containers and continuous integration or continuous delivery systems.

Code coverage

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This release provides the following enhancements:

- Support has been added in Eclipse for code coverage for procedural copybooks.

Codeset support

Support has been added to enable codeset mapping to additionally be configured to use IBM's Conversion Tables directly instead of the Micro Focus supplied tables. You need to download IBM's conversion tables from IBM's Web site. Then you can use the MFCODESET environment variable to convert between IBM's CCSIDs.

Compiler directives

The following Compiler directives are new in this release:

- **DISPSIGN** - determines the display output of numeric fields with included signs, under an IBM mainframe dialect only.
- **GNTLITLINKSTD** - stops the suppression of call-convention 8 when both call-convention 2 and call-convention 8 are in effect for a `.gnt` file in an Intel x86 32-bit environment.
- **ILSMARTTRIM** - trims any trailing spaces from a string item returned by the get property associated with an alphanumeric item processed by ILSMARTLINKAGE.
- **MAINFRAME-FLOATING-POINT** - specifies the format of a program's floating point data items: either IBM hexadecimal format or IEEE format. This directive is supported in managed code only.

The following Compiler directives contain new parameters in this release:

- **CHECKDIV** - a new parameter 'ACOS' now emulates a divide by zero operation on an ACOS mainframe system: the quotient and the remainder are set to the value of the dividend.
- **OOCTRL** - a new parameter, **L**, specifies whether to include directory location comments in `.cls` and `.ins` inheritance files.
- **NUMPROC** - a new parameter 'ACOS' provides partial compatibility with the behavior of NEC ACOS COBOL processing of invalid data in USAGE DISPLAY data items and invalid sign information in USAGE COMP-3 data items.

Data File Tools

It is now possible to export any filtered results. When filtering a data file, you can use the results to create a new data file - click **Search** > **Export Results** when a filter is applied to save the filtered records to a new file. You can:

- Save the filtered records to a new file.
- Save the records that match the specified filter (such as customer information or orders).
- Download a subset of the data from a remote file.
- Save a small portion of the data for testing purposes.

Debugging

This release includes the following enhancements:

- Debugging CICS channels and containers - you can now debug CICS COBOL applications that use channels and containers. The debugger now enables you to view the contents of any channels and containers, and to change content as you debug.

Docker

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This release provides support to enable you to run your COBOL and PL/I applications in Docker containers, taking advantage of the many benefits offered by the Docker platform such as portability, performance, agility, isolation, and scalability.

Documentation on working with large applications

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The product help now includes a new section, *Working with a Large Code Base*, that includes recommendations and best practices for working with large applications inside the IDE. It includes tips on how to structure your projects, how to optimize the performance of the IDEs, and step-by-step workflow showing how to move an existing legacy application into Enterprise Developer.

Enterprise Server

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The following enhancements have been made to Enterprise Server:

- Conversation filtering - the Enterprise Server Communications Process (MFCS) can now restrict access to listeners by client address. You can specify any permitted or forbidden addresses either by IP address, network mask, or domain name, and use wildcards. Filters can be applied to individual listeners, communications processes, or to entire regions. More specific filter rules override any general ones.

- The Enterprise Server Security Facility now starts throttling Verify requests when it receives more than 100 requests per second.

  This can be used to limit the effectiveness of denial-of-service and brute force attacks. You can configure the value where throttling occurs. See *Verify Request Throttling* for more information.

- (Technology Preview only) Support for adding, deleting, and modifying XA resources in a live Enterprise Server region.

  It is now possible to add, edit, or delete XA resources while an enterprise server instance is running. Any changes made come into effect after any in-flight transactions have completed. The ability to make these changes in a live environment comes under the control of the existing enterprise server permissions.

- XA-compliant Resources (XARs) - this release provides enhanced CTF tracing that allows more flexible reporting of warnings and errors on the RM switch module level.

- A new Communications Server resource class - enables you to control the access to the Enterprise Server Console Log and Communications Server Log when external security is in effect for an enterprise server region; see *Resource Classes for Communications Server* for more information.

- Improved catalog availability - there is now an improved resilience to temporary communication issues with the catalog and error reporting enabling a region to stay active if a region has multiple catalogs defined and one of the catalogs is not available.

- Enhanced SSL/TLS certificate support - for communications with TLS (formerly SSL), additional certificate and key file formats are supported. Servers may now be configured with both an RSA and an ECC key and certificate.
- Enhanced SSL/TLS cipher configuration - for communications with TLS (formerly SSL), the permitted cipher suites and their preferred order can now be configured. The minimum size of Diffie-Hellman groups for DH key exchange can also be configured. The defaults have been made more secure.

- The Historical Statistics Facility (HSF) now enables you to write user-defined data to the records produced within a `.csv` file. Use the ES_WRITE_CUSTOM_HSF or ESCSTHSF library routines within

your COBOL programs to define the custom data, and use the ES_HSF_CFG environment variable to configure up to five custom fields in the generated record.

- You can also use the ES_HSF_CFG environment variable to configure the number of CICSF, TSQ, and TDQ fields that are written to the record.

File Handler

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This release provides the following enhancements:

- The DFSORT and SYNCSORT emulations now support the NULLOFL parameter of the OUTFIL statement.
- The **ASCIISOSI** configuration option is now available. It adds the required SOSI characters to the relevant EBCDIC DBCS character strings in order for them to be displayed or written out correctly.

HCO for DB2 LUW

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This release includes the following new features:

- Support for CHARSET EBCDIC COBOL stored procedures
- Seamless integration with DB2 LUW SBCS databases, providing various EBCDIC collation sequences
- 64-bit HCO command-line tools are now available across all supported platforms
- HCO DCLGEN enhancements that provide more copybook generation options

IMS support

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This release introduces the following new features:

- The IMS Database Forward Recovery feature has been updated to provide point-in-time forward recovery that enables you to recover all database transactions completed up to a specified point in time, including date and time of day.
- IMS support now includes MFS code for Light Pen devices. In your MFS, include a DEV statement with the FEAT=PEN parameter, and set the ATTR property on appropriate fields to DET or IDET to make them detectable by a light pen. See your IBM documentation for details.

    Note: MFS that contains light pen code must be regenerated to take effect if the MFS is part of an Enterprise Developer project created using an earlier release.

- Support for export and import of IMS-configured enterprise server regions through Server Explorer.

JCL support

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This release introduces the following new features and enhancements:

- Micro Focus FTP utility - you can now configure MFFTP to not process trailing blank spaces for a GET command, by setting the new control variable MFFTP_PROCESS_TRAILS_ONGET=FALSE and setting the LOCSTAT value TRAILINGBLANKS=FALSE.
- A new API has been introduced - MVSSPLPB - that enables you to search all job information held in the JES spool control files. It is more comprehensive that the existing MVSCASPB API, and should instead be used for all new spool enquiries.
- A number of new environment variables have been introduced that enable you to configure the JES startup behavior with regards to opening user catalog files. You can configure JES to open user catalog files only when they are required (and not during system startup), and you can configure JES to retry opening a catalog file that has failed to open. These changes increase the resilience of the JES system,

as you can mitigate against JES startup failures if the user catalog files are not readily available whilst the region starts. See *Configuring Multiple Catalogs* for more information.
- The public catalog API, MVSCATPB, has been enhanced to better report on file errors when opening catalog files. The following new functions have been added to `mfpubcat.cpy`: GCFS, GNFS, STNI, GCFE, and GNFE.

Library routines

The following library routines contain new functionality:

- **CBL_GET_OS_INFO** - this library routine can now detect if the program is running within a Docker container: `cblte-osi-rts-capabilities parameter`, bit 7.

Mainframe Access

The installation process has been changed as follows:

- A single installer for both Mainframe Access and the Mainframe Access z/Server support is provided.
- There is now only one XML configuration file for Mainframe Access. There is also a new configuration utility that guides you through the configuration process.
- Specify your own JES console character - it is now possible to configure the Mainframe Access installation to use a different JES console character instead of the default ("$"). To achieve this, use the new JES_CONCHAR configuration parameter.

Enhancements are available in the following areas:

- The Mainframe Call Generator now runs in an independent address space. Previously, it was possible for code run in the MFA address space to enter a supervisor state. MCGLIB is now the new address space's STEPLIB. This enables other user modules to be called without placing them in MFA's STEPLIB, as was previously necessary. See *Mainframe Call Generator: Calling Programs on the Mainframe* for more information.

Managed COBOL

Deploying JVM COBOL to an Application Server:

- Running JVM COBOL under WebSphere 9.0 and WebLogic 12.2.1 is now supported.

Micro Focus Unit Test Framework

This release provides support for the following functionality:

- Generation of unit test stubs for selected entry points within your program.

OpenESQL

This release provides the following new features:

- Support for SQL Server 2017.
- The SQL(TRANSACTION) compiler directive has been enhanced to clearly define transaction boundaries.
- A new SQL(NOWHERECURRENT) compiler directive that allows you to define updateable cursors that do not do positioned updates or deletes with PostgreSQL or MySQL.

- Larger communication area (PID) that accommodates longer plan and program names.
- SQL(OPTIMIZECURSORS) has been enhanced for consistent and better cursor performance across all OpenESQL backends.

Platform support

Note the following changes in platform support for this release:

- Windows 8 and Windows Server 2012 are no longer supported for developing applications. They are still supported for deployment. Windows 8.1 and Windows Server 2012 R2 are supported.

- SUSE platforms - this release only supports SUSE Linux 12 SP2, 64-bit.

  On this platform, you can only build COBOL and PL/I programs to 64-bit executables. This applies when using Eclipse on SUSE or with remote projects when Micro Focus Enterprise Developer UNIX Components is installed on SUSE.

PL/I support

Note: PL/I applications that were created using Enterprise Developer 3.0 and earlier must be recompiled in Enterprise Developer 4.0 to ensure they will compile and execute properly.

Support has been added for the following features in PL/I debugging:

- Displaying complex data structures in the Expressions and Variables views.
- Viewing the console window on non-Windows platforms so that output and input can be seen or entered.
- The Outline view in the default Debug perspective.
- Watchpoints on variables on the line where the variable has been declared.
- Conditional breakpoints.
- Skipping variables a defined number of times before the execution stops.
- Adding expressions to the Expressions view from the Outline view.
- Inspecting variables when referenced as part of a macro argument.
- Signals and conditions.

PL/I compiler and Run-Time System enhancements:

- Support for the following built-in functions - CHARVAL(), COMPARE(), CURRENTSIZE(), EDIT(), PICSPEC(), SOURCEFILE() and SOURCELINE().
- Support for additional DATETIME() format strings.
- Support for the FLUSH FILE(*), ITERATE, and RESIGNAL statement.
- Support for the XMLOMIT and XMOLATTR attributes on variable declarations.
- Support for the MARGINI compiler option.
- Support for the SIZE and STRINGSIZE prefix conditions.
- Improved support for the repeat factor on arrays of AREA variables.
- Improved pointer arithmetic on 64-bit platforms.
- Where necessary, MFPLX now recognizes selected *PROCESS statements and passes them to the appropriate preprocessors.

PL/I EXEC preprocessor:

- The EXEC preprocessor now honors the -margins setting for the output MDECK in addition to the input file. This provides an improved experience in the Eclipse IDE when using the Outline view and other PL/I features provided by the background parser.

PL/I macro preprocessor:

- The Micro Focus macro preprocessor now provides a new default behavior that mimics IBM's RESCAN(ASIS) behavior. In addition, a new option, rescan_upper, has been introduced to enable you to optionally mimic IBM's RESCAN(UPPER) behavior.

Improvements in compatibility with IBM's Macro Preprocessor:

- Allows OTHER as an acceptable abbreviation for OTHERWISE on a macro SELECT statement.
- Supports the SCAN/NOSCAN option on declaration of macro variables.
- Implements the NOSCAN option on ANSWER statements.
- The %NOTE message format has been modified to match IBM's behavior.
- The SYSVERSION built-in function has been modified to always return a value of 22 bytes in length (space padded, if necessary).
- Relaxed diagnostics for scenarios where Enterprise Developer is generating a warning message and IBM does not.

(Technical Preview) Generating PL/I test coverage reports:

- The PL/I Compiler and Run-Time System now support capturing of information showing which lines in the program have been executed, and the generation of human-readable reports at the conclusion of a run.

(Technical Preview) Interaction with COBOL AMODE and 370 Assembler programs (Windows 32-bit only):

- A new compiler option is available which enables Open PL/I to interact with 370 Assembler, and with COBOL programs compiled with AMODE. See the product help for the current limitations to this support.

Web service clients

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This release provides the following enhancements for Web service clients:

- Improved support for larger, more-complex WSDL files, including:

  - Configurable generation of variable arrays and repeated structures by specifying the Inline-Array-Size-Limit parameter.
  - Generation selection for service, port, and one or more operations.
- Support for SOAP version 1.2 in addition to version 1.1.

Significant Changes in Behavior or Usage

This section describes significant changes in behavior or usage. These changes could potentially affect the behavior of existing applications or impact the way the tools are used.

Where present, the numbers that follow each issue are the Support Incident Numbers followed by the Reported Problem Incident (RPI) number (in parentheses).

- *Application Server JCA Support*
- *Application Workflow Modeller*
- *CICS Support*
- *Code Coverage*
- *Codeset Support*
- *Common Communications Interface*
- *Communications Server*
- *Compiler*
- *Data Tools*
- *Documentation*
- *Enterprise Server*
- *Enterprise Server Auditing*
- *Executables require relinking*
- *File Handling*
- *HCO for Microsoft SQL Server*
- *IDE*
- *Interface Mapping Toolkit*
- *JCL Support*
- *Mainframe Access*
- *MF Server Administrator (GUI)*
- *Micro Focus Directory Server*
- *PL/I Compiler*
- *Run-Time System*

Application Server JCA Support for Enterprise Server

- With this release, all CICS-related Java artifacts have been delivered using a new directory structure under the `javaee-ccl` directory of your Enterprise Developer installation directory. The `javaee-ccl` directory structure mimics the structure of the `javaee` directory. For example, `mfccl.jar` is no longer located in the `bin` subdirectory, but can be found in the `javaee-ccl\common` directory.

Application Workflow Modeller

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- Source or listing files are now opened in read-only mode when a browse action is executed in the ChangeMan attachment model.

  3138354 (1112546)
- A new function package, Micro Focus Background Parser, enables you to define the SYSLIB or PROCLIB concatenation in which to search for COBOL copybooks, PL/I or JCL include files on the mainframe or on network drives. The package also enables you to define any identifiers which determine the structure of the local cache for COBOL copybooks, PL/I or JCL include files.

  3132249 (1111922)

- The Endevor attachment application now validates the input of a CCID or a comment. They must not be blank.
- Added the new "Modeled Edit Sessions Only" AWM model attribute to control whether modeled editor actions should be available in non-modeled edit sessions.

CICS Support

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- Starting with version 4.0 Patch Update 2, all applications that use WEB CONVERSE or WEB SEND SESSTOKEN explicitly with the AUTHENTICATE, BASICAUTH, or NONE options, and that do not use a URIMAP that specifies the AUTHENTICATE attribute, must be recompiled. (This does not affect applications that use a URIMAP that specifies the AUTHENTICATE attribute.)
- Client ECI timeouts now propagate CTG requests to ABEND AITH the ECI server program.
- The update resource definition file utility, CASRDTUP, now supports the DELETE command. Note that the REMOVE option is not currently supported.

  2885020 (1108004)

Code Coverage

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- Schema changes that affect the test coverage results generated from the `tcutil` utility mean that if you propagate the results to a third-party application (for example, an XSLT processor), and rely on the `<copyFileCoverage>` element, you need to alter your transformations to focus on `<sourceFileCoverage>` instead. The element was renamed to more appropriately reflect its contents, as `tcutil` now gives global coverage for all source files (not just copybooks).

Codeset Support

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- Code-set mappings between ASCII and EBCDIC have been updated when Simplified Chinese is the language in effect. ASCII table 5210 now maps to EBCDIC CCSID 836 for SBCS conversions. This replaces the previously conversion (where ASCII table 1042 was used), which would convert the "\" character to "$".

  3124321 (1111464)
- New single-byte character set tables for MFCODESET have been added in order to improve support for DB2 LUW - both for off-mainframe databases and for access to z/OS DB2. A number of existing MFCODESET mappings have also been updated. See 'Supported Country Codes' for a full listing of ASCII/ANSI <-> EBCDIC mappings.

  3111843 (1109984)

Common Communications Interface

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- You can now configure the Micro Focus Directory Server and enterprise server region's listeners to only use the server's configured SSL and TLS protocols and define a priority ordered cipher suite collection. This forces connecting clients to use the server's preferred ordered list of cipher suites when using the specified protocols.

  2866265 (1105526)
- In some circumstances it was possible for a connection to incorrectly accept the identity of an SSL/TLS peer and allow a connection to complete when the connection should have been denied. This occurred due to a failure to check the peer's entire identity certificate chain. This has now been fixed. NOTE: You

might need to correct your system's configured certificate chains that fail verification checks at secure connection creation time.

- In some circumstances it was possible to crash the CCITCP module when it was attempting to obtain detailed error information about a closed connection. This has been fixed.

Communications Server

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- TN3270 conversations to Enterprise Server now correctly handle the receive (idle) timeout setting configured for the listener. There are also two new settings for configuring TN3270 timeouts, "Printers time out" and "Output resets timeout". See the online product documentation for more information.

    3144133 (1113024)
- Web access to the Enterprise Server Console Log and Communications Server Log is now restricted when the region is secured using external security. Users will be required to provide a valid username and password in order to view either log file. Web access to the logs can be controlled using the standard ACL definitions under the new "Communications Server" Resource Class, with resources "Enterprise Server Console Log" and "Communications Server Log". If these resources exist, users require read access to be allowed to view the logs. If they do not exist, the default behavior is to allow read access. The new resource class and resource definitions can be found in the "es_default_ldap(_msuser/_unix).ldf" file in the bin or etc sub-directory of your product install directory.

    3113539 (1110155)
- MFCS listeners can now be SSL-enabled without the need to have DemoCA installed.

    2868627 (1105777)
- MFCS no longer initializes the Security Facility if there are no External Security Managers defined for the region.

Compiler

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- Programs containing EVALUATE statements of the form: EVALUATE true | false WHEN conditional-expression where conditional-expression included inline method invokes would give an RTS 114 error when run as .int code, and an "Illegal .int code" error when generated. This has been fixed. Also, short circuit evaluation is now correctly observed, such that when evaluating condition-1 AND condition-2, if condition-2 contains an inline method invoke and condition-1 is false, then the inline method invoke is not executed. Previously, despite being correctly evaluated, the inline method invoke in condition-2 was being executed. Similar behavior relating to OR evaluations has also been corrected.

    3138510 (1112492)
- During compilation, characters within literals that are unknown in the current locale are now less likely to cause spurious errors. However, the correct (and safest) solution is to ensure that the locale has been set correctly, to match the source encoding of these characters. On UNIX, this means setting LANG, LC_CTYPE, or LC_ALL appropriately; each of these variables takes precedence over the former. On Windows, this means setting the system locale in the 'Region and Language' section of Control Panel.

    3123935 (1111148)
- The Compiler now produces an E level message - COBCH1888 Typedef is defined differently in another external program - if different external programs have conflicting definitions of the same typedef name. (To restore the previous behavior, where the earlier definition was ignored, use the directive HIDEMESSAGE"1888".)
- An issue with the Compiler has been fixed so that in the RECORD VARYING clause, if the minimum and maximum lengths are specified, the maximum length must be greater than the minimum length.

Data Tools

Back to the list

- Records with an invalid value for a conditional field will no longer result in a match for that conditional layout.

  2853226 (1103406)

Documentation

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- You can use 'byte' or 'BYTE' as a synonym for the binary-char unsigned data type. As a result, 'byte' and 'BYTE' are now reserved words in Managed COBOL. Use the REMOVE"BYTE" Compiler directive to prevent an error being produced for existing programs that use the reserved word as a user-defined word.

  3147576 (1113323)

- As of version 3.0, references to types within an assembly other than mscorlib need to be explicitly referenced. You can achieve this by using the ILREF Compiler directive. (Previously, in certain circumstances, the Compiler would allow access to types within the System.dll assembly without the need for an ILREF"System" directive.

  3121002 (1111373)

Enterprise Server

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- The External Security Facility (ESF) can now be configured to throttle large volumes of incoming Verify (user authentication / signon) requests to improve resilience to denial-of-service and brute force attacks. See "Verify Request Throttling" for more information.

  3113639 (1110160)

- The LDIF files used to create the sample configuration for Enterprise Server LDAP-based security no longer create an empty "PHYSFILE" resource class. Changes in the JCL engine as of ES 3.0 caused most jobs to fail when submitted to a security-enabled region using such a configuration. See the product help for more information.

- The MLDAP ESM Module, part of the Enterprise Server External Security Facility, now supports the Argon2 hash algorithm for creating password verifiers. See MLDAP ESM Module Custom Configuration Information in the product help for more information. NOTE: The Argon2 hash is optional and not enabled by default.

- The MQ pages in ESMAC are now controlled by a new security resource, MQL. This enables you to either restrict or grant users access. 'MQL*' is a new resource that needs to be added under MFESMAC similar to existing resources such as 'PCT*' or 'XAT*'. The following is a sample export of the LDAP repository:

```
******************************
# Sample security definitions for ESMAC MQ Listeners/Writers pages

######################
###### MQL*         ##
######################
dn: CN=MQL*,CN=MFESMAC,CN=Enterprise Server Resources,CN=Micro
Focus,CN=Program Data,DC=X
changetype: add
cn: MQL*
objectClass: microfocus-MFDS-Resource
microfocus-MFDS-Resource-Class: MFESMAC
microfocus-MFDS-Resource-ACE: allow:SYSADM group:alter
microfocus-MFDS-Resource-ACE: deny:*:execute
microfocus-MFDS-UID: mfuid
#description: Allow full access any ESMAC MQ Listeners/Writers Screen

******************************
```

3143258 (1112990)

- You can now use the ECIResponse.getReturnCode() method to obtain the return code for any errors from Enterprise Server.

3142092 (1113248)

- Communication with the console daemon has been improved. Messages are displayed more quickly and requests are being processed more efficiently and, as a result, times for initialization and shutdown might be reduced.

3136867 (1112483)

- Administrators can now add, delete or modify XA resources in the Enterprise Server Administration Web UI while a region is running.

2589624 (1085625)

- CICS Web services has been updated to include the ES_TRANCLASS_CWI environment variable, which enables you to prioritize and limit Web requests in a TRANCLASS-enabled region. When the ES_TRANCLASS_CWI environment variable has been set to either TCPIPSERVICE (default) or URIMAP, a TRANCLASS-enabled region processes the elected transaction according to its priority and associated TRANCLASS.

    Note: When using CICS® Transaction Server for z/OS®, Version 3 Release 1, and IBM CICS initiates the ATTACH transaction followed by the ALIAS transaction for a single Web request, this is intended to enable the application of different limitations and priorities on these transactions. Enterprise Server does not support this. Instead, a TRANCLASS-enabled region processes the requests as a single ATTACH transaction, and uses the ALIAS transaction for security checks.

3126381 (1111349)

- Web access to the Enterprise Server Console Log and Communications Server Log is now restricted when the enterprise server region is secured using external security. Users will be required to provide a valid username and password in order to view either log file.

    Web access to the logs can be controlled using the standard ACL definitions under the new **Communications Server** resource class, with resources **Enterprise Server Console Log** and **Communications Server Log**. If these resources exist, users require 'read' access to be allowed to view the logs. If the resources do not exist, the default behavior is to allow 'read' access on entry of a valid username and password.

    An example of the new resource class and resource definitions can be found in the `es_default_ldap_msuser.ldf` (Windows), or `es_default_ldap_unix.ldf` (UNIX) file, which is located in the `bin` (Windows), or `etc` (UNIX) sub-directory of your product directory.

- In UNIX environments, DB2 and ODBC switch modules can now be enabled together in the same region if the DB2 switch is built with the "-o" option.

3137455 (1112398)

Enterprise Server Auditing

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- The maxRetryTime value in the audit configuration file now treats 0 as a no timeout time, and any negative number as an infinite timeout.

3150566 (1113592)

- Any extra information that was added to the syslog messages will now correctly appear in the structured data items.

Executables require relinking or recompiling

    Note: Windows-only.

- Due to an internal change in version 4.0 of your product, you must at least relink any executable programs compiled prior to this version, to make them compatible with the latest run-time system. However, a full recompilation of your source code is the recommended action, to allow your executables to benefit from the product's latest programming and performance enhancements.

  Relinking an executable without recompiling means using the original object code with the `cbllink` utility. Original object code is typically the binary file output (usually containing the `.obj` extension) produced during the original compilation process. An application can contain one or more binary files.

File Handling

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- In some cases the ESF LDAP Security Administration Web Interface inadvertently removed users from groups when changing their password. This has been fixed.

  3124294 (1111259)
- The ESF LDAP Security Administration Web Interface can now filter by Class and Resource name, description, and ACL. Previously, you could only filter on Class name.

  2871549 (1106119)

- Setting the configuration option ASCIISOSI=ON will adds the required SOSI characters to the relevant EBCDIC DBCS character strings, in order for them to be displayed or written out correctly.

  3113802 (1110183)
- The OPEN mode of SYSOUT files now honors the DISP specified in the JCL.

  3109432 (1109745)
- OPEN I-O of a virgin ESDS file now correctly returns a file status of 35, as it does on the mainframe.

  2887724 (1108443)

- The TO parameter is now supported for TOT|TOTAL, MIN, MAX, and AVG in the TRAILER3 trailer item.

  3135298 (1112194)
- The OUTFIL statement of a SORT operation now supports the NULLOFL parameter.

  3110364 (1109822)
- The MFJSORT OUTFIL emulation now supports the VLTRIM parameter.

  3107105 (1109820)

HCO for Microsoft SQL Server

Back to the list

- The HCOSS Manage Connections tool was incorrectly limited to using the default CCSID for mainframe DB2 connections, causing problems when mainframe database did not use the default CCSID of 37. This has been corrected by the addition of a text box that enables the setting of a specific CCSID value for the connection.

  3130137 (1112180)
- When using the DIALECT=MAINFRAME setting, the OpenESQL STRICTPARSE SQL compiler directive option is now turned on by default for ODBC (DBMAN=ODBC). This ensures strict compliance with z/OS DB2 syntax.

  If your applications require the OpenESQL preprocessor to behave as it did in an earlier release, compile using NOSTRICTPARSE.

IDE

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- New functionality to support the debugging of CICS channels and containers has been added to this release.

  2810448 (1098047)

- Code blocks in PL/I editor can now be folded. You can configure the PL/I editor to fold various block types. To do this, click Window > Preferences > Micro Focus > PL/I Editor > Folding, and check the options that you require.

  2867993 (1105654)

Interface Mapping Toolkit

Back to the list

- Refresh Resources functionality has been added to regenerate existing service interfaces for COBOL programs whose linkage section has been updated after the service interface was initially created.

  2849403 (1103036)
- Due to changes made to the **Configure Runtime Environment** dialog box in this release, after you upgrade your system, you must reenter all previously set values on this dialog box before running a service.

JCL Support

Back to the list

- You can now configure MFFTP to not process trailing blank spaces for a GET command, by setting the new control variable MFFTP_PROCESS_TRAILS_ONGET=FALSE and setting the LOCSTAT value TRAILINGBLANKS=FALSE.

  3138375 (1112486)
- ICEGENER now does not copy the RECFM from SYSUT1 to SYSUT2 if SYSUT2 RECFM is not specified in JCL and when SYSUT1 is VSAM. It defaults to F/FB if SYSUT2 is non-VSAM, or V/VB if SYSUT2 is VSAM.

  3131268 (1111805)
- An error in identifying the IDENT in IEBGENER when the record included high values at the start of the record has been corrected.

  3109443 (1109759)
- FOR ED 2.3.2 HF7: The following changes have been made to the MF_UCC11 environment variable: MF_UCC11=Y - when running a job with DISP=(NEW,CATLG), it will not result in job failure caused by the data set already being cataloged. MF_UCC11=YR - when restarting a job with DISP=(NEW,CATLG), it will not result in job failure caused by the data set already being cataloged. For ED 3.0 HF1: The following changes have been made to the MF_UCC11 environment variable: The default behavior of MF_UCC11=Y has changed: DISP=NEW is changed to DISP=MOD only when the job is restarted. MF_UCC11=YA reverts to the old behavior of changing DISP=NEW to DISP=MOD even when the job is first run.

  3107409 (1109722)
- The introduction of a new environment variable, ES_OLD_DYN_PDS, has changed the resulting behavior of dynamic PDS members when specified in a JCL DD statement. Default behavior (ES_OLD_DYN_PDS=N) no longer creates physical files or catalogs the PDS members when specified in a JCL DD statement. Set this variable to Y to enable the previous default behavior of creating the physical files and cataloging PDS members when specified in a JCL DD statement.

  2845176 (1102528)
- To prevent unintended deletion of a GDG Bias, a GDG in use by one job may not be accessed by a second job until the first job has completed.

  2816745 (1101569)

Mainframe Access

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- Calling mfmon2.exe with the following options has the given effect:

    1. If you do not specify "EXTENSION" or specify "EXTENSION=" it will result in files downloaded without an extension.
    2. If you specify "EXTENSION=*" you will get an extension that matches the last part of the data set name. For example, if the source data set is a.b.c.d then the file extension will be .d.
    3. Everything else results in the extension specified. For example, "EXTENSION=txt" will result in files downloaded with a .txt extension.

MF Server Administrator (GUI)

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- The total number of active sessions or clients in MFDS is now limited to 2000.

Micro Focus Directory Server

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- The mfds -g options D, O, and S have been added to the product Help.

    2848627 (1102864)
- On UNIX, specifying an invalid user ID in the MFDS "General" options value for "Default process user ID" no longer causes the child process (such as a region start or stop request launched from the Web interface) to fail. The user ID under which the MFDS process was started will be used instead.
- MFDS now disables and limits the scope of Web listeners on add. It also emits a warning if any insecure Web listeners are displayed in the validate and listener tables.

PL/I Compiler

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- Previously, storing PL/I named constants in big-endian form was incorrect and impaired some instances of restricted expression evaluation. In ED 4.0, named constants are stored in native form when the -bigendian compiler option is in effect.

    3150931 (1113613)
- Open PL/I now supports the FLUSH statement.

    3134294 (1112117)
- The %PROCESS statement now includes new compile-time options, -pporder and -options. See the product help for more information.

    3107667 (1109861)
- Pointer subtraction in 64-bit mode now works as expected.

Run-Time System

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- The run-time system now produces a more precise error message if a shared object of the wrong bitism is loaded.
- scan64 is no longer available. This has been superseded by the COBOL Analysis functionality in the IDE.

Known Issues

Refer to the *Known Issues and Restrictions* topic in the *Product Information* section of your product Help.

In addition, note the following:

- *CICS*
- *Commuter licenses*
- *Debugging*
- *Eclipse*
- *Enterprise Server*
- *imtkmake*
- *Installation*
- *Micro Focus Rumba*
- *OpenSSL*

CICS

EXEC CICS VERIFY PASSWORD has a failure scenario that doesn't exist on the mainframe. It is currently not possible to distinguish this failure from an incorrect password on the command itself via the returned EIBRESP and EIBRESP2.

Under Enterprise Server, the following options mean that an admin LIST request to ESF is necessary to acquire the appropriate information:

```
CHANGETIME
DAYSLEFT
EXPIRYTIME
INVALIDCOUNT
LASTUSETIME
```

If no users are signed on to CICS, then this admin request will be made as the default CICSUSER which will be rejected.

The VERIFY PASSWORD command will return NOTAUTH 2, "The supplied password is wrong".

This is misleading because it implies that the value for PASSWORD on the command itself is incorrect. Note that in that case, CICS returns NOTAUTH 2 as per the mainframe.

The aggregated return code from ESF to CICS for the admin request is identical in both cases and so CICS has no way of distinguishing between these two failure scenarios. We therefore cannot return a new EIBRESP or EIBRESP2 for this particular case.

To allow CICSUSER to make admin LIST requests, the anonymous list option needs to be enable in the region's security manager configuration (not the Security Manager):

```
[Admin]
allow-list=yes
```

Commuter licenses

If there are a number of entries displayed in the License Administration tool, these might be either for different products or for the same product but for different serial numbers, for example.

When a commute request is made using the license manager, that request is serviced from a pool of licenses that could be provided by any number of Micro Focus product licenses stored on that server. The commute request cannot target a particular RMS license by product name, serial number, or number of cores.

The products to which you apply the commuter licenses will be licensed correctly but the number of licenses left in the License Administration tool might appear to be less than expected. This issue is more likely to occur with multiple entries for the same product.

If you are using a number of different products, Micro Focus recommends that you use a different licensing server for each product in order to help minimize the issue.

Debugging

- core_on_error=3 does not work correctly on AIX 7.2.

Eclipse

On Windows, you might experience some an issue with starting Eclipse where Java Tooling fails to initialize. These are a result of a known issue with JNA and installing certain Windows updates. To work around this issue, you need to:

1. 1. Locate the eclipse.ini file in the Enterprise Developer installation folder for Eclipse - `C:\Users\Public\Micro Focus\Enterprise Developer\eclipse`, by default.
2. 2. Add the following line at the end of the file:
   ```
   -Djna.library.path=C:/Windows/System32/
   ```

Enterprise Server

- On Windows 10, if you are using Microsoft's EDGE browser to access the Enterprise Server Administration GUI, issues with EDGE can cause the automatic refresh feature to display a dialog asking whether you want to resubmit a form. To work around this issue, cancel the resubmit request and then refresh the server list page or the Home page of Enterprise Server Administration. You can also turn off the automatic refresh by setting the **Auto-refresh interval** setting on the Home page of Enterprise Server Administration to 0.

imtkmake

- On AIX v7.2, you must install IBM's patch APAR IJ04075 in order for imtkmake -genclient to work correctly. See *http://www.microfocus.com/docs/links.asp?vc=IBM_APAR_IJ04075* for details about how to install the patch.

Installation

- Installing this product fails if Micro Focus License Manager version 10000.2.02070 (April 2015) or older is already installed on your machine. The setup files does not upgrade the License Manager automatically to the latest version. You must uninstall the existing version before you start the installation.

Micro Focus Rumba

Rumba 9.5 is not supported on Japanese Windows.

OpenSSL

The version of OpenSSL included in Enterprise Developer and Enterprise Developer 4.0 is intolerant of expired X.509 certificates in the CA Root Certificate collection in some circumstances. Specifically, if you configure a PEM file that contains multiple certificates as the collection of trusted CA certificates, and one or more of the certificates in that file have expired, OpenSSL might not be able to load and use other certificates in the file which are still valid. This can cause certificate validation errors and connection failures for SSL and TLS connections.

To work around this, you need to remove any expired certificates from such collections. If necessary, replaced them with any valid certificates that have the same Distinguished Name and Modulus (key). This is a known issue with OpenSSL. Micro Focus is investigating for other possible workarounds.

Resolved Issues

The numbers that follow each issue are the Support Incident Numbers followed by the Reported Problem Incident (RPI) number (in parentheses).

- *Adis*
- *Application Workflow Modeller*
- *AppMaster Builder*
- *Assembler Support*
- *CICS Support*
- *COBSQL*
- *Code Coverage*
- *Codeset Support*
- *Common Communications Interface*
- *Compiler*
- *Data Tools*
- *Debugging*
- *Documentation*
- *EJB Generation*
- *Enterprise Server*
- *File Handling*
- *IBM Language Environment for OS/390 & VM Support*
- *IDE*
- *IMS Support*
- *Interface Mapping Toolkit*
- *J2EE Connector*
- *Java Support for COBOL*
- *JCL Support*
- *MF Common Client*
- *MF Communications Server*
- *Micro Focus Directory Server*
- *Mainframe Access*
- *Micro Focus Batch Scheduler Integration*
- *Micro Focus Cryptographic Library*
- *Monitoring and Management*
- *OLE Class Library*
- *OO Base Class Library*
- *PL/I Support*
- *Run-Time System*
- *Setup Issues*
- *HCO for DB2 LUW*
- *SQL: HCO for SQL Server*
- *SQL: MBDT Utilities*
- *SQL: OpenESQL*
- *SQL Option for DB2*
- *XML Support*
- *z/Server*

Adis

- When running under DIALECT"RM", a DISPLAY statement using the WINDOW-CREATE clause will create a window. Its position can be relative to the parent window or the screen. The position specified will be the upper-left position of the first character in the window. If the window has a border specified, the border will not change the location of the first character on the window.

  3143230 (1112975)
- By default, the ZERO-FILL SCREEN SECTION clause only affects alphanumeric items when the data is modified in an ACCEPT statement. For compatibility with ACUCOBOL-GT, Adis includes a new selection (#3) to the option '16 Force Field to be updated if it is not altered'; it reads: 3: Alphanumeric fields with the ZERO-FILL clause are updated even if the field is not altered.

  3137641 (1112412)
- JUST (and RIGHT-JUSTIFY) now works when specified in the data item for a CONTROL clause.

  3137065 (1112350)
- Internal limits that would cause a 'COBCH1990-S Internal error - Code generation of SCREEN SECTION exceeded 65535 bytes for large SCREEN SECTION' message have been removed.

  3130462 (1112572)
- Box line characters no longer disappear when using DISPLAY WINDOW BOXED and the background contains DBCS characters.

  3125337 (1111261)
- The window1 preprocessor now correctly handles underscores specified as part of a data item.

  3123437 (1111084)
- When using the Window1 preprocessor to support DISPLAY WINDOW ACUCOBOL-GT syntax, Keisen and reverse-video attributes are now supported. Note: Due to the way that the attribute system works on a Japanese OS, to make space for Keisen attributes, background-color attributes are not supported.

  3123217 (1111064)
- To emulate RM/COBOL behavior, an additional action affecting the left- and right-cursor keys within a field has been added to ADISCTRL. Setting 25 contains a new action (value #3) that emulates the behavior of generating an exception when trying to move beyond the left- or right-hand edge of an entry field. However, unlike RM/COBOL, where you can control the exception generation of the left and right cursor keys individually and specify the exception values generated, this action affects both keys, and the values generated are fixed. They are 3 for the left arrow key, and 4 for right arrow key.

  3115797 (1110548)
- The PROMPT identifier in a SCREEN SECTION now works as expected.

  3115743 (1110380)

AppMaster Builder

- The srcscan.exe module was updated to remove an incorrect concatenation of COPYLIB files into an internal buffer, which was causing the module to crash when scanning large files.

  3110231 (1110157)

- A problem with the Distributed Generation Server not recognizing the APSDEBUG setting for mainframe program generation has been fixed.

  3129295 (1111603)

- A problem that caused the user variable directory to be saved and displayed improperly on the Preferences page when changing to a different project has been fixed.

3150392 (1113629)

- A problem that prevented programs located outside of the main AMB project from being generated has been fixed.

3149801 (1113560)

- An issue that caused an APSPROG program to be marked as "Changed" when opening it in the AMB Editor, regardless of its change status, has been fixed. The correct current change status when opening APSPROG in the AMB Editor is now reflected.

3142293 (1112894)

- A problem that caused a delay in the expansion of AMB project elements in the Application View has been fixed.

3141213 (1112823)

- A problem with accessing an object defined in a work group has been fixed.

3128897 (1111581)

- DatabaseView generation did not generate the required picture clause for "DBCS Char. in PIC". This has been fixed.

3127803 (1111502)

- A problem when loading a PSB into the Data View that prevented PSBs and DBDs from being exported to the specified COBOL project has been fixed.

3126291 (1111341)

- The CBLCOPY source now correctly handles a unique condition where it identified a "CALL" keyword within a string, however the string did not represent a true COBOL "CALL" statement.

3125204 (1111351)

- A problem with appropriate enablement of AppMaster Builder generation menus has been fixed.

3117176 (1110491)

- Multiple Map Mapsets will now be added to a COBOL project in the same manner as single map screens.

3107339 (1109587)

- A problem that caused AppMaster Builder to crash during generation of a program containing a paragraph name of more that 30 characters has been fixed.

3106206 (1109932)

- A problem with AppMaster Builder generation that caused it to incorrectly use a global DDISYMB instead of a local DDISYMB has been fixed.

3102013 (1109974)

- The cobcopy utility will now be able to accommodate larger COPYLIB paths.

2991309 (1109673)

- A problem with the screen painter that caused an error when accessing the SYSMSG character parameters window has been fixed.

3124456 (1111193)

- A problem that prevented the screen painter from fully accessing or creating a field in column 80 has been fixed.

3119207 (1110758)

- An issue was occurring in the AppMaster Builder screen painter in which an entryfield's length was being incremented by 1 if the entryfield was moved into the far-right column. This issue has been fixed.

3116934 (1110477)

- A problem in the program editor that caused ++ to become + + when spaces were inserted before the + + has been fixed.

3147465 (1113319)
- A problem in the program editor that prevented pasted text and lines of code from being indented according to the caret position has been fixed.

3147266 (1113314)
- Pasting in column 8 of the editor now correctly positions the text in the statement area.

3147249 (1113312)
- When shifting a single line in the editor, in the statement area, the text is shifted to the right. The keyword, though, remains in the same position in the keyword area. Shifting PARA lines is prohibited and will have no effect. This is due to an issue with generation when the paragraph name is shifted to the far right area in the editor.

3147248 (1113662)
- Back Tab would leave an additional space when returning to a location immediately to the right of a non-space character. This problem is now corrected.

3140934 (1112765)
- When pasting a field containing no spaces at the end of a full line, the pasted text will now be inserted as a new line.

3140784 (1112731)
- Pressing Shift+Tab key was producing inconsistent results. It is now functioning properly.

3138390 (1112484)
- The column indicator now displays correct line/column information.

3138388 (1112480)
- Different item types with the same name can now be added to an application.

3138163 (1112472)
- Data in column 73-80 was not being removed for source connected modules when the option 'Remove data in column 73-80 when loading program' was selected. This has been fixed.

3137747 (1112446)
- The Report Painter ruler only displayed up to 133 columns. This has been corrected to now show up to 255 columns.

3134794 (1112173)
- Whitespace toggle button was missing from the Data Structure Painter and Report Painter. This has been fixed.

3134784 (1112171)
- A behavior problem in the AMB Editor that occurred after pressing the Shift+Tab keys (backwards tab) has been corrected.

3133213 (1112044)
- When the COBOL project is specified in AMB preferences this now enables the Micro Focus Build console in addition to the AppMaster Builder console.

3133099 (1112070)
- A new menu, Local Files Only, has been added to the Filter Programs menu to enable the filtering of local files.

3131132 (1111800)
- The Customization Preferences page has been updated with new Console options that enable automatic clearing of the AppMaster Builder and Micro Focus Build Consoles.

3130941 (1111780)
- Text pasted into the Editor when the cursor was in the protected area erroneously placed the pasted text into the protected area. This has been fixed to paste the text starting at the first column of the statement area.

3130910 (1111795)

- A problem in the Editor that caused multiple lines of pasted text to incorrectly merge with other text on the same line where the pasted text is inserted has been fixed.

3130910 (1111832)

- A problem with caret placement in the statement area that occurred when a space was placed at the end of the keyword area has been fixed to place the caret at the beginning of the statement area.

3130910 (1112020)

- A problem with the Editor that caused Paste to fail when the pasted text consisted of a block of text plus an extra blank line has been fixed.

3130910 (1112021)

- A problem with the Editor that caused an extra blank line to be inserted before pasted text has been fixed.

3130910 (1112022)

- Typing space at the last position of the keyword area no longer causes shift in the statement area to shift.

3130910 (1112475)

- A problem that caused keywords to shift in the AMB Editor when moving blocks of code using the Tab key has been fixed. This applies to all keywords except the comment keyword (/*).

3130790 (1112235)

- A problem in the AMB Editor that prevented backwards tabbing of a block of code has been corrected.

3130790 (1112149)

- The AMB Editor did not permit multiple selected lines to be indented as a block using the Tab key. This has been corrected. In addition, the Editor splits any line of code that extends beyond the character limit after indentation.

3130790 (1111782)

- A problem with Find/Replace that caused spaces to be inserted into unrelated lines has been fixed.

3130776 (1111778)

- A problem in the Editor that prevented margins and rulers from adjusting properly after a font size change has been fixed.

3129667 (1111633)

- A problem with the AMB Editor when not in smart editor mode that caused a tab character to be inserted each time the Tab key was pressed has been fixed. The Editor now inserts four spaces instead of a tab character when the Tab key is pressed.

3125949 (1111503)

- A problem with alphabetization in the Data View components list has been fixed to list components in alphabetical order.

3121970 (1111073)

- A problem that prevented the KL01 keyword from being entered into the keyword area has been fixed.

3118306 (1110589)

- A problem that prevented the 'O' indicator from displaying for Online Express programs has been fixed.

3117412 (1110521)

- A name validation problem for Batch programs has been corrected.

3116634 (1110468)

- A problem that prevented items on the AMB Project Explorer from being dragged and dropped to alternative positions has been fixed.

3109630 (1109764)

- A problem with the AMB editor that caused incorrect cutting and pasting to and from the statement area has been fixed.

  3107271 (1109559)
- A problem that caused the AMB Editor to overflow data to the next line when pasting into a statement that contained a keyword has been fixed to position the pasted line within the statement area.

  3107271 (1111443)
- The AMB editor did not adjust the size of the KYWD area to match the font size when changed. This has been fixed.

  2988617 (1108552)
- A problem caused by the AMB editor when the length of find and replace text exceeded column 72 has been fixed by wrapping text to a new line after reaching column 72.

  2912752 (1108475)
- Renaming applications now works correctly.
- APSPROG files no longer appear twice in bulk lists.

Assembler Support

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- A problem that prevented the assembler from accepting omitted length parameters in instruction operands has been fixed to match IBM HLASM behavior. For example, instructions of the form: PACK AVAR(0),(,0) no longer generate assembly time invalid length errors.

  3148361 (1113412)

- To enable all DC C'...' variables to be defined using ASCII instead of EBCDIC characters, the ASCII Assembler directive has been added. To use this directive, enter: RUN MF370CHK <filename.mlc> ASCII Note: This affects C'...' items only. For example, EBCDIC characters defined using DC X'F1' are not affected. In addition, use of the ASCII directive could cause application logic to fail if the application assumes character data is in EBCDIC collating sequence order.

  3114383 (1110222)

- The EIBLENG symbol has been added to the Assembler file DFHEIBLK.MAC for compatibility with the mainframe.

Application Workflow Modeller

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- Switching to the Team Developer perspective shortly after starting Eclipse no longer causes the workbench to freeze.

  3142841 (1112929)
- AWM elements with disabled "Get Children" action did not have a "Refresh" action. This is now fixed.

  3141093 (1112753)
- Improved background parser performance in AWM edit sessions with local/network SYSLIB/PROCLIB paths only.

  3132682 (1111976)
- Modeled AWM dialogs containing tables enabled multi-selections despite the UI_MultiSelection attribute being set to false. This has been fixed.

  3130384 (1111742)
- Performance has been improved when using local or network paths in SYSLIB for downloading include files or copybooks.

  3128741 (1111573)

- If a COBOL copybook or PL/I include file is opened from the breadcrumbs view of a program which was edited from the Application Explorer or Table Results view, it is now opened in read-only mode.

  3126540 (1111789)
- If a Get All Properties action in an AWM model is set to execute before opening the context menu, then the Get All Properties action is now executed before the visible condition of other actions are evaluated.

  3123463 (1111136)
- On occasion the properties view failed to refresh. This has now been fixed.

  3114864 (1110298)
- Finished mainframe Jobs submitted by AWM tools now display a popup notification message at the bottom right corner instead of a dialog box. It contains links to jump to the finished job (Jobs view) or execute its "Job After Action". Its display time can be configured via the MVS function package in AWM models.

  3113130 (1110146)
- The AWM tool "Execute ISPF Edit Macro" provided in the ISPF function package now supports local edit scenarios in addition to the current remote edit scenario.

  3110798 (1110049)
- The new complex attribute "Table Row Selection" has been added to the AWM function package tool "Open Modeled Dialog". This attribute enables you to define conditions under which table entries are pre-selected in a table contained in a dialog box.

  3108314 (1109771)
- A new string attribute "Custom Error Message" has been added to the model object "Action Descriptor". If an exception occurs during execution of the action and this attribute is set, its value will be displayed in an error dialog.

  3108004 (1111100)
- The "Get All Properties" attribute of an element type has been replaced with a relationship from an element type with a Get_All_Properties action which enables more flexibility when specifying the Get_All_Properties action. For example, you can specify at which point in time the Get_All_Properties action is executed and how often it is executed for. You can also set enabling conditions for the Get_All_Properties action so that the action is only executed under specific conditions.

  3106896 (1109482)
- The new attribute "Cache Elements" application option has been added. It specifies whether AWM elements, elements lists, and column configurations for element lists are cached during application runtime or not. The default value is true.

  3106893 (1109481)
- It was not possible to define modeled AWM action labels containing slash characters, since they were used to define sub-menus. You can now use two forward slash characters (//).
- It was not possible to use AWM file descriptor names as mass processing input parameters for modeled ISPF function package tools. This is now fixed.
- AWM edit macros failed if temporary work files were missing on the mainframe. This has now been fixed.
- Property references are now resolved in AWM validate messages.
- A new tool, "Check File Existence", has been added to the "OS - Operating System" function package. The tool checks if a given file exists in the local OS file system.

- Previously, the Save action was executes twice when an IDz mainframe connection was used during a remote edit.

  3143538 (1112982)
- Double-clicking a partitioned data set in the MVS Explorer now expands it in the Remote Systems view, or shows its members in the Remote System Details view.

  3140345 (1112689)

- The PL/I include file editor could display incorrect error annotations if a PL/I program containing errors was opened using the Team Developer view. This has been fixed.

  3128339 (1111521)
- The Get All Properties action "Refresh" of an AWM model is no longer displayed in the context menu if the execution point is set to "Before context menu" and the execution rate is set to "Always".

  3123339 (1111099)
- An issue was encountered when a local and remote path were specified in the PROCLIB attribute in an AWM model. This has been fixed.

  3120804 (1110874)
- PL/I includes are now respected in AWM remote edit scenarios whether they are stored with or without a file extension in the local cache.

  3120778 (1110873)
- When the calendar widget is opened from a modeled AWM dialog that contains a date field, it now displays the entered date by default, instead of the current date.

  3139530 (1112659)
- The description attribute of the AWM function package tool "Open Modeled Dialog" supports multiline input.

  3133829 (1112083)
- The AWM model conditions "Equals" and "Equals Not" could return unexpected results when referenced property values were undefined. This has been fixed.

  3129580 (1111672)
- The AWM action descriptor attribute "Refresh List" did not always refresh element lists in the Table Results view. This is now fixed.

  3129398 (1111649)
- AWM models now validate if a key sequence has been defined more than once for the same key binding context.

  3129063 (1111599)
- Properties that have been hidden in the parent elements stay invisible in the child elements.

  3129056 (1111627)
- Properties can be defined as application properties. Application properties are accessible within the execution context of an AWM application.

  3123040 (1111057)
- Variable references are now resolved in labels of actions within AWM models.

  3122030 (1110994)
- The z/Explorer login dialog box has been improved. Mandatory fields are now clearly marked.

  3135347 (1112262)
- A "TSCOR0149" exception occurred when an existing workspace is used on a different operating system. This is now fixed.

  3126560 (1111553)
- Browsing the same job twice from the JES Explorer no longer results in an exception.

  3121818 (1110948)

CICS Support

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- Using read-only MAP files resulted in an ABEND APCT.

3110551 (1109925)

- The OUTDESCR option for EXEC CICS SPOOLOPEN OUTPUT is now supported. The output parameters specified using this option are available to your user printer exits.

3107410 (1109522)

- A background task issuing an EXEC CICS START transaction with data sometimes resulted in errors when dispatching the transactions. This has been fixed.

3104918 (1109663)

- Running concurrent browse INQUIRE TERMINAL on a busy system sometimes caused an RTS 114 error in dfheserv and/or sometimes caused communication server failure. This is now fixed.

3103089 (1109282)

- EIBCALEN was re-initialized incorrectly on return from a called program.

2862990 (1104824)

- This release provides support for IBM's AUTORESETTIME option in the SIT configuration. You can specify your preferences for AUTORESETTIME in ESMAC under Resources > by Group and by setting a "Reset time" option in any SIT configuration. The supported options are:

  - Immediate - The system detects a timezone (date) change at any time. It then changes the clock in the region on the next transaction which is started.
  - No - The system detects a timezone change at midnight and writes a notification in the console.log. You then need to run a transaction that will issue the PERFORM RESETTIME for the time to be changed.
  - Yes - The system detects a timezone change at midnight and automatically resets the clock.

2858836 (1104325)

- When a file is defined in CICS as catalogued, Enterprise Server now displays the type as (CATLG) in the ESMAC/ACTIVE/FCT instead of KSDS or ESDS.

2846390 (1102866)

- An enterprise server region could crash if the transaction CDBG was executed and no debugger was attached.

2828665 (1100470)

- The QUEUE disposition for an extra-partition is now honored on open.

2638481 (1088593)

- casrdo52 no longer crashes intermittently.

2841426 (1102352)

- The T-Type page in ESMAC has been fixed.

2832495 (1100861)

- The maximum value for ES_ESMAC_DISP_MAX_OVERRIDE has been changed to 99999.

2832069 (1100820)

- When browsing the contents of a file in the ESMAC catalog page, the back arrow button, "<", now navigates to the previous page instead of to an empty list of files.

2822494 (1099670)

- The TS/TD warm/cold start flag state in SIT was only checked for TRANCLASS. It is now always checked.

2676393 (1092162)

- Memory validation on entry or exit of programs can now be set dynamically from the Control page in ESMAC.

- The CFLE /K option now works correctly.

2860360 (1104438)

- The refresh rate for displaying the search records has been updated and the search algorithm is now faster.

  2856608 (1104800)

- Any special characters for Transaction used in DEFINE TRANSACTION are now imported correctly and will be displayed in ESMAC.

  2886545 (1108211)

- When creating a new SYSC resource in ESMAC, Enterprise Server now performs a validation and returns an error if you specify any invalid parameters.

  2881865 (1107538)

- When defining a TDQUEUE, a value of 0 for RECORDSIZE is now accepted.

  2807605 (1097659)

COBSQL

Back to the list

- A problem that caused COBSQL to mishandle EBCDIC conversion when the program was called more than once has been fixed.

  3145943 (1113226)

- A problem that caused incorrect indentations in generated code when using the KEEPCOMP directive has been fixed.

  3144736 (1113124)

- A problem with COBSQL handling of spaces between the colon and the host variable name has been fixed.

  3144632 (1113283)

- A problem with COBSQL incorrectly handling the AMODE directive has been fixed.

  3144632 (1113257)

- COBSQL now correctly handles host variables with the same name that are defined in different groups.

  3139017 (1112553)

- KEEPCOMP will now check SQLCODE for FETCH statements before performing a byte order swap on COMP data items.

  3138321 (1112476)

- A problem with COBSQL correctly handling replaced lines greater than 72 characters in length has been fixed.

  3127369 (1111465)

- COBSQL failed to recognize declared host variables that were identified using a two-part name. This has been fixed.

  3127102 (1111417)

- A problem that caused the COBSQL preprocessor to incorrectly handle the WORKING-STORAGE SECTION statement has been fixed.

  3124957 (1111232)

- An occasional problem with COBSQL reinitialization that caused the second background parse to fail has been fixed.

  3124170 (1111154)

- The COBSQL preprocessor was not handling COPY... REPLACING... statements correctly, causing the Debugger to display incorrect information. This has been fixed.

  3123903 (1111140)

- A problem that caused COBSQL to fail to parse the PROCEDURE DIVISION statement correctly when part of the statement was in a copybook has been fixed.

  3122593 (1111019)
- A problem that caused the COBSQL preprocessor to fail to generate HSF trace data When either the EBCDIC or KEEPCOMP option was specified has been fixed.

  3120860 (1110883)
- A problem that prevented COBSQL from processing more than 150 lines of similar source code in a single source file has been fixed.

  3112520 (1110134)
- A problem that caused the COBSQL preprocessor to incorrectly process child items when either the KEEPCOMP or EBCDIC options were specified has been fixed.

  3110932 (1110772)
- A problem that prevented the COBSQL preprocessor to correctly process data groups when the KEEPCOMP directive was specified has been fixed.

  3110932 (1110575)
- A problem that caused COBSQL to fail to recognize all data items correctly when the host variable was a group item has been fixed.

  3110932 (1110650)
- A problem that prevented COBSQL from correctly recognizing the parents of some data items when the KEEPCOMP directive was specified has been fixed.

  3110932 (1110495)

Code Coverage

Back to the list

- Correct results are now displayed when you generate a report on a program that is part of a shared object.

  3108051 (1109995)
- TCUtil will now run correctly without KSH installed.

Codeset Support

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- The current Shift-JIS EBCDIC to ASCII support under MFCODESET=81,930,939, and 9122 is based on the Japanese International Standard (JIS) X 0208 1978 revision. New conversion tables have been added based on the JIS X 0208 1990 revision - the tables have been taken from IBM's Conversion Tables CCSID 300 - 941. To use these new conversions instead of the default ones, set MFCODESET_DBCS=941.

  3143604 (1112980)

Common Communications Interface

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- An intermittent failure to establish a TCP connection with various components (including CCITCP, COBOL service deployment, and JCL job submission) was caused by the EADDRINUSE error. This has been fixed.

  3123202 (1111222)

Compiler

- The 'cobol' command line tool now produces the correct type of output when a 'dll' file is specified using lowercase; for example: cobol b.cbl,b.dll; Previously, specifying 'DLL' worked as expected, but 'dll' produced an executable file.

  3147888 (1113355)
- An error when adding a literal or unsigned-display-item to an unsigned-display-item, where the receiving item contains SPACES or LOW-VALUES, and the SIGN-FIXUP directive is in effect, has been fixed.

  3133590 (1112121)
- For .gnt compiled file types on Intel x86 32-bit only, when call-convention 2 (called program clears stack - also known as Windows stdcall) and call-convention 8 (litlink) are both in effect, call-convention 8 is suppressed. This behavior can be turned off by setting the GNTLITLINKSTD directive. This directive has no effect on other platforms.

  3132861 (1111990)
- A bug moving a numeric literal to a national alphanumeric variable has been fixed.

  3130652 (1111946)
- On AIX platforms, a fatal error at generate time for the INITIALIZE statement has been fixed.

  3122819 (1111093)
- A fatal error at generate time has been fixed.

  3122718 (1111075)
- A bug whilst stepping through the EVALUATE statement in the debugger has been fixed.
- (390 generated code only) An issue that occurred when variable length items used in an IF statement followed by a MOVE statement has been fixed.
- On Linux 390, a program that contains nested programs and is compiled with the OPT Compiler directive could fail when run with a Run-Time System error 115, "Unexpected signal".
- An issue where compiling some large programs to 64-bit generated code on Windows led to an EXCEPTION_STACK_OVERFLOW has been fixed.
- In 64-bit generated code, a call of the form: call "prog" using by value -1 would not sign-extend the by value parameter correctly. Thus, if the receiving program was of the form: linkage section. 01 p0 pic s9(18) comp-5. procedure division using by value p0. then p0 would receive an incorrect value.
- The presence of a hyphen character in a copybook name is no longer flagged under a mainframe dialect if located in the portion truncated by the TRUNCCOPY directive.

  3150945 (1113635)
- Certain ACUCOBOL-GT format ACCEPT statements, such as ACCEPT ... FROM SYSTEM-INFO and ACCEPT ... FROM INPUT STATUS, no longer cause unexpected run-time errors. (They continue to be flagged as unsupported, and now have no run-time effect.)

  3145581 (1113165)
- In the IDE, when switching between different programs that use the CONSTANT Compiler directive, background parses now complete cleanly, as expected, and do not crash.

  3144957 (1113156)
- OO inheritance involving data with non-ASCII characters now compiles and executes as expected.

  3143962 (1113013)
- An OPEN EXTEND statement referencing a sequential file with a LINAGE clause no longer produces a spurious warning message.

  3141789 (1112810)
- Integer-1 for the LINE clause or the COLUMN clause (of the SCREEN section) must be an unsigned integer, greater than zero and less than 256. However, this value is also restricted by the physical limits of the screen. If you enter a value greater than 256, you receive a COBCH0027 error.

3140501 (1112691)

- An INITIALIZE statement whose target is subscripted and contains one or more object references now produces correct object code.

3138563 (1112509)

- An ILREF directive that contains non-ascii characters is now processed as expected.

3137227 (1112362)

- When the run-time system detects that external files have inconsistent declarations, it now reports the internal file-name of the file in question, and where possible, reports the inconsistency.

3133860 (1112467)

- Compiler output associated with the XREF option now shows correctly for NATIONAL types.

3131449 (1111836)

- A COPY REPLACING statement that has parenthesis in the replacement text, and is compiled with the COBSQL preprocessor with CP enabled, now compiles as expected.

3131355 (1111897)

- A bug has been fixed in programs that contain both XML PARSE and XML GENERATE statements, and the last such statement is XML GENERATE.

3130455 (1111752)

- Passing an intrinsic function as a parameter in a standard INVOKE statement, where the target method interface defines the parameter as BY REFERENCE, now compiles and executes correctly, as long as the INVOKE correctly specifies 'BY CONTENT' and is compiled with the REPOSITORY"CHECKING ON" Compiler option.

3129593 (1111645)

- Support has been added for a new directive DISPSIGN, which emulates the IBM mainframe option of the same name. It controls the display output of included signs for numeric items, and only affects output when an IBM mainframe dialect has been specified.

3127646 (1111445)

- Implicitly declared assign names in a program compiled with the REENTRANT"2" directive are now processed as expected.

3126919 (1111383)

- The COBOL Copy View now correctly shows copy contents for remote projects that use the CP preprocessor and a mainframe dialect.

3125362 (1111326)

- The FDCLEAR directive now works as expected for a WRITE statement with an INVALID KEY clause that contains statements referencing other files.

3124343 (1111171)

- The 'window1' preprocessor now respects the setting of the MFCOMMENT directive.

3123999 (1111149)

- A tooltip query of an item defined in a method and whose parent shares a name with another unrelated item in a different method now works as expected.

3123598 (1111113)

- An INITIALIZE statement with FASTINIT enabled (which is the default) should not affect table contents if no portion of the table is explicitly assigned a value by the statement (strictly speaking the content is documented as undefined).

3123417 (1111098)

- A program compiled with FOLDCALLNAME"LOWER", which contains a CALL to a nested program, now executes as expected.

3123260 (1111085)

- A DISPLAY of a signed usage display numeric field that contains non-numeric data now better emulates mainframe behaviour when under a mainframe dialect.

  3121234 (1111025)
- A national data item with an associated 88 level that uses the THRU phrase and references alphanumeric literals (rather than national literals), is now processed as expected, for better mainframe emulation (that is, the literals are treated implicitly as national literals).

  3119944 (1110838)
- A program with an EXEC CICS statement that references the address of a linkage item no longer receives a spurious warning message about the item not having addressability.

  3119004 (1110648)
- A 'Determine Directives' request for an Eclipse remote project now functions as expected, and does not crash.

  3119003 (1111177)
- Inherited object storage from the OO class library now gives correct results.

  3117353 (1110502)
- The 'headers' preprocessor now functions as expected during a background parse.

  3115971 (1110871)
- Under the Enterprise COBOL dialect, the limit for the size of a record in a sort file description has been increased to 32767; this is to reflect the limit on the mainframe.

  3115808 (1110443)
- The SSRANGE Compiler directive no longer causes an erroneous out-of-bounds error for a reference-modified variable length group specified as a target item and where the occurs depending on field is located within the group.

  3113495 (1110154)
- When using Quick Browse, the various counts around comment lines no longer grows between background parses.

  3112271 (1110046)
- A non-ANSI abbreviated condition that compiled in older products now similarly compiles and executes (for backward compatibility) in this product.

  3109284 (1109737)
- Using the PROFILE directive with a nested program no longer causes a Compiler error.

  3108308 (1109633)
- Compiling a program containing ENTRY statements with an SQL ECM no longer produces a spurious warning about code being unreachable.

  2991017 (1108767)
- The MOVE-LEN-CHECK directive now verifies MOVE statements with reference modified operands that have literal lengths.

  2988987 (1110162)
- Compilation using the CP preprocessor, where one or more source files are located on the mainframe, now works as expected.

  2886117 (1109429)
- A DISPLAY of a large amount of data in a program compiled with the OUTDD directive now produces a SYSOUT file with all data included without truncation.

  2885153 (1108021)
- A DISPLAY statement with a very large number of operands now compiles as expected.

  2882748 (1107771)

- The correct source location is now reported for the FLAGSTD format error message associated with code being in the wrong area of source.

  2880234 (1107348)
- A SCREEN section declaration with FOREGROUND-COLOUR and HIGHLIGHT clauses now compiles as expected.

  2873489 (1106450)
- Siemens BS2000 COBOL support now extends to the BASED clause and the BYTE-LENGTH intrinsic function.

  2855428 (1103760)
- A new toggle option has been added to the OOCTRL directive, to allow the choice of whether .ins and .cls inheritance files have directory location comments. OOCTRL(-L) now turns the comments off.

  2853073 (1103758)
- An ON EXCEPTION clause on a CHAIN or CALL PROGRAM statement now works as expected, and does not cause bad stepping behavior while debugging.

  2852872 (1110615)
- A SORT or MERGE statement where the maximum size of an input record is larger than the sort description, or the maximum size of an output record is smaller than the sort description, is now flagged with an E-level Compiler message.

  2826647 (1100193)
- Using an intrinsic function as a parameter to an inline method invoke now works as expected.
- An inline method now works as a parameter to an inline method. Using the workaround of making the parameter an arithmetic expression (for example, by adding "+ 0") is no longer required.
- The Compiler directive ACUSYNC now appears in the SETTINGS output, as expected.

- An INITIALIZE statement acting on a property no longer produces a system error or non-functioning code.

  3148897 (1113470)
- When ILDYNCALL was specified, calls to CBL_methods in the run-time system were resulting in errors occurring at run time. We now attempt bind to such methods statically, even when ILDYNCALL is on.

  3125530 (1111313)
- When compiling for JVM COBOL, the IS INITIAL phrase of PROGRAM-ID is now working correctly for programs compiled with DEFAULTBYTE(0).

  3122824 (1111844)
- When fields defined as pic 9(8)v9(2) (or similar) were exposed using the ILSMARTLINKAGE directive, setting a field to a numeric value in an external program resulted in an incorrect decimal alignment, effectively multiplying the result by 10000. This has now been resolved.

  3121569 (1110958)
- The ILNAMESPACE directive now has no effect on types which specify a namespace name explicitly in the source code.

  (633923)

Data Tools

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- The /d parameter of the DFSTRCL command line utility is no longer case sensitive.

  2989512 (1108654)

- Applying a filter to a data file after selecting a field no longer causes the editor to crash.

  3139552 (1112637)

- Large structure files can now be loaded within the editor.

  3122802 (1111101)
- When performing a filter more than once, the filter no longer encounters a 9/41 corrupt indexed file, and the correct navigation buttons are enabled. Additionally, the filter now shows the correct number of filtered records.

  2883777 (1110293)
- The Data File editor now enables you to export filtered results to a new data file: option Search>Export Results when a filter is in effect.

  2878521 (1107103)
- DFCONV now shows its version number, rather than "TEST", when used from the command line.

  3114824 (1110281)
- Classic Data File Tools now supports IDXFORMAT(12). You can create files of this format, and use the Data File Convert tool and DFCONV command line utility (including .pro files) to convert to and from this format.

  3113772 (1110180)

Debugging

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- Debugging an IMTK CICS web service was prematurely stopped at end of the CICS module preventing the debugging of the caller. This has now been fixed.

  3108881 (1109789)
- Debugging programs compiled with AMODE(31) can now use the pointer values in the memory view.

  2878608 (1107108)
- When debugging a process that has a mix of debuggable and non-debuggable COBOL code, there is now no overhead introduced by the debugger when running the non-debuggable code.

  3149936 (1113589)
- Multi-threaded core file debugging is now supported on Linux platforms.

  3136556 (1112739)
- Performance when animating a .so program with a large code block, using Visual COBOL on AIX, has now been improved.

  3124951 (1111243)
- Animating a core file no longer fails with the message "Invalid coredump file" when the executable, for the process that produced the core file, is found via a location on the PATH environment variable.

  3123453 (1111160)
- When using character-mode Animator to animate a COBOL program that uses Database Connectors, if you exit Animator using Esc, then Y, the Animator process no longer hangs.

  3119573 (1111001)
- When debugging Intel x86-32bit native OO COBOL code, the stack trace displayed by the debugger should now show accurate information.

  3117359 (1110508)
- When debugging a threaded program, breakpoints no longer cause erratic behavior if multiple debug events are hit simultaneously.
- During animation on SUSE Linux Enterprise Server (SLES) 12, if the process being debugged was waiting in a system-call and you attempted to exit the debug session, the session would have been terminated rather that executing a 'stop run' in the debugger. This was due to a change in the operating system between versions 11 and 12, which has now been corrected so that a 'stop run' is now correctly executed.

- With reverse debugging enabled, when you reverse-step/zoom to a location and then query a data item, it now works as expected.
- Previously, pausing a process that is being debugged, and then setting a breakpoint before resuming may have failed to set the breakpoint if the process was in a long-running system call. This has now been resolved.
- For Linux debug sessions with reverse-debug capabilities, if you are stepping back through code and try to quit the debug session, the process will no longer sometimes hang.
- When using the Character Animator, the detach option no longer hangs the process, terminating it correctly instead.

    3124348 (1111182)

- When exiting the Perform View window in Animator, when there is no COBOL execution position, Animator now continues to debug.

    3149539 (1113497)

- Changing the values of large data-items in Character Animator now works as expected.

    3107393 (1109744)

- When using Character Animator, the behavior of program breakpoints can now be configure using the PROGBPALLENTRY directive.

    2849211 (1104729)

Documentation

Back to the list

- The documentation now states that the ILSMARTLINKAGE directive is only for use with procedural COBOL programs, not COBOL classes.

    3147500 (1113420)

- The product help now clarifies that cblcored.exe requires write permission to the current user's HKEY_CURRENT_USER key in the Windows registry. This ensures that any changes to the Core Dump settings made with the utility will persist.

    3142772 (1112972)

- The IMS Tracing Flags topic has been updated to accurately reflect the options available in Enterprise Server.

    3142342 (1113320)

- An important distinction has been made in the documentation, in that the content of nonnumeric literals, comment lines, comment entries and data can include any of the 'printable' characters available in the current character encoding scheme. See the 'Character Set' topic of the Language Reference Manual for more information.

    3140851 (1112720)

- The 'Standard File Header' topic now states that the definition is not applicable to certain indexed file formats. The definition of the node sizes, as specified in the 'Index File - File Header' topic, has also been clarified so that it applies to all applicable MF index file formats.

    3140352 (1112840)

- The ACCEPT statement documentation now contains the possible values codes/definitions returned for EXCEPTION STATUS.

    3138691 (1112556)

- The documentation now documents the difference between MF COBOL and RM/COBOL when inspecting the EXCEPTION STATUS in an ACCEPT statement.

    3138691 (1112555)

- Documentation for the SPZERO Compiler directive now directs you towards the preferred replacement, SIGN-FIXUP.

3135675 (1112227)
- The order in which the File Handler searches for the File Handling configuration file has been correctly documented for UNIX and Windows platforms.

3132391 (1111933)
- The use of the INTLEVEL Compiler directive has been clarified in the documentation; that is, it is an internal directive, not intended for customer use.

3129661 (1112191)
- If mnemonic-name is associated with ENVIRONMENT-NAME in an ACCEPT or DISPLAY statement, its value must not exceed 255 bytes.

3126506 (1111354)
- A restriction has been documented for the X"B0" Function 2 library routine, where console applications cannot distinguish between the left and right Shift key presses.

3125717 (1111316)
- The sample code listed within the documentation topics 'Customizing an STC scheduler address space JCL' and 'Customizing a user server address space JCL' has been corrected to include missing syntax.

3124411 (1113586)
- The documented example for OO switches has been updated to remove an obsolete switch.

3117356 (1110506)
- A new syntax rule (#9) has been added to the CALL statement topic in the Language Reference Manual, stating the restriction of passing a floating point item BY VALUE in native COBOL.

3115091 (1110326)
- The documentation for the BELL directive has been corrected to state that it is checked during the syntax checking phase, and not at the generate phase.

3110088 (1109799)
- In the documentation, the steps required to customize ASCII\EBCDIC character set conversion have been clarified.

3108884 (1109682)
- More information has been added for file and project level problem error markers. See Maximum Number of Problem Error Markers for more information.

2881233 (1107671)
- An error has been corrected in the description of the "Go To Procedure Division" option in the "Making the Most Out of The COBOL Editor" topic.

2877216 (1106910)
- Documentation for 'COBRT181 Invalid parameter error' has been expanded to include a possible cause and solution for the error.

2876095 (1106782)
- The instructions on how to install Fileshare as a Windows service have been clarified - see 'Walkthrough - Fileshare as a Service' in the product docs.

2876085 (1106746)
- The product help now clarifies that adding the Micro Focus Runtime (Interop RuntimeServices) assembly adds the MicroFocus.COBOL.RuntimeServices reference to a Visual Studio project.

2850791 (1103124)
- The Sharing Database Connections Between Java and COBOL topic has been updated with an example showing object sharing with other languages both when Java opens the connection and when COBOL opens the connection.

2674454 (1091949)
- The ANSI92ENTRY topic has been updated to include OpenESQL behavior in corformance with the ANSI-92 standard.

2596163 (1086171)

- The SQLCODE Values topic has been updated to reflect the most current information available.

2593799 (1085947)

- The CALL-RECOVERY documentation topic has been amended for clarity. The syntax and behavior is unchanged. When a CICS transaction has installed an ABEND handler at a given link level, if an ABEND occurs lower down the call chain where non-CICS programs have been called between the owner of the handler and the abending program, the CALL-RECOVERY directive ensures that control is passed directly back to the higher level without executing application code after the call(s) in the intervening programs. Parameters <integer> - Must be one of:

  1. Makes the program check the current call recovery state every time control is returned to it following a call. If there is a controlled exit in force the program performs a GOBACK, that is, passes control back up the COBOL call chain rather than continuing with the next statement
  2. As for 1, but also catches exceptions on CALL dataname statements and sets the call recovery state before performing a GOBACK to pass control back up the COBOL call chain.

  Note: You should use CALL-RECOVERY when compiling a mixture of CICS and non-CICS programs for running in Mainframe Subsystem Support. Only the non-CICS modules need be compiled with the appropriate directive. When compiling only CICS programs, CALL-RECOVERY is not required.

- When compiling tests on UNIX, you should include the -U COB flag.
- The Running Unit Tests in the IDE tutorial for Eclipse now instructs you to create the environment variable that locates the required data file before the run configuration is created, which now means that the run configuration correctly uses the variable to successfully run the unit tests.
- The error message description for COBCH1558 has been expanded to include the possible scenario of when a difference in bitism (between Java version and compilation mode) has caused the error.
- The COBCH1006 error message text has been corrected to encompass the fact that different dialects have different limits for the length of a COBOL word.
- The documentation has been corrected to state that the LINKLIB directive is not required by the cobol command. (LINKLIB was an old directive that should no longer be used.)
- The Codecomp Utility documentation now states that you can only create customized tables for single-byte character sets.

- An incorrect reference to SYSREC has been removed from the example in the topic "SQLTP2 Utility - Executing Dynamic SQL Statements".

3145877 (1113167)

- When using the MVSSPLHK spool housekeeping process to override the retain period of a class; for example: CLASS A 003 Y this refers to the output dataset class, and not the job class.

3138584 (1112576)

- The instructions on running the SPOOL conversion tool (splconv) have been updated with recommendations for setting the MFSYSCAT_ERRS variable. This is because there are a number of errors generated whilst running the conversion that can be safely ignored, and setting this variable to a sufficient value will allow the conversion to complete successfully.

3124350 (1111280)

- Documentation for MFJSABCODE has been added to the Sort environment variables.

- The product help now includes details about the CESL CICS supplied transaction. CDEQ, CZTD and CZTS are only internal and not directly executable.

3153520 (1113840)

- When running the dfconv command line utility, the (optional) -d option must be the first parameter specified in order to have an effect.

3135598 (1112570)

- The product help about "Datetime Literals in SQL Statements" now correctly states that to enable the functionality, you need to code any of the specified SQL comments into your DB2 mainframe application, positioned before a literal declaration.

3133502 (1112053)

- For Fileshare through Enterprise Server, on UNIX systems, Micro Focus recommends that CCI TCP in loopback mode is used in preference to CCI Named Pipes (CCINAMPU), because support for CCINAMPU is deprecated.

3131680 (1111868)

- The "UNIX and Linux Installers Issues" topic in the product help included an incorrect parameter, "-EDadminID=[User ID]". This now correctly states the parameter as "-ESadminID=[User ID]".

3129927 (1111675)

- Where appropriate, the SYNCSORT and DFSORT documentation now links directly to the topic that explains the various field types in use.

3123796 (1111143)

- Error message BMSCH1099W has been documented.

3122477 (1111005)

- Details for error BMSCH1083W have been added to the documentation.

3122476 (1111004)

- The product Help has been clarified for the versions of Enterprise Developer clients and the versions of z/Server they can communicate with. See Recommended versions of z/Server for Enterprise Developer for more information.

3121723 (1110991)

- The topic that lists the Compiler directives restricted in Managed COBOL has been brought up to date.

3120358 (1110789)

- To enable Language Environment (LE) support for all applications (other than JCL) running in Enterprise Server, set the environment variable ES_LE370_SUPPORT=Y

3118312 (1110678)

- In the documentation, the entry point/parameter name corrected for the UNIX version of the INITCALL directive.

3104480 (1109719)

- Documentation now includes JCL event information for the 'event-job-stmt-info' and 'event-uxit-changed-job-name' events.

2990395 (1108725)

- Information on the TCLS Entity has been added to the product documentation. See Resource Classes for ESMAC and Operator Command Security for more information.

2913474 (1108497)

- The documentation now references the es_default_ldap.ldf file, which contains a working example for using the DATASET resource class.

2860914 (1104513)

- The documentation has been updated to explain how best to configure CICS for use with WebSphere MQ.

2817494 (1099421)

EJB Generation

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- A problem that caused EJB client generation to fail when processing OCCURS arrays has been fixed.

3131411 (1111877)

Enterprise Server

- Starting the MFDS process with the -r option will now disable the Web administration UI. If using a browser to connect to the MFDS TCP network address, you now receive an HTTP 403 response.
- A missing form name in some Enterprise Server Administration pages could result in a JavaScript error.

- The default options under ESMAC > Resources now depend on the Region options. If JES is installed, the new default resource to show under Resources is JES. If IMS is installed, and JES is not installed, then IMS is the default. If MQ is installed, and both JES and IMS are not installed, then MQ is the default. If iFS is installed, and each of JES, IMS, and MQ are not installed, then iFS is the default. Otherwise, the default resource is Services.

  2871166 (1106098)

- An issue using single sign-on between MFDS and ESMAC has now been fixed.

  3106232 (1109779)

- The Enterprise Server External Security Facility (ESF) has improved redundant / failover support for Security Managers. See "Security Configuration Custom Configuration Information" in the product help for more information.

  2990790 (1109080)

- The Enterprise Server External Security Facility's MLDAP ESM Module can now generate an audit event describing the "effective rule" that determined the decision (allow / deny / permissions set) for an Auth or XAuth request. The effective rule is the security rule that was used to make the decision. See "MLDAP ESM Module Custom Configuration Information" in the product documentation for more information.

  2887945 (1110096)

- Enterprise Server Security trace message 2003, emitted when a SAFROUTE(Auth) request is made with the "API trace" flag enabled and access to the resource is denied, no longer truncates long resource names. Long names are abbreviated but still provide the prefix and suffix of the name.

  2885856 (1108682)

- Enterprise Server's External Security Facility, when using LDAP-based security, has an "Update" mechanism that can be used to notify MFDS and running Enterprise Server regions of changes to security information. This now works correctly for changes to group membership, for example, when a user is removed from a group.

  2873024 (1106452)

- Depending on the sequence of login, users with long usernames that contained spaces and that had usernames similar to other users could login and find that they are treated as if they do not have the correct user permissions. This has now been fixed.

- In Enterprise Server, when using LDAP-based security, if a user belonged to a group with an LDAP wildcard character (such as "*") in its name, and there were nested groups defined, and the use-all-groups mode was enabled, groups that contain other groups could be incorrectly added to the user's group set. This has been fixed.

- mfds and casstart will now run successfully on machines with locale names with the @modifier part, such as fr_FR.iso885915@euro.

  2868439 (1105641)

- A CICS JSON RESTful provider that was invoked with an HTTP GET and subsequently executed an INVOKE SERVICE would fail to map its response data to JSON.

  3151018 (1113677)

- Previously, a CICS Web Service requester application would receive INVREQ 13 on an INVOKE SERVICE if it had been initiated via HTTP with a method other than POST.

  3151018 (1113623)

- Extended ECI LUW context is now maintained.

  3148577 (1113418)
- Using the dump command from an MQ listener resulted in an AB/BA lock.

  3146317 (1113217)
- In 64-bit environments, ECI requests that do not use ES_ECI_SOCKET to identify or locate the target region used to fail.

  3143232 (1112962)
- Receiving an IMSConnect request before CASTMC had fully started up could result in a trap in casgate.

  3142402 (1112977)
- A request made with valid credentials no longer fails after an initial request that returned an error ECI-ERR-SECURITY-ERROR.

  3142092 (1113220)
- The Data File Editor now supports DSNs that contain the '£' and '#' characters.

  3140182 (1112661)
- You no longer receive a PGMIDERR error on the second invocation of a CICS program when using a symbolic link (and the shared object name does not end in .so) and FORCE PROGRAM PHASEIN is off.

  3139816 (1112624)
- The casstop /w command no longer creates a ccierr.log when a region terminates during the /w delay.

  3135994 (1112257)
- Previously, when creating a new DFHDRDAT, the provided users had an invalid phrase setup which resulted in sign-on errors.

  3135433 (1112238)
- An "MVSJOBNO not found" error sometimes occurred when canceling a JCL job from the command line. This has been fixed.

  3134787 (1112325)
- CICS Web services now provide basic JSON boolean support.

  3134676 (1112143)
- You no longer receive a JES000002E error in the ESMAC Admin SEP when submitting JCL after viewing a previous job details.

  3129388 (1112985)
- When a job that performs an EXCI LINK without the SYNCONRETURN option was submitted twice in succession, the second job did not run successfully.

  3129348 (1111596)
- An issue that could cause a memory corruption in CWS when application tracing was not ON has been fixed.

  3127485 (1111431)
- previously, HSF records for tasks that executed prior to a switch of the active file could be written to the newly active file. This has been fixed so that records are written to the file that was active at the time the task ran.

  3125864 (1111322)
- CICS now accepts JSONTRANSFRM and XMLTRANSFORM resource names of up to their maximum lengths - 16 and 32 bytes, respectively. The previous limit was 15 bytes.

  3123595 (1111110)
- An issue with DFHJSON where JSON data would not be written to a container has been resolved.

  3121607 (1110917)

- The casutl command line utility supports a new option, /x, which enables you to switch the active trace, dump and/or hsf files. For more details, see your product's documentation.

  3120728 (1110848)
- When recycling SEPs in a busy JES system, jobs that have not run yet are now managed correctly.

  3120670 (1111235)
- In a busy system, if JCL jobs timed out or were cancelled, the local trace entries could sometimes corrupt the shared memory causing the region to become unresponsive.

  3116835 (1110501)
- You no longer receive an RTS 200 error message when a duplicate START of a transaction is presented for execution at a target terminal which is busy. The duplicate AIDs are now discarded as under mainframe CICS(tm).

  3114982 (1110686)
- Mapping structures to containers in DFHJSON when there are consecutive multiple empty elements now works as expected.

  3114815 (1110285)
- If the result length from a call to CBL_CCSID_CONVERT was smaller than the original buffer length, garbage was written at the end of the buffer. This was because the length used was the original length and not the length returned from the call.

  3114365 (1110223)
- You no longer receive an error message when a single-byte EBCDIC character gets converted to a double-byte UTF-8 character in CICS WEB SERVICES.

  3112898 (1110070)
- A FREEMAIN of a shared pointer which had been populated in a SEP other than the one attempting the free would provoke a trap.

  3112416 (1110196)
- When either a CPMT NEW COPY is issued or FORCE PHASEIN is enabled on the SIT, MAPs are now reloaded from the disk and the memory version will not be used.

  3105813 (1109891)
- The CICS internal reader under Tranclass could sometimes hang and stop processing work.

  2988428 (1110144)
- System folders that have a backslash at the end of the name are now supported in region configurations. Previously, a region would fail to start in such scenarios.

  2886956 (1108250)
- The following issues with HSF have been resolved:
  - HSF records could be generated with a date prior to the date when the task actually started. This could affect low-activity SEPs.
  - If a task ran over midnight then its response time would always be 1 centisecond regardless of how long it ran for.
  - If a SEP was in the middle of either a CICS command, an EXEC SQL statement or a DLI call at midnight, then the API, SQL or IMS field respectively would contain a high and incorrect value.

  2870896 (1110045)
- If there was an error when trying to start cobdebugremote, the port was not retrieved.

  2864798 (1105495)
- When defining a GDG model, the path is now grayed out.

  2855374 (1103840)
- It is now possible to use environment variables in MQ Listeners queue names.

  2842137 (1102027)

- If a casout -g command to retrieve relative DD for a job was issued and the resulting file had a size of 0, the file was left open which resulted in a leak of handle.

  2814439 (1098608)
- Previously, Enterprise Server returned a mismatch error if you tried to add a new JES initiator from MFDS when the region was already started.

  2812102 (1098408)
- An issue causing the BlueZone terminal emulator to disconnect has been resolved.

  2807210 (1098676)
- Requests are now aborted if the ECI luw token is invalid.
- An issue with EXEC CICS SIGNON using PASSWORD in Enterprise Developer 3.0 could require an application to have the PASSWORD variable used on the SIGNON command defined as PIC X(100) rather than PIC X(8).

  (1110862)
- The "Use all groups" option for a secure enterprise server instance now enables the Data File Editor to authenticate a user against all of the groups for a particular user.
- Using casout with the /v option (to list initiators, printers and mprs) could cause incorrect HSF records to be generated.
- An issue where some HSF records for JCL steps could have incorrect response times and condition codes has been resolved.
- You can now use CBL_DEBUG_START and CBL_DEBUG_STOP to generate live recordings on x86 Linux platforms. You can generate consecutive live recordings from a single process, whereas previously you could only generate one per process.
- It is now possible to edit the dataset name entry in ESMAC if an incorrect name was submitted when adding the dataset.
- A problem that caused a non-facility (file) DCT trigger to fail to reset the "triggered application active" flag even when the queue had not been taken to QZERO has been fixed.

  3147018 (1113307)
- Documentation regarding support of the STATUS option on EXEC CICS INQUIRE PROGRAM and EXEC CICS SET PROGRAM has been corrected.

  3145947 (1113176)
- EXEC CICS INQUIRE now correctly retrieves TSQs with names greater than eight characters.

  3145414 (1113131)
- A problem with SOAP message validation that caused an error on messages containing an ampersand (&) character has been fixed.

  3142837 (1112955)
- An issue with WRITEQ TS REWRITE using an ITEM number greater that 32,767 with TRANCLASS enabled now fails as expected. Enterprise Server no longer targets the wrong item returning an EIBRESP of NORMAL.

  3142092 (631187)
- A problem with EXEC CICS VERIFY PASSWORD always authorizing against the default CICSUSER, sometimes resulting in a failure when the default CICS user was different than the current CICS user, has been fixed.

  3141790 (1112971)
- An incorrect response was being sent to the client when the default application handler was not used.

  3141757 (1112838)
- An issue with DFHFUNCTION prevented CICS Web services from returning a 16-byte space-filled field. The DFHFUNCTION container now returns the value padded with spaces in a 16-byte field.

  3141477 (1112779)

- During a CICS DELAY, internal requests for file operations were not processed, sometimes causing open/close file commands to hang. This is now fixed.

  3132496 (1111945)
- A problem with recovering a CICS region after terminating MFCS when CSKL was running has been fixed.

  3130515 (1111788)
- Using CICS FREE CONVID with TRANCLASS no longer results in a SEP to be recycled.

  3129235 (1111650)
- In CICS regions in which all SEPs were busy, duplicate DTP requests for the same session were chained, causing consecutive requests to hang. This has been fixed.

  3126761 (1111397)
- A problem that caused HSF records for transactions initiated via APPC to contain an incorrect response time has been fixed to provide the correct response time. In addition, PCT counts for these transactions have been updated.

  3122337 (1111091)
- A problem with the JSON CICS Web Services 'bottom up' demonstration application that appeared in version 3.0, Patch Update 1 has been fixed.

  3122046 (1110957)
- The default transaction class 'DFHCTL00' is now returned when an INQUIRE transaction specifies the option TRANCLASS and no TRANCLASS value was specified when the resource was installed.

  3121827 (1110974)
- A problem that caused an ISC connection to occasionally automatically reconnect after it was released from the active SysC page has been resolved.

  3120128 (1110769)
- Calling a PL/I program from ECI no longer results in a trap.

  3119928 (1110753)
- A problem that sometimes caused an ASRA abend after an EXEC CICS LOAD PROGRAM for PLI has been fixed.

  3119006 (1110649)
- An incorrect MAPFAIL error was returned when a conversational transaction was executed with Force Wait on Send in the SIT option. This has been fixed.

  3113520 (1110251)
- Making an EXCI call from batch to CICS which uses CICS Web Services no longer results in an error RTS 173 on mF_ES_initialiseStack. Previously, casstack was being unloaded and is now built as a system program.

  3112236 (1110184)
- A problem that sometimes caused EXEC CICS LOAD PROGRAM for a PLI program with ES_FPPI_LOAD_SUPPORT enabled to fail has been fixed.

  3112121 (1109994)
- CICS Temporary Storage Queue expiry is now honored for systems that run with TRANCLASS enabled.
- CICS APIs against type LOCAL Temporary Storage Queues now return values for LENGTH and NUMITEMS.
- Imported hexadecimal transactions are not truncated anymore.

  3153155 (1113813)
- Fixed an issue with the admin seps terminating abnormally when a USER (who is not associated with a group in ESM) tries to logon to ESMAC.

  3152197 (1113814)

- Access to the XAT resources in ESMAC (casrdo65) is now controlled by the user's security settings for the 'XAT*' resource under MFESMAC. The user will require "Update" access to the GRP resource in order to see the XAT Delete button.

  3143258 (1112991)
- TCPIPSERVICE resources are no longer erased when the URIMAP resource is set to PIPELINE. In addition, ESMAC now accepts blank WEBSERVICE fields.

  3141235 (1112752)
- The deletion of a PDS member in a secure region now use the correct classes.

  3140443 (1112709)
- Sometimes the STOP button for connected clients in ESMAC was not displayed when security was on. This has now been fixed.

  3139885 (1112724)
- Date and time filter values are now retained when the jobs are filtered to user requirements in ESMAC.

  3138516 (1112498)
- The Reply button for a waiting from console JOB in ESMAC is now enabled or disabled depending on user authority.

  3137426 (1112397)
- The environment variables ES_DISABLE_DFLTUSR_SIGNON/ ES_ESM_DISABLE_DFLTUSER_ESMAC are now correctly honored in secure regions.

  3133646 (1112061)
- When specifying the ES_MAX_CATALOG_LINES environment variable, one line fewer were displayed in the ESMAC catalog view. This has been fixed.

  3129034 (1111563)
- The 9/041 error no longer occurs when accessing catalog after running a job that accesses the proclib.

  3122584 (1111066)
- An issue in the date and time filters in the ESMAC spool display page has now been fixed.

  3122475 (1111003)
- The Job page now displays in Shift JIS encoding if the operating system encoding is determined to be Shift JIS.

  3115107 (1110311)
- The SIT 'New' button is no longer greyed out when the ESMAC user has the appropriate permission.

  2913474 (1108809)
- If the Data File Editor was used to retrieve the DCB information for a data file hosted by Enterprise Server and the catalog did not contain a physical filename, an RTS 114 error would be encountered. This has now been fixed.

- A user setting ES_CICS_SINGLE=Y enabled them to signon to more than one terminal at a time. This has now been fixed.

  2913254 (1109223)

- The PostgreSQL switch module now loads correctly in 64-bit mode.

  3149380 (1113516)
- A problem recovering from errors where SQL Server unilaterally terminates an XA transaction has been resolved.

  3145058 (1113133)
- User Impersonation now works as expected when using an ODBC switch module in batch mode.

  3140100 (1112655)

- The ESMSSQL switch module no longer returns an RTS153 error if USERP=T is set and the user does not exist.

  3140097 (1112649)
- The Oracle switch module no longer fails with an RTS153 error when being enabled after an initial connection error.

  3129198 (1111608)

- Auditing using syslog now reconnects correctly after the syslog server restarts.

  3135191 (1112186)
- Auditing modules are now loadable on all supported platforms.

  3124417 (1111183)
- Syslog messages can now be configured to use TLS as the transport protocol.

File Handling

- Users, Groups, and Classes can once again be searched based on substring matches, rather than full exact matches.

  3127314 (1111414)
- Password Expiry and Account Expiry dates are now correctly displayed in the ESF LDAP Security Administration Web Interface when specifying times in 24 hour format.

  2883964 (1107911)
- The Users in the "Members" list for Groups and Groups in the "Group Membership" list for Users are no longer incorrectly filtered by the filter on the respective "Users" and "Groups" main tabs.

  2871547 (1106121)
- The ESF LDAP Security Administration Web Interface no longer incorrectly displays a blank Users/ Groups list when changing tabs.

  2863056 (1104795)

- The REPRO of a cluster that contains an alternate index no longer performs the copy using the alternate index. It uses the primary index instead.

  3136566 (1112386)
- When running under a mainframe emulation, if the INDD record length does not match the cataloged length for SYSIN when performing an ACCEPT statement, and that results in a partial record being read, that record is now returned (as it does on the mainframe).

  3120786 (1111421)
- 9/41 additional statuses 2, 4, 5 are no longer printed to the log without an associated log entry for the actual 9/41 error.

  3115318 (1110341)
- Setting RUNITLOCKDETECT=OFF no longer causes an unhandled exception when a file is opened multiple times in managed code.

  2885757 (1108212)
- File Handler settings supplied by the extfh.cfg configuration file are now captured in CTF tracing of the File Handler.

  2849599 (1102983)

- If, in a single process, Fileshare is called with both FCD2 and FCD3, the filename sent to Fileshare no longer becomes corrupted.

  3131960 (1112168)

- The reading of keys no longer fails when the indexed file that was open prior to the current file was not explicitly closed.

  3129038 (1111565)
- The EXTFH option RETRYOPEN has no effect when set in the Fileshare Server configuration file.

  3106992 (1111699)
- An SPLJNO filename will no longer become corrupted when being accessed simultaneously through a Fileshare server currently under load.

  3106992 (1112094)
- iFileshare no longer hangs during a stop run operation if files being used in the program are accessed through different iFileshares.

  3142333 (1112939)
- MFJ_INPUTDS_ERROR=N is now honored for DFSORT and ICETOOL emulation.

  3151761 (1113797)
- ICETOOLS DISPLAY operators now display correct formats.

  3132530 (1112032)
- SORT CODE EQ NUM is now working as expected with EBCDIC records.

  3113121 (1110145)
- For dataset names that contain an environment variable that holds the name of a Fileshare server, MFJSORT will no longer give a 9/004 file status.

  3109801 (1109898)
- MFJSORT will now correctly close all opened files in the case where each file in the output group is handled differently. Thus, SYNCSORT behavior is now the same between versions 2.3 and 2.3.2

  3106550 (1109627)
- Sorting concatenated LSEQ or NULLFILE/DUMMY files no longer produces an error.

  3106223 (1109452)
- During a SORT operation, SEQNUM now correctly starts at sequence number 1.

  3106111 (1109444)
- MFJSORT now correctly treats LSEQ files as CHARSET ASCII regardless of CHARSET setting.

IBM Language Environment for OS/390 & VM Support

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- A problem was encountered with assigning heap storage after it had previously been cleared using the CEEGTST and CEECRHP Language Environment routines used in 64-bit mode (COBMODE=64). This has now been fixed.

  3104480 (1110751)
- Calling the Language Environment modules CEE3GRP and CEEMRCE no longer results in an RTS 173 error. See "Enable Language Environment (LE) Support' in your product help for details on how to enable LE support.

IDE

Back to the list

- Content assist will now provide the correct proposals when triggered on the last line of an unclosed program.

  3112349 (1110179)

- Content assist was not offered in the COBOL editor on lines with a * in column 1 even when NOMFCOMMENT was in effect. This is now fixed.

  3149311 (1113493)
- Deleting text while Smart Edit Mode is enabled will now result in consistent behavior for both insert and overwrite editing modes.

  3144336 (1113053)
- The "force capitals" editor preference is now respected when the editor is in block selection mode.

  3143629 (1113003)
- You now receive a message when the validation fails in the remote debug symbol container dialog box.

  3142352 (1113505)
- When you pass FailOnError="true" to the PliTask, Ant now requires a return code of <1 for success.

  3142124 (1112930)
- The startrdoserver script now tidies up temporary files when java is missing from your PATH environment variable.

  3141448 (1112815)
- sentence added to dependency path properties page for cobol projects to clarify how copybook searching will be done

  3141380 (1112769)
- Blank messages could appear in the Eclipse Error Log when a workspace created with a prior product was opened using 3.0 and the workspace had saved Micro Focus Directory Server credentials. This has been fixed.

  3137626 (1112428)
- Code coverage statistics are now displayed correctly in locales which use a comma as the decimal separator.

  3137142 (1112695)
- "The context for copybook has been lost" error messages was displayed when Eclipse restarted when copybook editors were open using the RSE file system when Eclipse was closed. The projects containing the files and the editors are now reopened when Eclipse is restarted.

  3137122 (1112794)
- References to jars used within a project are now referred to using a project relative path in the project's .cobolBuild file.

  3136382 (1112323)
- When directive determination is used on files in a project with SQL preprocessors enabled, files which do not need the preprocessors for compilation now correctly disable them.

  3134406 (1112303)
- When a copybook is in a folder that is the target of a linked resource whose target is specified in a different case to the actual case of the target, the copybook context is now correctly handled - this had caused the context lost dialog box to be displayed when the copybook was opened from nodes under the main source in COBOL Explorer.

  3131640 (1112554)
- Delete and some other functions had not worked when editing copybooks that were located outside a project, this has now been fixed.

  3129768 (1112551)
- Remote debugging performance has been improved.

  3129761 (1111691)
- Directives files located in the project folder were not found when background parsing a program located in a different folder, this is now fixed.

3129638 (1111667)
- Editor background parse performance has been improved when using local or network paths in an AWM modeled SYSLIB when downloading include files or copybooks.

3128741 (1111572)
- The version of Apache Ant used to build projects has been changed to reduce the build duration.

3128609 (1111546)
- The AUTOMATIC keyword was flagged as an error in the PL/I editor when used in a variable declaration with an Open PL/I module.

3128153 (1111504)
- Compiling a single file within the Eclipse IDE could take an excessive amount of time if the workspace included a large number of linked files. The performance has been improved.

3128124 (1111477)
- The ++INCLUDE and -INC statements are now recognized by the PL/I editor.

3127923 (1111479)
- Editor opens in read-only mode when the file does not have write access.

3126540 (1111914)
- Syntax highlighting for COBOL comments now correctly respects source format and dialect when an asterisk appears in the first column of a line.

3126371 (1111355)
- A clash in keybindings between a third party contribution and the 'Start Debugging CICS Transaction' has resulted in a change in keybinding, from "Alt+Shift+D X" to "Alt+Shift+X Z".

3126233 (1111374)
- Deleting a COBOL program in a COBOL JVM project when "Use Dynamic Calls" is set now deletes the build artifacts relating to the deleted program in a manner consistent with COBOL projects. The deletion no longer prevents a full rebuild of the project from being triggering.

3125727 (1111294)
- Error messages in programs processed using the AWM Mainframe Pre-compiler Integration module could be misaligned if COPY statements were resolved locally rather than on the mainframe.

3125413 (1111462)
- The use of the GNT directive in the file or project's properties Additional directives field to specify the name and location of the generated file has been fixed.

3124811 (1111229)
- An editor can now be opened using the Team Developer view while a background parse is still being performed on the contents of a different editor.

3123481 (1111209)
- You can now search subfolders when you add a Remote File System Directory to the debug symbols lookup path in the Debug Symbols tab of the Debug Configurations. Note: Debug symbols containers length must not exceed 32,725 characters.

3123390 (1111082)
- The Quick Browse dialog now provides an option to clear its search history.

3123390 (1111188)
- It was not possible to set breakpoints in a COBOL Copy view when debugging code that had been compiled without absolute paths outside Eclipse and the build articles had been moved from where they had been created. This has now been fixed.

3123390 (1111109)
- Rerunning a COBOL Reference search could show 0 results when a background parse error was shown in the editor. This has now been fixed.

3121316 (1111609)

- When COBOL programs containing EXEC SQL statements were added to an SQL enabled project the file setting was incorrectly overridden and disabled. This has been fixed.

3116071 (1110412)

- PL/I identifiers that contain the special characters #, ?, $, and @ are now highlighted in their entirety when they are double-clicked in the PL/I editor.

3115581 (1110368)

- The following issues were resolved in the PL/I editor:

  - A structure declaration statement which contained a comma immediately preceding the terminating semi-colon was reported as a syntax error by the PL/I editor. It is now reported as a warning.
  - The PL/I LIKE declaration now resolves when a procedure is declared between the PL/I LIKE declaration and the PL/I LIKE declaration's target.
  - The PL/I editor reported syntax errors for binary fixed point constants. This has now been fixed.
  - Some GET and PUT statements were incorrectly reported as syntax errors by the PL/I editor. This has now been fixed.
  - A reference to an undeclared SYSIN or SYSOUT file was reported as a warning by the PL/I editor. This has now been fixed.
  - The PL/I editor was incorrectly displaying error messages for valid PUT and GET statements, this has been fixed.
  - Some declarations of GENERIC items were incorrectly reported as syntax errors by the PL/I editor. This has now been fixed.
  - Defining ENVIRONMENT options for a PL/I FILE declaration resulted in editor warnings on references to the file. This has now been fixed.
  - PL/I qualifiers that use PL/I LIKE names now parse correctly.
  - PL/I LIKE declarations that reference an object with a partial qualifier now parse correctly.
  - The PL/I editor reported an error when a structure parameter contained a sub-item declared as CHAR(*). This has now been fixed.
  - A PL/I variable used as a qualifier was not always included in References search results, this has been fixed.
  - Some FORMAT statements were incorrectly reported as syntax errors by the PL/I editor. This has now been fixed.
  - Handling of *PROCESS lines in the PL/I editor by the background parser has been improved.
  - PL/I string literals were incorrectly colorized in the editor when a backslash (\) preceded a single quote ('). This has now been fixed.
  - The PL/I INITIAL attribute for arrays, is now supported by the background parse in the PL/I editor.
  - The FILE attributes INPUT and CONSTANT are now supported by the background parse in the PL/I editor.
  - EXEC SQL statements that contain commented out semicolons are now correctly processed by the background parse.
  - Some file declarations using the ENV attribute were incorrectly reported as syntax errors by the PL/I editor. This has now been fixed.
  - The PL/I editor incorrectly displayed an error when the CELL keyword was used as synonym for UNION. This has been fixed.
  - The PL/I editor incorrectly indicated an error on a literal of the form "literal"z. This is now fixed.
  - The PL/I editor incorrectly indicated an error on the use of the BIT built-in function. This is now fixed.
  - The PL/I editor failed to parse programs containing %INCLUDE statements nested within EXEC SQL statements.
  - The PL/I editor would mark some variables declared after an ENTRY variable as an error.
  - The PL/I editor navigation functions did not work on source lines containing a TAB character.
  - The PL/I editor was slow to parse source files containing a large number of large EXEC SQL statements.

- The PL/I editor marked some missing or extra comma characters in DECLARE statements as errors, they are now marked as warnings.
- The PL/I editor marked uses of the built-in function TIMESTAMP as an error.

3113147 (1110123, 1110101, 1110102, 1110103, 1110104, 1110105, 1110106, 1110111, 1110112, 1110114, 1110115, 1110116, 1110122, 1110119, 1110316, 1110319, 1110315, 1110322, 1110318, 1110321, 1110313, 1110314, 1110317, 1110819, 1110820, 1110821, 1110822, 1110824, 1110825)

- PL/I content assist template suggestions are now based on the name of the template.

3111685 (1109986)

- 'References' has been removed from the context menu for macro invocations in the PL/I editor.

3111653 (1111379)

- You can now use the References and Open Definition context menu items in the PL/I editor on words within a PL/I macro invocation. References to items made within the PL/I macro will be identified as the first line of the macro invocation, which will be highlighted.

3111653 (1111380)

- In the COBOL and PL/I editors, Micro Focus annotations can now be navigated to by clicking the Next/ Previous Annotation menu items. Bookmark and 3rd-party error marker annotations now show their hover text correctly in the COBOL and PL/I editors.

3111182 (1109906)

- A line break is no longer inserted after a template unless the template pattern specifies it.

3110480 (1109830)

- The PL/I %NOTE macro directive now behaves correctly for all return codes.

3109720 (1109787)

- Fixed an issue with EGit history support for COBOL sources in Eclipse, which was causing an "Editor could not be initialized" exception.

3109071 (1109711)

- COBOL paragraphs can now be correctly navigated to from the same-program sections which appear earlier in the source listing than the ones in which they are specified.

3108275 (1110003)

- Programs in remote DB2 projects showed an error in the editor. F3 did not open SQL include files unless the DB2 software was installed on the local computer. The ESQL pre-processor is now used when Eclipse is performing a background parse of the programs.

3107896 (1109631)

- Statements declared in a macro are now processed correctly by the PL/I editor when the left margin is larger than 0 characters.

3107676 (1109665)

- SQL TYPE declarations are now supported by the PL/I editor.

3107669 (1109637)

- PL/I background parse errors related to unsupported %PROCESS options can now be suppressed with an editor preference.

3107667 (1109911)

- The LINKAGE(OPTLINK) parameter is now supported by the PL/I background parse.

3107666 (1109611)

- PL/I procedures with multiple names are now supported by the background parse.

3107665 (1109727)

- The scope of the declaration referenced by the LIKE declaration is no longer incorrectly processed which resulted in a background parse error.

3107664 (1109726)

- Handling of some LIKE declarations are no longer incorrectly marked as a background parse error.

  3107663 (1109584)
- BGP of file attributes now accepts INPUT, FB, RECSIZE, and ENV.

  3107662 (1109565)
- The background parser incorrectly flagged the POSITION attribute as an error. This has been fixed.

  3107661 (1109564)
- The background parser incorrectly flagged an underscore "_" in literals as an error. This has been fixed.

  3107657 (1109563)
- The background parser incorrectly flagged a b4 hex constant as an error. This has been fixed.

  3107656 (1109562)
- In the PL/I editor, you can now browse to include files which contain a # character in their filename or path.

  3106041 (1109567)
- The %PROCESS statement option MARGINI is now supported in PL/I background parsing.

  3102178 (1109028)
- Comments inside JCL DD statements no longer cause parsing errors in the editor.

  3101904 (1108988)
- Parameters of PL/I built-in functions are now displayed in the content assist list and are inserted when selected.

  2886298 (1108173)
- Cursor position is now calculated correctly in the BMS and IMS editors when a line contains double-byte characters.

  2883915 (1107866)
- Shift Out characters displayed in the COBOL editor appeared to occupy 2 bytes instead of 1, this is now fixed.

  2882959 (632769)
- An incorrect PL/I datatype is now displayed as an error by the background parser, not a warning.

  2869898 (1111121)
- The following advanced copy/paste functionality is now available in the editor: Use CTRL+SHIFT+C/ CTRL+SHIFT+X or Edit > Copy Lines/Cut Lines to select a range of lines and copy or cut the entire lines (regardless of whether the highlighted range covers a line in its entirety). To paste text from the clipboard before the current line, use CTRL+SHIFT+V or Edit > Paste Before Line.

  2860785 (1104564)
- Filter capability has been added to the COBOL Explorer and PL/I Explorer views.

  2856476 (1103924)
- BUILD/CLEAN STARTED message in the build console is now accompanied with a matching BUILD/ CLEAN FINISHED message that indicates the end of the task output.

  2852872 (1105047)
- Using directives files with absolute paths now works correctly in Eclipse.

  2852872 (1110901)
- The Import Remote Micro Focus Projects wizard now displays projects that cannot be selected as a greyed out project in the Projects list.

  2852872 (1110900)
- Long running background parse operations can now be cancelled.
- Words or string literals split across two lines could be incorrectly reported as errors in the PL/I editor. This is now fixed.

- DSNs prefixed with '&&' were incorrectly marked as unreferenced in some cases, this has been fixed.
- It was not always possible to enter text between columns 72 and 80 in the COBOL editor when a line contained DBCS characters. This has now been fixed.

IMS Support

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- A problem that sometimes caused a read-only IMS batch program (PROCOPT=GO) to encounter an incorrect status code of AI has been fixed.

  3145385 (1113189)
- An invalid GD or GE status code was issued when inserting a physical child of a logical parent using a logical view when the virtual logical child was defined with multiple sequence fields. This has been fixed.

  3143889 (1113032)
- An "AO" status code was sometimes erroneously returned when updating a logical parent database through a logical view. This has been fixed.

  3140617 (1112764)
- An erroneous DJ status was returned to a REPL call when a DLI call was issued to another PCB between the GH* call and the REPL call. This has been fixed.

  3140173 (1112684)
- An erroneous DA status was returned to a REPL call when the GET-HOLD call preceding it was only partially successful. This has been fixed.

  3138482 (1112600)
- A GNP call following a GE (not found) status sometimes returned incorrect PCB key feedback information. This has been fixed.

  3137412 (1112558)
- The mfims imsdbu ADD command incorrectly required the REPLACE/NOREPLACE directive to have a value. This has been fixed.

  3125697 (1111332)
- The IMS Recovery Utility has been updated to enable you to specify a point in time at which to recover a database. See your product documentation for details.

  3117798 (1110547)
- When using an IMS DB Catalog file (IMSDBCAT.DAT) in support of Remote IMS or USERDB exit, a program that issued a restart (XRST) or checkpoint (CHKP) call resulted in unpredictable behavior. This has been fixed.

  3108346 (1109655)
- An x'0900' was incorrectly returned in the AIB return code for an EBCDIC application using the AIBTDLI interface. While this did not affect the success of the call, return code has been corrected.

  3106210 (1109548)
- The ESMAC > SPOOL page now displays the JOB START and JOB END times.

  2886742 (1108293)
- A problem with MFS generation not properly generating MID output for TN3270 devices has been fixed. All TN3270 devices always default to Input/Ouput and always generate a MID and DIF in addition to MOD and DOF unless explicitly defined otherwise by the DIV macro in the MFS source.

  3151923 (1113702)
- A problem with MFS generation that incorrectly caused multiple input segments for OPT=2 type MFS to be shortened has been resolved.

  3148697 (1113538)

- A problem that caused messages sent to the terminal by IMS to display on a blank screen instead of in the SYSMSG field defined in the MFS source has been fixed.

  3147331 (1113351)
- A problem that caused print output to be formatted incorrectly when consecutive output fields had no space between them. This has been fixed. This fix requires that you regenerate MFS source.

  3143588 (1113101)
- A problem that caused an incorrect cursor position in the I/O area of an IMS program has been fixed. This fix applies to both ASCII and EBCDIC, and is not affected by MFS data case conversion. MFS regeneration is not required.

  3141057 (1112928)
- A problem that caused abends when formatting printer data has been fixed.

  3138921 (1112865)
- A problem that sometimes caused MFS formats designated as output only to incorrectly generate an input format has been corrected to now generate only the appropriate MOD/DOF output control blocks.

  3135140 (1112240)
- Trailing spaces are no longer be removed from the input message when OPT=2 is specified in the MFS source.

  3131882 (1112075)
- The input field (MFLD) that was mapped from a nonexistent device field (DFLD) has a default literal assigned to it. Previously, this literal was ignored. The literal value (in this particular case, the tran code) is now moved to the input buffer even if the device field does not exist.

  3131869 (1111904)
- When multiple MODs referenced a different subset of DPAGES from the same device, MFS generation output was incorrect, causing IMS to hang at run time. This has been fixed; however, to correct the problem, you must regenerate the MFS after installing this update.

  3123517 (1111315)
- When FILL=NONE is specified on the DPAGE macro in the MFS source, the output screen fields will be padded with whatever character is specified in the MOD. Otherwise, the MOD fill character is ignored. Regenerate your MFS in order for the appropriate flags to be updated.

  3118064 (1110571)
- Light pen support has been added to IMS MFS.

  2870473 (1105952)
- A PURG call to a modifiable alternate PCB issued without first establishing a destination returned a DLI status of A3. This has been changed to return a DLI status of spaces provided there is no message to insert.

  3129240 (1111770)
- A problem that caused a parsing error on parameters provided for EXEC DLI has been fixed.

  3128279 (1111493)
- A problem that caused the EXEC DLI preprocessor to incorrectly parse inner parentheses and issue an error message has been fixed.

  3115734 (1110379)
- A problem that caused a "Not Protect" condition to return a 0000 status code in the auth I/O area feedback has been fixed to correctly return a 0004 code.

  3110324 (1109823)
- A problem that caused an IMS TM transaction to wait indefinitely for a response from an external resource manager has been fixed to terminate the transaction when its process time limit is exceeded.

  3145988 (1113188)

- When users switched activity between two or more LUs (terminals), a new signon to a previously used LU failed to return the signon initial screen produced by the <transaction-id>. The failure was specifically associated with the following configuration combination: ES_CICS_SINGLE=y ES_DFS3650=TRX ES_IMS_FORCE_SIGNON=Y ES_IMS_GOTO_CICS_ON_SIGNOFF=Y ES_TRX3650=<transaction-id> This failure has been resolved.

  3144089 (1113054)
- A problem that caused a loop in CASTMC when an XA resource manager was enabled has been fixed.

  3141157 (1112874)
- Asynchronous/unsolicited output to an IMS Connect client is now supported.

  3140384 (1112781)
- MQ-IMS Bridge output messages can now be routed to a reply queue based on LTERM, as configured using the new OTMA destination-descriptors environment variable, ES_IMS_OTMA_DEST.

  3139850 (1112808)
- Sporadic memory corruption in CASTMC no longer occurs.

  3134730 (1112708)
- A problem that caused an RTS114 error when a second IMS sign-on from a user already associated with a different logical terminal has been fixed.

  3128579 (1112160)
- A problem that incorrectly caused an DFS2082 system message to be returned to an IMS Connect client by an IMS application has been fixed.

  3109139 (1110050)

Interface Mapping Toolkit

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- A problem that caused memory leaks in JSON-based Web Services has been fixed.

  3109465 (1109773)

J2EE Connector

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- You no longer receive Java heap errors when a resource adapter is passing large amounts of data.

  3120684 (1110892)
- JSP generation works correctly when there are OCCURS fields.

  2869932 (1105858)

Java Support for COBOL

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- The Javademos Readme files have been updated with new instructions.

JCL Support

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- A file locked error (9/068) on SPLJOB, occurring after deleting a printed dataset, has been corrected.

  3151227 (1113747)
- If you are using wildcards to identify the datasets on which to perform a function of the public catalog interface program (mvscatpb), and the dataset name criteria is 44 characters or more, you should use the * wildcard as the first character of the dataset name.

3149739 (1113570)

- A failure to submit JCL jobs from a CICS program via the internal reader has been corrected.

3148986 (1113522)

- MFJAMS (IDCAMS) does not rename the members of a dynamic PDS when the cataloged PO dataset is renamed.

3146461 (1113337)

- Using MFFTP, when you GET a FB file, the file retrieved is now padded with low-values to the length of (or a multiple of) the LRECL.

3141536 (1112787)

- If a job fails and leaves active GDG biases, the next job that requires use of the GDG will reset the bias numbering to include the active biases from the failed job.

3141379 (1112768)

- The use of the environment variable ES_CATLG_DISABLE_ADDITIONAL_QUAL has been replaced by a check box named Disable Additional Qualifiers, which is located on the ESMAC Data Catalog page. The functionality provided by the new check box is equivalent to that of the variable: when checked, the use of additional qualifiers when displaying data sets in the catalog is disabled; for example, when checked, a filter of A.B would only return a data set of A.B. When unchecked, a filter of A.B would return all data sets starting A.B (as if A.B** had been entered).

3138176 (1112494)

- Test comparisons now works as expected for nested procs with duplicate step-names.

3136138 (1112290)

- MFJSORT now handles concatenated variable length LSEQ input files correctly, and does not generate a 9/139 error.

3135888 (1112365)

- A problem with Job Ready and Job Submitted messages not appearing in SSTM-enabled regions has been corrected.

3135320 (1112207)

- GDG generation count is now correct when the GDG is defined with SCRATCH and EMPTY options and generations during DD processing.

3134244 (1112355)

- Setting the environment variable ES_CATLG_DISABLE_ADDITIONAL_QUAL=Y no longer impacts the results of an IDCAMS LISTCAT LVL step.

3133201 (1112011)

- A change in the tracing of the IDANIP01 module, introduced in ED 3.0 PU3, and was producing an RTS 114 error when tracing SSTM jobs, has been corrected.

3133184 (1112035)

- The environment variable ES_CATLG_DISABLE_ADDITIONAL_QUAL now no longer affects results from the MVSCATIO if calls were made from utilities such as IDCAMS.

3132978 (1112009)

- Multiple quoted parameters are now permitted on the MFFTP input line.

3132764 (1111982)

- MFFTP now allows the use of input datasets with an LRECL greater than 80.

3132360 (1111960)

- MFFTP no longer leaves a lock on a dataset when it executes a GET command.

3131732 (1111951)

- An RTS 114 error reported when deleting the last batch job from the spool has been corrected.

3131671 (1111884)

- MFFTP now works as expected when large files are transmitted.

  3129865 (1111862)
- The processing of IP format in OUTPUT statements has been corrected so that it does not cause JCL parser errors.

  3129388 (1111604)
- A problem transferring LSEQ format files in MFFTP has been corrected.

  3129323 (1111606)
- When environment variable ES_PROG_PATH is set to 'Y', a program's load path can be viewed in the JESYSMSG and also in SYSLOG.

  3123641 (1111130)
- The job record now holds the correct numbers of HELD, OUT, and COMPLETED spool datasets after the spool conversion utility (SPLCONV) has been run.

  3123298 (1111314)
- A problem with initialization of a procedure in the first job that a SEP runs has been corrected.

  3123002 (1111050)
- Calling MFJZLOG from a CICS or IMS region is supported if the region is SSTM-enabled. The API is not supported to run under ES for .NET.

  3122665 (1111137)
- When a dataset rename operation fails, the physical file is no longer renamed.

  3117963 (1110582)
- MFJPTPCH now works correctly when the input dynamic PDS path contains an environment variable.

  3113225 (1110193)
- The GDG-CURR-BIAS value in the CATALOG is now correctly updated when the current GDG bias is deleted.

  3112986 (1110127)
- The JOBRC parameter on a JCL JOB statement is now parsed and ignored.

  3107427 (1109575)
- The COND CODE from an MFFTP step that errors calling sftp is now set to at least 4. Should MFFTP detect 'ERROR' status messages in the output from the mfsftp script, it will set the return code to 8.

  3106682 (1109971)
- Referback on DCB now resolves correctly when only the PROCSTEPNAME is mentioned without the STEPNAME.

  3105486 (1109350)
- A problem with the catalog listing returning extraneous PO entries when a wildcard had been specified has been corrected.

  2883777 (1110201)
- There is now a marked improvement in the time taken to filter the catalog list when asking for just one record and ES_CATLG_DISABLE_ADDITIONAL_QUAL=Y is set.

  2883777 (1110148)
- MVSCATPB no longer incorrectly applies values from previous records when updating a catalog record.

  2881470 (1107585)
- The error reporting in MFJAMS has been improved so that it reports the file status of the file, along with return code of 16, when a DELETE fails.

  2875995 (1106881)
- A number of enhancements have been made to the behavior of user catalogs to make them more resilient. See 'Support for Multiple Catalogs' in the documentation for full details.

2868958 (1105727)

- ES_ALLOC_OVERRIDE now honours PO and PDSM rules specified in the configuration file.

2866945 (1105413)

- When using the MFFTP utility, trailing blank spaces in generated 'lcd' commands are now removed.
- The ES_ESMAC_DISP_MAX_OVERRIDE environment variable now has an effect when files are accessed directly from the job list page.
- A problem where MFUSERCAT_BASE_LOC was not prepended to any catalog file that did not specify a path has been corrected.
- A 'Binary Flow Mismatch' error when using casout to kill a non-existent job has been corrected.
- A failure to grant access to a dataset with a PHYSFILE rule that did not end in with a wildcard has been corrected.
- The incorrect application of JOB KEEP entries in the spool housekeeping utility has been corrected.
- 4-digit condition codes that include a cond-code type are now returned correctly in the public spool interface (mvscaspb).
- Flushing a job no longer results in spool records for a different job being deleted.

- ESMAC now displays the correct number of lines that the user has selected in the spool view.

3100998 (1108889)

- If "Local ES Security Enabled" is enabled in ESMAC, Enterprise Server now verifies whether the user has sufficient permissions to submit jobs.

2837220 (1101415)

MF Common Client

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- The Micro Focus Common Client now allows the comma character in HTTP URLs. This affects COBOL web services clients, CICS Web Interface, and CICS Web Services.

3127463 (1111430)

- MFCC will now always allow the use of a CCI.INI file without crashing.

3123531 (1111144)

MF Communications Server

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- Enterprise Server and the Micro Focus Common Client now support opening more than 256 SSL-enabled endpoints simultaneously. Also, a resource leak in the MFCS process for HTTPS connections made with CICS Web Interface or CICS Web Services has been fixed.

3137166 (1112477)

- A situation where some terminal emulators were unable to connect to an enterprise server region has been fixed.

3135166 (1112195)

- The maximum size of an HTTP header value allowed for a CICS Web Interface or CICS Web Services server can now be configured. Include an [HTTP] section in the configuration information on the Edit Communications Process page, and use the option 'maximum header value length=<num-of-bytes>'. If not specified, the default number of bytes is 1024.

3127781 (1111480)

- A bug that caused some clients to crash MFCS when submitting 3-character trancodes has been fixed.

3121264 (1111026)

- Enterprise Server now correctly handles chunked HTTP message bodies. The CRLF sequences, which appear after each chunk, are now removed when the chunked body is consolidated.

3100279 (1109784)

- The Enterprise Server Communications Process (MFCS) can now restrict access to listeners by client address. See "Conversation Filtering" in the product Help for more information.

2887418 (1108517)

- Enterprise Server's backward compatibility with older versions of MFDS has been restored.

MF Directory Server

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- Automatic corrections are now made to invalid Enterprise Server listener ISC configurations when they are loaded or imported.

3136730 (1112328)

- Regions exported using MFDS now include the IMS query name if present.

3130077 (1111684)

- A missing product HTML file could cause the Enterprise Server Administration HTML GUI to revert to using English text rather than the configured language. This is now fixed.

3118363 (1110595)

- A memory leak in the MFDS process which could cause an intermittent crash has been fixed.

2886846 (1108593)

- The "mfCASIMSMFSNullChar" and "mfCASIMSTMMQColdStart" IMS region attribute values are now imported correctly from a previously generated XML export from the Micro Focus Directory Server.

2879665 (1107226)

- The "IMS Configuration Directory" configuration value has been deprecated and has been removed from the Enterprise Server Administration Web UI for Enterprise Server instance properties.
- For additional security, any start, stop or not-responding region scripts region will only be executed if the Micro Focus Directory Server restricted administration is enabled.
- You could get an RTS115 error in MFDS on AIX when performing certain actions such as browsing the properties of an ESM.
- When executing Enterprise Server in a Docker container, you need to set the MFDS_EXTERNAL_ADDR environment variable to a resolvable external address string (a hostname rather than an IP address) in the Docker environment. This is to enable client browsers to resolve ESMAC and other URLs in Enterprise Server Administration. The value of this variable will replace the internal container address in the URL.
- The Enterprise Server Administration Web UI "Directories" menu item and functionality has been deprecated and is no longer available.
- If MFCS control channel is configured to use SSL, MFDS must have an environment variable "MFDS_ $SERVERNAME_CAROOT" defined, which points to the full file path of the CA root certificate used to sign the control channel's certificates.

Mainframe Access

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- MFDAS now correctly imports binary data as binary when MFDAS_CODE_PAGE was set to a DBCS page. Previously, it was imported as ASCII.

3150576 (1113612)

- MFDAS import commands using file as *.* or type as AUTO now download correctly.

3145965 (1113223)

- MFA DBCS calls now use an appropriate SBCS default.

3144286 (1113100)

- Eclipse no longer crashes when calling commands after an MFA rename.

  3143624 (1113181)
- Using the MFDAS DIR END FILTER command no longer causes a crash.

  3136640 (1112468)
- When using a codepage other than IBM-037 syncmon2 could fail to sync PDS members that contained the section symbol in their name. This has now been fixed.

  3130696 (1111807)
- MFDAS KSDS-FIXED import no longer ignores fixed files.

  3129963 (1111679)
- An issue with the MFDAS /FIXEDVSAM parameter has been resolved.

  3129963 (1111680)
- The MFA_SERVER_PARMS environment variable now changes the Mfdeamon query when user credentials are not known.

  3127797 (1111962)
- MFDAS STATUS jobname filter now works as expected.
- Specifying invalid SSL details when configuring AWM in Eclipse no longer causes exceptions.
- Adding new Eclipse RSE connections no longer results in Eclipse emptying the MFA registry entries when you close the IDE.

- MFA now supports a new configuration parameter JES_CONCHAR for installations that do not use the default '$' character for JES console commands.

  3142873 (1113084)
- When performing a delete from the JES spool first check if the user is the owner. If true then allow the delete to proceed, else check the normal RACF JESSPOOL and JESJOB classes to determine if the user is authorized to perform the action. If no JESSPOOL or JESJOB classes are present then deny.

  3141208 (1113585)
- An occasional 0C4 in DCPSAF caused by a memory overwrite has been fixed.

  3129416 (1111732)
- MFDAS import requests made to Endevor now honour the PGRP (processor-group) parameter.

  3127644 (1111509)
- The Endevor transient data set allocated to ENDVLIST has had its maximum space allocation increased to enable handling of large history listings.

  3122295 (1110989)
- A program using the ACCEPT FROM SYSIN statement to read a data set on the mainframe failed to release the data set when the step had completed. The data set remained locked to the Data Connect mainframe process. This has been fixed.

  3122245 (1110995)
- Previously, when updating an Endevor element with a workstation file containing zero-length records they were always treated as updates. Writing at least one blank now avoids this and no update takes place.

  3105518 (1109752)
- The file handler was sending a function code that was not recognised by MFA causing an abend 0C4. This has now been fixed.

  3105465 (1109897)
- Default parameters in the PARMS member where incorrectly set. These have now been restored to the defaults as documented.

- The command line utility MFMON2 will now exit and return an error message if it is unable to create the temporary files it requires to run.

3123995 (1111268)

- The MFA Synchronisation and Control Monitor did not correctly synchronise mainframe datasets whose members contained a $ character.

3121666 (1110909)

- The compare and synchronization monitor command line utility MFMON2 was failing if more than 4000 files were synchronised. This has been fixed.

3104574 (1109235)

- An abend 02A will no longer occur if submit and PDS hash functions execute at the same time.

3135556 (1112256)

- User code now runs in an independent address space in the Mainframe Call Generator. It previously ran in the Mainframe Access address space meaning it was technically possible for the code to enter supervisor state. MCGLIB now becomes the new address space's STEPLIB so other user modules can be called from the first one without placing them in MFA's STEPLIB.

2120159 (1057612)

Micro Focus Batch Scheduler Integration

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- On UNIX, MFBSI no longer fails to recognize an end of job in Enterprise Server.

3135839 (1112547)

- %%INCLIB Control-M statements, used in a conditional block (%%IF, %%ELSE, and %%ENDIF), are now executed or skipped as expected.

3128402 (1111552)

- By default, performing a soft-kill on an MFBSIJCL process that is waiting for JOB termination also cancels the JOB in Enterprise Server before terminating. Use the following parameter in the MFBSI configuration file to avoid killing the JOB when the process is soft-killed: ES_JOB_KILL=NO (By default, ES_JOB_KILL=YES is assumed.)

3120998 (1110950)

Micro Focus Cryptographic Library

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- The MFDS could crash during startup when SSL and a keyfile with no password are used to secure it.

3152964 (1113791)

Monitoring and Management

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- JCL jobs that generate STEPBYPASSED events no longer cause incorrect values in JCL HSF records.

2886646 (1108200)

OLE Class Library

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- An issue with the tabbing of ActiveX controls has been resolved.

3106202 (1109437)

OO Base Class Library

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- The SortedCollection class methods setSortMethod and setSortEntry are now thread-safe.

  3145921 (1113207)
- The class libraries resources now compile without having to add the Windows SDK include location to the INCLUDE environment variable.

  3117380 (1110512)
- Menu item objects are not destroyed until the on idle processing. This is to stop the destroying from being attempted twice.

  3107820 (1110204)

PL/I Support

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- "-optexec plitest" is now correctly honored with margins 1,72 (and others).

  3140040 (1112694)
- Calls to functions with CHAR VARYING BIGENDIAN parameters now compile correctly when using -OPT.

  3151487 (1113707)

- A PL/I compiler optimization problem using the compiler options -opt -range causing incorrect execution behavior has been fixed.

  3151588 (1113704)
- Previously, you could encounter issues when using factored declarations of named constants.

  3151490 (1113657)
- The use of condition prefixes no longer causes diagnostic message MFPLI04042A.

  3151488 (1113713)
- An issue which caused a message "MFPLI04042A : Possible compiler error" has been resolved.

  3151486 (1113705)
- The Open PL/I compiler now handles the SUBSTR built-in during restricted expression evaluation.

  3150937 (1113615)
- The Open PL/I compiler now handles the COLLATE built-in during restricted expression evaluation.

  3150936 (1113614)
- A problem with static structure members initialized with ADDR(x) where "x" is another static variable has been fixed.

  3150240 (1113577)
- Using a condition prefix of SIZE, and built-in VERIFY, no longer causes a compiler abort.

  3146621 (1113244)
- Open-PLI now supports the XMLOMIT and XMLATTR attributes.

  3140927 (1112923)
- The PICSPEC built-in function is now supported.

  3140470 (1112889)
- Conversion of float dec to fixed dec now works correctly when using -fdmaxp 15.

  3139170 (1112562)
- Open-PLI now supports the use of a named constant in the FROM clause of a WRITE statement.

  3139145 (1112792)
- The message "MFPLI00069S : An arithmetic constant must be separated from the following symbol by a delimiter. A blank delimiter has been supplied." has been reduced to Warning Level.

3139138 (1113106)

- Open PL/I now supports the NONASSIGNABLE attribute.

3139137 (1112687)

- The severity of message "MFPLI01267E : The resultant size of the STRING built-in is > the implementation limit of 32K" has been reduced to Level-E.

3139136 (1112704)

- The error diagnostic of ADDR built-in function when used with FIXED BIN(8) UNSIGNED data type no longer occurs.

3139135 (1112660)

- A problem when REFER is used in a LIKE structure has been fixed.

3139131 (1112686)

- The Open PL/I compiler now evaluates the NOT ^ operator when applied to bit strings in a named constant VALUE clause as part of restricted expression evaluation. The maximum length of a bit string in this case scenario is 32764.

3139125 (1112615)

- A new compiler option, -fdcheck, is available. It checks any direct assignment and passing of FIXED DECIMALS variables using dummy argument for loss of possible digits. When used in combination with –nofdcheck, the options -cics, -sql, -dli, -mvs, and/or –ims imply –fdcheck can be overridden.

3137471 (1112414)

- An erroneous diagnostic MFPLI00132E has been corrected.

3136427 (1112344)

- Open PL/I now supports the COMPARE built-in function.

3136266 (1112293)

- A problem with STATIC INIT(ADDR(x)) where "x" is a static internal ENTRY constant has been fixed.

3136219 (1112285)

- Open PL/I now supports the EDIT built-in function.

3136123 (1112277)

- Open PL/I now supports the SOURCEFILE and SOURCELINE built-in functions.

3136081 (1112273)

- The OPTIONS(VARIABLE) clause is no longer required on an entry declaration with no descriptor list when optional arguments are omitted at invocation.

3136001 (1112259)

- PL/I declarations of UNSIGNED BIN (FIXED attribute omitted) now correctly resolve to UNSIGNED FIXED BIN.

3135879 (1112245)

- A problem with STATIC INITIAL(ADDR(x))applied to a structure member has been fixed.

3135757 (1112234)

- Open PL/I now supports an optional DATETIME format pattern.

3135480 (1112210)

- Open PL/I now supports the CURRENTSIZE built-in.

3134967 (1112163)

- Open PL/I now supports the RESIGNAL statement.

3134389 (1112120)

- Open PL/I now supports the ITERATE statement. Restriction: ITERATE with multiple comma-separated DO controls is not supported.

3134386 (1112119)

- The Open PL/I compiler now generates string range diagnostic errors on SUBSTR arguments which can be evaluated at compile-time. In addition, when -range or the prefix condition stringrange is in effect, runtime range checking is eliminated for SUBSTR operands known to be in range at compile-time.

  3130920 (1111808)
- An extraneous comma preceding a semi-colon which terminates a structure declaration now causes the compiler to generate an Info-Level diagnostic.

  3112934 (1110069)
- The compiler (ED 4.0) now supports –margini ('c') – where 'c' is a character which delimits the left and right margins in the source listing. The option –margins is required for this option to take effect.

  3102178 (1109027)
- A new compiler option -nolaxif is now supported. See the User's Guide for more information.

  2884542 (1108177)
- The CELL attribute is now supported as synonym for UNION.

  (629286)
- The CONSTANT attribute is now supported on FILE and ENTRY data types.

  (629298)
- A problem where a null-based variable was causing a SIGSEGV while calling PLIDUMP has been fixed. The variable will be omitted from the PLIDUMP output.

  3130827 (1111814)
- Previously, when trying to read the memory for a variable evaluation, PLIDUMP would crash. Now, it recovers and prints out a message.

  3130827 (1112244)
- When waiting for an attachment while debugging a PL/I code application running in Enterprise Server, the remote debugger would not shut down.
- An issue has been resolved where after a notification mfplictx was also loaded which confused the debugger.
- 64-bit debugging can now be stopped without any issues.
- While shutting down, the debugger was attempting to free the languageContext variable and that was causing the debugger to crash. This no longer occurs.
- A conditional breakpoint is executed when the results of an expression are TRUE. An expression can be a simple variable value check such as: foo = 'This is a simple string' foo_number = 9 bar = '"This is a quoted string"' The following is an example of a more complex expression: foo = 'This is a simple string' & foo_number = 9 You can also use one of the PL/I functions supported by the debugger. For example: substr(foo, 1, 7) = 'This is' See Codewatch User's Guide > Codewatch Commands > Breakpoints > Conditional Watchpoints in your product help.
- Previously, Eclipse showed all system frames. There is now an option to hide them.
- An issue where PL/I Wait for attachment would not stop waiting has been resolved.
- Previously, when trying to run-to-line on an empty line the debugger would hang. It now gives a message to the user that it is an invalid line.
- The cwnotif.dat file is no longer required for CodeWatch to receive notifications from the PL/I run-time system.
- The PLI MQ headers cmqepp.inc and cmqp.inc now contain the bigendian attribute in all fixed bin fields.

  3151579 (1113666)
- Previously, if using mixed case or lowercase to write *PROCESS statements and -margins 2,72 was in effect, the macro preprocessor would strip the * and leave the word PROCESS in place causing compile errors.

  3136423 (1112356)

- A problem related to the generation of macro output when a macro procedure specified an argument but the invocation did not utilize an argument has been corrected.

  3131736 (1111905)
- Previously, the PL/I macro preprocessor when invoked as part of the Eclipse Editor background parse, ran unacceptably slow if there were large amounts of source code with no intervening preprocessor statements. This no longer occurs.

  3110545 (1109838)
- Previously, when using the PL/I Macro Preprocessor's %NOTE built-in function, the message was output in a non-standard format. It now emits an informatory message MFPP09073I followed by a single character indicating the severity (I,W,E,S) based on the "condition code" that %NOTE was driven with, and then the %NOTE Text.

  3109720 (1109996)
- A fix for RPI 1109323 had an unintended knock-on effect with regard to to the PARMSET built-in function when used against a variable that was not passed into a user's PL/I Macro procedure. This no longer occurs.

  3109342 (1109765)
- Previously, if referencing a macro which had been declared, but not defined, the macro preprocessor took a SIGSEGV trying to invoke the macro. This no longer occurs.
- Bit strings evaluated as part of a PL/I Macro Expression were not evaluated correctly when using the new -case_asis option.
- Previously, if -margins 2,72 were used and the program split a fully qualified variable name that exceeded 70 bytes in length at the right margin, then an infinite loop occurred in the macro preprocessor. This no longer occurs.
- Previously, if trying to use EDz to edit PL/I code on the mainframe without a PL/I Dev and PL/I RTS License caused the IDE to crash. This no longer occurs.
- The NOSCAN option of the ANSWER statement is now honored.
- Previously, the PL/I Macro Preprocessor did not correctly identify *PROCESS; as a valid *PROCESS statement. This caused problems when multiple macro passes were made against the same source with -margins 2,72 in effect.
- PL/I Macro preprocessor now accepts OTHER as an abbreviation for OTHERWISE when SELECT is used in a PL/I Macro.
- Previously, if a null keyword was used in a macro with the STATEMENT attribute and it was then followed by a non-null keyword value, Enterprise Developer issued a diagnostic message and used the "null" keyword value. In this scenario, IBM uses the following non-null keyword value. The behavior of Enterprise Developer now matches IBM's.
- Previously, when using the macro preprocessor to replace a variable in your code, if the value of the variable contained the name of the variable, the process went into an infinite loop until the stack was exhausted. The default behavior of the Micro Focus macro preprocessor has now been changed to match the behavior of IBM's default macro preprocessor option of RESCAN(ASIS) in such scenarios.
- Previously, there was no easy way to determine if a PL/I Shared object built under Enterprise Developer was being executed against an incompatible version of the PL/I Runtime. The version information is now emitted in a CTF Diagnostic to facilitate troubleshooting.

  3148585 (1113576)
- Previously, if a PL/I program was pre-compiled with -sql db2 precompiler and it implicitly opened SYSPRINT on two consecutive jobsteps, the second jobstep would trap. This no longer occurs.

  3144431 (1113098)
- An RTS115/U4038 abend no longer occurs when -pic is used in conjunction with memory strategy being enabled.

  2832375 (1101037)
- A problem checking the overlay of based variables (-nolaxbased) has been fixed.

3142680 (1112902)

- "-optexec plitest" is now correctly processed honoring plitest when margins 1,72 (and other settings) are in effect.

3141474 (1112780)

- Previously, the HCO pre-compiler didn't handle XMLPARSE correctly which resulted in compile failure. This has now been fixed.

3109344 (1110210)

- Previously, when the macro preprocessor was used in conjunction with other preprocessors, it added %IGNOREMARGINS; to the generated source and then emitted code between 1 and 254. In the customer-supplied scenario where a EXEC SQL INCLUDE was used and it had information in columns 73-80, it caused a failure to compile. The new behavior is that the intermediate code is emitted within the specified margins and the margins setting is passed to all preprocessors and the compiler.

3106330 (1109782)

Run-Time System

- IBM floating-point behavior is now supported in managed code via the MAINFRAME-FLOATING-POINT Compiler directive.

3111511 (1109931)

- When native COBOL calls a Java method that returns an array of objects, the returned object reference now correctly represents the array of objects.

3144462 (1113127)

- When creating a live recording file, if you specify a path in the COB_LIVE_RECORD environment variable, the path is now validated (to ensure it exists) before the process runs.

3136927 (629611)

- A new tunable has been introduced, dbcs_text_enable_clip, which when set to true ensures that the font is clipped to the font height supplied by Microsoft Text APIs rather than overwriting pixels beyond the font height. Use this tunable when running in a GUI window (runw). The default is false.

3136924 (1112338)

- The NUMPROC"ACOS" directive has been enhanced to support certain elements of NEC ACOS COBOL relating to the processing of invalid data in USAGE DISPLAY data items.

3135821 (1112242)

- A bug in the NUMPROC"ACOS" emulation of NEC ACOS COBOL has been fixed. The error occurred in statements of the form: move unsigned-display-item to numeric-edited-item where the source item contains a negative value.

3135821 (1113569)

- The NUMPROC"ACOS" directive has been enhanced to support certain elements of NEC ACOS COBOL relating to invalid sign information in USAGE COMP-3 data items.

3135820 (1112241)

- In the run-time text window, the correct key-code is now returned when the Tab key is pressed after the Window menu has been previously selected using the Alt + Space shortcut.

3132989 (1111983)

- The position and size of windows created with the WINDOW-CREATE clause in Dialect(RM) will no longer be constrained by the window that was active when the call is made. Previously, a window created by WINDOW-CREATE would be required to fit within the constraints of the parent window. This behavior was not consistent with the same command under RM/COBOL, and so was changed.

3131065 (1111843)

- A GUI application no longer fails to terminate correctly if the title bar of the text window console is currently selected with the mouse when the termination occurs.

  3124823 (1111218)
- OO CTF tracing now correctly outputs the thread-id to file.

  3117361 (1110510)
- When using .INT code, an arithmetic statement involving a 64-bit COMP-5 operand now gives the correct results.

  3111631 (1109997)
- When entering multiple DBCS characters using the IME, the later characters in the string are no longer being corrupted. Previously, corruption occurred due to a bug in Microsoft's ReadConsoleInput() API.

  3111356 (1109909)
- A new parameter is available for the CHECKDIV Compiler directive that emulates behavior when attempting to divide by zero on an ACOS mainframe system. CHECKDIV"ACOS" will result in both the quotient and the remainder being set to the value of the dividend if a divide by zero operation is attempted when no ON SIZE ERROR clause is specified.

  3111073 (1109890)
- The NUMPROC Compiler directive has a new parameter. NUMPROC"ACOS" provides partial compatibility with the behavior of NEC ACOS COBOL processing of invalid data in USAGE DISPLAY data items.

  3111072 (1109889)
- On file systems that support 64-bit inode numbers, CTF output files were not produced in the expected directory if its inode number was sufficiently large that it did not fit in 32 bits. This has now been corrected.

  3109110 (629772)
- When using the COBOL printer routines, the default printer is now selected on Windows Server 2016. Registry differences introduced with Windows 10/Sever 16 caused existing functions to select the wrong default printer. These have now been updated to use an alternative method to achieve the correct result.

  3109043 (1110153)
- An intermittent runtime error (COBRT255: CODESET cannot open double byte conversion table) could occur when MFCODESET was set to a value that included double byte conversions. This has been fixed.

  3108885 (1109915)
- The correct status-code definitions (for Windows and UNIX) are now recorded in the documentation.

  2879887 (1107243)
- Improvements have been made to the run-time system, the File Handler and the JCL engine, with regards to error trapping and reporting.

  2867927 (1106202)
- Spurious errors no longer occur when compiling or running programs on 32bit Linux platforms with an XFS file system greater than 1TB.
- COBUTF8 no longer segfaults if COBDIR is not set.

Setup Issues

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- The DemoCA installer now works correctly on Japanese OS.

  3142481 (1112900)
- An issue was resolved where the AppMaster Builder AddPack would not install if Enterprise Developer for Visual Studio 2017 was installed on the same machine as Enterprise Developer for Eclipse.

3124867 (1111236)

- An issue with some empty folders created during installation ad not deleted when the product was uninstalled has been resolved.

3115392 (1110376)

- The RPM installer now displays the correct information about the Install and Update commands at the end of RPM extract.

3108619 (1109717)

HCO for DB2 LUW

Back to the list

- The DB2 preprocessor sometimes generated a 309 malformed subscript error if the SQL statement contained COMP host variables with an indicator variable array. This has been fixed.

3142686 (1112952)

- A problem that prevented the use of CBLLINK on compiled programs that use LITLINK has been fixed. HCO now supplies the LIBs necessary to link these applications. Note: If you compile static DB2 applications that use LITLINK, you must compile them using the DB2(NOPRE) directive, and specify all applicable LIBs in the LINK statement. For example: CBLLINK SELECT.obj DB2API.LIB, MFHCOLIB.LIB, MFSQLSMF.LIB

3135847 (1112270)

- The DB2 preprocessor incorrectly generated code to convert COMP fields in SQLCA if no SQL statement was found in the program. This resulted in error "COBCH0002 Undefined ECM error. Inform Technical Support. Error code 309". This issue has been resolved.

3129362 (1111619)

- The DB2 preprocessor has been enhanced with a new directive option, DB2(STOPROC), that provides a solution to a problem that prevented DB2 LUW stored procedures from working properly when compiled with CHARSET(EBDIC) because character information is passed to and from DB2 LUW as ASCII data.

3129260 (1111614)

- A problem that caused the DB2 preprocessor to generate DB103 errors on mainframe-style VARCHAR host variable definitions has been fixed.

3123813 (1111337)

- When run against DB2 LUW version 10 or later, the HCO DCLGEN tool sometimes defined the first column in a DECLARE TABLE statement incorrectly by dropping WITH DEFAULT. This has been fixed.

3119616 (1110699)

- The DB2 preprocessor and HCO runtime have been updated to convert an entire VARCHAR field to EBCDIC rather than just converting the length of data specified. This corrects a problem with erroneous ASCII spaces showing up in VARCHAR columns.

3110220 (1109819)

SQL: HCO for SQL Server

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- When using HCOSS Generate DDL to generate tables and columns from mainframe code that contained REMARKS containing single-quote characters, a SQL Server DDL syntax error occurred. To correct this, REMARKS are now generated using two single-quote characters in place of each single-quote character found in the mainframe code.

3137298 (1112507)

- A problem that occurred when using the HCOSS Generate DDL tool generate unique filtered indexes with nullable columns caused the columns to be generated incorrectly. This has been fixed such that the

columns are now generated using a WHERE <column_name> IS NOT NULL clause. In addition, nullable columns defined in unique indexes were not being evaluated with regard to adding the WHERE NOT NULL clause. This has been fixed as well.

3107289 (1109778)

- The HCOSS DB2 grammar was erroneously generating a syntax error when the mainframe character STRIP function was used with the BOTH option. This has been fixed.

3140519 (1112698)

- HCOSS data transfer was failing if more than one version of SQL Server was installed on the machine. This is now fixed.

3132833 (1111996)

- When using SQL(DIALECT=MAINFRAME) the STRICTPARSE directive is now set by default, and can be disabled by specifying NOSTRICTPARSE. This is a change from earlier releases in which the default setting was NOSTRICTPARSE.

SQL: MBDT Utilities

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- DSNUTLB LOAD no longer gives an SQL error for columns that are defined as DECIMAL EXTERNAL and that have a POSITION clause containing only a start position, but no end position.

3139744 (1112632)

- A problem when that occurred when querying referential integrity information for a table has been fixed. In addition, a problem with CompiliOptionBlock being out of sync with new ESQL directives has been fixed.

3119350 (1111458)

SQL: OpenESQL

Back to the list

- OpenESQL now supports RETURNING clauses in INSERT, UPDATE and DELETE statements when using SQL(DBMAN=ADO) and SQL(PROCOB).

3120916 (1110849)

- A problem when using an Oracle REF CURSOR in managed code that sometimes caused subsequent statements to fail has been fixed.

3113118 (1110287)

- Problems with DATE and TIMSTAMP handling when using the Oracle fully managed provider for ADO.NET have been fixed by introducing new environment variables to control .NET formatting of datetime and datetimeoffset values when DATE=EXTERNAL is set for Oracle connections.

3108444 (1109632)

- Problems with DATE and TIMESTAMP handling when using the Oracle fully managed provider for ADO.NET have been fixed by introducing new environment variables to control .NET formatting of datetime and datetimeoffset values when DATE=EXTERNAL is set for Oracle connections.

3107838 (1109570)

- An issue with singleton selects that have no FROM clause but have a WHERE clause has been fixed.

3151028 (1113711)

- A problem that generated an undefined preprocessor error and caused compilation to fail when a literal of a size greater than 79 characters was used with the SQL LIKE operator has been fixed.

3150466 (1113596)

- Previously, when using SELECT... INTO statements containing a FOR UPDATE clause with PostgreSQL and MySQL, the pseudo column used for positioned updates was not present in tables. A new

OpenESQL directive, SQL(NOWHERECURRENT), is now available. This benefits PostgreSQL and MySQL applications that do not require positioned update or delete support, and where the pseudo column used as a rowid to implement positioned updates and deletes is not present.

3146620 (1113335)

* A problem using "plan" as an SQL identifier has been fixed.

3146620 (1113251)

* An issue with using the SQL(XAID) Compiler directive with IMS applications has been resolved.

3144626 (1113137)

* A problem with applications using a very large number of embedded SQL statements has been fixed.

3142107 (1113006)

* The file cobmfdsntiar.so is now included in the COBOL Server product.

3132441 (1112164)

* The limit for the number of compiled SQL statements has been increased from 5000 to 12000.

3129084 (1111593)

* An inconsistency with the OpenESQL ADO.NET runtime handling of PIC X host variables in DBCS locales has been fixed.

3128324 (1111562)

* A problem with EXEC SQL ALLOCATE for SQL-CLOB host variables has been fixed.

3128295 (1111492)

* OpenESQL for ADO has been updated to behave consistently with Pro*COBOL by returning a +1403 SQLCODE instead of an erroneous -1403 SQLCODE when a PL/SQL stored procedure fails to handle a data-not-found condition.

3128289 (1111491)

* A problem that prevented the setting of the UNSAFE_NULL directive from the IDE when using Pro*COBOL has been fixed.

3127696 (1111447)

* A problem with Oracle scroll cursors that resulted in a backward compatibility issue with Net Express has been fixed.

3126245 (1111648)

* If you use an AT db_name clause in a DECLARE CURSOR statement, you no longer need this clause in statements that reference the cursor, such as FETCH, CLOSE, GET NEXT RESULT SET or positioned UPDATE and positioned DELETE statements. To maintain backward compatibility the clause may optionally be included, but it is no longer required.

3124001 (1111150)

* A problem that caused the OpenESQL preprocessor to generate invalid code when "AT xxxx SELECT" was specified in an array singleton SELECT statement in managed code has been fixed.

3123827 (1111128)

* A problem with SQL(CHECK) that was introduced in version 3.0 of this product and occurred for DB2, Oracle, and PostgreSQL with ADO.NET has been fixed.

3121267 (1110919)

* A problem using AT <connectionName> with COMMIT, ROLLBACK, and SAVEPOINT statements has been fixed.

3115063 (1110308)

* A new SQL compiler directive option, PICXBINDING, has been added to OpenESQL to provide more intuitive behavior for LIKE expressions with SQL Server by enabling greater control of parameter binding for PIC X host variables.

3113999 (1110373)

- OpenESQL has been updated to retain the FOR READ ONLY clause when the TARGETDB SQL compiler directive option is set to DB2.

  3112785 (1111030)
- A problem with fractional seconds truncation when using the legacy SQL Server ODBC driver has been fixed.

  3112499 (1110032)
- A problem using SYSTEM_USER in select statements has been fixed.

  3111513 (1109934)
- A problem caused by OpenESQL rounding a result to a COMP-3 host variable instead of truncating it has been fixed in the ODBC runtime.

  3110902 (1109871)
- A problem with OpenESQL trimming trailing spaces in input host variables has been fixed by the addition of the SQL(PIXCBINDING=FIXED) compiler directive option, which ensures that these trailing spaces remain intact.

  3110720 (1110099)
- A problem handling unmapped codepoints in DBCS locales when storing binary data in character fileds and using SQL(ALLOWNULLCHAR) has been fixed.

  3109266 (1109723)
- OpenESQL had a storage limit of 30 characters for a program ID. The maximum has been increased to 128 characters.

  2884875 (1107982)
- A problem that caused OpenESQL to remove any OPTIMIZE FOR n ROWS clause from queries when TARGETDB was set to DB2 has been fixed.

  2883301 (1108387)
- A problem with HCOSS access plans getting out of sync with the running code and database stored procedures and metadata when a live ES region is updated has been fixed.

  2877693 (1110926)
- OpenESQL has been updated to support the OPTIMIZECURSORS SQL compiler directive option for the OCI and JDBC run-time systems.
- The SQL(TRANSACTION) directive now accepts an additional option, AUTO. SQL(TRANSACTION=AUTO) is equivalent to SQL(AUTOCOMMIT). For new applications, SQL(TRANSACTION) is the preferred method for specifying transaction options.
- PostgreSQL versions 3.2.2 and later are now supported with .NET COBOL.
- Operating System authentication for CONNECT statements is now supported for Oracle, DB2, and SQL Server in the ODBC, ADO, and JDBC run-time systems.

SQL Option for DB2

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- A problem that caused an AUTOBIND support routine invoked by the XDB ECM to fail by omitting the drive letter in log file names when the specified drive letter was other than C: has been fixed.

  3114069 (1110423)
- The XDB ECM now supports the z/OS DB2 NEXTVAL reserved word as an ordinary identifier.

  3120469 (1110834)
- A problem that prevented the SQL Option for DB2 ECM from recognizing IN clause predicates containing multiple group host variables has been fixed.

  3115066 (1110310)

- A problem that prevented the SQL Option for DB2 ECM from supporting the use of a collection ID for validating SQL against z/OS DB2 with DYNAMICRULES BIND packages has been fixed.

  3112996 (1110332)

- A problem reading XDB translation files caused by stack initialization on Windows 10 has been resolved.

  3120927 (1110988)

- A problem that resulted in an X352 thread access violation due to an improper reallocation of the parse tree when using an inner join to a table expression containing a scalar subquery has been fixed.

  3132740 (1111977)

- A problem with CASE expressions resolving host variables has been resolved.

  3131966 (1111932)

- A problem with the lexical analysis of a PARTITION BY SIZE clause on a CREATE TABLE statement when the integer constant and the "G" indicating gigabytes were not separated by a space character has been fixed.

  3129670 (1111676)

- An issue with a correlated subquery not returning results due to a problem with the correlation variable has been resolved.

  3114811 (1110283)

- A problem with the query optimizer incorrectly identifying the step for predicate evaluation of a join predicate containing a column and an expression has been resolved.

  3114809 (1110284)

- A problem that caused an X352 thread access violation on a VIEW definition containing a select item of the form name.* has been fixed.

  3114210 (1110228)

- An access violation caused by a long UNC path for the Roaming APPDATA directory on a Windows machine has been resolved.

  3112201 (1110021)

- A problem that caused the XDB engine optimizer to return an empty result set for range predicates on join conditions has been fixed.

  3111742 (1109957)

- A problem with the first FETCH operation against a rowset cursor containing a UNION ALL with host variables has been resolved.

  3110071 (1109893)

- An issue with a LEFT OUTER JOIN operation not retrieving all result set rows has been resolved.

  3104216 (1109202)

- A problem with XDB engines not allowing a GROUP BY to contain an item not in the projection list has been fixed.

  3103832 (1109175)

- A problem that caused a PDMP272 – xdb Inner Join Problem message has been fixed.

  2887796 (1108361)

- The Stored Procedure Test tool now sizes the Results tab in the same way as it sizes the other tabs.

  3148319 (1113402)

- A problem with DSNUTILB that occurred when loading a table containing a VARCHAR field has been resolved.

  3128931 (1111587)

XML Support

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- cbl2xml will now work successfully under AIX 7 32-bit.

  3109051 (1109699)

- The XML run-time now handles UTF-16 XML documents correctly.

  3147256 (1113357)

- The XML run-time system now correctly sends the XML instance document as an HTTP POST request to the URL specified on UNIX platforms.

  3145761 (1113163)

- An RTS 164 error (Run-Time subprogram not found) no longer occurs on some very old versions of Windows when parsing XML.

  3142315 (1113028)

- The XML run time now correctly sends the XML instance document as HTTP POST request to the URL specified.

  3135893 (1112298)

- XMLPARSE now returns the full UTF-8 string when XMLPARSE(COMPAT) is specified.

  3126921 (1112286)

z/Server

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- The mfawrapperec.dll was only supplied as 32-bit version in the PU1 cab. It is now supplied as both 32 and 64-bit versions. This resulted in an error when trying to perform a MFA z/OS Mainframe connection.

  3122545 (1111119)

- IVPHOLD member was missing parameters on the EXEC line which caused the z/Server Holder to fail to start. The supplied member has been updated.

  3119820 (1110779)

- zServer has been enhanced to handle passwords ("pass phrases") of length up to the RACF mandated limit of 100 characters. The pass phrases can contain alphanumeric, nationals (@,#,$), special characters and blanks (trailing blanks will be removed). The initial pass phrase must be set by a RACF administrator.

  3109741 (1110526)

- Any advanced parameters entered for a holder, a scheduler or a user server are now correctly saved to XML.

- The z/Server Session ID support was enabled despite being disabled in configuration file. This is now fixed.

  3138523 (1112812)

- When using the Eclipse JES Explorer function, users are only able to browse and delete jobs they own. That is, jobs that they have submitted.

  3109690 (1109793)

- When using an XML configuration file where the Scheduler port range was invalid z/Server continued to start up when it should have failed, which could result in it terminating abnormally. It now shuts down correctly.

- z/Server now correctly recognizes when a port is unavailable when trying to start a User Server. Rather than fail to start, the User Server attempts to use the next available port in the User Server port range.

3124411 (1111274)

Other Issues Resolved in This Release

The numbers listed are the Support Incident Numbers followed by the Reported Problem Incident (RPI) number (in parentheses).

- 2879380 (1107250)
- 2881923 (1109518)
- 2913358 (1110961)
- 3145394 (1113143)
- 3142564 (1112892)
- 3129260 (1111765)
- 3117914 (1111288)
- 3143624 (1113310)

Unsupported Functionality

This section includes information about features or functionality that are no longer supported.

- The HOSTSIGNS Compiler directive is no longer supported. Micro Focus recommends that you use the following Compiler directives instead: SIGN-FIXUP, HOST-NUMMOVE, and HOST-NUMCOMPARE. This is a change since version 3.0 of this product.

Installation

Before Installing

Downloading the Product

1. Use the download links in your Electronic Product Delivery email.

    For more information follow the links for the installation instructions and the End User License Agreement.

On Windows

System Requirements

Hardware Requirements

Enterprise Developer has the following requirements in addition to the requirements of Eclipse. See the Eclipse documentation for details of its requirements.

In general, most modern machines will have the required processor and available RAM to run the Micro Focus products under Windows effectively. For planning purposes, you should consider having a minimum of 2GB of RAM though Micro Focus recommends at least 4GB of RAM for optimal performance.

The disk space requirements for Windows are, approximately:

Enterprise Developer
3.5GB

> **Note:** The disk space requirements include the size of the Eclipse IDE and the version of Java and the .NET Framework provided with the Enterprise Developer setup file. This includes the space needed to cache information locally so that you can modify the installation without the original source media.

z/Server requirements

z/Server has the following hardware requirements:

*   IBM mainframe model zEC12 or later is required for installing and using MFA Server. If your hardware does not meet these requirements please contact Micro Focus support.

Operating Systems Supported

For a list of the supported operating systems, check the *Product Availability* section on the Micro Focus SupportLine Web site: *http://supportline.microfocus.com/prodavail.aspx*.

> **Note:**
>
> *   Support for development on Windows 8 and Windows Server 2012 has been discontinued. These platforms are still supported for deployment. Windows 8.1 and Windows Server 2012 R2 are supported.

- Enterprise Developer installs fully only on 64-bit Windows platforms. On 32-bit Windows, the setup file does not install some of the components. See *Issues with the Installation* in *Known Issues and Restrictions*.
- Enterprise Developer enables you to produce both 64-bit and 32-bit applications on 64-bit operating systems.
- This product can be installed on earlier versions of Windows but it has not been tested on them.

Software requirements

✎ **Note:** This product includes OpenSSL version 1.0.2n.

The setup file will check your machine for whether the prerequisite software is installed and will install any missing prerequisites and the product components.

Eclipse requirements

- The setup file installs Enterprise Developer and the 64-bit Eclipse 4.7.

  Some earlier versions of Eclipse are also supported. See *Installing Enterprise Developer into other instances of Eclipse* in the *Advanced Installation Tasks*.
- Enterprise Developer installs fully only on 64-bit Windows platforms. On 32-bit Windows, the setup file does not install some of the components. See *Issues with the Installation* in *Known Issues and Restrictions*.
- Enterprise Developer supports both the 32-bit and the 64-bit Eclipse. You can use the 64-bit Eclipse to create both 32-bit and 64-bit applications.

Software requirements on Windows

- Oracle's Java Platform (64-bit) version 1.8 or later is required to run the Eclipse IDE; however, the recommended minimum version is Java 1.8.162 (64-bit), which the Windows product installation will install if it detects an older version. Java 7, 8 (32 or 64-bit versions), and Java 9 (64-bit version only) are supported for executing JVM COBOL code and for native COBOL and Java interoperability. You can download Oracle's Java from *Oracle's Web site* and install it anywhere on your machine.

  ✎ **Note:** To skip installing Java 1.8.162 as part of the product installation, run the setup file with the `skipjre=1` command line option.
- Enterprise Developer requires:

  - A 32-bit Java installation if using the 32-bit Eclipse.
  - A 64-bit Java installation if using the 64-bit Eclipse.
- The setup file also installs .NET Framework v4.6.1 and the Microsoft's Visual C++ 2010 and 2012 Redistributables.

See *Java Support Restrictions* in the product help for any considerations when using Eclipse and Java.

Other Requirements

⚠ **Important:** For local servers, you do not need to install the Micro Focus License Administration tool separately, as the setup file installs a new Enterprise Developer client and a new licensing server on the same machine.

If you have a network server, you must update the license server before installing the product as the client is not able to communicate with license servers of versions older than 10000.2.660. On Windows, you can check the version of your license server by clicking **Help > About** in the Micro Focus License Administration tool. To check the version of the license server on UNIX, run `/var/microfocuslicensing/bin/mfcesver` or `/var/microfocuslicensing/bin/cesadmintool.sh`.

If Micro Focus License Manager version 10000.2.02070 or older is installed, it must be uninstalled before the product installation or upgrade can continue.

You can download the new version of the license server software from the Micro Focus SupportLine Web site: *http://supportline.microfocus.com*.

Additional Software Requirements on Windows

To ensure full functionality for some Enterprise Developer features, you might be required to obtain and install additional third-party software in addition to the prerequisite software installed automatically by the Enterprise Developer setup file.

Click here to see this information on the Product Documentation pages on Micro Focus SupportLine.

Product Co-Existence

Note: The following applies to Windows only.

- Enterprise Developer and Enterprise Server (or Enterprise Test Server) cannot coexist on the same machine.
- Visual COBOL and Enterprise Developer cannot coexist on the same machine regardless of which IDE (Visual Studio or Eclipse) you install.

Installation Restrictions and Requirements

Before starting the installation you should consider the following:

- You need to be logged in with a user-ID that has write access to the registry structure under HKEY_LOCAL_MACHINE, HKEY_CLASSES_ROOT, and HKEY_CURRENT_USER so the installation software can set the environment appropriately. You also need to be logged on with Administrator privileges.

On UNIX

System Requirements for Micro Focus Enterprise Developer UNIX Components

Hardware Requirements

The disk space requirements for Micro Focus Enterprise Developer UNIX Components are approximately:

Platform	Installer type	Setup file size	Disk space required for the installation	Disk space required for running the product	Sentinel RMS license server
POWER running AIX	Micro Focus	533 MB	2.13 GB	1.07 GB	41 MB
HP IA	Micro Focus	953 MB	3.81 GB	1.90 GB	79 MB
System Z running Red Hat Linux	Micro Focus	425 MB	1.70 GB	850 MB	39 MB
x86-64 running Red Hat Linux	Micro Focus	540 MB	2.16 GB	1.08 GB	50 MB

Platform	Installer type	Setup file size	Disk space required for the installation	Disk space required for running the product	Sentinel RMS license server
ppc64le running Red Hat Linux	Micro Focus	303 MB	1.21 GB	606 MB	1 MB
SPARC running Solaris	Micro Focus	519 MB	2.08 GB	1.04 GB	38 MB
x86-64 running Solaris	Micro Focus	472 MB	1.89 GB	944 MB	33 MB
System Z running SUSE SLES	Micro Focus	306 MB	1.22 GB	612 MB	39 MB
x64 running SUSE SLES	Micro Focus	384 MB	1.54 GB	768 MB	50 MB
ppc64le running SUSE SLES	Micro Focus	272 MB	1.09 GB	544 MB	1 MB

Operating Systems Supported

For a list of the supported operating systems, check the *Product Availability* section on the Micro Focus SupportLine Web site: *http://supportline.microfocus.com/prodavail.aspx*.

Software Requirements for Micro Focus Enterprise Developer UNIX Components

These are the software requirements for Micro Focus Enterprise Developer UNIX Components:

- The "ed", "sed" and "tar" utilities must be installed and added to the PATH.
- The pax archiving utility is required by the setup file. Pax is distributed with most UNIX/Linux systems but, if it is missing, you must install it separately. To verify pax is installed, run `pax --help` or `pax --version` at the command line.
- Required libraries for Red Hat and SUSE Linux platforms - The installer checks that both the 32-bit and 64-bit libraries listed below are installed on both 32-bit and on 64-bit Operating Systems for this product to install and work correctly.

  If installing on a 64-bit OS, the 32-bit libraries are not installed by default and must be installed before you start the installation.

Library	32-bit Library Name	64-bit Library Name	Platform			
			s390	SUSE 12	Red Hat 6.*x*	Red Hat 7
glibc	glibc-*.i686	glibc-*.x86_64	glibc-*.s390		X	X
libgcc	libgcc-*.i686	libgcc-*.x86_64	libgcc-*.s390		X	X
libstdc++	libstdc++-*.i686	libstdc++-*.x86_64	libstdc++-*.s390		X	X
glibc-locale	glibc-locale-32bit	glibc-locale-2		X		

Library	32-bit Library Name	64-bit Library Name	Platform			
			s390	SUSE 12	Red Hat 6.x	Red Hat 7
glibc-devel	glibc-devel-*.i686	glibc-devel-*.x86_64	glibc-devel-*.s390		X	X
elfutils-libelf	elfutils-libelf.i386 or elfutils-libelf.i686	elfutils-libelf.x86-64	N/A		X	X
libelf-devel	elfutils-devel.i386 or elfutils-devel.i686	elfutils-devel.x86-64	N/A		X	X
libelf-devel	libelf-devel-32bit-0.137-8.19	libelf-devel-0.137-8.19	N/A	X		
libelf1	libelf1-32bit-0.137-8.19	libelf1-0.137-8.19	N/A	X		
gcc[2]	gcc*.i686	gcc*x86_64	X	X	X	X
ld[2]	Binutils*.i686	Binutils*x86_64	X	X	X	X

- [1] On SUSE 12, you can only install the 64-bit version of Enterprise Developer. The glibc-locale-32bit library is still required by the SafeNet Sentinel licensed components.
- * Additional libraries required to use the core_on_error runtime variable. The gdb packages (for the GNU Project Debugger) can be installed from the install media for your OS.
- ** Operating system libraries required for PL/I support on both SUSE and Red Hat.
- [2] On Red Hat these libraries are required to enable COBOL and PL/I to compile.
- Libraries marked with an 'X' are not included in the platform and need to be installed separately.

Visit the *Red Hat Web site* for more information.

- Xterm, the terminal emulator for the X Window System, is part of your UNIX/Linux distribution but is not installed by default. Use your UNIX/Linux installation media to install it.

- Oracle's Java Platform (64-bit) version 1.8 or later is required to run the Eclipse IDE; however, the recommended minimum version is Java 1.8.162 (64-bit), which the Windows product installation will install if it detects an older version. Java 7, 8 (32 or 64-bit versions), and Java 9 (64-bit version only) are supported for executing JVM COBOL code and for native COBOL and Java interoperability. You can download Oracle's Java from *Oracle's Web site* and install it anywhere on your machine.

  ✎ **Note:**

  - On AIX and zLinux, you need to have IBM's JDK. The earliest supported release of IBM's JDK is 7.0 Service Refresh 8. If you install IBM's JDK 8, on AIX you must install its latest fix - JDK 8 SR5 FP16. You can get IBM's AIX JDK from *IBM's Web site*.
  - On HP-UX, you need to have HP-UX JDK. The earliest supported release of HP-UX is JDK 7.0.11. You can get the HP-UX Java JDK from *HP's Web site*.
  - On Solaris platforms (both SPARC and Intel) only the 64-bit version of Java 8 and later is supported.

To execute JVM COBOL code, you need to set the environment as follows:

- You need to set the JAVA_HOME environment variable. When installing the product, set this variable to a 64-bit Java installation or the installation terminates. For example, execute the following:

```
export JAVA_HOME=java_install_dir
```

where *java_install_dir* is the path to the JAVA installation directory such as `/usr/java/javan.n`

- You need to add `$JAVA_HOME/bin` to your system PATH variable. To do this, execute:

  ```
  export PATH=$JAVA_HOME/bin:$PATH
  ```
- You need to set the LANG environment variable to pick up localized messages. The LANG settings are English and Japanese only.

- GNOME menus and buttons have been standardized across all applications so that icons are not displayed by default. To keep the icons and the look and feel of previous versions, enable the menus_have_icons property with the command:

  ```
  gconftool-2 --type boolean --set /desktop/gnome/interface/menus_have_icons
  true
  ```

Additional Software Requirements for Micro Focus Enterprise Developer UNIX Components

To ensure full functionality for some Enterprise Developer features, you might be required to obtain and install additional third-party software in addition to the prerequisite software installed automatically by the Enterprise Developer setup file.

Click here to see this information on the Product Documentation pages on Micro Focus SupportLine.

UNIX and Linux Installer Issues

Installing on Linux

On Linux, the RPM installer for Enterprise Developer for Eclipse installs a 64-bit version of Java. When you start the installation, if the 32-bit version of Java is already installed on your Linux machine, you might not be able to install Enterprise Developer. This is a *known issue* with the Oracle Java installers for Linux which prevents you from installing both the 32-bit and the 64-bit versions of Java on the same machine. To work around this problem:

- Download the 64-bit Java distribution in a compressed .tar format from the Oracle Web site.
- Untar the distribution into a location different from the one used for the 32-bit Java version. For example, untar in `/usr/local/java64` and not in `/usr/local/java`.
- Set JAVA_HOME and LD_LIBRARY_PATH to the 64-bit version of Java so that it is used to install and run Enterprise Developer.

Installing while using AFS/Kerberos authentication

If you are using AFS/Kerberos authentication to log onto your Linux system then you need to ensure you have a local user ID which SOA and Enterprise Developer components of the product can use. This user ID must be set up prior to running the installer. When running the installer you need to specify `–ESadminID=[User ID]` on the command line so it is used by the installer.

License Server

You need to configure the computer hostname to ensure the license server will start properly.

To avoid performance issues, "localhost" and the computer hostname must not both be mapped to IP address 127.0.0.1. You should only map "localhost" to IP address 127.0.0.1.

The following is an example of how to specify these entries correctly in the `/etc/hosts` file:

```
127.0.0.1 localhost.localdomain localhost
IP machinelonghostname machineshorthostname
```

where *IP* is the unique IP address of the computer in xx.xx.xx.xx format.

Basic Installation

The instructions in this section apply when you are performing a basic installation of this product for the first time. If you are an administrator, you can perform a basic installation on a local machine before

performing a more advanced installation when rolling out the product to developers within your organization.

For considerations when installing this product as an upgrade, for additional installation options or non-default installations and for installing the mainframe components, see *Advanced Installation Tasks* in your product Help.

Installing on Windows

Note:

- This version of the product is a full install.
- If you have an earlier version of Enterprise Developer installed on your machine, check *Installing as an Upgrade* before you start the installation - see *Advanced Installation Tasks*.

These are the steps to install Enterprise Developer:

1. Run the `ede_40.exe` file and follow the wizard instructions to complete the installation.

By default, this installs Enterprise Developer in the `%ProgramFiles(x86)%\Micro Focus \Enterprise Developer` folder and installs a full version of Eclipse 4.7 64-bit, with the Micro Focus plugins already installed, in the `C:\Users\Public\Micro Focus\`*Product Name*`\eclipse` directory.

The setup file installs any missing prerequisite software as listed in the topic *Software Requirements*.

Note: See *Advanced Installation Tasks* for information about non-default installation tasks. For example, to stop the product installation from installing the version of Java shipped with the product, run the setup file from the command line with the `skipjre=1` command line option; otherwise, if the installation detects a version of Java older than the shipped version, it will install the shipped version.

Installing Micro Focus Enterprise Developer UNIX Components

Note: Micro Focus offers two types of installers on UNIX and Linux - a proprietary Micro Focus installer for installing on UNIX and Linux and a standard RPM (RPM Package Manager) installer for installing on Linux. See your product Help for instructions on how to use the RPM installer.

These are the steps to install this product using the Micro Focus installer:

1. Give execute permissions to the setup file:

```
chmod +x setup_entdev_4.0_platform
```

2. Run the installer from the Process User ID login:

```
./setup_entdev_4.0_platform
```

When the installer starts it will prompt you to enter the superuser password so it can perform operations that require root permissions.

The COBOL environment is installed by default into `/opt/microfocus/EnterpriseDeveloper`, (COBDIR).

SafeNet Sentinel considerations

- The installation of this product could affect the SafeNet Sentinel licensed components running on your machine. During installation licensing is shutdown to allow files to be updated. To ensure the processes running on your machine are not affected, you need to use the `-skipsafenet` option, which skips the installation of SafeNet:

```
./setup_entdev_4.0_platform -skipsafenet
```

- To protect the SafeNet Sentinel installation from accidental updating you can create an empty file named `SKIP_SAFENET_INSTALL` in `/var/microfocuslicensing/` as follows:

```
touch /var/microfocuslicensing/SKIP_SAFENET_INSTALL
```

While the file is present, the SafeNet installer does not make changes to the installation or shutdown the running license daemons. If licensing needs to be updated later, remove the file and install Sentinel RMS server manually.

> ✎ **Note:**
>
> During the installation process, the installer configures the product's Enterprise Server System Administrator Process User ID. The Process User ID will be the owner of all Enterprise Server processes except the one for the Micro Focus Directory Server (MFDS). The Directory Server process (Enterprise Server Administration) runs as root as this allows it to access the system files and ports.
>
> All Enterprise Server processes you start from Enterprise Server Administration run under the Process User ID which can affects the file access and creation.
>
> By default, the installer uses the login id of the user that runs the installer for the Process User ID. To change the user id after you complete the installation, execute `$COBDIR/bin/casperm.sh`.

Advanced Installation Tasks

This section includes instructions about how to perform a non-default installation, install this product as an upgrade, or about how to install the additional components.

The advanced installation tasks include:

- *Installing as an Upgrade* - included in these Release Notes
- *Command line installation options* - included in these Release Notes
- *Installing using an RPM installer on Linux* - available in the product Help and on the Product Documentation pages on Micro Focus SupportLine
- *Installing and licensing Micro Focus Rumba* - available in the product Help and on the Product Documentation pages on Micro Focus SupportLine
- *Installing into other instances of Eclipse* - available in the product Help and on the Product Documentation pages on Micro Focus SupportLine
- *Installing the Mainframe Components*, - Mainframe Access Server, Application Workflow Manager into IDz, z/Server - available in the product Help and on the Product Documentation pages on Micro Focus SupportLine
- *Installing on Microsoft Terminal Server and Citrix* - available in the product Help and on the Product Documentation pages on Micro Focus SupportLine

Click here to see this information on the Product Documentation pages on Micro Focus SupportLine.

On Windows

Installing as an Upgrade

Installing this release as an upgrade will automatically uninstall any Patch Updates of the older version of the product you have installed on your machine.

- If you have been using the mainframe components of Enterprise Developer for z Systems, see *Installing z/Server as an Upgrade* for recommendations about how to upgrade your z/Server installation. Also, check *Backward Compatibility of AWM Models* for information about changes that affect your existing AWM models.

- Before installing this release as an upgrade, ensure you create a back-up of your Enterprise Server configuration. To do this, on the Enterprise Server Administration home page, click **Export** and then

select **Export Enterprise Server configuration and Security Manager definitions**. This creates a backup folder in the `c:\programdata\micro focus\Enterprise Developer\MFDS`. You can restore the Enterprise Server configuration after installing this release - click Import on the Enterprise Server Administration home page.

Enterprise Developer Installation Options

You can install Micro Focus products silently by specifying /q at the command line and using command line parameters to specify the installation directory (`installfolder=path`), user information, and which features to install. You must execute the command with superuser permissions.

To see what parameters you can use, execute the following from the command line:

```
install-file /help
```

where *install-file* for the following products is as follows:

Enterprise Developer	`ede_40.exe`

See the *Examples* section further in this topic for examples of some of the parameters you can use.

Directory considerations

- You must have read and write access for every directory accessed during the installation.
- You can override the default installation folder using the `InstallFolder` parameter.
- Installing creates a group of log files prefixed `Micro_Focus_` in the `%temp%` folder, by default. To change the location or name, use the `/log` parameter on your Setup command line and specify the path and file name, for example:

  ```
  /log drive:\path\LogFilename
  ```

Installing silently

Use the `/q` parameter to install silently:

```
start /wait install-file.exe /q [parameters]
```

Examples

- To silently install Enterprise Developer into a directory other than the default:

  ```
  start /wait ede_40.exe /q InstallFolder=c:\DirectoryName
  ```
- If you want to silently install the Eclipse IDE in a location other than the default, execute:

  ```
  start /wait ede_40.exe /q InstallFolder2=c:\EclipseInstallDirectory
  ```

- To skip installing JRE when installing Enterprise Developer:

  ```
  start /wait ede_40.exe /q skipjre=1
  ```

- To silently install Rumba during the silent install of Enterprise Developer:

  ```
  start /wait ede_40.exe /q RumbaCheckbox=1
  ```

On UNIX

Installing as an Upgrade

This release works concurrently with the previous version of Micro Focus Enterprise Developer UNIX Components, so you do not need to uninstall it.

Install the latest version in a different location and set the environment to point to it. To do this, run the Micro Focus Enterprise Developer UNIX Components installer with the –installlocation option:

1. Execute the following command:

```
./InstallFile -installlocation="/opt/microfocus/EnterpriseDeveloper"
```

> **Note:** You can use variables when specifying an absolute path for `-installlocation`. For example, the following examples are equivalent:
>
> ```
> -installlocation="/home/myid/installdir"
> ```
>
> ```
> -installlocation="$HOME/installdir"
> ```

2. Execute cobsetenv to set the environment and point to the new install location:

```
. <product-install-dir>/bin/cobsetenv
```

> **Note:** `cobsetenv` is only compatible with POSIX-like shells, such as bash, ksh, or XPG4 sh. It is not compatible with C-shell or pre-XPG4 Bourne shell.

Micro Focus Enterprise Developer UNIX Components Installation Options

Installing into a different location

To install in a different location use the `-installlocation="Location"` parameter to specify an alternative directory location. For example:

```
./setup_entdev_4.0_platform -installlocation="full path of new location"
```

> **Note:** You can use variables when specifying an absolute path for `-installlocation`. For example, the following examples are equivalent:
>
> ```
> -installlocation="/home/myid/installdir"
> ```
>
> ```
> -installlocation="$HOME/installdir"
> ```

You can see details about which additional parameters can be passed to the install script if you enter the `-help` option.

Configuring the Enterprise Server installation

You can use the following options to configure the Enterprise Server installation: `[ -ESsysLog="Y/N" ] [ -ESadminID="User ID" ] [ -CASrtDir="location" ]`, where:

-ESsysLog	Use this to enable ("Y") or disable ("N") Enterprise Server system logging. Logging is enabled by default. Log files are saved in `/var/mfcobol/logs`.
-ESadminID	Sets the Enterprise Server System Administrator Process User ID from the command line - for example, `-ESadminID="esadm"`. The default user ID is the one that runs the installer.
-CASrtDir	Specifies the location were the Enterprise Server run-time system files are placed - for example, `-CASrtDir="/home/esuser/casrt/es"`. The default location is `/var/mfcobol/es`.

Installing Silently

You can install Micro Focus products silently by using command line parameters to specify the installation directory, user information, and which features to install. You must execute the command with superuser permissions.

You can use the following command line arguments to install silently on UNIX/Linux. You need to execute the commands as root:

```
-silent -IacceptEULA
```

For example, execute:

```
setup_filename -silent -IacceptEULA
```

Installing on Microsoft Terminal Server and Citrix

Note: This document is a work-in-progress. Check the documentation for Enterprise Developer in the *Product Documentation* section of the Enterprise Developer SupportLine Web site for its most recent version.

Microsoft Terminal Server and Citrix (TS/Citrix) are environments for running multiple instances of a single user product. They are not platforms where a single-user product can be made to perform as a multi-user product.

When running Enterprise Developer on TS/Citrix machine, there might be some implications to components of Enterprise Developer which could cause potential conflicts between a 'per-user session' compared to the standard 'per machine' setup. The following components of Enterprise Developer require special configuration:

* Eclipse workspaces and projects
* The Enterprise Server component - the Run-Time System product for JCL, CICS and IMS operations
* The database management service

You can use Enterprise Developer with TS or with any Citrix version certified for use with Eclipse; however, a separate end-user license is required for each user who accesses Enterprise Developer, even if it is running on a single machine. See your *End User License Agreement* for clarification.

Note: Micro Focus Enterprise Developer does not officially support TS/Citrix. However, it will run on any prerequisite Operating System that is supported under TS/Citrix.

Capacity planning

Multi-user capacity planning for TS/Citrix does not scale linearly, and the calculations required for this planning are not directly related or specific to any Micro Focus technology. Micro Focus recommends that you consult with Microsoft or Citrix Systems, respectively, about the server sizing and capacity planning, based on hosting the required number of "rich" Windows 7 or Windows 8 desktops (e.g. using a singleton desktop build as a baseline).

Installing Enterprise Developer

To install Enterprise Developer for use with TS/Citrix:

1. Log on to the physical terminal or Citrix server with a user ID that has administrator privileges.
2. Use the download links in your Electronic Product Delivery email.
3. Follow the links for the installation instructions and the End User License Agreement.

Configuring Enterprise Developer

Follow the links below for details on how to configure the individual Enterprise Developer components.

Customizing the Installation, the Workspace and the Projects

Using Enterprise Developer for Eclipse under TS/Citrix

For considerations about how to use Eclipse under TS/Citrix refer to the *Eclipse product help*.

Micro Focus recommends you set up Enterprise Developer for Eclipse so that each user has their own configuration area and you make the `configuration` folder within the Eclipse installation read-only. (Enterprise Developer for Eclipse is installed on the TS/Citrix machine into `%ProgramFiles(x86)% \Micro Focus\Enterprise Developer` with the Eclipse installation stored in `C:\Users\Public \Micro Focus\Enterprise Developer\eclipse`.)

To ensure that each user will have their own configuration area, you need to set up Eclipse as follows:

1. On the TS/Citrix machine, start Enterprise Developer once, make any required customizations to the IDE and then close it.
2. Using Windows Explorer, navigate to `C:\Users\Public\Micro Focus\Enterprise Developer \eclipse` and open the `eclipse.ini` file with an editor.
3. Add the following code before the `-vmargs` entry:

```
-configuration
@user.home\EclipseConfig
```

4. Using Windows Explorer, navigate to the Eclipse installation folder and from the folder properties make the `configuration` folder **Read Only** for the group that will work with Enterprise Developer for Eclipse.

This ensures that each user that starts Enterprise Developer for Eclipse under TS/Citrix can only see their own workspaces and that they have their own `EclipseConfig` folder specified by the `eclipse.ini` file.

Eclipse workspaces

An Eclipse workspace is a folder on the disk where the project and application files are stored. The default location for an Eclipse workspace is in the user's area (for example, `c:\users\`*`username`*`\`). It is not possible to share workspaces so each user must have their own.

We suggest that you create Eclipse workspaces in an area on a shared network drive, naming each workspace folder with an individual user ID.

Also provide a startup script that maps the drive dynamically using share names derived from the user ID.

Tip: Use the `net use` command to connect to, remove and configure the connections to the mapped drives.

Template projects

Create and configure template projects to distribute among your users. Templates must not include fully qualified paths. You can store the projects in a source control system and make them available so that individual users can import them into their own workspace.

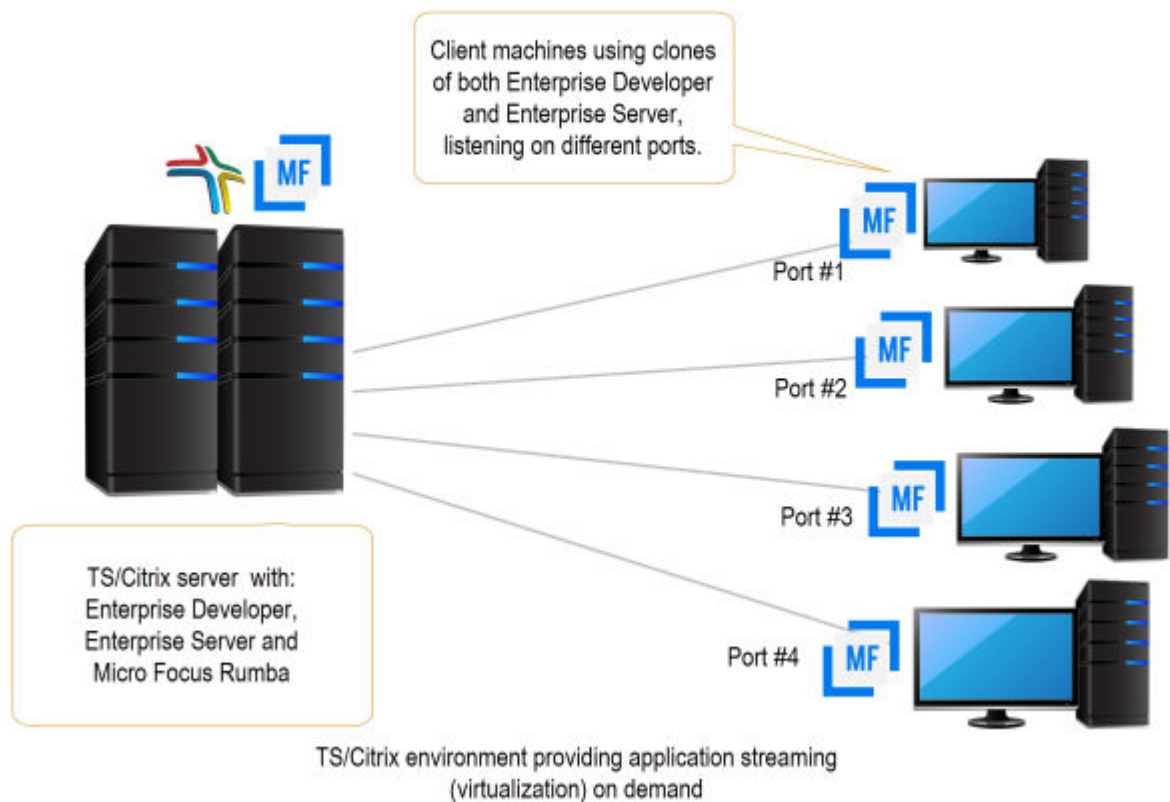## Enterprise Server Installation Options

When you install Enterprise Developer, the setup file also installs the Enterprise Server component on the same machine. There are different ways in which you can configure and use Enterprise Server regions in TS/Citrix environments. This topic outlines two of the methods and explains what the implications of choosing them are:

- Use the Enterprise Server component as part of Enterprise Developer installed on the TS/Citrix machine
- Install Enterprise Server or Enterprise Test Server on a separate server

Use the Enterprise Server component as part of Enterprise Developer installed on the TS/Citrix machine

On the client machines, the developers each use a clone of Enterprise Developer. They also use a clone of Enterprise Server to create and manage multiple server instances as required.

While this option provides the greatest flexibility, it also consumes the largest footprint per user.

Client machines using clones
of both Enterprise Developer
and Enterprise Server,
listening on different ports.

Port #1

Port #2

Port #3

Port #4

TS/Citrix server with:
Enterprise Developer,
Enterprise Server and
Micro Focus Rumba

TS/Citrix environment providing application streaming
(virtualization) on demand

Install Enterprise Server or Enterprise Test Server on a separate server

You can install Enterprise Server[1] or Enterprise Test Server[2] on a separate server that does not have TS/ Citrix installed. By default, Enterprise Server installs and runs as a single-instance product and, within an Enterprise Server, you can operate a number of server instances. Each server provides session and state management for COBOL applications, as well as optionally interfacing with external resource managers to coordinate resource updates.

There are two ways to provide server instances to the developers using Enterprise Developer on the TS/ Citrix machine:

- Configure and configure one server instance per developer by specifying different ports. We recommend defining five-digit port numbers where digits one through three identify the developer and four through five identify a unique port. For example: port number 10123 defines a TN3270 listener for developer 1, and port number 10223 defines a TN3270 listener for developer 2.

---

[1] Micro Focus Enterprise Server provides full application server support for COBOL applications that require high-performance and mainframe subsystem emulation. Enterprise Server is designed as a multi-user environment.
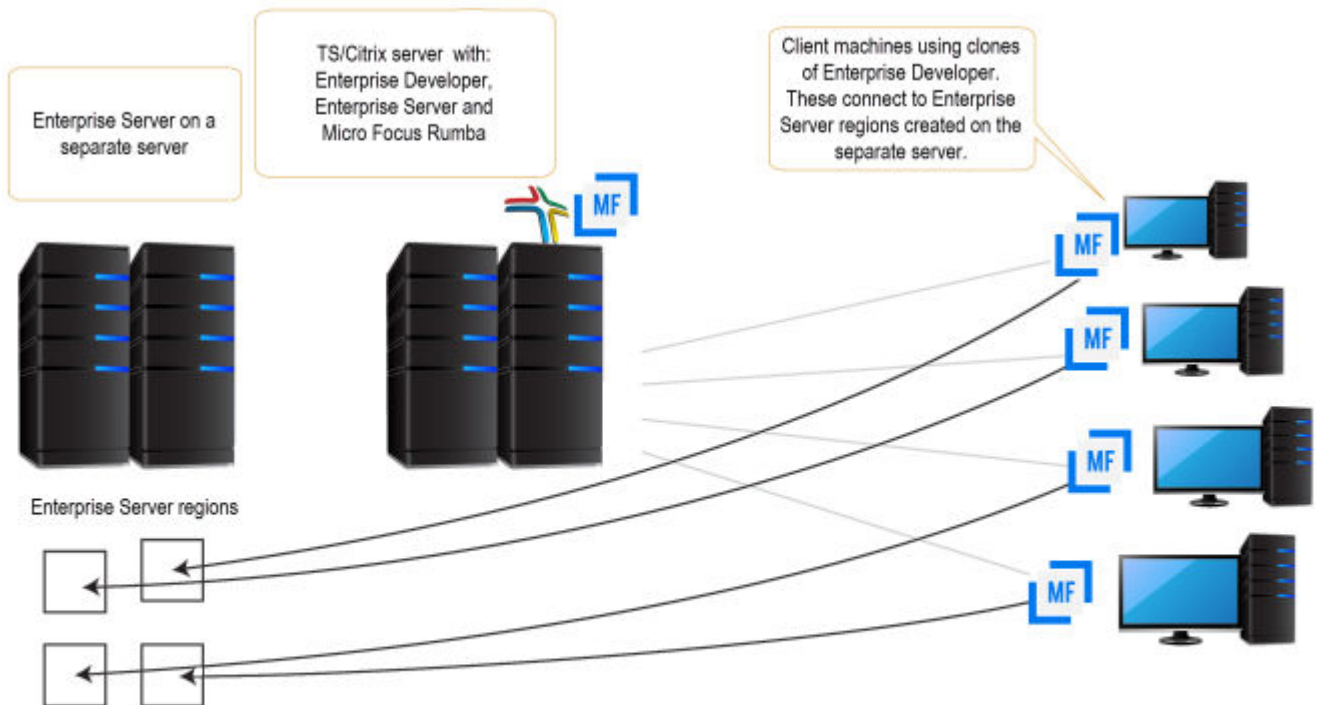
[2] Micro Focus Enterprise Test Server is an IBM mainframe application test execution environment on Windows. Enterprise Test Server enables mainframe IT organizations to perform a variety of pre-production testing on low cost commodity hardware, avoiding unnecessary cost and delay. Built on proven technology, Enterprise Test Server exponentially expands the test capacity and enables testing to scale up easily to meet delivery timelines and quality standards driven by today's business requirements.

This option provides a dedicated enterprise server for testing purposes for each developer, but restricts each developer to that one enterprise serve instance.

This scenario creates the largest footprint per developer.

Or:

- Create and configure one server instance per application for use by a single development team. Use a different port number for each instance as explained above, using the first three digits to differentiate between applications.

Configuring SQL Option for DB2 (XDB) for Multi-User Environments

SQL Option for DB2 in Enterprise Developer supports scenarios where multiple users use a single XDB Server installed on a TS/Citrix server. Typically, users in such environments would require their own private working locations so they can be isolated from each other's activity on the TS/Citrix server and might require different XDB configuration settings. SQL Option for DB2 provides support for this.

The configuration options for XDB Server are stored in the `xdb.ini` configuration file installed in the Windows protected area in `C:\ProgramData\Micro Focus\Enterprise Developer\mfsql\cfg`.

`xdb.ini` contains both client-side and server-side settings for the XDB tools.

Changing the server-side settings

In most cases, it is not necessary to change XDB Server's server-side settings. If you need to change these settings, however, it is important that you use the XDB tools to modify the `xdb.ini` file as the tools run with administrator's privileges. This helps avoid some possible issues with Windows virtualizing files in the protected areas that you try to edit without administrator's privileges.

See *Changing the Main XDB Server Configuration File.*

Changing the client-side settings

In multi-user environments such as TS/Citrix, it is important to provide individual users with their own client-side configuration options for XDB. To cater for that, Enterprise Developer provides a utility, XDBSetup, which creates a private XDB configuration file for each user in their local Windows folder on the TS/Citrix machine.

Users would run XDBSetup before they start using any of the XDB components on the TS/Citrix server. They can then use the XDB Client Options utility (XOPT40N) to customize their own version of `xdb.ini` and specify any required client-side run-time options and a temporary space for the client-side tools. For example, they might want to customize various options such as the isolation level, the lock timeout (for example, if they want a longer record lock timeout for testing), the data formats (if they want a different date format to test the software for internationalization issues), the SQLWizard configuration, and the private area for saved files.

XDBSetup also creates some entries in the user's specific area in the registry which point to the location of the private `xdb.ini` file. This ensures that XDB Server will use the main `xdb.ini` file installed under the `c:\ProgramData` folder, while any of the XDB tools that individual users start will use the private `xdb.ini` files that users might have customized according to their own preferences.

See *Creating a Private XDB Configuration File in a Multi-User Environment.*

Configuring the private XDB Server options in batch

If all users must have the same environment and use a specific standard set of client-side options in their private `xdb.ini` files, a system administrator can set this up for them using a batch file. The batch file would execute XDBSetup to create the private `xdb.ini` files and then it would execute BOPT40N, the batch version of the XDB Client Options utility, to specify the same client-side options in each private `xdb.ini` file.

See *Changing the Private XDB Server Configuration Files in Batch.*

Creating a Private XDB Configuration File in a Multi-User Environment

Before using XDB Server on a TS/Citrix machine, all users must first run the XDBSetup utility to create a private XDB Server configuration file, `xdb.ini`, in their local Windows folders.

To run the utility:

1. Log in to the TS/Citrix machine using the Windows Remote Desktop Connection.
2. Execute the following from an Enterprise Developer command prompt:

   ```
   XDBSetup
   ```

   See *Syntax of the XDBSetup command* for more details.

This creates a standard `xdb.ini` file in the user's Windows home directory, in `c:\Users\`*username*`\AppData\Roaming\Micro Focus\Enterprise Developer\mfsql\`, for which the user does not need administrator's credentials to change the file.

This also creates some registry entries in the user's specific area which point to the location of the private `xdb.ini` file. When any of the XDB tools are executed, they check the user's registry settings for whether there is a private configuration file before they check the local machine registry settings which store the location of the main XDB Server configuration file.

Syntax of the XDBSetup command

The XDBSetup utility can run in either an interactive or unattended mode. Use the following syntax to execute the utility:

```
XDBSetup [-u|--unattended]
```

Where you can specify the following options:

No options   XDBSetup executes in an interactive mode. You receive some pop-up windows confirming whether the operation completed successfully, prompting whether to overwrite a previously installed `xdb.ini`, and possibly showing any status or error messages.

-u, --unattended   XDBSetup executes in an unattended mode.

Log files:

1. A log of the commands activity is output to the standard error output handle.
2. If you need to receive any standard errors, specify ">" to redirect the standard output. To redirect any standard errors, use "2>" as a redirection symbol. If this is not specified, any messages are displayed in the command prompt.

Changing the Main XDB Server Configuration File

The XDB Server configuration file, `xdb.ini`, is installed in a Windows protected location - in `C:\ProgramData\Micro Focus\Enterprise Developer\mfsql\cfg`, by default. You need administrator's privileges to edit the file to help avoid some problems that Windows file virtualization can cause.

Micro Focus recommends that you use the XDB tools to edit `xdb.ini` because the XDB tools include a Windows manifest that requests administrative credentials for updating files in the Windows protected areas. You need to run the tools from the command line and specify `xdb.ini` as an argument. For example, if you use the XDB Client Options utility, execute:

```
XOPT40N /i"C:\ProgramData\Micro Focus\Enterprise Developer\mfsql\cfg\xdb.ini"
```

Avoiding Windows virtualization issues

Files that reside in the Windows protected locations, such as `xdb.ini`, that reside in the Windows protected locations require that you edit them with administrative privileges. If you use utilities such as Notepad that do not request administrator's credentials, Windows file virtualization does not save the modifications in the actual file you edit but creates a copy of the file in the `%userprofile%\AppData\Local\VirtualStore` folder.

From then on, programs that run without administrative credentials use the file in the `VirtualStore` folder while those that run with administrative credentials use the actual `xdb.ini` file which can lead to some confusing results.

Changing the Private XDB Server Configuration Files in Batch

The XDB Client Batch Options command, BOPT40N, is a batch version of the XDB Client Options utility, XOPT40N.

You can use BOPT40N to modify the options in the `xdb.ini` file in batch. The syntax of the command is as follows:

```
bopt40n /pSection.Variable=Value
```

Where:

Section, *Variable* and *Value* indicate a section in `xdb.ini`, a variable in that section and the value you want to set the variable to.

> **Note:** If any of *Section*, *Variable* or *Value* include any spaces, you must use quotes around the entire argument. In the following example, the connection name has an embedded space in the section name so you need to use quotes around the entire argument in the command as follows:
>
> ```
> bopt40n "/pConnection MYSERVER.CurrentLocation=MYLOC"
> ```

Configuring Other Components

Micro Focus Rumba

To use Micro Focus Rumba on a TS/Citrix machine, ensure you install a license for this type of environment. Contact Micro Focus Sales for more information.

ViewNow Installation

To use ViewNow on a TS/Citrix machine, ensure you install a license for this type of environment. Contact Micro Focus Sales for more information.

After Installing

- See *Changes in Behavior or Usage* in your product documentation and in the Release Notes for important information about changes in this release that might affect existing applications.
- Check the *Product Documentation* section of the *Micro Focus SupportLine Web site* for any updates to the documentation which might have been uploaded.

Configuring Enterprise Developer

If you have used Eclipse from the same workspace before, the Eclipse perspective settings are not reset after installing any Micro Focus product. To pick up any new features, you must reset the perspective you are working with after installation:

1. Open the existing workspace with this product.

   You may receive some warnings or errors which you can ignore.
2. Make sure you are in the perspective you need to reset by clicking **Window** > **Perspective** > **Open Perspective** > **Other**.
3. From the **Open Perspective** dialog box, click the perspective you want to reset.
4. Click **OK**.
5. Click **Window** > **Perspective** > **Reset Perspective**.
6. When prompted, click **Yes**.
7. Reapply any customizations.

On Windows

Installing X Windows on Windows

Some features of Enterprise Developer for Eclipse on Windows require an X Windows installation, hence Micro Focus ViewNowX is provided with the product.

To install ViewNowX:

1. Using Windows Explorer, navigate to the folder that contains the ViewNowX executable. By default, this is `%ProgramFiles(x86)%\Micro Focus\Enterprise Developer\ViewNowX`.
2. Execute `ViewNow_X_Server.exe` and then `vnx_HF_11327.msp` in that folder.

ViewNowX requires that your client machine has Microsoft Visual C++ 2008 SP1 Redistributable Package (x86) installed. If it is missing from your machine, the ViewNowX installation will offer a link to download the package.

Repairing on Windows

If any product files, registry settings or shortcuts are accidentally removed at any point, you can perform a repair on the installation to replace them.

To repair your installation on versions of Windows Vista or later:

1. From the **Control Panel**, click **Uninstall a program** under **Programs**.
2. Right-click your Micro Focus product and select **Repair**.

Uninstalling

To uninstall the product, you cannot simply delete its files from your hard disk. To uninstall the product:

1. Log in with the same user-ID as you used when you installed the product.
2. Click **Uninstall a program** under **Programs** in **Control Panel**.
3. Select the product and click **Remove** or **Uninstall** as appropriate.

When you uninstall, the only files deleted are those that the installation software installed. If the product directory has not been removed, delete any unwanted files and subdirectories within it using Windows Explorer.

> **Note:** The installer creates separate installations for Micro Focus Enterprise Developer and Micro Focus License Administration. Uninstalling only Enterprise Developer does not automatically uninstall the Micro Focus License Administration or any of the prerequisite software.
>
> To completely remove the product you must uninstall the Micro Focus License Administration as well.
>
> You can optionally remove the prerequisite software. For instructions, check the documentation of the respective software vendor.

Some registry entries are not removed by the uninstallation process and you need to manually delete them.

The following folders might not be removed:

* The `Micro Focus Product Name` folder in the Start menu - you can delete it manually.
* `%systemdrive%\Users\Public\Documents\Micro Focus` - includes the binaries and the log files of the samples which you have built.
* `%ProgramData%\Micro Focus` - includes some data files used by the Micro Focus licensing system.
* `%Program Files%\Micro Focus` - you can delete it manually.

To silently uninstall the product, you need the setup file and you need to execute the following at the command line:

```
start /wait install-file.exe /quiet /uninstall
```

In addition, the following registry entries are not removed. These are created the first time that an Enterprise Server that has been enabled for performance monitoring starts up:

* Micro Focus Server\Performance\Active Servers
* Micro Focus Server\Performance\PerfIniFile

On UNIX

Configuring the Remote System Explorer Support

> **Note:** The following only applies if you are using Micro Focus Enterprise Developer UNIX Components with Enterprise Developer for Eclipse.

The remote development support from the Eclipse IDE relies upon Enterprise Developer running on the UNIX machine and handling all requests from the IDE for building and debugging programs. Enterprise

Developer provides a UNIX daemon, the Remote Development Option (RDO) daemon, which initiates the RDO as Eclipse clients connect to it. Whichever environment is used to start the RDO daemon will be inherited for all servers and hence all build and debug sessions.

Configuring the Environment

You may need to configure some aspects of the environment before you start the daemon. This is because when a build or debug session is initiated from one of the Eclipse clients, the environment used will be inherited from whatever was used to start the daemon. A typical example of the kind of environment that might need to be set up would include database locations and settings for SQL access at build/run time.

Starting the Daemon

⚠ **Important:** Before starting the daemon you must have the following on your UNIX machine:

* A version of Perl.
* A version of Java 1.7 or later.
* The `as` (assembler) and `ld` (linking) programs on the path, as specified by the PATH environment variable.

To start the daemon on the default port (4075) as a background process, perform this command with superuser authority:

```
$COBDIR/remotedev/startrdodaemon
```

The daemon will now listen for any Eclipse client processes connecting to that machine on port 4075. If you want to use another port, specify another port number on the `startrdodaemon` command.

The daemon can also be configured to instantiate the servers on a specified port or range of ports. This is particularly relevant when you want to only open certain ports through a firewall. To do this, perform this command with superuser authority:

```
$COBDIR/remotedev/startrdodaemon [<port> | <low port>-<high port>]
```

where:

* *<port>* is the port number the daemon should use to listen for connections from Eclipse on the client machine. If no value is given, it will be assigned a default value of 4075. This value matches the value assigned within the Eclipse installation.

    For example,

    ```
    $COBDIR/remotedev/startrdodaemon 4999
    ```

    This command will start a daemon listening on port 4999 and will use random server ports.
* *<low port>-<high port>* is the range of ports on which the servers (launched by the daemon) should use to communicate with Eclipse on the client machine.

    For example,

    ```
    $COBDIR/remotedev/startrdodaemon 4080 4090-4999
    ```

    This command will start a daemon listening on port 4080 and server ports will be in the range 4090 to 4999.

Stopping the Daemon

To stop the daemon, type the following command with superuser authority:

```
$COBDIR/remotedev/stoprdodaemon <port>
```

Repairing on UNIX

If a file in the installation of the product becomes corrupt, or is missing, we recommend that you reinstall the product.

Uninstalling

Note: Before you uninstall the product, ensure that the Enterprise Server instances and the Micro Focus Directory Service (MFDS) are stopped.

To uninstall this product:

1. Execute as root the `Uninstall_EnterpriseDeveloper4.0.sh` script in the `$COBDIR/bin` directory.

Note: The installer creates separate installations for the product and for Micro Focus License Administration. Uninstalling the product does not automatically uninstall the Micro Focus License Administration or the prerequisite software. To completely remove the product you must uninstall the Micro Focus License Administration as well.

To uninstall Micro Focus License Administration:

1. Execute as root the `UnInstallMFLicenseServer.sh` script in the `/var/microfocuslicensing/bin` directory.

   The script does not remove some of the files as they contain certain system settings or licenses.

You can optionally remove the prerequisite software. For instructions, check the documentation of the respective software vendor.

Licensing Information

> **Note:**
> - If you have purchased licenses for a previous release of this product, those licenses will also enable you to use this release.
> - If you are unsure of what your license entitlement is or if you wish to purchase additional licenses, contact your sales representative or *Micro Focus SupportLine*.

To start Micro Focus License Administration

Windows

Windows 8.1	• From the Windows **Start** screen, click the **License Administration** tile
Windows 10 and Later	• From your Windows desktop, click **Start > Micro Focus License Manager > License Administration**

UNIX

Log on as root, and from a command prompt type:

```
/var/microfocuslicensing/bin/cesadmintool.sh
```

Installing licenses

You need either a license file (with a `.mflic` extension) or an authorisation code which consists of a string of 16 alphanumeric characters.

If you have a license file

Windows

1. Start Micro Focus License Administration.
2. Click the **Install** tab.
3. Do one of the following:
   - Click **Browse** next to the **License file** field and select the license file (which has an extension of `.mflic`).
   - Drag and drop the license file from Windows Explorer to the **License file** field.
   - Open the license file in a text editor, such as Notepad, then copy and paste the contents of the file into the box below the **License file** field.
4. Click **Install Licenses**.

Alternatively, you can install the license file from within the IDE as follows:

1. Start Enterprise Developer.
2. Click **Help > Micro Focus > Product Licensing** to open the **Product Licensing** dialog box.
3. Ensure **I have a full Enterprise Developer Team Edition license** is checked.

4. Click **Browse** next to the **License file** field.
5. Select the license file (which has an extension of `.mflic`), and then click **Open**.
6. Click **Finish** to install the license.

UNIX

1. Start the Micro Focus License Administration tool and select the **Manual License Installation** option by entering `4`.
2. Enter the name and location of the license file.

If you have an authorization code

Authorizing your product when you have an Internet connection

> **Note:**
> • It is not possible to install licenses remotely. You must be logged into the machine on which you are installing the licenses.

The following procedure describes how to authorize your product using a local or network license server. The license server is set up automatically when you first install the product.

Windows

1. Start Micro Focus License Administration.
2. Click the **Install** tab.
3. Type the authorization code in the **Enter authorization code** field.
4. Click **Authorize**.

If you change the name of the machine running your license server after it has granted licenses, the licenses stop working.

UNIX

1. Start Micro Focus License Administration.
2. Select the **Online Authorization** option by entering `1` and pressing **Enter**.
3. Enter your authorization code at the **Authorization Code** prompt and then press **Enter**.

Authorizing your product when you don't have an Internet connection

This method of authorization is required if the machine you want to license does not have an Internet connection or if normal (automatic) authorization fails.

Windows

1. Start Micro Focus License Administration.
2. Click **Manual Authorization** on the Install page.
3. Make a note of the contents of the **Machine ID** field. You will need this later.
4. Do one of the following:

   • If your machine has an Internet connection, click the SupportLine Web link in the Manual Authorization Information window.
   • If your machine does not have an Internet connection, make a note of the Web address and type it into a Web browser on a machine that has an Internet connection.

The Micro Focus SupportLine Manual product authorization Web page is displayed.

5. Type the authorization code in the **Authorization Code** field. The authorization code is a 16-character alphanumeric string supplied when you purchased your product.
6. Type the Machine ID in the **Machine ID** field.
7. Type your email address in the **Email Address** field.
8. Click **Generate**.
9. Copy the generated license string (or copy it from the email) and paste it into the box under the **License file** field on the Install page.
10. Click **Install Licenses**.

UNIX

In order to authorize your product you must have the following:

• Access to a computer which is connected to the Internet.
• Your authorization code (a 16-character alphanumeric string).
• The machine ID. To get this, start the Micro Focus License Administration tool and select the **Get Machine Id** option by inputting 6. Make a note of the "Old machine ID".

If you have previously received the licenses and put them in a text file, skip to step 6.

1. Open the Micro Focus license activation web page *http://supportline.microfocus.com/activation* in a browser.
2. Enter your authorization code and old machine ID and, optionally, your email address in the **Email Address** field.
3. Click **Generate**.
4. Copy the licenses strings from the web page or the email you receive into a file.
5. Put the license file onto your target machine.
6. Start the Micro Focus License Administration tool and select the **Manual License Installation** option by inputting 4.
7. Enter the name and location of the license file.

To obtain more licenses

If you are unsure of what your license entitlement is or if you wish to purchase additional licenses for Enterprise Developer, contact your sales representative or Micro Focus SupportLine.

Updates and SupportLine

Our Web site gives up-to-date details of contact numbers and addresses.

Further Information and Product Support

Additional technical information or advice is available from several sources.

The product support pages contain a considerable amount of additional information, such as:

- The *Product Updates* section of the Micro Focus SupportLine Web site, where you can download fixes and documentation updates.
- The *Examples and Utilities* section of the Micro Focus SupportLine Web site, including demos and additional product documentation.
- The *Support Resources* section of the Micro Focus SupportLine Web site, that includes troubleshooting guides and information about how to raise an incident.

To connect, enter *http://www.microfocus.com* in your browser to go to the Micro Focus home page, then click **Support & Services** > **Support Resources > All Support Resources**. In the **Browse by Product** field, click the product you require support for. Click **Log into SupportLine**.

✎ **Note:** Some information may be available only to customers who have maintenance agreements.

If you obtained this product directly from Micro Focus, contact us as described on the Micro Focus Web site, *www.microfocus.com*. If you obtained the product from another source, such as an authorized distributor, contact them for help first. If they are unable to help, contact us.

Also, visit:

- The Micro Focus Community Web site, where you can browse the Knowledge Base, read articles and blogs, find demonstration programs and examples, and discuss this product with other users and Micro Focus specialists. See *http://community.microfocus.com*.
- The Micro Focus YouTube channel for videos related to your product - see *https://www.youtube.com/user/MicroFocusIntl*.

Information We Need

However you contact us, please try to include the information below, if you have it. The more information you can give, the better Micro Focus SupportLine can help you. But if you don't know all the answers, or you think some are irrelevant to your problem, please give whatever information you have.

- The name and version number of all products that you think might be causing a problem.
- Your computer make and model.
- Your operating system version number and details of any networking software you are using.
- The amount of memory in your computer.
- The relevant page reference or section in the documentation.
- Your serial number. To find out these numbers, look in the subject line and body of your Electronic Product Delivery Notice email that you received from Micro Focus.

On Windows, if you are reporting a protection violation you might be asked to provide a dump (`.dmp`) file. To produce a dump file you use the **Unexpected Error** dialog box that is displayed when a protection violation occurs. Unless requested by Micro Focus SupportLine, leave the dump setting as `Normal`

(recommended), click **Dump**, then specify a location and name for the dump file. Once the dump file has been written you can email it to Micro Focus SupportLine.

Alternatively, you might be asked to provide a log file created by the Consolidated Tracing Facility (CTF) - a tracing infrastructure that enables you to quickly and easily produce diagnostic information detailing the operation of a number of Micro Focus software components.

On Windows, you can use the Micro Focus SupportLine Support Scan Utility, MFSupportInfo, to create either:

- a `.log` file that contains the details about your environment, Micro Focus SupportLine products, and settings.
- a `.zip` archive that includes the same information as the `.log` file plus some product configuration files from **c:\ProgramData** and the product installation log files.

`MFSupportInfo.exe` is stored in `<install-dir>\bin`.

To run MFSupportInfo:

1. Start a 32-bit Enterprise Developer command prompt.
2. Enter `MFSupportinfo` at the command prompt to start the utility.
3. Create a `.log` file or a `.zip` archive as follows:

    a. To create a `.log` file, click **File > Save**.

    This prompts to save the `.log` file, `MFSupportInfo_Log_MachineName_YYYY-MM-DD_HH-MM-SS.log`, in the `%temp%` directory.

    b. To create a `.zip` archive, click **Tools > Create Zip Package**.

    This creates a `.zip` archive, `MFSupportInfo_Log_MachineName_YYYY-MM-DD_HH-MM-SS.zip`, in the `%temp%` directory.
4. Send the diagnostic information to your Micro Focus SupportLine representative:

    The following requires an Internet connection and an Email client:

    a. Click **Tools > Email Log to SupportLine** to open the **Email Log** dialog box.
    b. Fill in the required fields and click **Send**.

    If the machine is not connected to the Internet or if there are no Email clients installed, copy either the `.log` file or the `.zip` archive to a machine that is connected to the Internet. Use your Email client to email the files to Micro Focus SupportLine at *supportline@microfocus.com* together with the Support Incident (SI) number, if available, and any additional details that might be useful to diagnose the issues that you are experiencing.

On UNIX, you can use the Micro Focus UNIX Support Scan Utility, `mfsupport`, to create a log file that contains the details about your environment, product, and settings. The `mfsupport` script is stored in `$COBDIR/bin`.

To run `mfsupport`:

1. Start a UNIX shell.
2. Set COBDIR to the product with issues.
3. Execute `mfsupport` from a directory where you have write permissions.

    This creates a log file, `mfpoll.txt`, in that directory.
4. When the script finishes, send the `mfpoll.txt` file to your Micro Focus SupportLine representative.

> **Note:**
>
> If COBDIR is set to a location that does not contain `etc/cobver`, the script outputs the contents of `/opt/microfocus/logs/MicroFocusProductRegistry.dat` which keeps a list of the installed Micro Focus products.

If COBDIR is set to a location that does not contain `etc/cobver` or COBDIR is not set, `mfsupport` gives you the option to search your machine for possible product locations. Note that the search can take some time if you have a large amount of disc storage and files.

Creating Debug Files

If you encounter an error when compiling a program that requires you to contact Micro Focus SupportLine, your support representative might request that you provide additional debug files (as well as source and data files) to help us determine the cause of the problem. If so, they will advise you how to create them.

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