Micro Focus Enterprise Developer 2.2 Update 2 for Eclipse

Release Notes

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Contents

Micro Focus Enterprise Developer 2.2 Update 2 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.

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.

Micro Focus offers Enterprise Developer with the following licensing options that unlock different functionality:

Micro Focus Enterprise Developer Connect	Enterprise Developer Connect is for customers looking to use modern and productive Eclipse-based tooling to develop mainframe applications directly on the mainframe. Close integration to mainframe configuration management systems and the ability to easily customize the Eclipse-based IDE to include mainframe-based tools and processes means developers can take full advantage of modern development tools without having to learn new development processes.
Micro Focus Enterprise Developer	Enterprise Developer is for customers looking to develop and modernize mainframe applications in a productive and modern Windows-based development environment, targeted for deployment onto an alternate server platform. Developers have the choice of either the Visual Studio or the Eclipse-based IDE and development and test tools are provided for all target environments currently supported by Micro Focus.
Micro Focus Enterprise Developer for IBM zEnterprise	Enterprise Developer for IBM zEnterprise gives customers the choice to develop directly on the mainframe or under Windows. Mainframe applications can be developed, maintained and modernized regardless of where they will be deployed, either back onto the mainframe or onto an alternative server environment. Support is provided for both the Visual Studio and Eclipse-based IDEs and for all the development and test tools for every target environment currently supported by Micro Focus - including z/Linux, AIX and x86 environments. Enterprise Developer for IBM zEnterprise combines all the capabilities of Enterprise Developer Connect and Enterprise Developer. Full mainframe integration and the Application Workflow Manager are only available in the Eclipse-based IDE.

In addition, this document contains information on workflow modelling extensions in the section *Enterprise Developer for IBM zEnterprise Workflow Modelling Extensions* .

Note: The Enterprise Developer Personal Edition option is not available with this release. You can use the Personal Edition with Enterprise Developer 2.1 Update 1 - you can register for it on the *Enterprise Developer Personal Edition section* on the Micro Focus Web site.

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 (RDz) - see *Installing Application Workflow Manager into Rational Developer for System z (RDz)* in the installation instructions. This requires that Enterprise Developer Connect is installed and licensed.

Important: Application executables that were compiled using earlier Micro Focus products must be recompiled from the sources using Enterprise Developer. For more information, read the section *Upgrading to Enterprise Developer for Eclipse* in the product Help.

Micro Focus Heartbleed Update

The OpenSSL library used in this product has been updated to the latest version, 1.0.1i, to fix various vulnerabilities.

Installing Enterprise Developer

System Requirements

Hardware Requirements

z/Server has the following hardware requirements:

- IBM mainframe model z9 or later is required for installing and using z/Server. z/Server will not install on earlier hardware models.

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, it is recommended to have a minimum of 2GB of RAM.

Windows

The disk space requirements for Windows are, approximately:

Platform	Enterprise Developer	Sentinel RMS License Manager
x86 Windows platforms	1.3GB	25MB
x64 Windows platforms	1.4GB	25MB

Note: This includes the space needed to cache information locally so that you can modify the installation without the original source media.

UNIX

The disk space requirements for Micro Focus Enterprise Developer UNIX Components are approximately:

Platform	Setup file size (MB)	Disk space required for the installation (GB)	Disk space required for running the product (MB)	Sentinel RMS license server (MB)
POWER running AIX	414	1.66	828	33
HP IA	789	3.16	1580	61
System Z running Red Hat Linux	354	1.4	708	34
x86-64 running Red Hat Linux	372	1.48	744	40
SPARC running Solaris	442	1.77	884	38
System Z running SuSE SLES	359	1.44	718	34
x86-64 running SuSE SLES	377	1.51	754	40

Operating Systems Supported

Note: You can produce 64-bit and 32-bit applications on 64-bit operating systems.

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: This product can be installed on earlier versions of Windows but it has not been tested on them.

Software requirements

Eclipse requirements

- Enterprise Developer only supports the 32-bit Eclipse IDE and requires a 32-bit Java installation.
- Though Enterprise Developer does not support the 64-bit Eclipse, you can use the 32-bit Eclipse to create both 32-bit and 64-bit applications.
- Enterprise Developer ships with Eclipse 3.8. After the installation, you can install the Enterprise Developer plug-in into other instances of Eclipse available on the same machine. The supported versions are 3.8, 4.2 and 4.3 for the 32-bit Eclipse only. See *Installing Enterprise Developer into other instances of Eclipse* for instructions.

Other software requirements for Windows

The setup file will check your machine for whether the prerequisite software is installed and will install any missing prerequisites and the product components.

- If no Java is installed on your machine, the setup file installs Java 1.6u27 32-bit.
- The setup file will also install .NET Framework v4.0.

If you are installing Enterprise Developer on a machine that has Java 8 installed, see the *Java Support* in the *Known Issues and Restrictions* section in your product help for considerations that apply to using the Eclipse IDE.

Other software requirements for UNIX/Linux

These are the software requirements for Micro Focus Enterprise Developer UNIX Components:

- 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.
- On Red Hat 6.*x* and Red Hat 7, you must have the following operating system libraries installed:

All Enterprise Developer products	glibc-*.x86_64 glibc-*.i686 libgcc-*.x86_64 libgcc-*.i686 libstdc++-*.x86_64 libstdc++-*.i686
Additional libraries required to use the core_on_error runtime variable	gdb - the gdb packages (for the GNU Project Debugger) can be installed from the install media for your OS.
Additional libraries for Micro Focus Enterprise Developer UNIX Components	glibc-devel-*.x86_64 glibc-devel-*.i686

In addition, on IBM System z (390), you must have the following operating system libraries installed:

Additional libraries for Micro Focus Enterprise Developer UNIX Components	glibc-devel-*.s390 glibc-devel-*.s390x

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, Enterprise Edition (Java EE) 6 or Java 7 is required to run the Eclipse IDE, to execute COBOL JVM code and for native COBOL and Java interoperability. The earliest supported release of Java 6 is 1.6 Update 27. You can download Oracle's Java EE 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 1.6 is 1.6.0.13. 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 JDL 1.6 is Java 6.0.13. You can get the HP-UX Java JDK from *HP's Web site*.
- You need to set the JAVA_HOME environment variable. When installing the product, set this variable to a 32-bit Java installation or the installation terminates. For example, execute the following:

  ```
  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
```

Other Requirements

Important: This release requires version 10000.2.990 or later of the Micro Focus licensing software. For local servers, you do not need to install it 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 Licensing System Administration tool. To check the version of the license server on UNIX, run `/var/microfocuslicensing/bin/mfcesver` or `/var/microfocuslicensing/bin/cesadmintool.sh`.

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. The following information specifies the third-party software required for each feature.

Application server support for JVM COBOL

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The following application servers are supported using the following JDKs:

Application Servers	JDK version	Containers support version
Tomcat 7.0.39	1.6 / 1.7	Servlets 2.5
JBoss 7.1.1	1.6 / 1.7	Servlets 2.5
WebLogic 12.1.1	1.6 / 1.7	Servlets 2.5
WebSphere 8.5	1.6 / 1.7	Servlets 2.5

You need Oracle's JDK. The earliest supported release of Oracle's JDK 1.6 is 1.6.027. You can download Oracle's JDK from *Oracle's Web site*

Application server support for interaction with Enterprise Server

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Java EE 5 and Java EE 6 are supported for the deployment of EJBs generated using the Interface Mapping Toolkit, as follows:

- Java EE 5 includes support for EJB 3.0 and Java Connector Architecture 1.5
- Java EE 6 includes support for EJB 3.1 and Java Connector Architecture 1.6

The following Java application servers are supported using the following JDKs:

Application Servers	JDK (vendor)	Java EE
JBoss 5	1.5/1.6 (Oracle)	5
JBoss 6	1.6 (Oracle)	6
Oracle WebLogic 10	1.5 (Oracle)	5
Oracle WebLogic 12	1.6/1.7 (Oracle)	6
IBM WebSphere 7.0	1.5 (IBM)	5
IBM WebSphere 8.0	1.6 (IBM)	6
IBM WebSphere 8.5	1.6/1.7 (IBM)	6

AppMaster Builder Distributed Generation Server

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Restriction: This feature applies only when the AppMaster Builder AddPack has been installed, and applies only to Windows platforms.

IBM WebSphere MQ version 7 and later.

Java Development Kit (JDK)

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Native COBOL and Java Interoperability

Oracle's Java Platform, Enterprise Edition (Java EE) 6 or Java 7 is required to run the Eclipse IDE, to execute COBOL JVM code and for native COBOL and Java interoperability. The earliest supported release of Java 6 is 1.6 Update 27. You can download Oracle's Java EE from *Oracle's Web site* and install it anywhere on your machine.

Compiling Java

Either the IBM or the Oracle Java Development Kit (JDK), version 1.5 or later, is required for compiling Java.

Interface Mapping Toolkit (IMTK)

Restriction: This feature applies only when the Enterprise Server feature is enabled.

The JDK is required for generating Java interfaces from the Interface Mapping Toolkit or the `imtkmake` command.

Java Beans	Your Java client needs to be compiled with JDK 1.6 or greater.
EJBs	Use the same JDK vendor and version that is used by the application server.

After installing the JDK, you need to set up your Java environment.

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Consolidated Trace Facility

- The Microsoft .NET Framework 2.0 or later is required for the CTF Viewer. It is available from the Microsoft .NET downloads area.

Database Access

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Before you can use Enterprise Developer to develop and deploy SQL applications that use COBSQL, HCO for DB2 LUW, HCO for SQL Server (HCOSS), SQL Option for DB2, or OpenESQL, ensure any third-party software prerequisites are installed and the environment is set properly.

Database Access - COBSQL (Pro*COBOL)

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Note: COBSQL (Pro*COBOL) is supported for native COBOL only.

Availability

Feature/Platform	32-bit	64-bit
x86-64 running Windows	X	X

XA Switch Module

The Oracle XA switch module is provided for COBSQL (Pro*COBOL), and is available on the same platforms as are indicated in the *Availability* section above.

Certification of RDBMS Precompilers for Native COBOL

Certification of RDBMS precompilers with Micro Focus products is the responsibility of the RDBMS vendor, rather than Micro Focus. Certification information can be found within the relevant Oracle documentation. If you have an *Oracle MetaLink account*, document # 43208.1 provides details of all language compilers certified by Oracle for use with their precompilers.

Preprocessors

COBSQL supports the following database preprocessors:

- Sybase Open Client Embedded SQL/COBOL Version 11.1 or later
- Oracle Pro*COBOL Version 11.1 (11gR1) or later
- Informix Embedded SQL/COBOL Version 7.3 or later

Compiling

On x86 and x86-64 platforms, when compiling with COBSQL for use with Oracle, do not use the COBSQL directive option NOMAKESYN, since this directive results in COMP host variables, and on Intel platforms these are incompatible with the native byte order expected by Oracle.

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Database Access - OpenESQL

Availability

Feature/ Platform	Native COBOL 32-bit	Native COBOL 64-bit	PL/I 32-bit
x86-64 running Windows	X	X	X

XA Switch Module

The ODBC One-phase Commit switch module is provided and is available on the same platforms as are indicated in the *Availability* section above. The SQL Server XA switch module is also provided.

To build the SQL Server XA module, you must have the Windows Software Development Kit (SDK) installed for your version of Windows.

Native COBOL and PL/I

- OpenESQL supports access to relational databases using ODBC 3.0-compliant drivers
- Refer to your driver vendor's documentation to determine whether your driver is suitable for use with OpenESQL

JVM Managed COBOL

OpenESQL supports access to relational databases using JDBC 4.0-compliant JDBC drivers. To use JDBC DataSource Objects, you must also install and configure a JNDI server.

If you are using a Java application server, it includes a JNDI server you can use to configure DataSource Object. This process is described in the Java documentation for the application server.

If you are not using a Java application server, or if you require a standalone JNDI server to configure DataSource objects for initial evaluation and development, see the *Simple-JNDI* topic in this documentation set for instructions on downloading, installing, and using the open source JNDI server Simple-JNDI for this purpose.

Database Access - HCO for SQL Server (HCOSS)

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Microsoft SQL Server

SQL Server 2008 R2 or later, Developer or Enterprise Editions, including Microsoft SQL Server Management Studio.

Database Migration

- Microsoft .NET Framework 4.0
- Microsoft OLE DB Provider for DB2, available in the SQL Server 2008 R2 or later Feature Pack

  Note: Be sure to configure the OLE DB Provider to connect to the mainframe. See your Microsoft documentation for details.
- Mainframe DB2

Note:

- We support only the mainframe DB2 versions that are currently under IBM support.
- If you intend to develop applications on your local machine, but deploy applications to a SQL Server database on a remote machine, you can install SQL Server Native Client 10.x (or later) for ODBC connectivity on your local machine instead of installing SQL Server. For SQL Server 2014 connectivity, you can install Microsoft ODBC Driver 11.0 for SQL Server. For information on configuring a deployment machine, see the section *Deploying Native Applications* below.

Deploying Native Applications

Development Machine

- Enterprise Developer for Eclipse
- If SQL Server 2008 R2 or 2012 is not installed, you must have Microsoft SQL Server 2008 R2 or 2012 Native Client installed. For SQL Server 2014, you must have Microsoft ODBC Driver 11.0 for SQL Server.

Development SQL Server Machine

SQL Server 2008 R2 or later

Note: This can be the same machine as the development machine, but is not required to be

Deployment Machine

- Enterprise Server or Enterprise Test Server installed
- If SQL Server 2008 R2 or 2012 is not installed, you must have Microsoft SQL Server 2008 R2 or 2012 Native Client installed. For SQL Server 2014, you must have Microsoft ODBC Driver 11.0 for SQL Server.

If you want to bind your application from the deployment machine, install the following software in addition:

- Microsoft .NET 3.5 framework, or later
- SQL Server 2008 R2 or later System CLR Types
- SQL Server 2008 R2 or later Shared Management Objects

Deployment SQL Server Machine

SQL Server 2008 R2 or later

Note: This can be the same machine as the deployment machine, but is not required to be

Database Access - HCO for DB2 LUW

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Availability

Feature/ Platform	Native COBOL 32-bit	Native COBOL 64-bit	PL/I 32-bit
x86-64 running Windows	X	X	X

XA Switch Module

The DB2 XA switch module is provided and is available on the same platforms as are indicated in the *Availability* section above.

Certification of RDBMS Precompilers for Native COBOL

Certification of RDBMS precompilers with Micro Focus products is the responsibility of the RDBMS vendor, rather than Micro Focus. You can find IBM document certification information for DB2/COBOL applications within the IBM Information Center for DB2, in the topic *Support for database application development in COBOL*.

Preprocessor

HCO for DB2 LUW supports the following database preprocessors:

- IBM DB2 LUW Version 9.5 or later
- IBM DB2 Connect Version 9.5 or later

Host Compatibility Option (HCO)

Host Compatibility Option requires that you have one of the following software products installed and configured:

- IBM Database Connect
- IBM DB2 LUW Personal Edition or DB2 Express-C
- DB2 LUW Workgroup or Enterprise Edition

You must also install the DB2 Application Development Client (formerly called DB2 SDK) or you will not be able to compile any DB2 programs.

Database Access - SQL Option for DB2

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Feature/Platform	32-bit
x86-64 running Windows	X

XA Switch Module XDB XA switch modules are provided and are available for the Windows x86-64 32-bit platform.

Micro Focus Rumba

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- On Windows 8, in order to install Micro Focus Rumba you must have the Microsoft .NET Framework 3.5 Service Pack 1 installed.

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. The following information specifies the third-party software required for each feature.

Application server support for JVM COBOL

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The following application servers are supported using the following JDKs:

Application Servers	JDK version	Containers support version
Tomcat 7.0.39	1.6 / 1.7	Servlets 2.5
JBoss 7.1.1	1.6 / 1.7	Servlets 2.5
WebLogic 12.1.1	1.6 / 1.7	Servlets 2.5
WebLogic 12.1.1 on AIX 6.1	1.6.0 SR10 FP1 / 1.7 Release 1	Servlets 2.5
WebSphere 8.5	1.6 / 1.7	Servlets 2.5
WebSphere 8.5 on AIX 6.1	1.6.0 SR10 FP1 / 1.7 Release 1	Servlets 2.5

Note:

- On AIX and zLinux, you need to have IBM's JDK. The earliest supported release of IBM's JDK 1.6 is 1.6.0.13. 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 JDL 1.6 is Java 6.0.13. You can get the HP-UX Java JDK from *HP's Web site*.
- On all other platforms, you need Oracle's JDK. The earliest supported release of Oracle's JDK 1.6 is 1.6.027. You can download Oracle's JDK from *Oracle's Web site*.

Application server support for interaction with Enterprise Server

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Java EE 5 and Java EE 6 are supported for the deployment of EJBs generated using the Interface Mapping Toolkit, as follows:

- Java EE 5 includes support for EJB 3.0 and Java Connector Architecture 1.5
- Java EE 6 includes support for EJB 3.1 and Java Connector Architecture 1.6

The following Java application servers are supported using the following JDKs:

Application Servers	JDK (vendor)	Java EE
JBoss 5	1.5/1.6 (Oracle)	5
JBoss 6	1.6 (Oracle)	6
Oracle WebLogic 10	1.5 (Oracle)	5
Oracle WebLogic 12	1.6/1.7 (Oracle)	6
IBM WebSphere 7.0	1.5 (IBM)	5
IBM WebSphere 8.0	1.6 (IBM)	6
IBM WebSphere 8.5	1.6/1.7 (IBM)	6

The availability of resource adapters for these Application Servers differs between UNIX platforms. The following table indicates where support is available for each platform:

Feature/ Platform	JBoss 5	JBoss 6	Websphere 7.0	Websphere 8.0	Websphere 8.5	Weblogic 10	Weblogic 12
AIX 6.1 on RS6000	32-bit	32-bit	32-bit	32-bit	32-bit	32-bit	32-bit
HP/UX 11.31 on Intel IA64	32- and 64-bit	32- and 64-bit	64-bit	64-bit	64-bit	32- and 64-bit	32- and 64-bit
Red Hat EL 6.2 on IBM390	32-bit	32-bit	32-bit	32-bit	32-bit	32-bit	32-bit
Red Hat EL 5.5 on AMD Opteron	32-bit	32-bit	32-bit	32-bit	32-bit	32-bit	32-bit
Solaris 11 on AMD Opteron	32- and 64-bit	32- and 64-bit				32- and 64-bit	32- and 64-bit
Solaris 10 on SPARC	32- and 64-bit	32- and 64-bit				32- and 64-bit	32- and 64-bit
SuSE SLES 11 SP1 on IBM390	32-bit	32-bit	32-bit	32-bit	32-bit	32-bit	32-bit
SuSE SLES 11 on AMD Opteron	32-bit	32-bit	32-bit	32-bit	32-bit	32-bit	32-bit

Java Development Kit (JDK)

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Compiling Java

Either the IBM or the Oracle Java Development Kit (JDK), version 1.5 or later, is required for compiling Java.

Interface Mapping Toolkit (IMTK)

Restriction: This feature applies only when the Enterprise Server feature is enabled.

The JDK is required for generating Java interfaces from the Interface Mapping Toolkit or the `imtkmake` command.

EJBs Use the same JDK vendor and version that is used by the application server.

After installing the JDK, you need to set up your Java environment.

Database Access

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Before you can use Enterprise Developer to develop and deploy SQL applications that use COBSQL, HCO for DB2 LUW, or OpenESQL, ensure any third-party software prerequisites are installed and the environment is set properly.

Database Access - COBSQL (Pro*COBOL)

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Note: COBSQL (Pro*COBOL) is supported for native COBOL only.

Availability

Feature/Platform	32-bit	64-bit
x86-64 running Red Hat Linux	X	X
x86-64 running SuSE Linux	X	X
IBM System p running AIX	X	X
IBM System z running SuSE Linux	X	X
Itanium running HP-UX	X	X
x86-64 running Solaris	X	X
SPARC running Solaris	X	X

XA Switch Module

The Oracle XA switch module is provided for COBSQL (Pro*COBOL), and is available on the same platforms as are indicated in the *Availability* section above.

Certification of RDBMS Precompilers for Native COBOL

Certification of RDBMS precompilers with Micro Focus products is the responsibility of the RDBMS vendor, rather than Micro Focus. Certification information can be found within the relevant Oracle documentation. If you have an Oracle MetaLink account (*http://metalink.oracle.com*), document # 43208.1 provides details of all language compilers certified by Oracle for use with their precompilers.

Preprocessors

COBSQL supports the following database preprocessors:

- Sybase Open Client Embedded SQL/COBOL Version 11.1 or later
- Oracle Pro*COBOL Version 11.1 (11gR1) or later

- Informix Embedded SQL/COBOL Version 7.3 or later

Compiling

On x86 and x86-64 platforms, when compiling with COBSQL for use with Oracle, do not use the COBSQL directive option NOMAKESYN, since this directive results in COMP host variables, and on Intel platforms these are incompatible with the native byte order expected by Oracle.

Executing

On HP-UX, to execute an application precompiled using Pro*COBOL (or COBSQL) after you have created a callable shared object of Oracle DBMS routines, you need set an environment variable, LD_PRELOAD, to point to the Oracle client callable shared object, for example:

```
LD_PRELOAD=$ORACLE_HOME/libdir/libclntsh.so
export LD_PRELOAD
```

where *libdir* is:

- lib32 for 32-bit environments
- lib for 64-bit environments.

A script is available that creates an executable run-time system or a callable shared object containing Oracle support (applies to UNIX environments only). You can find the script in the Micro Focus Knowledge Base article titled *Building and executing Pro*COBOL applications on UNIX*.

Database Access - OpenESQL

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Availability

Feature/ Platform	Native COBOL 32-bit	Native COBOL 64-bit	PL/I 32-bit
x86-64 running Red Hat Linux	X	X	X
x86-64 running SuSE Linux	X	X	X
IBM System p running AIX	X	X	X
IBM System z running SuSE Linux	X	X	
Itanium running HP-UX	X	X	
x86-64 running Solaris	X	X	
SPARC running Solaris	X	X	X

XA Switch Module

The ODBC One-phase Commit switch module is provided and is available on the same platforms as are indicated in the *Availability* section above.

Native COBOL

- OpenESQL supports access to relational databases using ODBC 3.0-compliant drivers
- Refer to your driver vendor's documentation to determine whether your driver is suitable for use with OpenESQL

JVM Managed COBOL

OpenESQL supports access to relational databases using JDBC 4.0-compliant JDBC drivers. In order to utilize JDBC DataSource Objects, you must also install and configure a JNDI server.

Database Access - HCO for DB2 LUW

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Availability

Feature/ Platform	Native COBOL 32-bit	Native COBOL 64-bit	PL/I 32-bit
x86-64 running Red Hat Linux	X	X	X
x86-64 running SuSE Linux	X	X	X
IBM System p running AIX	X	X	X
IBM System z running SuSE Linux	X	X	
Itanium running HP-UX		X	
x86-64 running Solaris			
SPARC running Solaris	X	X	X

XA Switch Module

The DB2 XA switch module is provided and is available on the same platforms as are indicated in the *Availability* section above.

Certification of RDBMS Precompilers for Native COBOL

Certification of RDBMS precompilers with Micro Focus products is the responsibility of the RDBMS vendor, rather than Micro Focus. You can find IBM document certification information for DB2/COBOL applications within the IBM Information Center for DB2, in the topic *Support for database application development in COBOL*.

Preprocessor

HCO for DB2 LUW supports the following database preprocessors:

- IBM DB2 LUW Version 9.5 or later
- IBM DB2 Connect Version 9.5 or later
- On SPARC running Solaris, 64-bit is supported in IBM versions 10.1 or later

Host Compatibility Option (HCO)

Host Compatibility Option requires that you have one of the following software products installed and configured:

- IBM Database Connect
- IBM DB2 LUW Personal Edition or DB2 Express-C
- DB2 LUW Workgroup or Enterprise Edition

You must also install the DB2 Application Development Client (formerly called DB2 SDK) or you will not be able to compile any DB2 programs.

Installing Enterprise Developer for Eclipse

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.

Product Co-Existence

- 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.
- Enterprise Developer is available in different IDE variants, each one of which is targeted by one specific variant of the development product:
  - Enterprise Server - the deployment environment for COBOL applications created with Enterprise Developer for Visual Studio 2010 or Enterprise Developer for Eclipse
  - Enterprise Server 2012 - the deployment environment for COBOL applications created with Enterprise Developer for Visual Studio 2012

Installing and Licensing Micro Focus Rumba

The Enterprise Developer setup file includes Micro Focus Rumba 9.2 which you can install as an optional component. The license for Enterprise Developer will also license all components of Rumba (for example, Rumba Office, Rumba for Mainframe, Unix, AS400, and the TN3270 mainframe display within Enterprise Developer).

Note: Micro Focus Rumba versions 8.3 or later provide integration with Enterprise Developer where you can use a Rumba TN3270 Mainframe Display within the IDE in order to run applications.

Installation considerations:

- If you are installing Enterprise Developer 2.2 Update 2 onto a machine that does not have Rumba installed, it is recommended that you select the Rumba option when you start the installation. This installs all of the components of Rumba including the one you need to establish a mainframe 3270 connection (Rumba for Mainframe).
- Installing Rumba 9.2 as part of this release of Enterprise Developer will update any older version of Rumba installed and licensed on your machine.

  Note: Micro Focus recommends that you upgrade older versions of Rumba to the one installed with Enterprise Developer. However, if you want to keep an older version of Rumba, you can choose not to install Rumba when you start the Enterprise Developer 2.2 Update 2 installation. In this case, the TN3270 Mainframe Display will not be available for use from within Enterprise Developer.
- If a version of Rumba more recent than version 9.2 is installed and licensed on your machine, you can choose not to install Rumba as part of the Enterprise Developer 2.2 Update 2 installation. The TN3270 Mainframe Display provided with this version of Rumba may be supported within Enterprise Developer but might not have been tested.

Installing as an Upgrade

This release will update an existing installation of Enterprise Developer 2.2.

- Before installing this release as an upgrade to an existing installation of the previous version 2.2 of the product, you must uninstall any HotFixes of 2.2. This is to avoid some problems that might result in files not being installed.
- 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.

Installing

Note:

- Before installing, check *Installation Restrictions and Requirements*.
- The setup file installs Enterprise Developer and Eclipse 3.8. After the installation is completed, you can install Enterprise Developer into a newer version of Eclipse such as version 4.2 or 4.3 for the 32-bit Eclipse only - see *Installing Enterprise Developer into other instances of Eclipse* for instructions.
- See *Installing as an Upgrade* first for important information when upgrading an existing installation of Enterprise Developer.
- This version of the product is a full install.

These are the steps to install this product:

1. Run the `ede_222.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 3.8, 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:

- If you are installing onto a machine that has an existing Micro Focus product that uses an older Sentinel RMS License Manager, you might be prompted to remove it and install the Micro Focus License Administration. By doing this you maintain the existing Sentinel RMS license files while adding the Micro Focus License Administration. If you are unsure about existing licenses on your computer or removing the Sentinel RMS License Manager, consult your System Administrator. If you want to proceed, remove Sentinel RMS License Manager by using **Program and Features** (Windows Vista or later), and rerun the installation file.
- Trial licenses cannot be used with remote desktop services. If you want to use your product in this way, please contact Micro Focus SupportLine to obtain a relevant license.
- We recommend that you install any updates for the .NET Framework that are available at the *Microsoft Download* site.
- If you install JDK you might be prompted to install the latest update. The latest update is not required for use with Enterprise Developer but you can install it if you wish.

Installing Silently on Windows

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.

To install silently use the following command:

```
start /wait install-file.exe /q [parameters]
```

where *install-file* for the following products is as follows:

Enterprise Developer	`ede_222.exe`

To see what parameters you can use, execute the following from the command line:

```
install-file /help
```

See the *Examples* section further in this topic for examples of some of the parameters you can use.

After the application installation is complete you can install the license silently by executing the following commands:

If you have access to the Internet and an authorization code

For 32-bit Windows environments:

```
start /wait "" "C:\Program Files\Common Files\SafeNet
Sentinel\Sentinel RMS License Manager\WinNT
\cesadmintool" -term activate AuthorizationCode
```

For 64-bit Windows environments:

```
start /wait "" "C:\Program Files (x86)\Common Files
\SafeNet Sentinel\Sentinel RMS License Manager\WinNT
\cesadmintool" -term activate AuthorizationCode
```

If you don't have access to the Internet but have a file from Micro Focus that contains the license string

For 32-bit Windows environments:

```
start /wait "" "C:\Program Files\Common Files\SafeNet
Sentinel\Sentinel RMS License Manager\WinNT
\cesadmintool" -term install -f FileName
```

For 64-bit Windows environments:

```
start /wait "" "C:\Program Files (x86)\Common Files
\SafeNet Sentinel\Sentinel RMS License Manager\WinNT
\cesadmintool" -term install -f FileName
```

where *FileName* is the name of the text file that contains all the license strings to be used.

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 INSTALLDIR parameter:
- If a path in a definition contains spaces, then the path must be preceded by a backslash and double quotation mark (\"). For example:

  ```
  INSTALLDIR=path
  INSTALLDIR=\"c:\MyProduct\"
  INSTALLDIR=\"c:\Program Files\Micro Focus\My Product\"
  ```

- Installing creates a log file in `%temp%\LogFilename` 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:

  The default names for the log files are as follows:

`Micro_Focus_Enterprise_Developer_for_IDE_date.log`	for the Enterprise Developer wrapper
`EnterpriseDeveloperx??_install_log.txt`	for Enterprise Developer, where *??* is "86" for 32-bit systems and "64" for 64-bit systems
`lmsetup_install_log.txt`	for Micro Focus License Administration

- The log filename and folder name cannot contain spaces
- The log file folder must exist before beginning the silent install

Examples

- To silently install Enterprise Developer into a directory other than the default:

  ```
  start /wait ede_222.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_222.exe /q InstallFolder2=c:\EclipseInstallDirectory
  ```

- To silently install Rumba during the silent install of Enterprise Developer:
```
start /wait ede_222.exe /q RumbaCheckbox=1
```

Installing Enterprise Developer into other instances of Eclipse

Enterprise Developer ships with Eclipse 3.8 but can be installed in other instances of Eclipse available on the same machine. The supported versions of Eclipse are 3.8, 4.2 and 4.3 only for the 32-bit Eclipse.

Note: Though Enterprise Developer does not support the 64-bit Eclipse, you can use the 32-bit Eclipse to create both 32-bit and 64-bit applications.

To assist you with automatically installing the Micro Focus plug-ins in other instances of Eclipse, Enterprise Developer provides an installation utility, `installeclipseplugins.bat` available in `%ProgramFiles(x86)%\Micro Focus\Enterprise Developer\installer`.

To use the script to install Enterprise Developer into another instance of Eclipse:

1. Start an Enterprise Developer command prompt.
2. At the command prompt, navigate to the location of the install utility.
3. Run the install utility from the command prompt using the following syntax:
```
installeclipseplugins -eclipse <EclipseInstallDir> -version <version> [-
cobdir <InstallDir>]
```

   Where:

   - *EclipseInstallDir* - full path to the installation directory of the instance of Eclipse you are installing into.
   - *version* - version number of the instance of Eclipse that you are installing into. The valid version numbers are 3.8, 4.2 and 4.3 and these also cover for minor version numbers such as 3.8.1 or 4.2.2.
   - *InstallDir* - optional. The full path to the installation directory of Enterprise Developer. If this is not specified, the COBDIR environment variable is used.

   Running the utility installs the Enterprise Developer plug-ins into the specified version of Eclipse and copies the Enterprise Developer UpdateSite folders into *`EclipseInstallDir`*`\eclipse\dropins`.

   For example, to install Enterprise Developer into an instance of Eclipse 4.3 available in the `c:\eclipse` folder, run the install utility with the following parameters:
```
installeclipseplugins -eclipse c:\eclipse -version 4.3
```

Installing Micro Focus Enterprise Developer UNIX Components

Note:

- Micro Focus Enterprise Developer UNIX Components is only available with an Enterprise Developer or Enterprise Developer for IBM zEnterprise license and is not available with an Enterprise Developer Personal Edition license.
- If you are installing on Solaris, please read *UNIX Installer Issues* first.

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.

Installing

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`.

These are the steps to install this product:

1. Give execute permissions to the setup file:
   ```
   chmod +x setup_entdev_2.2_update2_platform
   ```
2. Run the installer from the Process User ID login:
   ```
   ./setup_entdev_2.2_update2_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).

   To install in a different location use the `-installlocation="Location"` parameter to specify an alternative directory location. For example:
   ```
   ./setup_entdev_2.2_update2_platform -installlocation="full path of new location"
   ```

   Note: You can use variables or the tilde syntax for the path for `–installlocation`. For example, the following examples are equivalent:
   ```
   -installlocation="/home/myid/installdir"
   -installlocation="~myid/installdir"
   -installlocation="~/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.

   You can use the following options to configure the Enterprise Server installation: `[ -ESsysLog="location" ] [ -ESadminID="User ID" ] [ -CASrtDir="location" ]`, where:

   -ESsysLog Specifies a location in which the build will create the Enterprise Server System log file - for example, `-ESsysLog="/home/esuser/logs"`. The default location is `/var/mfcobol/logs`.

   -ESadminID Sets the Enterprise Server System Administrator Process User ID from the command line - for example, `-EDadminID="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`.

   Note:

   - 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_2.2_update2_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.

1. To set up your product, execute:

   ```
   . /opt/microfocus/EnterpriseDeveloper/bin/cobsetenv
   ```

2. To verify that your product is installed, execute:

   ```
   cob -V
   ```

Important: These commands set the environment only for the current shell. You need to execute them for each new shell that you start.

To avoid having to run `cobsetenv` for every shell, add these commands to the shell initialization files (such as `etc/profile`, `etc/bashrc`).

Note that `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.

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:

```
–silent -IacceptEULA
```

For example, execute:

```
[as root] setup_filename –silent -IacceptEULA
```

After the application installation is complete you can install the license silently by executing the following commands:

If you have access to the Internet and an authorization code	Run the following as root:
	`cd /var/microfocuslicensing/bin`
	`./cesadmintool.sh -authorize AuthorizationCode`

If you don't have access to the Internet but have a file from Micro Focus that contains the license string	Run the following as root:
	`cd /var/microfocuslicensing/bin`
	`./cesadmintool.sh -install FileName`
	where *FileName* is the name of the text file that contains all the license strings to be used.

UNIX and Linux Installer Issues

Installing on Linux	On Linux, the 32-bit version of Java is required to install and use Enterprise Developer for Eclipse. When you start the installation, if the 64-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 prevent 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 32-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 64-bit Java version. For example, untar in `/usr/local/java32` and not in `/usr/local/java`.
- Set JAVA_HOME and LD_LIBRARY_PATH to the 32-bit version of Java so that it is used to install and run Enterprise Developer.

License Infrastructure Installer

- On some Solaris platforms, you can receive the following error message when SafeNet license server needs to be installed or upgraded on your machine:

  ```
  tar: /safenet.tar: No such file or directory
  ```

  To resolve this issue, wait for the installation to complete and then perform the following:

  1. Navigate to the `safenet` directory in the COBDIR location.
  2. With superuser permissions execute: `./MFLicenseServerInstall.sh`

-  **Note:** The following information applies when you are installing on Red Hat Enterprise Linux (RHEL) 7. (RHEL 7 is a beta version and support for it is a technical preview only).

  Certain configuration changes in RHEL 7 (such as the `/etc/inittab` file no longer available) required a change in the MF SafeNet license installer for this platform and the way you can manually manage the licensing service.

  By default, the MF SafeNet licensing service is still configured so that it starts automatically when starting your machine. Only on RHEL 7, you must use the `systemctl` command available with the OS if you need to override the default behaviour – for example, if you do not want run the MF SafeNet licensing service at start-up or if you do not want the service to automatically start when you are configuring trace levels.

  1. Create a file, MFSafeNet.service, in `/usr/lib/systemd/system/` with the following contents:

     ```
     ----------- start of /usr/lib/systemd/system/
     MFSafeNet.service -----------
         [Unit]
         Description=Micro Focus SafeNet licensing daemons.
         Documentation=http://supportline.microfocus.com

         [Service]
         Type=forking
         ExecStart=/var/microfocuslicensing/bin/startboth.sh
         ExecStop=/var/microfocuslicensing/bin/stopboth.sh
         Restart=no

         [Install]
         WantedBy=multi-user.target
     -----------  end of /usr/lib/systemd/system/
     MFSafeNet.service  -----------
     ```

  2. Use the systemctl command to manage the SafeNet service:

     ```
     [ asroot ] systemctl option MFSafeNet
     ```

     Where some of the values that *option* can take are:

reenable	Installs the SafeNet service.
is-enabled	Checks the status of the SafeNet service. Does not require root privileges.
start	Starts the SafeNet service.
stop	Stops the SafeNet service.
restart	Restarts the SafeNet service.
disable	Disables the SafeNet service so it does not start when the machine is booted.
enable	Enables the SafeNet Service so it starts when the machine is booted.

For more information about systemctl, refer to the help available with the RHEL OS.

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.

Configuring the Remote System Explorer Support

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
- 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.

Installing Mainframe Access Server

Note: Mainframe Access Server is only available with an Enterprise Developer or with an Enterprise Developer for IBM zEnterprise license and is not available with an Enterprise Developer Personal Edition license.

Introduction

The installation process for Mainframe Access Server (MFA) uses a single FTP operation to transfer all of the mainframe software into a partitioned data set that you pre-allocate. When this transfer is complete, the remaining installation activities are all done on the mainframe. You customize and submit the pre-built FRESTORE job to restore the product data sets from the uploaded files and then continue with customization steps to create an operational Mainframe Access Server.

Requirements

- IBM TCP/IP 4.0, or Interlink TCP/IP 3.1 or higher
- Two APPLIDs, two TCP/IP ports
- Availability of APF security authorization support personnel
- Access to a network share with acceptable space for source and data, as well as the ability to access the IP address and ports used to access MFA
- The following installation-specific variable information:

Variable	Description
drive	
userid	TSO user-ID for FTP to your mainframe
pswd	TSO password for the FTP user-ID
your.mainframe.name	TCP/IP host name or IP address of your mainframe
prodhlq	A NEW high level qualifier that will be assigned for all Host Connectivity data sets when the new Mainframe Access product is installed. These are NOT existing product data sets, but rather brand new files that you will be creating for this base version.

Important: The installation of a new version of MFA creates new product run-time data sets before the upgrade is applied. Any existing Host Connectivity 3.01 libraries remain intact, and can be used for fallback. If you prefer to retain your former production library names and re-use your existing prodhlq, rename your old libraries beforehand.

Make a note of the maintenance level of your current Mainframe Access Server. Messages MFM0001I and MFM0014I on the syslog and XDBOUT sysout data set show the maintenance level at startup. You may need to know what level you are upgrading from when you complete post-installation customizations for this upgrade.

Install Mainframe Access Server

In the instructions that follow, the information that you must provide is shown as one of the variable names from the table of information in the previous section. For example, if your high-level qualifier (*prodhlq*) value is MY.MFA, then substitute MY.MFA for *prodhlq*.

Follow these steps to load Mainframe Access Server:

1. Download the installation file from the link in your Electronic Product Delivery email and extract its contents to a directory on the PC.
2. On the mainframe, allocate a new partitioned data set named *prodhlq*.UPLOAD to receive the uploaded files. Use the following data set characteristics for this upload library:

```
DSORG=PO                    <=== PDS (partitioned data set)
RECFM=FB                    <=== record format fixed and blocked
LRECL=80                    <=== 80 character record size
BLKSIZE=3120                <=== 3120 character block size
SPACE=(3120,(3500,500,50)) <=== allocate blocks (BLKS) size 3120
                                3500 primary blocks
                                500 secondary blocks
                                50 directory blocks
```

3. On the PC, issue the following FTP commands. The actual text of the FTP prompts and responses that you see may differ slightly from those shown in this example.

   a. Start FTP:

```
C:\>ftp your.mainframe.name
Connected to your.mainframe.name.
220-FTPD1 IBM FTP CS/390 VxRy at YOUR.MAINFRAME.NAME, hh:mm:ss
220 Connection will close if idle for more than 5 minutes.
User (your.mainframe.name:(none)): userid
331 Send password please.
Password: pswd
230 userid is logged on. Working directory is "userid.".
```

   b. Change the working directory on the mainframe to be the upload library that you allocated:

```
ftp> cd 'prodhlq.UPLOAD'
250 The working directory "hlq.UPLOAD" is a partitioned data set.
```

c. Set file transfer type to binary:

```
ftp> binary
200 Representation type is Image
```

d. Set FTP prompting off to transfer all files without interruption:

```
ftp> prompt
Interactive mode Off.
```

e. Transfer all files from the extracted `\Upload` directory to members in the *prodhlq*.UPLOAD library:

```
ftp> mputdrive:\upload\f*
200 Port request OK.
125 Storing data set prodhlq.UPLOAD(Fxxxxxxx)
250 Transfer completed successfully.
ftp: xxxx bytes sent in x.xx seconds (xxx.xx Kbytes/sec)
.
.
.
```

f. When `mput` has transferred all files the `ftp>` prompt appears. End the FTP connection:

```
ftp> quit
221 Quit command received. Goodbye.
```

g. On the mainframe, verify that all files transferred successfully and that for each Fxxxxxxx file in the `\Upload` directory there is a corresponding member in the *prodhlq*.UPLOAD data set. There should be 10 members, F1 through to F9 and FRESTORE.

4. On the mainframe, edit member FRESTORE in the upload library, *prodhlq*.UPLOAD. Follow the instructions in that member to customize the JCL and then submit that job to restore the product libraries from the uploaded files and populate your new product runtime libraries.
5. Start Mainframe Access Server.

After installation

Since the program libraries can change between versions, it is necessary to either create new procedures, or back up the old procedures, and at least modify the DSNQUAL=*prodhlq* within your MFA sample started task procedures as provided by Micro Focus. The *prodhlq*.LOADLIB and *prodhlq*.SASC.LINKLIB must both be authorized.

Verify successful maintenance application by checking the Mainframe Access Server startup message:

```
MFM0001I: Mainframe Access V4.00 (BASE ) is active
```

The "(BASE)" indicates the product maintenance level. Also check for "V4.00" in the Mainframe Access Data Connect server startup message:

```
MFA303I MFA/DATACONNECT V4.00 - BASE COPYRIGHT (C) 1987-2012 MICRO FOCUS...
```

When you are satisfied with the new version installation you may delete the UPLOAD data set from your system.

New parameters and members in the CNTL samples data set

The following updated members are found in the CNTL data set.

MFA	sample MFA started task
MFAS	*new* sample MFAS started task for Data Connect
MFAAS	sample MFAAS application server started task
MFAVTAM	sample MFA VTAM definitions
PARMS	sample PARMS for MFA started task
PARMSAS	sample PARMSAS for MFAAS started task
SERVERS	sample SERVERS configuration for MFA

If you are migrating from Host Connectivity 3.01 WebSync 10 or earlier, you may want to retain your existing CNTL members from your current version as an installation test. You can simply copy the existing MFA started task JCL and change the STEPLIB to reference the new product libraries. You will however need to modify the MFAS started task JCL since the module names for Data Connect have been changed to allow co-residence within the same authorized library as MFA.

Review the Change Log in each of the new members. Read the documentation for any new parameters in the Readme and in the updated Mainframe Access Administrator's Guide. Add these new parameters and other changes to your working copies. If necessary, customize the new parameters for your installation.

Once you are satisfied with the operation of Mainframe Access, you can consolidate the configuration settings into the new high-level qualified CNTL members.

Installing the mainframe components

Mainframe z/Server

The mainframe z/Server is a z/OS server that supports the Eclipse mainframe integration, and is provided with Enterprise Developer for IBM zEnterprise. z/Server needs to be installed before mainframe access is enabled.

Refer to the document *z/Server Installation Guide* for instructions on how to install Enterprise Developer's mainframe components.

To define default z/Server connections

Enterprise Developer supports the configuration of default connections. Default connections can be defined by creating a file called `defaultZConnection.ini` in the Eclipse folder of your Enterprise Developer installation.

The contents of this file must follow these syntax rules:

- Every line must contain one attribute or start with # (Comment)
- Every connection must start with `>CONNECTION` and end with `>END_CONNECTION`
- Every connection must be defined with following attributes:

NAME	The name of the connection - this must be unique
HOST_ADDRESS	The physical address of the host (for example 192.168.1.1, localhost)
PORT	The port of the z/Server (scheduler)
DESCRIPTION	The description of the connection - this can be left blank

A sample file is included in the installation.

When Enterprise Developer successfully parses the `defaultZConnection` file, it creates a z/OS connection in the Remote Systems View for every configured default connection.

Important: Enterprise Developer reads the `defaultZConnection` file only once for each workspace. This means that any changes relating to default connections will not apply to existing workspaces that have already been used.

Assuming you have the appropriate Enterprise Developer for IBM zEnterprise license, after installing z/Server you should verify the connectivity.

To verify mainframe connectivity

1. Start Eclipse.
2. Ensure the Team Developer perspective is loaded. If it is not visible, select **Window > Open Perspective > Other > <Team Developer>**.

3. Right-click in the Remote Systems view and select **New > Connection**.
4. Select "z/OS" from the connection list and click **Next**.
5. Enter the TCP/IP address or name of your mainframe system and enter a connection name that will be displayed in the view. Click **Next**.
6. Enter the correct connection port and the default encoding parameters. Ask your system administrator if you do not know the correct parameters.
7. Click **Finish**. The z/OS entry is added to the view.

To verify the client host connection

1. Start Eclipse and switch to the Team Developer perspective.
2. Expand the z/OS connection entry in the Remote Systems view. If the z/OS entry is not shown in this view, verify the client installation process first.
3. Right-click on the MVS entry and verify, or customize, the port number of the z/Server server (the default is 1111).
4. Right-click on the MVS entry and select **Connect**.
5. Enter your mainframe user ID and password and click **OK**. After a successful connection the color of the icons changes to green.
6. Right-click again on the MVS entry and select **Disconnect** to disconnect from the host system.

Mainframe Access server (MFA)

Mainframe Access is the OS/390 and z/OS server for Micro Focus development environments. It is a common component providing access to host resources for environments. One installation of Mainframe Access can support all of these products, providing connectivity to any number of DB2, IMS, and CICS systems located anywhere in an enterprise. It can also provide access to JES facilities, VSAM data sets, non-VSAM data sets, and data controlled by external library management products such as Panvalet, Librarian and Endevor.

Features include:

- The Drag and Drop utility allows you to transfer files using drag and drop methods, between the mainframe and the PC environments.
- The Remote Job Step Execution (RJSE) facility enables execution of one or more steps of a job on a remote z/OS host. It automatically uploads and downloads required files as necessary with an end result the same as when all steps are executed locally.
- Compare and Synchronization Monitor allows you to compare mainframe data sets against workstation directories. Where differences occur, you can synchronize the information. This can occur in either direction, or both directions. Typically, you would download mainframe partitioned data sets to a workstation directory.
- You can use SourceConnect to map a PC drive to a mainframe dataset. You can then access mainframe files and resources from a PC, or from applications running on a PC.

Installing Application Workflow Manager into IBM Rational Developer for System z (RDz)

Provides instructions about how to install the Application Application Workflow Manager delivered with Enterprise Developer Connect into IBM's Rational Developer for System z (RDz).

The Application Workflow Manager component provides all the capabilities and tools to develop and maintain Application Workflow models. These models allow you to integrate mainframe tools and processes directly into Enterprise Developer.

An Enterprise Developer Connect license enables you to install and use the Application Application Workflow Manager component in the RDz product. The following instructions show how you can do this:

1. Install Enterprise Developer and a license for Enterprise Developer Connect.

2. Copy the `AWMUpdateSite.zip` file from `%ProgramFiles(x86)%\Micro Focus\Enterprise Developer\installer` to a temporary folder.
3. Start the RDz product with administrator's privileges.
4. In the IDE, click **Help > Install New Software**.
5. On the **Install** dialog box, click **Add** on the row for the **Work with** field.
6. On the **Add Repository** dialog box, click **Archive**.
7. Navigate to the location of the `AWMUpdateSite.zip` file, select the file, click **Open** and then click **OK**.

   This loads the **Application Workflow Manager** component in the **Install** dialog box.
8. Under the **Application Workflow Manager** node, check the **Application Workflow Manager** and **AWM RDz Integration** items.
9. Click **Next** and follow the wizard instructions to complete the installation.
10. Restart RDz if prompted to do so.

After Installing

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 COBOL perspective 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 COBOL perspective by clicking **Window > Open Perspective > COBOL**.
3. Click **Window > Reset Perspective**.
4. Click **OK**.
5. Reapply any customizations.

Note: For applications created with earlier Micro Focus products, note the following:

Existing Applications

Application executables that were compiled using earlier Micro Focus products must be recompiled from the sources using Enterprise Developer. For more information, read the section *Upgrading to Enterprise Developer for Eclipse* in the product Help.

Open PL/I Compiler

Important: If you are installing this release as an upgrade to Enterprise Developer 2.2 Update 1, after the upgrade you must rebuild any applications that are compiled using the –zp1 option.

The behavior of the –zp1 option has been reverted to that of versions of Enterprise Developer earlier than 2.2 Update 1, with an additional correction relating to Char Varying data items.

The behavior has been restored to that in Enterprise Developer versions earlier than 2.2 where, when compiling with –zp1, all parameters are treated as unaligned. (In Enterprise Developer 2.2 Update 1, the behavior when compiling with –zp1 was to not treat parameters as if unaligned).

When using the –zp1 compiler option, all Character Varying data items are now treated as if unaligned. In previous versions of Open PL/I, for Character Varying data items, the –zp1 unaligned requirement was applied only to structure members and parameters.

To illustrate the change, consider the following example:

```
zptest: proc options(main);

   dcl 1 st1,
     2 c char,
```

```
     2 x(4) char(7) var init ('a', 'xx', 'yyy', 'zzzz');

   dcl y(4) char(7) var init ('a', 'xx', 'yyy', 'zzzz');

   dcl sub entry ((4) char(7) var);

   call sub (x);

   call sub (y);

end;

sub: proc (z);

   dcl z(4) char(7) var;

   dcl i fixed bin(31);

  do i = 1 to hbound(z);
      z(i)  = 'x';
  end;

end;
```

Where:

- For x and z, each `char (7) var` item is 7 plus 2 bytes which equals 9 and then multiplied by 4 equals 36.
- If y were aligned on half-word by default, each array element is half-word aligned and each equals 10 bytes (9 + 1 pad byte), and the total size equals 40 bytes.
- At `call sub (x)`, the calling argument and parameter are matched.
- At the `call sub (y)`, the y element size (10 bytes) is mismatched against the parameter z element size (9 bytes) due to –zp1. This is incorrect and causes unexpected program behavior.

Due to this correction of treating all Char Varying data items as if unaligned when using –zp1, the size of CHAR VARYING arrays now differs from previous versions of Open-PL/I. For example:

```
   dcl X(4) char(7) var;

   Put skip list (size(X))  /* size is 36 bytes vs. 40 bytes in
previous versions of Open-PL1 */
```

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, run the file `ViewNow_X_Server.exe` in your Enterprise Developer installation. By default this will be in the `%ProgramFiles(x86)%\Micro Focus\Enterprise Developer\ViewNowX` 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

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

Windows

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.

Important: 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.

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
```

UNIX

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_EnterpriseDeveloper2.2.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.

- The Enterprise Developer Personal Edition option is not available with this release. You can use the Personal Edition with Enterprise Developer 2.1 Update 1 - you can register for it on the *Enterprise Developer Personal Edition section* on the Micro Focus Web site.
- Your entitlement for using this product is governed by the Micro Focus End User License Agreement and by your product order. 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 buy and activate a full unlimited license

To buy a license for Enterprise Developer, contact your sales representative or Micro Focus SupportLine.

For instructions on using the Micro Focus Licensing Administration Tool, see *Licensing* in the Enterprise Developer help.

To start Micro Focus License Administration

Windows

From the Windows Taskbar click **Start** > **All Programs** >**Micro Focus License Manager** > **License Administration**.

Note: On Windows 8 and Windows Server 2012, you use the Start screen to invoke programs.

UNIX

Log on as root, and from a command prompt type:

```
/var/microfocuslicensing/bin/cesadmintool.sh
```

Installing licenses

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: This topic only applies if you have an authorization code.

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

Note: This topic only applies if you have an authorization code.

This method of authorization is required if your machine 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:

- 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.

New Features in Enterprise Developer 2.2 Update 2

This release provides enhancements in the following areas:

Eclipse

Enterprise Developer provides the following new functionality and improvements:

- Support for Eclipse 4.2 and 4.3 - Enterprise Developer ships with Eclipse 3.8 but also supports Eclipse 4.2 and 4.3 (the 32-bit IDE only). To use Enterprise Developer with a newer version of Eclipse, you need to install Enterprise Developer first and then use the `installeclipseplugins.bat` script in `%ProgramFiles(x86)%\Micro Focus\Enterprise Developer\installer` (UNIX). See *Installing into other instances of Eclipse* for more details.
- Remote JVM COBOL projects - this release provides enhanced support for remote JVM COBOL projects.
- Remote project connections - the diagnosis tool for remote connection issues has been improved. There is now a client-side diagnosis tool and a server-side diagnosis tool for diagnosing connection problems to remote projects and connections to your Micro Focus Enterprise Developer UNIX Components. You should run both tools for a complete diagnosis.

Character Set Enhancements

The following character sets, available using the MFCODESET environment variable, have been enhanced or added in this release:

- Thai Extended (0066) - new

- Korean (0082)
- Simplified Chinese (0086)
- Traditional Chinese (0886)

There are also a number of double-byte character sets that are now capable of mixed single-byte and double-byte character conversion; see the definition of MFCODESET in *Environment Variables in Alphabetical Order* for more information.

Code Analysis

This release of Enterprise Developer provides Dead Code analysis for COBOL programs that enables you to find unreferenced items or any piece of code that can't be reached .

AppMaster Builder

The AppMaster Builder Database View and maintenance support (known as Data Views) is now provided within the Eclipse framework for Enterprise Developer, rather than relying on invoking the AMB database view interface that was part of Mainframe Express Enterprise Edition. You must install the AMB Eclipse plug-in to be able to use this feature.

Data Views enable you to create and maintain database views, as well as add and compile PSB and DBD sources in a COBOL project, all while working within the Eclipse framework.

Database Access

The following new features are available in database access support:

COBSQL

In Eclipse, the new KEEPCOMP directive resolves COMP/COMP-5 issues with Oracle applications on little-endian platforms.

HCO for DB2 LUW

This release introduces GEN-HV-FROM-GROUP - a new DB2 ECM compiler directive option, that generates host variables for all elementary data items when a multiple-level group variable is used in a FETCH or singleton SELECT DB2 statement.

HCO for SQL Server (HCOSS)

This release provides the following new HCOSS features:

- DATE/TIME formatting - the OpenESQL Configuration Utility now supports DATE/TIME formatting for HCOSS batch utilities.
- Multi-row INSERT - supports a multi-row INSERT statement.

OpenESQL

This version provides the following new OpenESQL features:

- Support for SQL Server 2014.
- New SQL Compiler directive options:
  - DETECTDATE=SERVER - resolves host variables alignment with column data types in an SQL table.
  - GEN-HV-FROM-GROUP - generates host variables for all elementary data items when a multiple-level group variable is used in a FETCH or singleton SELECT SQL statement.
- Sample applications - the following native COBOL SQL sample applications are new with this version:
  - Get Diagnostics - demonstrates how to use GET DIAGNOSTICS EXEC SQL calls to get diagnostic information from various DBMSs.
  - LOB Data Types - Demonstrates how to INSERT and SELECT LOB data in a native application using various DBMSs.

SQL Option for DB2

Support for the following has been added in this version:

- DSNUTILB LOAD LOG=NO option

- RID scalar function
- XML data type via XDB Link to mainframe DB2

XA switch modules

The following XA switch module updates are available in this version:

- Oracle switch module - Windows and UNIX platforms :
  - Supports User Impersonation when statically registered.
  - Enables you to specify which XA resource definitions use User Impersonation.
  - Now compiled with one source file, rather than two.
- SQL Server switch module - Windows platforms only:
  - Enables you to specify which XA resource definitions use User Impersonation.
  - Now compiled with one source file, rather than two.

Enterprise COBOL 5.1 compatibility

There have been a number of enhancements to make this version of Enterprise Developer more compatible with Enterprise COBOL 5.1.

Note: These enhancements are available under both DIALECT(MF) and DIALECT(ENTCOBOL).

- The following phrases have been added to the XML GENERATE statement:
  - NAME
  - SUPPRESS
  - TYPE
- The following intrinsic functions have been added:
  - ULENGTH
  - UPOS
  - USUBSTR
  - USUPPLEMENTARY
  - UVALID
  - UWIDTH
- A number of reserved and context-sensitive reserved words have been added; see the topics *Reserved Words Table* and *Context-sensitive Words Table* for complete lists.

External Call Interface (ECI)

Enhancements to the ECI include:

- The ECI for Java clients is no longer restricted to the 32K Commarea. You can now transfer virtually unlimited containers of any size in a channel to a CICS server program. See *ECI Java Interface* for more information.
- Java support for IBM's implementation of ECI, which, in turn, uses the Micro Focus implementation.
- A ECI RA for WebSphere; however, in this release, no IMTK tooling is provided for servlets or JSP.

External Security Facility (ESF)

The Enterprise Server External Security Facility (ESF) now supports caching the results of some security queries. This can improve the performance of enterprise server instances and of the MFDS when they are configured to use external security.

To enable caching, you need to set non-zero values for the **Cache limit** (maximum size of the cache) and **Cache TTL** (Time To Live, or how long before a cached result expires) settings on the **MFDS Security** tab, the **Default ES Security** tab, or on the **Security** tab for an individual enterprise server. (Currently, the

cache settings for Security Managers have no effect; you need to set cache parameters on one of the three Security pages mentioned earlier.)

For more information, see *http://supportline.microfocus.com/examplesandutilities/doxygen/caching.html*.

IMS Connect

This release now supports Java IMS Connect messages except when also using the IBM-supplied HWSJAVA0 I/O exit.

PL/I General Enhancements

Enhancements are provided in the following areas:

- Attributes - the PL/I DECLARE statement now supports the OPTIONAL attribute as part of the parameter-descriptor list or as an attribute in a parameter declaration. This provides an improved functionality and a greater language compatibility for customers looking to migrate applications from z/OS environments.
- Built-in functions - the PL/I Compiler and run-time system now support the PRESENT and OMITTED built-in functions which provides an improved functionality and a greater language compatibility if you are looking to migrate applications from z/OS environments.
- CodeWatch - this release includes the following enhancements:
  - CodeWatch is now supported in native 64-bit environments which ensures that the CodeWatch debugger runs properly in native 64-bit mode. This enables the PL/I debugger to take advantage of faster speeds and to debug larger programs which have access to larger amounts of storage.
  - Notifications for the CodeWatch conditions - you can use the command line and the UI to turn notifications on or off for all of the currently documented PL/I conditions. The use of notifications enables you to investigate the state of programs and optionally set breakpoints before continuing program execution.
- Compound operators - the PL/I macro preprocessor now supports the compound operators += , -=, *=, and /= within macro assignment statements.
- Error handling - you can now use the EXEC CICS HANDLE ABEND check which provides a consistent error handling technique for PL/I programs running under CICS that is consistent with error handling on the mainframe. EXEC CICS HANDLE ABEND determines error handling for programs running under CICS. Conditions detected by CICS cause an abend if established using EXEC CICS HANDLE ABEND, and PL/I ON units do not get control. If EXEC CICS HANDLE ABEND is not established, CICS defines that the action taken will be as defined by CICS, which normally leads to a transaction abend.
- PL/I data structures - this release provides enhanced support for PL/I data structures in the Data File Tools. You can now easily generate a PL/I structure map (.str) from within the IDE, and the Data File Tools can then use to generate a formatted layout for a PL/I data file. This enables you to see what is in each field within a PL/I Data File Record, and to modify the records in a logical way without having to know the offset, length and raw format of the data item.

PL/I Editor Enhancements

This release provides a new and improved PL/I editor within Eclipse. Features include:

- Configurable background syntax parsing.
- Syntax error reporting - uses red squiggles to denote errors in the code.
- Configuration settings for the editor - you can hide or show the horizontal ruler, turn on or off visible lines for the margins (at columns 2 and 72 for Mainframe Subsystem projects, and only at column 72 for native projects), and configure the syntax coloring and the smart edit mode.
- Smart edit mode - defines the word wrapping behavior when breaking lines or around margins, moving the cursor using the **Home** and **End** keys.
- Folding - support for collapsing and expanding regions for procedures and blocks within procedures.
- Content Assist - provides assistance with inserting PL/I keywords, variables and syntax templates.

- Syntax templates for the most commonly used PL/I statements.
- Block selection - use the button from the toolbar to toggle the mode.
- Breadcrumbs navigation - enables you to quickly navigate between source programs and the dependent include files.
- Outline view - shows a structure of the procedure and structure declarations within a program. Clicking on an item in the Outline view positions the cursor on that item in the code and vice versa.
- Include Dependency View - shows where in the source file's structure the INCLUDE statements appear, and which include files they reference.
- Opening include files directly from the editor using **F3**.
- Task creation - inserting a TODO or a FIXME in a comment in the code automatically creates a task that appears in the Task view.

Rumba 9.2

This release of Enterprise Developer includes Micro Focus Rumba 9.2 which you can optionally install as part of the setup process. The license for Enterprise Developer will license all components of Rumba.

Known Issues

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

In addition, note the following:

Application Workflow Manager

In an Application Workflow Manager modelled action, you retrieve a file from the remote zOS system directly into a COBOL project, you must set the text file encoding of the COBOL project to UTF-8 in the project properties in order for the Compiler to correctly process the source code. To set the encoding, in the project properties of the COBOL project and on the **Micro Focus > Project Settings > COBOL**, specify the `source-encoding(utf8)` Compiler directive in the **Additional directives** field.

CICS

- An EXEC CICS DELAY statement may sometimes produce a difference of one second.

COBOL Watchpoints

The debugger ignores a COBOL watchpoint that is hit if there is no statement following the statement that modifies the data on which that watchpoint is set.

Debugging

There is an issue with "Wait for attachment" when you use Enterprise Developer for Eclipse to debug applications that run on some UNIX/Linux platforms. Eclipse connects to the debugger on the remote machine, but might not attach to the process to debug the code.

To work around this issue, ensure that on the remote machine the TMPDIR environment variable is unset or has the same value for both Micro Focus Enterprise Developer UNIX Components server and for the running process you wish to debug. The Micro Focus Enterprise Developer UNIX Components server is the server which you started either directly with the $COBDIR/remotedev/startrdoserver script or indirectly using the daemon which is started with the $COBDIR/remotedev/startrdodaemon script.

To check the variable used by the Micro Focus Enterprise Developer UNIX Components server:

1. Open Remote Systems view in Eclipse on the Windows machine.
2. Right-click the **Shells** element of the server connection to be tested and click **Launch Shell**.
3. In the **Remote Shell** view, type `echo $TMPDIR` in the **Command** field, and press **Enter**.

The value of the TMPDIR environment variable is shown - ensure it is the same as the one used by the process to be debugged.

Note: The value of TMPDIR used by the Development Hub server cannot be changed in the remote shell and must be set before you start the daemon or server.

Documentation

- A problem in Enterprise Developer results in an error when you try to submit the JCL file as described in the tutorial *Getting started with Enterprise Developer for Eclipse* in the product help. To work around this, when you follow the steps in the topic *Importing the BankDemo project and adding the source files*, execute the step *Setting Compiler directives* before executing the step *Specifying the copybook paths for the project*. This ensures the BankDemo projects is rebuilt. The instructions have been updated in the *Micro Focus Infocenter* version of the help.
- A known issue in JRE 1.7.0_45 (issue JDK-8028111) causes problems with searching and indexing the help in the Eclipse help viewer if you are running Eclipse on a machine that has this version of JRE installed.

Database Access

If you have a remote COBOL project under Eclipse that uses DB2 ECM in Visual COBOL or HCO for DB2 LUW in Enterprise Developer and the DB2 software is not installed on the client machine where you are using the Eclipse IDE, you receive background parsing errors in your application. To resolve the issue, you can do either one of the following:

- Disable background parsing **Window > Preferences > Micro Focus > COBOL > Editor** and disabling the checkbox for **Background parsing**.
- Install the IBM DB2 client-side software on the machine on which you are running Eclipse. Go to the IBM Support Home and locate the page entitled "IBM Download Fix Packs for IBM Data Server Client Packages" .

Eclipse IDE

- If you are upgrading your license from Enterprise Developer Personal Edition (v2.2 or earlier) to Enterprise Developer, or from Enterprise Developer Connect (v2.2.1 or later) to Enterprise Developer, any existing projects compiled to either .exe or .dll files using the old license must be updated in order to recreate the `.cobolBuild` file. You can do this done by adding or removing files from the project or by deleting the `.cobolBuild` file. Updating the project in this way ensures the IDE will fully build the executable files.
- Adding a new COBOL JVM class to a remote COBOL JVM project causes the IDE to become unresponsive if you do not add the class to an existing package.
- Trying to rename a COBOL JVM class in a remote COBOL JVM project causes the IDE to become unresponsive.

Enterprise Server

- The Historical Statistics Facility may generate incorrect records for SSTM-enabled enterprise servers.

ICETOOL Emulation

ICETOOL emulation for managed code is not available in this release.

Installation

- Before installing this release as an upgrade to an existing installation of the previous version 2.2 of the product, you must uninstall any HotFixes of 2.2. This is to avoid some problems that might result in files not being installed. This is required only on Windows.
- 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.

- On UNIX, check *UNIX Installer Issues* before you start the installation.

JCL VSE

When running Enterprise Server applications on HP Itanium in 32-bit mode, if you receive an error such as "CASCD1057S JES Initiator for Server ... abended by signal 00004", you need to set the environment value COBMAINSTACK to a value greater than 500000 to increase the default stack size.

Micro Focus Rumba

On versions of Windows Vista and later, Enterprise Server listens only on the IPv4 loopback address (127.0.0.1). As a result, an attempt to connect to localhost with a TN3270 emulator such as Micro Focus Rumba may fail. To work around this issue, in your emulator's configuration use 127.0.0.1 in preference to localhost or your host machine's name.

Resource Adapters

Trying to deploy the local resource adaptor `mfcobol-localtx.rar` to WebLogic may fail with a ClassCastException. To work around this issue, you need to deploy `mfcobol-xa.rar` first, then need to undeploy this file and deploy the local one, `mfcobol-localtx.rar`. If there are issues deploying using the WebLogic GUI, you can use the command line. If there are issues with this as well, try reducing the length of the command (for example, by moving the file to a location with a shorter path).

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.

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

Compiler

Back to the list

- When using the HOSTRW directive with the mainframe dialect, Report Writer will now produce the full range of ASA control characters and will emulate mainframe print files.

  2697615 (1094527)

Compiler Front-end

Back to the list

- Fixed Binary (p<=7) is now an 8-bit, signed, 2's complement binary integer by default.

Documentation

Back to the list

- The default setting for the MFALLOC_PCFILE environment variable has changed; the default is now set to Y, which means that when cataloguing a file that has a DCB attribute of DSORG=PS, a physical file is created for it if one does not exist. Previously, the default was set to N, which meant that a file was not created.

  2697571 (1094370)

Enterprise Server

Back to the list

Starting with this release, IMSCONFG.DAT is no longer used for configuring enterprise servers. Instead, you need to use environment variables to control the following fields:

Field	Environment Variable
LANG=PL/I PCB address lists	ES_IMS_PLI_INDIRECT_PCBADDR=D|Y|N Where: **D** Dynamic (default) use indirect PCB address list when PSB language is PL/I and main program is PL/I. **Y** Always use indirect PCB address list if PSB language is PL/I. **N** Never use indirect PCB address list.
IBM Platform	ES_IMS_IBMPLATFORM=M|D Where: **M** MVS (default) **D** DOSVS Required by some DOS/VS customers.
Secondary Index Sparse exit language	ES_IMS_SPARSE_EXIT_LANG=C|A Where: **C** COBOL **A**

Field	Environment Variable
	Assembler **Not set (default)** Sparse exits disabled

File Handling - External File Handler

Back to the list

- The ES_IMS_TLOG_FLUSH environment variable is now deprecated. To control TLOG flushing, use the following environment variable: ES_IMS_DB_TLOG_WRITETHRU=0|1

  0 Forces the flushing of TLOG buffers to disk on COMMIT only (default)

  1 Forces the flushing of TLOG buffers to disk on all database I/O

  To control database flushing, use the following environment variable: ES_IMS_DB_COMMIT_FLUSH=0|1

  0 Forces the flushing of database buffers to disk on CLOSE only (default)

  1 Forces the flushing of database buffers to disk on COMMIT only

  Depending on the number of database updates, the frequency of COMMITs, and other concurrent computer activities, use of these environment variables could cause significant performance degradation.

  2784949 (1095190)
- The use of the environment setting MFJ_INPUTDS_ERROR=N has been extended so that an input file for a JCL step is now considered as optional and you no longer receive an error when the file is missing.

  2784622 (1095971)

J2EE Connector

Back to the list

- The listSystem.properties file in package com.ibm.ctg.client was missing documentation for some sections.

  (606556)

MTO: CICS Communications

Back to the list

- In CRTE mode, the transactions are now run using the correct userid if the user has signed on after running CRTE.

  2663890 (1091979)

MTO: IMS DB

Back to the list

- The NODCX mfims dbdgen directive has been added to enable you to compile DBD source without executing data capture exit routines contained in the DBD source. Previously, data capture exit routines contained in the DBD source but that were not found during compilation were ignored. The new default behavior is to process all data capture exit routines unless NODCX has been specified.

  2579600 (1084675)

MTO: IMS MFS

Back to the list

- All existing IMS Global Physical Terminal edit routines (DFSGPIX0) in use must be recompiled with charset EBCDIC instead of charset ASCII.

  (606142)

MTO: JCL MVS

Back to the list

- Following the detection of an unrecoverable file status error on the casspool file, a message is displayed on the console and an ACCEPT statement is issued. This stops processing, allowing you to fix the underlying file problem, before continuing the job.

  2651654 (1090287)

MTO: JCL Utils

Back to the list

- You can now activate support for the VSAM Shareoption for batch jobs and for CICS files that use a catalog entry. For more details, see your product help.

  2660651 (1091290)

Open PL/I Compiler

Back to the list

- **Important:** If you are installing this release as an upgrade to Enterprise Developer 2.2 Update 1, after the upgrade you must rebuild any applications that are compiled using the –zp1 option.

  The behavior of the –zp1 option has been reverted to that of versions of Enterprise Developer earlier than 2.2 Update 1, with an additional correction relating to Char Varying data items. For a full description of the –zp1 option, refer to the Open PL/I User's Guide in the product help

  This fix restores the behavior in Enterprise Developer versions earlier than 2.2 where, when compiling with –zp1, all parameters are treated as unaligned. (In Enterprise Developer 2.2 Update 1, the behavior when compiling with –zp1 was to not treat parameters as if unaligned).

  When using the –zp1 compiler option, all Character Varying data items are now treated as if unaligned. In previous versions of Open PL/I, for Character Varying data items, the –zp1 unaligned requirement was applied only to structure members and parameters.

  To illustrate the change, consider the following example:

```
zptest: proc options(main);

   dcl 1 st1,
     2 c char,
     2 x(4) char(7) var init ('a', 'xx', 'yyy', 'zzzz');

   dcl y(4) char(7) var init ('a', 'xx', 'yyy', 'zzzz');

   dcl sub entry ((4) char(7) var);

   call sub (x);

   call sub (y);

end;

sub: proc (z);
```

```
   dcl z(4) char(7) var;

   dcl i fixed bin(31);

  do i = 1 to hbound(z);
     z(i)  = 'x';
  end;

end;
```

Where:

- For x and z, each `char (7) var` item is 7 plus 2 bytes which equals 9 and then multiplied by 4 equals 36.
- If y were aligned on half-word by default, each array element is half-word aligned and each equals 10 bytes (9 + 1 pad byte), and the total size equals 40 bytes.
- At `call sub (x)`, the calling argument and parameter are matched.
- At the `call sub (y)`, the y element size (10 bytes) is mismatched against the parameter z element size (9 bytes) due to –zp1. This is incorrect and causes unexpected program behavior.

Due to this correction of treating all Char Varying data items as if unaligned when using –zp1, the size of CHAR VARYING arrays now differs from previous versions of Open-PL/I. For example:

```
   dcl X(4) char(7) var;

   Put skip list (size(X))  /* size is 36 bytes vs. 40 bytes in previous
versions of Open-PL1 */
```

2789213 (1095636)

Open PL/I Debugger

Back to the list

- Previously, the SRC list in the debugger only included the source filename without the path to the file. If a source file did not exist in the current directory, the debugger could not find it using the filename as it always expects a fully qualified filename. The SRC list now contains the fully qualified file name which includes the path. Also, when changing the SRC or ENV values the source is updated correctly.

  2783734 (1094988)

Resolved Issues

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

- *Codeset Support*
- *Data Tools Converter*
- *Data Tools Layouts*
- *Documentation*
- *Enterprise Analyzer Integration*
- *Eclipse IDE*
- *ES Cluster*
- *File Handling: External File Handler*
- *File Handling - Sort / JCL Sort*
- *HCO for Microsoft SQL Server*
- *JVM: Compiler*
- *JVM: Run-Time System*
- *MF Communications Server*
- *MF Directory Server*
- *MFA Server*
- *MFA SyncMon*
- *MFBSI*
- *MFIO*
- *MTO: CICS ECM/Preprocessor/Translator*
- *MTO: CICS Emulation*
- *MTO: CICS ESMAC*
- *MTO: CICS Supplied Transactions*
- *MTO: IMS DB*
- *MTO: IMS MFS*
- *MTO: IMS Other*
- *MTO: IMS TM*
- *MTO: JCL ESMAC*
- *MTO: JCL MVS*
- *MTO: JCL System Catalog*
- *MTO: JCL TSO*
- *MTO: JCL Utils*
- *MTO: JCL Utils - IDCAMS*
- *NCG*
- *OO Run-Time System (32-bit)*
- *Open PL/I Compiler*
- *Open PL/I Debugger*
- *Open PL/I Macro Preprocessor*
- *Open PL/I Run-Time System*
- *Open PL/I SQL Preprocessor*
- *Run-Time System*
- *Setup Issues*
- *SQL: Cobsql*
- *SQL: DB2 ECM*
- *SQL: HCO for SQL Server*
- *SQL: OpenESQL*
- *Unassigned*
- *Web Service Client*
- *XDB Server*
- *XDB: Problems not classed above*
- *XML syntax support runtime*

- *zServer General*
- *zServer Scheduler Task*

Adis

Back to the list

- When using X"AF" function 81, screen attributes are now inherited correctly.

  2782580 (1094878)
- Using an ACCEPT statement followed by a display of an OUTPUT RIGHT item and an ERASE EOL item no longer causes a corruption of a screen section.

  2695444 (1093924)

AMB: Generation

Back to the list

- The mapset name in BMS screen generation was always being set to the screen name, even when they differed. This has been fixed.

  2698542 (1094245)
- The product now writes hex values for international currency signs to the AMB cmdgen xml file.

AMB: User Interface

Back to the list

- A new setting, Force capitals, is now available for the editor.

  2792374 (1096135)
- The lib type for Batch program reporting is now set to "PG".

Animator (Character version)

Back to the list

- Programs compiled with the CHARSET(EBCDIC) Compiler directive now show the correct values for Query in the Animator.

  2780466 (1094644)

Assembler Compiler: HLL Macro Assembler

Back to the list

- The Assembler macro IDENTIFY was generating an invalid relocatable definition when the EPLOC= operand was in a DSECT. The EPLOC= operand processing has been changed to use the load address (LA) instruction which obtains a valid address for both CSECT resident symbols and DSECT resident symbols.

CAS (COBOL App Server) General

Back to the list

- Using the INPUTMSG parameter for the XCTL and LINK commands is now working correctly.

  2790518 (1095805)
- On user syncpoint, a 500-error no longer returns to the client if the application did not issue a WEB SEND.

  2780958 (1094671)

- When linking to a program with a channel, the current channel was not always honoured.

  2779977 (1094556)
- Enterprise Server is not longer sending a FREEKB to the terminal at the end of a task when there is more work pending for the terminal.

  2691707 (1093544)
- You no longer receive an intermittent signal 11 in MFCS during shutdown.

CAS Admin Console

Back to the list

- When starting an enterprise server instance, the location of the work files may differ depending on whether the instance was started using a browser or from the command line. See the documentation for "system directory" in the topic "Server Instance Properties General".

  2660616 (1090612)

CAS Security

Back to the list

- The es-ldap-update.cmd script has been updated for the Enterprise Developer product line. The script is used to install a sample set of security definitions when LDAP-based security is used with Enterprise Server.

CAS XA Switch modules

Back to the list

- When using HCOSS, if a global temporary table is declared twice, the current transaction will no longer be implicitly rolled back.

  2780353 (1094629)
- An HCOSS problem where a cursor that was open for a global temporary table caused an EXEC CICS SYNCPOINT ROLLBACK to fail has been fixed.

  2779765 (1094542)
- Global temporary tables are now deleted after EXEC CICS SYNCPOINT ROLLBACK is executed.

  2698545 (1094249)
- HCOSS concurrency issues with DECLAREd GLOBAL TEMPORARY TABLEs have been resolved. As a result, in this release we no longer support user-defined (i.e., persistent) tables in the SESSION schema.

  2697852 (1094184)
- EXEC SQL RESET CONNECTION has been updated and is used to drop Global Temporary Tables at the end of tasks.

  2693269 (1093613)
- EXEC SQL SYNCPOINT has been updated and now correctly handles ON COMMIT actions for DECLAREd global temporary tables.

  2682648 (1093611)
- The XDB XA switch module has been enhanced to exploit CICS EOT processing for XDB transactions.

CCI TCP/IP

Back to the list

- CCITCP client connections could intermittently fail on some platforms due to transient errors in the TCP/IP stack. CCITCP is now more aggressive at detecting and retrying client connections under these

conditions. This primarily affects COBOL Web services clients, some Enterprise Server command-line utilities, and Fileshare clients.

2794263 (1096355)

- INT and CSO modules that use the Casfile API can now successfully connect to SSL-secured Enterprise Server listeners.

  2696022 (1094318)

Compiler

Back to the list

- Programs with a mainframe dialect that contain a paragraph declaration that is not preceded by a period and that is previously referenced now compile as expected.

  2793046 (1096112)
- Complex table VALUE syntax is now working as expected.

  2792013 (1095954)
- Compilation no longer hangs when REPLACE and COPY REPLACING is active and the source code has multiple lines ending in a comma.

  2791425 (1095905)
- READ and WRITE statements with the RM filehandler for files defined with the "RECORD VARYING FROM 0 TO ..." syntax now behave as expected.

  2785986 (1095385)
- An INSPECT CONVERTING statement on a subscripted sliding item now executes as expected.

  2785328 (1095244)
- Setting the LINE-COUNT(2) Compiler directive on a project no longer causes the IDE to crash during a background syntax check.

  2784751 (1095114)
- Data items with DBCS characters which are defined as SQL data types are now processed correctly.

  2783799 (1094976)
- The OSEXT and COPYEXT directives now work with quoted names (with or without spaces).

  2780350 (604653)
- Compiling programs that use both the "WITH DEBUGGING MODE" and "IS INITIAL" clauses now produces correct object code.

  2779266 (1094498)
- Programs that use an external report file now execute as expected.

  2698699 (1094352)
- The performance of the syntax constructs "SET ADDRESS OF .. TO ADDRESS OF ..." when using the AMODE compiler directive has been improved.

  2697051 (1094174)
- Using the "Determine Directives" command on a source file that has an asterisk in column one (which is not a Micro Focus-style comment) now returns results as expected.

  2696946 (1094680)
- A MOVE of 'ALL <alphanumeric literal>' to a numeric display item is now correctly emulated under DIALECT(RM).

  2648551 (1089534)
- The IDE now correctly indicates the location of errors in multi-program source.

  2541308 (1081744)

- Using Watch/Quick Watch on a data item with subscripts, where one of the subscripts is also subscripted, now produces the correct results.

  2463792 (1075281)
- A program that exceeds the system limit of 254 DETAIL groups for a report now receives an appropriate error message "COBCH1692S Too many DETAIL groups specified for report".

  2458349 (1096071)

Codeset Support

Back to the list

- The offset of input segments is now calculated correctly. In order to apply the fix, you must regenerate the MFS source.

  2695463 (1093948)

Data Tools Converter

Back to the list

- Converting a data file using record layouts will now report an error if a field within the selected record layout exceeds the length of the data file record being converted.

  2699617 (1094446)
- The GUI data file converter no longer terminates data item conversion prematurely when using a record layout with an ODO data item.

  2692803 (1093839)

Data Tools Layouts

Back to the list

- Creating a record or a segment layout file no longer fails when the COBOL names contain double-byte characters.

Documentation

Back to the list

- The name of the ES_IMSDB_ROLLBACK environment variable has been changed to ES_IMS_ROLLBACK. Documentation now reflects this name change. Applications that use ES_IMSDB_ROLLBACK are still compatible in this release.

  2698601 (1094260)
- The documentation for the MFBSI CTF trace option has been corrected in the online help. It now reads: mftrace.comp.mfbsi.emx#all = true

  2693323 (1093631)
- The "zServer Messages and Diagnostics" guide has been corrected to show the message TAU0163E as TAU0163S.

  2787621 (1095462)
- The description for the MULTI-NESTED topic under DB2 Compiler Directive Options was incorrect.

  2783274 (1094953)
- The BMS Painter .bmsx output file was not documented.

  2782860 (1094902)
- The topic about the ILSMARTLINKAGE Compiler directive in the product help now includes information about the get_Reference() method (JVM COBOL) and the .Reference property (.NET COBOL) that the classes and types generated with ILSMARTLINKAGE produce. If you pass such a class or type as a

parameter to a program that receives it "by reference", you need to use the "by reference" object by specifying the get_Reference() method or .Reference property, respectively. This returns an object that encapsulates the ILSMARTLINKAGE parameter so it be used with a method that is declared as "by reference". You also need to use get_Reference() or .Reference with the RunUnit:Call() method.

2779516 (1094514)

- The product help now includes an overview of the Eclipse IDE in **Welcome > Introduction to Eclipse** and provides information about how Working Sets work - when you are have enabled a Working Set, Eclipse performs a full build of the projects that are part of that working set or have a file that is part of the working set.

2694881 (1094169)

- The setup file installs the product and any missing third party software, and will install the Java 7 Update 27. This information is now included in the *Software Requirements* section of the product help.

2785427 (1095199)

- The setup file installs the product and any missing third party software, and will install the .NET Framework v4.0. This information is now included in the *Software Requirements* section of the product help.

2672774 (1095057)

- The Release Notes for Enterprise Developer now state correctly that the supported versions of Visual Studio are 2010 and 2012.

2785664 (1095227)

- The list of DLLs to copy to execute a stored procedure for DB2 in PL/I has been amended to include the most current list.

Enterprise Analyzer Integration

Back to the list

- An issue with the DISPLAY ... LINE statement being unable to process expressions has been fixed.

Eclipse IDE

Back to the list

- When importing Net Express projects, any BMS Compiler directives from the original Net Express project are now correctly transferred and set on the Eclipse project.

2790264 (1095847)

- Executing the "Determine Directives" command on a project with a build configuration that has the "Override project COBOL settings" option enabled now sets the dialect at both build configuration and project level.

2790210 (1095782)

- The IDE now prevents adding remote folders as linked folders to a remote project unless both the folders and the project are on the same connection. For samba-style projects, it is not possible to map the project to the samba drive.

2789973 (1096026)

- When importing a Net Express project which has multiple INT and GNT targets into Eclipse, the IDE no longer creates separate projects for each INT or GNT target. Eclipse now creates a single project for all INT/GNT targets and will appropriately select or deselect the file-specific option to generate the .gnt file.

2789861 (1095749)

- Previously, when an Assembler program was added to a project as a linked resource, the build failed to compile and produce executables if the actual Assembler file was missing.

2788580 (1095669)

- When running or debugging a project, the Console Size settings on the Run-time Configuration page within the project's properties was ignored.

  2786714 (1095307)
- You can specify additional object files when linking an application and when the Eclipse build configuration output path is set to a linked directory.

  2781741 (1094863)
- You no longer receive a "Graphic is disposed" error when opening a COBOL file from a CA SCM/ Harvest.

  2779498 (1094643)
- You no longer receive error messages for missing copybook files in COBOL projects if they reference COBOL Copybook projects that are stored in a Jazz source control system.

  2697816 (1094507)
- If a COBOL project is specified in a debug launch configuration, the IDE will only build this project and its referenced projects before launching the configuration. Previously, the IDE performed a full rebuild of all projects in the workspace except when you launched a project as part of a COBOL Application configuration that had the "Program is part of project build configuration" option checked.

  2695131 (1093912)
- It is now possible to build JVM projects on remote machines and to use 64-bit JREs to launch COBOL JVM classes.
- This release provides support for remote JVM COBOL projects and for launching the output classes using a 64-bit JRE.

ES Cluster

Back to the list

- In a clustered configuration of Enterprise Server, on some platforms, MFCS could crash during startup of an enterprise server instance due to attempting to process communications with the cluster manager before initialization was complete.

File Handling - External File Handler

Back to the list

- An automatic close of a file opened in a container no longer causes a rollback.

  2790362 (1095956)
- Previously, a file could be left with its integrity bit set to transactional if a process included a mix of transactional and non-transactional opens and the last close of the file was a non-transactional one.

  2785682 (1095657)
- The transaction log now correctly shows the timestamp for the prepare, commit and rollback operations.

  2784948 (1095162)
- If a VSAM file is opened for an OUTPUT in a RANDOM/DYNAMIC access mode, the file virgin state is changed to a non-virgin even if no records are written to it. If the file is opened for an OUTPUT in a SEQUENTIAL access mode, its virgin state is retained.

  2781975 (1094779)
- The MFALLOC_PCFILE environment variable now works as expected. Previously, it would be bypassed when the ES_ALLOC_OVERRIDE environment variable was also specified.

  2692290 (1093977)
- During Open OUTPUT of a VSE VSAM reusable file, with DISP=OLD, the file is no longer reset; the file is opened in EXTEND mode.

  2638640 (1089073)

File Handling - Sort / JCL Sort

Back to the list

- You no longer receive a SORTOUT RECFM 'VB' invalid message in situations where all the files are 'FB'.

  2791516 (1096010)
- Edited PD fields no longer corrupt when MFJSSTRICTSORT is set.

  2787824 (1095518)
- The FTOV parameter now works as expected when sorting data sets that specify RECFM=VBS.

  2785814 (1095223)
- MFJTOOL now correctly displays ZD and PD fields.

  2781909 (1094865)

HCO for Microsoft SQL Server

Back to the list

- When trying to compile an OpenESQL program with an invalid combination of the BIND ACCESS and DBRMLIB Compiler directives, you now receive an error message.

  2694907 (1093864)
- The HCOSS Data Transfer tool now supports SQL Server 2014. The executable for SQL Server 2014 for the command line is: mfdatatransferctlr14.exe.

JVM - Compiler

Back to the list

- The INSPECT CONVERTING statement, when applied to DBCS data, now produces the expected results when compiling to JVM COBOL.

  2784715 (1095080)
- A STRING statement that has contiguous literal operands with a total length of more than 8192 bytes no longer causes system errors during compilation.

  2700765 (1094513)
- When compiling JVM COBOL, moving subscripted operands to multiple targets now works as expected.

  2695442 (1093923)
- Previously, with JVMGEN on, the Compiler was failing to compile a program that includes a working-storage section with a very large number of VALUE clauses. Although this may still happen in some cases, the incidence of problem programs has been greatly reduced.

  2693676 (1094165)

JVM - Run-Time System

Back to the list

- Previously, when compiling an application with the JVMGEN Compiler directive and the application included a large number of "value" clauses in the working-storage section, the "value" clauses were not always.

  2784025 (1095274)
- Negative single digit results no longer evaluate to zero.

  2696486 (1094062)

MF Communications Server

Back to the list

- - You no longer receive memory leaks in the MFCS process for CICS Web Interface servers.

  - The MFCS process may fall behind in task processing if the Enterprise Server region handles a heavy load of quick transactions arriving from multiple clients. In this case, you may experience a gradual decrease in throughput. To check whether this problem exists, you can also periodically check the "Statistics" page for the Communications Process in Enterprise Server Administration, which will display a growing list of tasks waiting to run. To work around this issue, you need to use the new configuration option, "enable mutex sweep", described in the product help.

  2789874 (1095856)
- Certain Enterprise Server administration actions such as notifying a running enterprise server of a security update could cause MFCS to hang.

  2784219 (1095045)
- Requests using the CICS Transaction Gateway or the CICS External Call Interface protocol could hang and time out when running against Enterprise Server 2.2 and 2.2 Update 1, due to an issue that occurred when multiple CTG requests arrived at the server in a short time.

  2681548 (1092656)

MF Directory Server

Back to the list

- The Enterprise Server Administration no longer terminates when trying to display a list of users registered on an external Security Manager.

  2788461 (1095505)
- The 64-bit MFDS is now able to read and write XML configuration data.

MFA Server

Back to the list

- This release provides a fix for abend 0C4 in XDBWWWM0.

MFA SyncMon

Back to the list

- Previously, PDS members without ISPF statistics caused an error message "Input string was not in a correct format" when processing the timestamp. Now the current time is used. SyncMon2 also downloads the entire PDS every time.

  2783738 (1094996)
- The product now displays a useful error message and not an exception when a user specifies an illegal output.
- Removing a rule from the SM2 dialog no longer causes other rules to be removed from the dialog.

MFBSI

Back to the list

- Support has been added for the Control-M $JULIAN/$GREG/$WEEK# functions using the Control-M expression or variable parameters.

  2698531 (1094301)

MFIO

Back to the list

- Specifying a leading ";" in an environment variable containing a file path no longer results in the file not being found.

  2693286 (1093707)

MTO: CICS ECM/Preprocessor/Translator

Back to the list

- You no longer receive CICS AEIA errors generated on a BMS MAP LOAD.

  2792682 (1096074)

MTO: CICS Emulation

Back to the list

- Passing an invalid program name to a CICS function (such as LOAD, XCTL or LINK) could cause CICS to get into a loop and the transaction would appear to hang. This has been fixed and in such cases, a correct EIBRESP code is returned.

  2786729 (1096085)
- If an error occurs during PLTPI processing, mainframe CICS enterprise servers now display a notification which enables the operator to cancel the startup or ignore the error. The new environment variable ES_ABORT_PLTPI_ERROR provides a limited support for configuring this behavior. Using this environment variable, you can configure an enterprise server to abort the initialisation if a PGMIDERR error or an ABEND occurs during PLTPI. The control is positional: ES_ABORT_PLTPI_ERROR=YN - abort on PGMIDERR ES_ABORT_PLTPI_ERROR=NY - abort on ABEND ES_ABORT_PLTPI_ERROR=YY - abort on PGMIDERR or ABEND

  2785311 (1095152)
- On an EXEC CICS RECEIVE, the BMS field values are now correctly received when a map is not positioned at line 1, column 1.

  2780436 (1094636)
- ASSIGN INVOKINGPROG now correctly returns the name of remote invoking programs. Also, when a program is invoked using an XCTL or a LINK call from a program invoked through a DPL call, the INVOKINGPROG name is now set correctly.

  2780411 (1094631)
- You no longer receive an RTS 114 in dfhebms in a conversational transaction when there is an EXEC CICS DELAY between the SEND and RECEIVE statements.

  2780331 (1094621)
- Trying to access VSAM files using the alternate index (without opening the file first) would previously produce an error.

  2695934 (1094069)
- Previously, the BMS paging overflow condition was raised incorrectly when using trailer maps.

  2694503 (1093880)
- Previously, when a group contained the length and the attribute on the group descriptor but not on the group item, the length and the attribute for all items of a group was always being taken into an account.

  2685387 (1093120)
- When a system abend is issued, the process should terminate normally cleaning up temporary files and releasing resources (this is known as a soft-kill). If the process cannot be ended normally, casmgr terminates it without performing a clean-up and releasing resources (this is known as a hard-kill) and

also issues a console notification. If the "dump on System Abend" option in ESMAC is enabled, this also produces a dump file with information about the system abend.

2652085 (1093330)

MTO: CICS ESMAC

Back to the list

- You can now use the environment variable ES_DISABLE_DFLTUSR_SIGNON to control default user signon to ESMAC: if set to 'Y' or 'y', then the default user is not used, and the SIGNON screen is presented for the user to sign on.

  2649506 (1090376)

MTO: CICS Supplied Transactions

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- When installing an FCT and the file had previously been installed, the entry in the alpha chain was not deleted which would then corrupt the chain.

  2675650 (1092077)

MTO: IMS DB

Back to the list

- When an IMS application compiled as EBCDIC issued an INIT STATUS call, the DB PCB status codes were incorrectly initialized to ASCII spaces.

  2789287 (1095804)
- If a data scrape is required for a database as part of the automatic rollback recovery, the time when the data scrape started and when it ended will be recorded in the ROLLBACK.LST file.

  2784951 (1095117)
- When using the IMS feature LOCALDLI, the DB position was lost when a DLI or a DBB application switched to another PCB, then issued a DB call and then returned and issued a get-next call.

  2698794 (1094555)
- When using IMS DB with XA resource manager(s), there is no longer a small window of opportunity for mixed results if the IMS DB Control process crashed between the last DB call from an application and the commit.

  2694104 (1093779)

MTO: IMS MFS

Back to the list

- The DPM device type is not supported and, if found in the MFS source, MFSGEN used to fail. The generate process should not abort in such cases so, instead, you now receive a warning message that these types of devices are not supported, and MFSGEN will continue for the other device types in the source file.

  2790130 (1095760)
- Output screen fields will now be padded correctly. In order to apply the fix, you must regenerate the MFS sources. The rules for padding are that any FILL characters specified on the DPAGE macro always take precedence over any FILL characters specified on the output MSG macro. If no FILL characters are specified, the default behavior is to pad with the SPACE.

  - DPAGE must specify FILL=NONE in order for FILL characters from the output MSG macro to take effect.

- FILL=NULL means that no padding is done. If a NULL character (default is X'1A') is moved to the first byte of an output field, no padding is done. This mimics mainframe behavior. If the NULL character is moved to any other position in the field, then padding is performed after that NULL.

  2695885 (1093971)

MTO: IMS Other

Back to the list

- When a batch program defined with the processing option GO opened an IMS database in read-only mode before any other access, the database was incorrectly opened exclusively.

  2789746 (1095709)

MTO: IMS TM

Back to the list

- Receiving IMS Connect requests with no data (for example, acknowledgement (ACK) messages) no longer produce a Run-Time System error.

  2794885 (1096358)
- Issuing a /STOP USER command from ESMAC no longer results in an RTS 114 error.

  2790030 (1095747)
- You can now use the ES_IMS_SYSABEND_RESTART_TRAN environment variable to configure the IMS feature of automatically restarting aborted transactions after an Enterprise Server system abend. Set ES_IMS_SYSABEND_RESTART_TRAN to "Y" to enable transaction-restart or to "N" to disable it. By default, transaction-restart is enabled.

  2784980 (1095125)
- You no longer receive an error RTS200 after performing an IMS logon twice as the same user.

  2784536 (1095066)
- Heavy IMS Connect traffic no longer causes the IMS message queue to fill up abnormally.

  2782816 (1094887)
- In ESMAC, changing the Codeset property of an IMS transaction from EBCDIC to ASCII is now processed correctly.

  2780468 (1094826)
- CASTMC no longer crashes when the ES_OTMA_TIMEOUT variable is specified.

  2699870 (1094445)
- Using an express alternate PCB to do an insert no longer causes an incorrect DFS2082 message.

  2685153 (1093050)

MTO: JCL ESMAC

Back to the list

- Using the JCL OUTPUT statement to specify a class for a spool file no longer leaves the "active" cesspool present after the job has ended.

  2792943 (1096043)
- Previously, on the JES spool screen in ESMAC, if an automatic refresh was set up, the screen would revert to displaying the contents of the Output queue after a refresh even if the radio button for another queue was selected and showing as enabled on the screen.

  2785064 (1095144)

MTO: JCL MVS

Back to the list

- An error when reading data from SYSTSIN in an IKJEFT job, which caused an execution loop, has been corrected.

  2787712 (1095763)
- A problem that caused a DD override to be applied to the wrong procedure step when duplicate procedures were used has been corrected.

  2786158 (1095283)
- All system abends of the format S<x>22 (except S722) cause the system to terminate the job step and bypass successive steps. For example, when executing an IF/THEN/ELSE/ENDIF statement in the JCL, any of the supported system abend codes (except S722) produced on the IF statement will bypass the THEN or ELSE clauses, regardless of any tests on the IF statement. When S722 is produced, the successive clauses are processed as normal.

  2695873 (1093984)
- When running IKJEFT* steps, if a serious file error occurs when reading the command file, the step will exit with a non-zero COND CODE.

  2685678 (1094478)
- An error with JES printing, where the file was being deleted before it had been printed, has been fixed.

  2676540 (1092223)
- A JCL error is always generated when a literal within a JCL stream contains an opening quote but no closing quote. Previously, in certain circumstances, an attempt was made to process such literals, resulting in unexpected behavior.

  2671742 (1092195)
- Using the DLM option on a DD statement sometimes caused problems with processing quotes on the PARM option in a subsequent EXEC statement.

  2648116 (1089458)
- JCL PROCs' variable substitution now works correctly for nested PROCs when the PROCs use the same variable name.

  2511372 (1078961)

MTO: JCL System Catalog

Back to the list

- A problem where JCL sysout showed "€" instead of spaces has been fixed.

  2698575 (1094331)
- Deleting dynamic PDS member files from the catalog did not remove the profile file (*.pro). The file will be deleted now.

  2696480 (1094210)
- You no longer receive intermittent CTF trace error messages in the ESMAC Catalog view page.

  2693148 (1094423)
- PDS libraries now support environment variables in the PCDSN.

  2605606 (1087110)
- When allocating a dataset, if you specify a PC name, the system catalog API checks that PC name. If the name starts with the string "<CATALOGFOLDER>" or with an environment variable, the system catalog API also checks any slashes in the name and, if necessary, automatically changes them to the ones appropriate for the OS system on the machine (Windows or UNIX).

MTO: JCL TSO

Back to the list

- Calling setenv with a field shorter than the maximum allowed for DsnAndDcb no longer results in a Run-Time System error 163.

  2668741 (1091426)

MTO: JCL Utils

Back to the list

- If not specified for SYSUT2, RECFM is now correctly copied from SYSUT1 to SYSUT2.

  2788751 (1095629)
- A problem which caused exclusive locks to be kept inappropriately when allocating a GDG bias has been fixed.

  2787281 (1095459)
- DSNALI now accepts call arguments in EBCDIC format.

  2694219 (1093848)
- Zero length records are now allowed for all variable files. For ESDS and KSDS files, the minimum record length should be at least 1.

  2679809 (1092804)
- The IEBGENER utility was not writing the "number of records copied" to SYSPRINT when SYSPRINT was defined as LSEQ.

  2679194 (1092557)
- Before deleting a spool file, Spool housekeeping now checks that the file does not belong to any active job. Previously, when short retain times were specified, a spool file could be deleted before its parent job had finished.

  2676836 (1092207)
- When emulating the IEBCOMPR utility, the comparison only stops processing when 10 consecutive mismatches are found.

  2662123 (1090743)
- When a LSEQ SYSUT1 file is copied to a SYSUT2 spool file with no DCB, the default RECFM is now correct.

  2658284 (1090437)
- DSNRLI calls to a SIGNON or a CREATE THREAD following a TERMINATE THREAD are now being passed to the switch modules correctly.

MTO: JCL Utils - IDCAMS

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- The IDCAMS REPRO command now allows an empty dynamic PDS member to be used as INFILE, if it is either an existing PDS member, or if it has been opened for OUTPUT/EXTEND/UPDATE.

  2788741 (1095559)
- The LISTCAT LVL command now returns a return code of zero for empty GDG base entries, to emulate mainframe behavior.

  2787482 (1095522)
- IDCAMS ALTER no longer renames the catalog entry of a file if it is not possible to rename the physical file.

  2695027 (1094111)

- The IDCAMS DELETE command now supports the use of wildcard characters when deleting dynamic PDS members.

  2684823 (1094971)
- IDCAMS now processes TSO ALLOCATE statements.

  2581587 (1084939)

NCG

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- Using a "MOVE alphanumeric-item to numeric-item" statement in programs generated with the CHECKNUM directive now correctly results in a Run-Time System error 163 (invalid numeric data) message.

  2796191 (1096340)
- Building programs that use DIALECT(RM) and that contain calls with more than eight parameters no longer fails with a RTS 114 error.

  2788746 (1095583)
- An issue with statements of type "compute edited-item = expression", where expression evaluates to a value larger than the value that edited-item can store, and so truncation is required, has been fixed. This only affected Intel x86 32-bit generated code when the HOSTARITHMETIC Compiler directive was set.

  2782400 (1094841)
- Compiling code that contains alphanumeric intrinsic functions with very long parameters could previously result in an error at generate time. It now generates successfully.

  2782306 (1094942)
- A bug in the MOVE statement where the source item is S9(15)V99 COMP-3 and the target item S9(8)V9(9) comp-3 has been fixed.

  2697129 (1094607)
- The performance of arithmetic with COMP-3 items on the 390 platform has been greatly improved.

  2683340 (1092877)
- Programs that include 8-byte comp/comp-5 variables in a PERFORM loop termination condition, with the OPT Compiler directive specified, now compiles successfully in 32-bit mode.
- An issue with the code generated for alphanumeric moves on Intel x86-32 when the OPT(4) Compiler directive was specified has been fixed.
- You no longer receive an RTS 114 error when processing invalid directives.
- You no longer receive an RTS 200 error in debuggable generated code (.gnt) programs compiled with the amode(31) Compiler directive.
- A problem with setting breakpoints on some EXEC SQL statements has been fixed.

OO Run-Time System (32-bit)

Back to the list

- Native object-oriented programs with multiple methods that use local-storage data now execute as expected.

Open PL/I Compiler

Back to the list

- Performance improvements have been made to the TRANSLATE built-in function when the second and third arguments are string literals or named constants. Performance improvements have also been made to the HEX built-in function.

  2790431 (1095819)

- An incorrect error diagnostic when using DEFINE POSITION no longer occurs.

  2783689 (1094978)
- An incorrect error diagnostic when using DEFINE POSITION no longer occurs.

  2783285 (1094943)
- A problem using the REPEAT built-in when compiling with the -opt compiler option no longer occurs.

  2783206 (1094935)
- You can now specify the maximum FIXED DECIMAL precision. Note that this may affect FIXED DECIMAL calculations.

  2780021 (1094568)
- An asterisk iteration factor in an INIT clause is now ignored when applied to a non-array. For example: DCL SC2 CHAR(3) INIT((*)'A'); INTERNAL: The attachment in the RPI has 3 examples with problems. This specifically addresses the issue with "SC2". The issues with "SC3" and "AR5" are addressed different RPIs, 1095134(SC3) & 1095135(AR5).

  2779481 (1094510)
- The Open PL/I compiler now produces an ERROR-level diagnostic for a scalar item declared with a non-asterisk INITIAL repeat factor.

  2779481 (1095134)
- ON STRINGRANGE and ON SUBSCRIPTRANGE no longer report as unsupported when using -range.

  2699544 (1094353)
- ON STRINGRANGE and ON SUBSCRIPTRANGE no longer report as unsupported when using -range.

  2699544 (1094354)
- A problem with the divide (/) operator during restricted evaluation no longer occurs.

  2699232 (1094307)
- The Open PL/I Compiler now performs Restricted Expression evaluation on INITIAL repeat factors.

  2698703 (1094272)
- DEFAULT RANGE attributes are no longer incorrectly applied to incomplete declarations with FIXED or FLOAT attributes.

  2698702 (1094268)
- The RANGE parameter of the DEFAULT statement now supports multi-letter sequences when applying defaults.

  2698697 (1094265)
- The RANGE parameter of the DEFAULT statement now supports multi-letter sequences when applying defaults.

  2698696 (1094262)
- The DEFAULT statement with an attribute expression is not supported; however, the Open PL/I compiler accepts the following construct DEFAULT (RANGE(simple-spec) & ^PARAMETER) attribute-list ;

  2697197 (1094149)
- When the message limit is exceeded, the EXEC preprocessor now issues the message: mmaxmsgs.pl1 (19,29) : Severe MPLIE00103S : Message limit of nnnn exceeded. Processing terminated.

  2676683 (1092198)
- The OPTIONAL attribute and the OMITTED built-in are now supported.

  2548630 (1082054)
- Links no longer fail on Windows when using ldpli without the -out:filename option on an object file whose file name included spaces. ldpli now correctly creates the .exe with spaces in the file name.
- The -agginit compiler option now applies only to scalar arrays.

- The compiler now diagnoses a subroutine that is invoked as a function. In addition, the OPTIONAL attribute is now supported in a returns descriptor, so that a function can be invoked by a CALL statement.

Open PL/I Debugger

Back to the list

- Previously, if utilizing the new codewatch notifications, it was possible to trigger an ONKEY condition within the CWNOTIF routine which resulted in an infinite loop as it tried to report the ON KEY on unit recursively.

  2693088 (1093591)

Open PL/I Macro Preprocessor

Back to the list

- The PL/I macro preprocessor now supports the use of HEX literals such as 'F1F2F3'x within the PL/I macro logic.

  2780818 (1094659)
- Previously, if a PL/I macro started in a column in the original source code so its generated code would cross the right margin without any appropriate place to wrap the line, you ended up with a broken token. In this scenario, we now correctly mimic IBM's behavior and start the generated macro code on a new line at the left margin.

  2780678 (1094656)
- The PL/I macro preprocessor has been enhanced to support the REPEAT Built-in function.

  2780649 (1094642)
- If using %INCLUDE with a %IF-%THEN and a %ELSE, the macro preprocessor now correctly recognizes the %ELSE and does not issue a syntax error.

  2780619 (1094639)
- If a PL/I macro generated text requiring a RESCAN, and the generated text contains a macro that itself generates text longer than 4096 bytes, a potential memory overwrite no longer occurs.

  2780595 (1094638)
- Previously the PL/I Macro preprocessor parsed but ignored the optional third parameter of the INDEX builtin function. The third parameter is now honored.

  2697198 (1094142)
- A trap no longer occurs when the same %INCLUDE is used multiple times within either a PL/I Program or another %INCLUDE and the -full_list macro preprocessor option is specified.

  2696880 (1094084)
- The PL/I macro preprocessor now allows use of the compound operators +=, -=, *=, and /= within macro assignment statements.

  2695884 (1093972)
- If your source code contains '5B'x, '7A'x or '7B'x characters, the Macro preprocessor no longer replaces them with an ASCII Space '20'x when invoked. The '5B'x, '7A'x and '7B'x characters are allowed to flow through.

  2675830 (1092092)
- A 9/139 error no longer occurs when attempting to open a "DUMMY" JCL DD from within a PL/I Program where there was no DCB specified in either the program, nor in the JCL (other than BLKSIZE).

  2675632 (1092067)
- The Macro preprocessor now finds files when using the -isuffix option and using unquoted %INCLUDE names that already contain an appropriate extension. For unquoted names, the Macro preprocessor

first looks for the name as specified. If not found, it then appends the specified extension and tries again.

- You no longer receive a message "VARIANT() string not defined" if the -variant option is not specified.
- A multi-line comment immediately followed a token with no interceding space no longer causes the %LINE compiler directive to work incorrectly.

Open PL/I Run-Time System

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- The INDEX, VERIFY, and SEARCH built-ins now raise the STRINGRANGE condition when the start position is greater than the length of the string to be searched, and the -range compiler option is used at compile time.

  2780174 (1094585)
- The SIZE condition no longer generates a SIGSEGV when raised for an assignment statement.

  2699368 (1094329)
- Previously, the FILEDDINT() built-in function returned the logical record length for variable length files (RECFM=V). It now returns the physical record length.

  2679693 (1092483)
- Line spacing now matches the behavior of z/OS when a LINE(1) format item follows a PAGE format item.

  2673335 (1091862)
- Spacing when using LINE(1) in a PL/I program now matches the behavior when running the program on z/OS.

  2673335 (1091863)
- A PUT EDIT statement using the LINE(x) format item when there is unflushed data in the stream buffer no longer causes an incorrect calculation of the number of lines to move forward. Previously the LINE(x) format item did not account for unflushed data that might increment the line when flushed to disk.

  2673335 (1091864)
- The LINENO() built-in function no longer returns a value that differs from what is returned on the mainframe.

  2638051 (1088614)
- A trap no longer occurs when calling PLIDUMP with the linker option set to /PDB:none. Setting the linker option /PDB:none is not recommended with PLIDUMP as it greatly impacts the ability to walk the stack and generate diagnostics.

  2604011 (1086995)
- Using GET EDIT on a line sequential input file containing blank lines of zero length no longer skips the first line.
- When using a PUT EDIT with an F format item that was too small for a FLOAT BIN() number, the OVERFLOW condition was erroneously raised instead of SIZE. SIZE is now raised in such scenarios but only if enabled.
- Evaluating the contents of a CHAR VARYING variable while running in -bigendian mode on a little endian platform no longer results in incorrect quotes showing the end of the string, incorrect length reporting in the debugger. Using the LENGTH built-in still worked properly for the same function. Only the debugger function did now work properly.

Open PL/I SQL Preprocessor

Back to the list

- A new exit enables users to suppress or change the severity of error messages. Contact Micro Focus SupportLine if you need this functionality.

2787987 (1095485)

- The DB2 pre-compiler now supports host variable names greater than 31 characters for PL/I.

2783693 (1094980)

- The DB2 pre-compiler no longer generates the wrong code for SQL INSERT statements that result in MPLIE0995S compile errors depending on which program was used to compile application.

2783344 (1094989)

- A problem using the LIKE attribute with a BLOB (Binary Large Object)no longer occurs.

2783284 (1094941)

- Restricted expression evaluation involving MAXLENGTH of a CHAR VAR BIGENDIAN data item no longer causes error MFPLI02000A.

2783281 (1094940)

- Compiler diagnostics for EXEC statements in generated PL/I code now reflect the correct line number.

2685591 (1093083)

- PL/I functions now work with EXEC SQL statements as expected.

2681499 (1092667)

- The macro preprocessor inappropriately generated extra blank lines when -margins 1,250 was used in place of the default or 2,72. This behavior caused inaccurate line numbering in the debugger and made the source appear out of sync with the debugger.

Run-Time System

Back to the list

- You can now use a configuration file that has a spacey filename to start Audit Manager as a service.

2785459 (1095200)

- The debugger now displays correctly the content of non-ASCII characters in programs compiled with the CHARSET(EBCDIC) Compiler directive.

2782246 (1094947)

- In some situations, the processing of a Run-Time System error in an Enterprise Server container could cause the container to hang or crash. This has been fixed.

2690883 (1094783)

- PL/I CICS error handling is now fully supported.

Setup Issues

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- The mfsupport permissions have been modified so that any user with access to the product can now run mfsupport.

2781319 (1094713)

SQL: Cobsql

Back to the list

- COBSQL now correctly processes source lines that only contain a single character at column 72.

2781493 (1094727)

- COBSQL now correctly processes SQL statements with continuation lines.

2781299 (1094716)

SQL: DB2 ECM

Back to the list

- A new directive option, DB2(ALEBRA), has been added to the DB2 ECM preprocessor to prevent ASCII/EBCDIC translation of host variables used in SQL statements. DB2(ALEBRA) is applicable only when using the EBCDIC character set and the Alebra Remote DB2 Access software.

  2789897 (1095736)
- Programs using SQL TYPE AS CLOB compiled with host variables were flagged with COBCH0233S Compiler error because the reserved word "AS" is not supported in mainframe dialects such as Enterprise COBOL. The DB2 pre-compiler now resolves this by adding "AS" as a valid reserved word.

  2698988 (1094584)
- While editing the source code in the IDE during syntax checking, the DB2 pre-compiler sometimes generated incorrect error messages for DECLARE CURSOR statements if they were defined in the WORKING-STORAGE section when the DB2 BACKGROUND PARSING option was set to NONE.

  2698133 (1094267)
- COMP-3 host variables prevented the porting of JVM COBOL object code between machines with different byte ordering architectures.

  2695871 (1094325)

SQL: HCO for SQL Server

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- SQL decimal result columns with a maximum precision of 38 could not be retrieved.

  2698172 (1094215)
- The HCOSS data conversion tool did not support mainframe DB2 tables and corresponding indexes that were created under different schemas.

  2696111 (1094539)
- HCOSS did not correctly extract mainframe syssequence table entries with MAXVALUE greater than 31 digits.

  2696106 (1094067)
- When HCOSS converts DB2 TIME() functions, the seconds component will now be truncated rather than rounded in order to match mainframe behavior.

  2692917 (1093579)
- HCOSS now supports DB2 multi-row INSERT statements.

  2683979 (1094036)

SQL: OpenESQL

Back to the list

- The OpenESQL preprocessor incorrectly terminated a host variable lookup resulting in a COBES0109 error.

  2795391 (1096265)
- Using a SQL Server fast forward cursor with an ODBC driver that does not support MARS caused a rollback when the cursor was closed.

  2793798 (1096126)
- Applications migrated from earlier products that used the tokens ON and ROW_NUMBER as column names in SQL statements were compiling with errors.

  2793301 (1096088)

- The OpenESQL preprocessor produced a compilation error for EXEC SQL select ... INTO <TableName> ... END-EXEC.

  2792715 (1096102)
- The OpenESQL runtime for ADO.NET was incorrectly returning the native database error in SQLERRD(1).

  2790152 (1095758)
- A problem fetching decimal columns using OpenESQL for ODBC in locales where the decimal point is not '.' has been fixed. In addition, to optimize performance for the majority of ODBC applications, the default setting for SQL(DECDEL) has been changed from NODECDEL to DECDEL=LOCAL. Use an explicit SQL(NODECDEL) directive for Windows applications that change the effective locale dynamically at runtime.

  2788986 (1095766)
- The insertion of values larger than 8000 characters from a PIC X host variable into a SQL Server VARCHAR(MAX) column caused an error.

  2787574 (1095428)
- Some valid ODBC SQL expressions caused the OpenESQL preprocessor to issue errors when it encountered a 'BY' token.

  2787068 (1095429)
- Valid SQL "PARTITION BY" clauses caused compiler errors when using OpenESQL.

  2786991 (1095386)
- Performance of the OpenESQL runtime system for ODBC required improvement when fetching character data.

  2785410 (1095165)
- The OpenESQL preprocessor generated invalid code resulting in undefined ECM error code 302 when an array host variable was mixed with regular host variables in a parameter list in the EXEC SQL CALL statement.

  2785284 (1095354)
- A memory leak occasionally occurred when multiple prepares of the same dynamic SQL statement existed in the OpenESQL JDBC runtime system.

  2784039 (1095123)
- The OpenESQL preprocessor incorrectly interpreted the SQL CONCAT character as DBCS when using SQL(CONCAT=124) for the CONCAT character, resulting in compilation error.

  2783615 (1094981)
- When compiling for ODBC, the OpenESQL preprocessor now generates an error message, COBES0123, when it encounters an EXEC SQL statement that contains a host or indicator variable that uses a subscript. Subscripts of this type are not supported in ODBC.

  2781022 (1094686)
- The GEN-HV-FROM-GROUP SQL compiler directive option intermittently caused truncation of SQL VARCHAR data type occurrences.

  2780748 (1094649)
- SQL(CHECK) caused compilation errors when compiling source programs containing DBCS characters in column names. Programs containing DBCS characters in column names that were compiled using SQL(NOCHECK) caused runtime errors.

  2780185 (1094588)
- The GEN-HV-FROM-GROUP compiler directive option has been added to the OpenESQL preprocessor to support the selection of multiple levels in a group item. Specify SQL(GEN-HV-FROM-GROUP) when compiling to generate host variables for each elementary definition in a group record.

  2699622 (1094395)

- OpenESQL for JDBC did not correctly open insensitive cursors.

  2699442 (1094415)
- OpenESQL Assistant was inconsistently inserting the query function in the "B" area for queries and column 8 for other code.

  2697908 (1094190)
- The OpenESQL preprocessor sometimes incorrectly defined host variables when an indicator variable array was used with an SQL statement.

  2696332 (1094052)
- You no longer receive errors when parsing Oracle INTERVAL expressions.

  2694071 (1094337)
- A problem that prevented a COBOL stored procedure from being called from a nested trigger has been fixed.

  2690749 (1094042)
- The restriction that program names in an application must be unique in the first 24 characters in order for OpenESQL to handle cursors correctly has been increased to 30 characters. This is to restore backwards compatibility with earlier Micro Focus products.

  2685901 (1093808)
- HCOSS now provides better control for ODBC applications that use data that: o Uses the DATE and TIME formats specified by SQL(DATE) and SQL(TIME) o Is stored as character data in the database You can now do any of the following: o Specify host variable types to use with DETECTDATE. o Set the ODBC runtime to determine parameter data types by querying the server (this option uses additional runtime overhead). o Tag string literals in SQL statements with special SQL comments that specify the type of literal. With this option, literals tagged with /*#CHAR*/ are not reformatted when SQL(DIALECT=MAINFRAME) is set.

  2685625 (1093540)

Unassigned

Back to the list

- A channel created by a program invoked by a CALL statement is now visible to the programs running at the same level.

  2698335 (1094225)

Web Service Client

Back to the list

- Namespaces not declared on the schema root, i.e. declared either with an element declaration or on the WSDL root, will now be processed properly and no longer ignored.

  2583853 (1085102)

XDB Server

Back to the list

- XDB Server now supports a value of up to 256G for the PIECESIZE clause on a CREATE INDEX statement.

  2784918 (1095176)
- The syntax compatibility of "partition by size every integer G" in the CREATE TABLE SQL statement has been fixed.

  2784917 (1095177)

- The MAXPARTITIONS clause is now allowed on CREATE TABLESPACE statements.

  2784916 (1095178)
- The DATACLAS clause is now supported on CREATE STOGROUP statements.

  2784915 (1095179)
- You now receive correct results when certain SQL statements are used with CASE and ORDER BY on the projection.

  2781926 (1094773)
- You can now use the reserved word DOCUMENT in SQL statements as an identifier.

  2781673 (1094744)
- XDB server threads no longer exclude themselves from executing. Previously, this happened as a result of conflicts with rapid sequence update operations.

  2695974 (1094282)
- A problem where CICS SEP processes would run out of SQL Option cursors has been resolved.

  2693104 (1093639)
- A problem where a large number of concatenations could cause an XDB engine stack overflow has been resolved.

  2686565 (1094072)

XDB: Problems not classed above

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- Bootstrapping now assumes SBCS and conversion to Unicode tables is handled automatically.

  2699728 (1094431)

XML syntax support runtime

Back to the list

- The HTMLPP preprocessor now handles copybooks with filenames longer than eight characters correctly.

  2783315 (1095092)

zServer General

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- zServer now works on z/OS with JES3.

  2786009 (1095541)
- The "Show in table" menu option in AWM and zServer now displays ISPF member statistics for a PDS.

  2783831 (1095026)
- This release provides a new exit, TAURXMSG, that enables you to tailor the severity and disposition of messages.

  2783294 (1094936)
- It is now possible to allocate PDS/Es using DSNTYPE=LIBRARY on the DD statement.

  2783058 (1094920)
- A descriptive message is now produced if the user does not have access rights to an archived data set.

  2783057 (1094919)
- Attempts to free an unallocated data set are now ignored; no error message is produced.

  2783056 (1094918)

- It is now possible to allocate data sets when specifying RECFM=U.

  2783054 (1094917)
- A FREE command following an ALLOC in the same XML document now executes as expected.

  2783052 (1094915)
- It is no longer possible to issue a GETDATA ENQ=Y twice on the same member.
- MODIFY commands will still be accepted after a LIMITED scheduler rejects a STOP command.
- A user server now uses its STOKEN and not ASID to find its port. This is to help avoid problems when the ASIDs have already been reused.

zServer Scheduler Task

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- The Taurus scheduler no longer abends 0C4 if the wrong CCSID is specified in the AWM client.

  2788684 (1095695)
- Systems that have a SYSNAME of less than four characters no longer produce abend code S806.

  2786009 (1095267)
- An issue with port checking has been resolved. The user server start-up timeout delay value has been increased to enable the server to start correctly.

  2699238 (1094311)
- The zServer port check functions now work with z/OS 2.1.
- If the scheduler crashes while you are editing an ISPF member and all the SPFEDIT enqueues are lost, it is no longer possible to save the data. This is to avoid overwriting the data.
- Using a PUTDATA command without a previus GETDATA ENQ=Y no longer produces an error message.
- GETDATA commands with ENQ=Y no longer cause an abend 013-18 when the member does not exist.
- JSTATUS command responses no longer occasionally contain null characters.
- Using the zServer SUBMIT function no longer causes an abend 0C4.
- z/Server now returns a null member XML element when a member is not found in a PDS concatenation.
- You now receive a correct error message when a sequential data set is specified in a FINDMEM command.

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 WebSync service, where you can download fixes and documentation updates.
- The Knowledge Base, a large collection of product tips and workarounds.
- Examples and Utilities, including demos and additional product documentation.

To connect, enter *http://www.microfocus.com* in your browser to go to the Micro Focus home page.

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.

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 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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