Micro Focus Enterprise Server 2.2 Update 2

Release Notes

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Contents

Micro Focus Enterprise Server 2.2 Update 2 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 Server Variants and Deploying Applications

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

You can install and use both Enterprise Server variants with the same license.

You can only deploy applications to the specific variant of Enterprise Server that is targeted by the Enterprise Developer variant used to build the applications. For example, if you build your application using Enterprise Developer for Visual Studio 2012, you can only deploy the target files to Enterprise Server 2012. The application will not run in Enterprise Server.

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.

Installation

Installing on Windows

System Requirements for Enterprise Server for Windows

Hardware Requirements

The disk space requirements are approximately:

Platform	Enterprise Server	Sentinel RMS License Manager
x86 Windows platforms	250MB	25MB
x64 Windows platforms	350MB	25MB

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

Operating Systems Supported

The following platforms are supported:

For a list of the supported operating systems, check the *Product Availability* section on the Micro Focus SupportLine Web site: *http://supportline.microfocus.com/prodavail.aspx*.

Note:

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

Software Requirements

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

Before installing this product, you must have the following software installed on your computer:

- The Microsoft .NET Framework - the setup file installs Microsoft .NET Framework 4 with Enterprise Server, .NET Framework 4.5 with Enterprise Server 2012. You might need to install the following version of the .NET framework manually, if it is targeted by your applications:
  - Microsoft .NET Framework 2 - if your applications use the ILCLR(2) Compiler Directive or if they target the .NET Framework versions 2, 3 or 3.5. You might need to download these installers depending on the .NET Framework you are targeting.

    To download the Microsoft .NET Framework 2 *click here*.

    Microsoft .NET Framework 2 or later is also required for the Micro Focus License Manager if you install this on a separate machine as a license server.
  - Microsoft .NET Framework 4.5 might be required for COBOL applications created with Visual Studio 2012.
  - Microsoft .NET Framework 4.5.1 might be required for COBOL applications created with Visual Studio 2013.

Note:

- .NET Framework 3 is provided with Windows Vista and Windows Server 2008.
- .NET Framework 3.5 is provided with Windows 7 and Windows Server 2008 R2.
- .NET Framework 4.0 is provided with Windows 7 and Windows Server 2008 R2.
- .NET Framework 4.5 is provided with Windows 8 and Windows Server 2012.

- Microsoft's Web Platform Installer 2.0 if your application targets ASP.NET 4. This installs and sets up ASP.NET. To download the installer *click here*.
- A Web browser is required for Enterprise Server Administration in Enterprise Server.

  To use your Web browser offline, you need the dial-up networking feature of Windows installed. Otherwise you might have TCP/IP errors such as being unable find "localhost" or the numeric equivalent (127.0.0.1).
- To use Enterprise Server Administration, scripting or JavaScript support must be enabled in your browser. This is on by default in Internet Explorer in most Windows operating systems. Also, active content must be allowed and not blocked. To enable both these in Internet Explorer:

  1. Click **Tools** > **Internet Options**.
  2. On the **Security** tab, click **Custom Level**. In the **Scripting** section, under **Active Scripting**, click **Enable**.
  3. On the **Advanced** tab, scroll down the list to the **Security** section, and ensure the item **Allow active content to run in files on My Computer** is checked.
- Enterprise Server Help requires the Java Runtime Environment on some Windows systems to enable the Search facility to work.

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 Server features, you might be required to obtain and install additional third-party software in addition to the prerequisite software installed automatically by the Enterprise Server 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

Database Access

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Before you can use Enterprise Server to deploy SQL applications developed with OpenESQL, DB2 ECM, or COBSQL, ensure any third-party software prerequisites are installed and the environment is set properly. Refer to the your product help, **Welcome > Product Information > Installing... > System Requirements... > Additional Software Requirements > Database Access**, for details.

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.

WebSphere MQ

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IBM WebSphere MQ version 7 and later.

Installing Enterprise Server for Windows

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 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
- Enterprise Server and Enterprise Server 2012 cannot coexist on the same machine.
- Enterprise Server and Enterprise Server cannot coexist on the same machine.

Installation Restrictions and Requirements

Before starting the installation, you should consider the following:

- If you are installing this as an upgrade, make sure that none of the product files are in use when you start the installation.
- You need to be logged in with a user-ID that has write access to the registry structure under HKEY_LOCAL_MACHINE, HKEY_CLASSES_ROOT, and HKEY_CURRENT_USER so the installation software can set the environment appropriately. You also need to be logged on with Administrator privileges.
- Before installing this product, make sure that any existing Micro Focus Directory Server (MFDS) or CCITCP2 Windows service (on Windows) or a process (on UNIX) from an existing product is stopped and uninstalled. On Windows, do this as follows:

  1. Stop the MFDS and CCITCP2, using either the Windows Service Management Console GUI (`services.msc`) or from a command line prompt by typing:

     ```
     net stop mf_ccitcp2
     ```

     Only one instance of the MFDS or CCITCP2 service can run on a Windows machine.
  2. Uninstall the MFDS or CCITCP2 service.

     For MFDS, from a command line prompt enter: `mfds -u`

     For CCITCP2: `ccitcp2 -u`

  To run an earlier version of MFDS as a service after you have installed a later version:

  1. Stop and uninstall the MFDS service, as described above.
  2. Reinstall the earlier version, as follows:
     a. Open an Enterprise Server command prompt.
     b. Install the service. Enter the following command: `mfds -i`
     c. Start the service. Enter the following command: `net start mf_ccitcp2`

     Note: The two versions use different paths for environment and registry values, so the list of configured enterprise servers might be different depending on which version has been started, since, by default, different MFDS data repositories are used.

  MFDS 5.1 and later are able to import or use Enterprise Server configuration data generated by earlier versions of MFDS, but 5.0 or earlier versions of MFDS might not be able to read data generated by later versions.

It is possible to run MFDS from a command prompt ("mfds") rather than as a service, but by default the "mfcobol" port is used (86) and this can only be used by one process at a time

Installing as an Upgrade

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

Important:

- 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.

Before installing, check *Installation Restrictions and Requirements*.

Installing

Note: See *Installing as an Upgrade* first for important information when upgrading an existing installation of Enterprise Server.

These are the steps to install this product:

1. Run the `es2010_222.exe` file and follow the wizard instructions to install the prerequisite software and the product.

   The setup file will also install any missing prerequisite software as listed in the topic *Software Requirements*.

Note: The respective installation file for Enterprise Server 2012 is`es2012_release.exe`.

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 Server but you can install it if you wish.

Enterprise Server Installation Options

To install Enterprise Server you run `es2010_222.exe` which contains a number of product `.msi` files (Windows Installer packages). When run, `es2010_222.exe` performs some initial system checks then sequentially installs the `.msi` files.

Note: This document only uses the filename of the executable for the product variant you have installed - `es2010_release.exe`. For Enterprise Server 2012, the filename is `es2012_release.exe`.

`es2010_222.exe` can take a number of parameters, enabling you to specify a number of different types of installation:

- Standard Installation

  Format:
  `es2010_222.exe`
  Summary:
  Full installation including License Manager and Enterprise Server. During installation you can specify options including the location to which the components are installed.
- Non-interactive Installation

  Format:
  `es2010_222.exe /passive`
  Summary:
  Full installation, but the components are installed non-interactively using default options and directories.
- Silent Installation

  Format:
  `es2010_222.exe /q`
  Summary:
  Full installation, but the components are installed non-interactively with no user interface, using default options and directories.
- Modified Silent Installation

  Format:
  `es2010_222.exe /q InstallFolder=d:\cobolrts`
  Summary:
  Full installation, but the components are installed non-interactively with no user interface, and Enterprise Server is installed to `d:\cobolrts`.

To see what parameters you can use, execute the following from the command line: `es2010_222.exe /?`.

Note:

- Log files that are created during installation are saved in the folder specified by the TEMP environment variable. To change the location or name of the files, use the /log parameter on your setup command line and specify the path and file name, for example: `filename /log d:\temp\log.txt`. This creates a log file, named `log.txt`, in the `d:\temp` directory.

After Installing

To open the help on versions of Windows 7 and earlier, select **Start > All Programs > Micro Focus Enterprise Server > Documentation** from the Windows Taskbar.

On Windows 8, right-click at the bottom of the Start screen, and click **All apps** to display all available links for this product. In the Enterprise Server section, click **Documentation**.

This starts the documentation for Enterprise Server in the online Micro Focus Infocenter. From the left hand pane, select **Enterprise > Micro Focus Enterprise Server**.

Note: For applications created with earlier Micro Focus products or earlier versions of Enterprise Developer, note the following:

Database Access

Managed applications using SQL(DBMAN=ODBC) that were compiled in Enterprise Developer 2.1 Update 1 must be recompiled in Enterprise Developer 2.2 Update 2.

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 Visual Studio 2010* 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 */
```

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

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 Server and Micro Focus License Administration. Uninstalling only Enterprise Server 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
```

Installing on UNIX

System Requirements for Enterprise Server for UNIX

Hardware Requirements for Enterprise Server

The disk space requirements 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	334	1.34	668	33
HP IA	707	2.83	1414	61
System Z running Red Hat Linux	289	1.16	578	34
x86-64 running Red Hat Linux	298	1.19	596	40
System Z running SuSE SLES	293	1.17	586	34
x86-64 running SuSE SLES	303	1.2	606	40

Operating Systems Supported

For a list of the supported operating systems, check the *Product Availability* section on the Micro Focus SupportLine Web site: *http://supportline.microfocus.com/prodavail.aspx*.

Software Requirements

Before installing this product, you must have the following software installed on your computer:

- 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:

  glibc-*.x86_64
  glibc-*.i686
  libgcc-*.x86_64
  libgcc-*.i686
  libstdc++-*.x86_64
  libstdc++-*.i686

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

  glibc-*.s390
  glibc-*.s390x
  libgcc-*.s390
  libgcc-*.s390x

  Additional libraries for Micro Focus Enterprise Developer Unix Components

  glibc-devel-*.s390
  glibc-devel-*.s390x

  Visit the *Red Hat Web site* for more information.

- Oracle's Java Platform, Enterprise Edition (Java EE) 6 or Java 7 is required 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*.

Before you start the installation, you need to set the environment as follows:

- You need to set the LANG environment variable to pick up localized messages. The LANG settings are English and Japanese only.
- The Java Development Kit (JDK) is required for compiling Java. The JDK is downloadable from *www.oracle.com*. After installing the JDK, you must put the tools.jar file for the JDK on your classpath, using a command similar to:

  ```
  set classpath=jdk-install-directory\lib\tools.jar
  ```
- JavaScript or scripting support must be enabled in your browser, so that Enterprise Server Administration is usable. Also, active content must be allowed and not blocked.

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 Linux and UNIX

To ensure full functionality for some Enterprise Server features, you might be required to obtain and install additional third-party software in addition to the prerequisite software installed automatically by the Enterprise Server setup file. The following information specifies the third-party software required for each feature.

- *Application server support for JVM COBOL* on page 14
- *Application server support for interaction with Enterprise Server* on page 15
- *Database Access* on page 16
- *Java Beans* on page 16
- *Java Development Kit (JDK)* on page 16

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 6.1	1.6 / 1.7	Servlets 2.5
WebLogic 12.1.1	1.6 / 1.7	Servlets 2.5

Application Servers	JDK version	Containers support version
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

Feature/ Platform	JBoss 5	JBoss 6	Websphere 7.0	Websphere 8.0	Websphere 8.5	Weblogic 10	Weblogic 12
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

Eclipse IDE development is supported for Red Hat and Windows only.

Database Access

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Before you can use Enterprise Server to deploy SQL applications developed with OpenESQL, DB2 ECM, or COBSQL, ensure any third-party software prerequisites are installed and the environment is set properly. Refer to the your product help, **Welcome > Product Information > Installing... > System Requirements... > Additional Software Requirements > Database Access**, for details.

Java Beans

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- Java Platform, Enterprise Edition (Java EE) 1.6 or later from Oracle or IBM. You can download the Java EE from *www.oracle.com*.

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. The JDK is downloadable from the Oracle and IBM Web sites. After installing the JDK, you must put the `tools.jar` file for the JDK on your classpath, using a command similar to:

```
set classpath=jdk-install-directory\lib\tools.jar
```

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

Installing Enterprise Server for UNIX

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_ent_server_2.2_update2_platform
   ```
2. Run the installer with superuser permissions:
   ```
   ./setup_ent_server_2.2_update2_platform
   ```

   If you don't run this as superuser, you are prompted to enter the superuser password during the install.

   If you set COBDIR to an already installed product, the installer will back up the existing installation and will install this release in the location COBDIR points to. If COBDIR is not set, the installer does a fresh install.

   The COBOL run-time 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_ent_server_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_ent_server_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.

After Installing

When you have installed the product, you need to set the environment as described below.

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	Run the following as root:
	`cd /var/microfocuslicensing/bin`
	`./cesadmintool.sh -install FileName`

Focus that contains the license string	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.

Repairing

If a file in the installation of the product becomes corrupt, or is missing, we recommend that you reinstall the product.

Uninstalling

Note: Before you uninstall the product, ensure that the Enterprise Server instances and the Micro Focus Directory Service (MFDS) are stopped.

To uninstall this product:

1. Execute as root the `Uninstall_EnterpriseServer2.2.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.
- 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

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.

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

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

Installing licenses

If you have a license file

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**.

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.

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.

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.

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**.

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 Server 2.2 Update 2

This release provides enhancements in the following areas:

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.

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.
- 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.

Tunables

This release includes the following new tunable:

- reduce_java_signals - specifies the options that are passed to a JVM when mixing Java and COBOL.

Known Issues

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

In addition, note the following:

CICS	• An EXEC CICS DELAY statement may sometimes produce a difference of one second.
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** 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).

- *.NET Compiler*
- *.NET ESQL Support*
- *.NET Run-Time System*
- *Adis*
- *CAS (COBOL App Server) General*
- *CAS Admin Console*
- *CAS Security*
- *CAS XA Switch modules*
- *CCI TCP/IP*
- *Compiler*
- *Codeset Support*
- *Documentation*
- *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*
- *XML syntax support runtime*

.NET Compiler

Back to the list

- Comparisons between PIC N or PIC G items and ALL hex-literals are now working correctly.

  2795393 (1096266)
- The CURRENT-DATE function, using reference modification with an implied length (e.g. FUNCTION CURRENT-DATE(3:)), now behaves as expected when compiled to managed COBOL.

  2788009 (1095691)
- In Managed COBOL only, an unreferenced elementary field of an "IS EXTERNAL" data item would not be initialized by the INITIALIZE verb, even though the containing group item was referenced. This is now working correctly.

  2787385 (1095405)
- The performance of the .NET Compiler has been enhanced. Previously, programs that included multiple pointers and comp-5 items with value clauses could take a long time to load. The use of the XML preprocessor could lead to this condition, since it generates data of this type.

  2784731 (1095278)
- Correct behavior is now being displayed when the INITIALIZE statement is used on DBCS data, where the initializing literal is a single-byte alphanumeric.

  2784714 (1095079)
- Exponentiation with a literal exponent of 2 (or multiple of 2) on a signed field is now working as expected. In previous versions of the product, such an operation could lead to invalid code.

  2784503 (1095063)
- Compatibility of SPZERO with native COBOL code has been improved in the following two cases: 1) If a-9 = space (where a-9 is defined as pic 9(n) DISPLAY) With SPZERO on, this comparison will now always yield a false result. 2) Move a-x to a-9 (where a-x is pic x(n) and a-9 is pic 9(n)) In the case where a-x contains spaces, this move will now result in a-9 containing zeroes.

  2676477 (1093768)

.NET ESQL Support

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- When using OpenESQL for ADO.NET, the first execution of a statement for SQL Server no longer locks the varbinary host variable sizes.

  2791617 (1095920)
- The OpenESQL pre-compiler sometimes generated incorrect code if a PIC X(n) VARYING host variable was used in a COBOL JVM project.

  2787380 (1095934)

- The managed SQL run-time system now correctly handles variable string lengths for both 49-level COMP fields and 49-level COMP-5 fields.

  2782088 (1094793)
- The OpenESQL native ODBC wrapper used in managed applications would sometimes incorrectly set index past the end of table before moving information to the table which resulted in a COBOL subscript error.

  2780447 (1094665)

.NET Run-Time System

Back to the list

- In managed code, multiple processes using the same input file in a SORT statement will no longer get intermittent open failures.

  2790155 (1095759)

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)

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)
- 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)

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 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 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.

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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

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- 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

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- 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

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- 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

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- 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

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- 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

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- 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)

XML syntax support runtime

Back to the list

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

  2783315 (1095092)

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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