Micro Focus Enterprise Server 2.2 Update 1

Release Notes

Contents

Micro Focus Enterprise Server 2.2 Update 1 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.

Micro Focus Heartbleed Update

The OpenSSL library used in this product has been updated to version 1.0.1g to fix the "Heartbleed" vulnerability with TLS heartbeat requests.

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.

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* on page 6
- *Application server support for interaction with Enterprise Server* on page 7
- *Database Access* on page 7
- *Micro Focus Rumba* on page 7
- *WebSphere MQ* on page 7

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
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 J2EE application servers are supported using the following JDKs:

J2EE 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

⚠️ **Important:** Before you install 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.

These are the steps to install this product:

1. Run the `es2010_221.exe` file and follow the wizard instructions to install the prerequisite software and the product.

🖊️ **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.

Installing as an Upgrade

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

⚠️ **Important:** Before you install 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, check *Installation Restrictions and Requirements*.

Enterprise Server Installation Options

To install Enterprise Server you run `es2010_221.exe` which contains a number of product `.msi` files (Windows Installer packages). When run, `es2010_221.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_221.exe` can take a number of parameters, enabling you to specify a number of different types of installation:

- Standard Installation

    Format:
    `es2010_221.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_221.exe /passive
    ```
    Summary:
    Full installation, but the components are installed non-interactively using default options and directories.

* Silent Installation

    Format:
    ```
    es2010_221.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_221.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_221.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 Update1.
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.

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

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)
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*, 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

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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
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

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 J2EE application servers are supported using the following JDKs:

J2EE Application Servers	JDK (vendor)	Java EE
JBoss 5	1.5/1.6 (Oracle)	5
JBoss 6	1.6 (Oracle)	6
Oracle WebLogic 10	1.5 (Oracle)	5
Oracle WebLogic 12	1.6/1.7 (Oracle)	6
IBM WebSphere 7.0	1.5 (IBM)	5
IBM WebSphere 8.0	1.6 (IBM)	6
IBM WebSphere 8.5	1.6/1.7 (IBM)	6

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

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

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

Restrictions on UNIX and Linux in Third Party Software

Host Compatibility Option (HCO)	If you are using the Host Compatibility Option (HCO) with IBM DB2 v9.1 or later, you may experience the following issues when executing the HCO command-line utilities: - RTS114 against "hcgetenv" - SQL1083N The database cannot be created because the database description block cannot be processed, reason code = "6". These are due to known issues with IBM DB2 software. Please refer to Micro Focus Knowledge Base article #25686, located at *http://kb/article.aspx?article=2358&p=6*, for further details on how to proceed.

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_update1_platform
```

2. Run the installer with superuser permissions:

```
./setup_ent_server_2.2_update1_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_update1_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_update1_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 Focus that contains the license string	Run the following as root:

```
cd /var/microfocuslicensing/bin
./cesadmintool.sh -install FileName
```

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

UNIX and Linux Installer Issues

Installing on Linux

On Linux, the 32-bit version of Java is required to install and use Enterprise Developer for Eclipse. When you start the installation, if the 64-bit version of Java is already installed on your Linux machine, you might not be able to install Enterprise Developer. This is a *known issue* with the Oracle Java installers for Linux which prevent you from installing both the 32-bit and the 64-bit versions of Java on the same machine. To work around this problem:

* Download the 32-bit Java distribution in a compressed .tar format from the Oracle Web site.
* Untar the distribution into a location different from the one used for the 64-bit Java version. For example, untar in `/usr/local/java32` and not in `/usr/local/java`.
* Set JAVA_HOME and LD_LIBRARY_PATH to the 32-bit version of Java so that it is used to install and run Enterprise Developer.

License Infrastructure Installer

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

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

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

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

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

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

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

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

```
----------- start of /usr/lib/systemd/system/
MFSafeNet.service -----------
```

```
      [Unit]
      Description=Micro Focus SafeNet licensing daemons.
      Documentation=http://supportline.microfocus.com

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

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

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

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

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

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

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

License Server You need to configure the computer hostname to ensure the license server will start properly.

To avoid performance issues, "localhost" and the computer hostname must not both be mapped to IP address 127.0.0.1. You should only map "localhost" to IP address 127.0.0.1.

The following is an example of how to specify these entries correctly in the etc/hosts file:

```
127.0.0.1 localhost.localdomain localhost
IP machinelonghostname machineshorthostname
```

where *IP* is the unique IP address of the computer in xx.xx.xx.xx format.

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 1

This release provides enhancements in the following areas:

Micro Focus Heartbleed Update

The OpenSSL library used in this product has been updated to version 1.0.1g to fix the "Heartbleed" vulnerability with TLS heartbeat requests.

Btrieve Support

Support for the Btrieve file handling system from Pervasive Software Inc. has been added into Enterprise Developer.

Support is restricted to native COBOL, in a Windows environment.

Compare and Synchronization Monitor

With the release of Enterprise Developer 2.2 Update 1, the Compare and Synchronization Monitor has been updated to version 2.

Version 2 is greatly improved in terms of performance, especially during initial checkout of partitioned data sets or when synchronizing a large number of members. Also, the user interface has been improved, and some of the functions available in the old version have now changed or become obsolete.

Compiler Directives

The following Compiler directives have been added in this release:

ILPARAMS	Determines the way in which you call a method that contains an array as its last receiving parameter.
INIT-BY-TYPE	Initializes Working-Storage Section data items to a default value, according to their type. - Alphabetic, alphanumeric, alphanumeric edited, and numeric edited items are initialized to spaces. - Numeric items are initialized to zero. - Pointer items are initialized to null. - Index items are initialized to the value 1.

Enterprise Server Integration in the IDE

You can now use the context menu for the servers in Server Explorer to enable the display of the Enterprise Server log information in .

Enterprise Server MQ-IMS Bridge

⚠️ **Attention:** This feature is in Early Adopter Product (EAP) release status. We intend to provide the finalized feature in a future release. Please contact Micro Focus SupportLine if you require further clarification.

This release provides support that enables WebSphere MQ applications to communicate with IMS applications in an Enterprise Server region.

Environment Variables

The following environment variable has been added in this release:

strictvsam strictvsam enables strict mainframe emulation when processing VSAM files.

When set to ON and running under mainframe emulation, file status 37 is returned for an existing VSAM file when opened for OUTPUT if the file has data or previously had data written to it, or if the file is of a different format to the file on disk. When set to OFF, file status 0 is returned and a new file is created when an existing VSAM file is opened for OUTPUT. This variable is set to OFF by default.

Fileshare Recovery

Recovery of Fileshare data files has been enhanced.

Rollback recovery is a faster process that aims to fix the files from their failed state.

This process cannot be used in all scenarios, but a new user exit has also been introduced that allows you to programmatically control which files you wish to recover with this process.

Hot backups are also a new introduction, which allow you to perform a backup without having to shut down Fileshare.

HCO for DB2 LUW

- Support added for DB2 LUW version 10.5
- Enhanced RETURN-CODE processing
- The HCO DDL processor now accepts column names with a length greater than 18 characters.
- The HCO Import Data tool now processes CLOB data less than 32K in size.
- The HCO Import Data tool can now convert DSNTIAUL import files to delimited format, enabling the actual import to be done by DB2 LUW IMPORT and LOAD utilities. This is done using the new SAVEDEL and CHARDEL parameters.

HCO for SQL Server (HCOSS)

- Support for the mainframe SET CURRENT SQLID statement.
- Support for the mainframe LEFT and RIGHT scalar functions.
- Data Migration tools now support the mainframe ALIAS and SYNONYM objects.

Mainframe Emulation

Previously, MGMTCLAS was supported by simply saving it on the catalog record when a dataset was allocated in JCL using the MGMTCLAS parameter on the DD statement. Starting with this release, you can use batch jobs to define MGMT classes and to specify the EXPIRE AFTER time (in days).

Mainframe Subsystem

Casspool performance enhancement As part of an enhancement to improve performance when browsing the spool queue of an Enterprise Server, you must update the casspool file for any Enterprise Server created before Enterprise Developer 2.2 Update 1 before you can submit jobs to it.

To update the casspool for each Enterprise Server, from a command prompt, run `fixcasspool.bat`/`fixcasspool.sh`, located in `%COBDIR%\bin` and `%COBDIR%\bin64`/`$COBDIR\bin`, using the following syntax:

```
fixcasspool.bat casspool.dat backup.dat
```

or

```
fixcasspool.sh casspool.dat backup.dat
```

Where:

casspool.dat

> The spool file, located in the same directory as the Enterprise
> Server's system catalog, that will be updated.

backup.dat

> A file that will be created with a backup of the old `casspool.dat`
> file. If `backup.dat` already exists, the update is not run.

If you do not update casspool and attempt to start Enterprise Server, the following
messages are displayed in the console:

```
JES000011E Batch Spool File Error; Status [39]

JES000130E Note JES000011 Error - New casspool indexes may need
generating. See error description in product docs
```

Managed COBOL Syntax

This release includes the following enhancements to the managed COBOL syntax:

Specifying parameters in the method signature	You can now specify passing parameters and returning items in the method signature, instead of using a Procedure Division header. This applies to methods, indexers, iterators, constructors and delegates.
CONSTANT keyword	Use the CONSTANT keyword on a field to protect it from being altered.
Operations on string fields	You can now use the STRING, UNSTRING and INSPECT statements on fields of type string.

PL/I

PL/I support within the IDE now includes the following enhancements:

* Support for new built-in functions

  The PL/I Compiler and Runtime now support the following new built-in functions:

  DAYS
  DAYSTODATE
  SECSTODATE
  SECS
  WEEKDAY
  DAYSTOSECS
  ONSUBCODE
  REPATTERN
  IAND
  IOR
  INOT
  OMITTED
  XMLCHAR

  This provides an improved functionality and a greater language compatibility when you migrate
  applications from a z/OS environment.
* Support for %OPTION in the PL/I macro preprocessor

  You no longer need to modify application code that uses %OPTION in order for it to compile
  successfully.
* Support for QUOTE() and COMMENT() built in functions.

This enables the use of PL/I macros that generate code using these built-in functions.

* Support for IBM Style %INCLUDE(s) that utilize PDS name as part of include file names.

  The PL/I macro preprocessor now parses the %INCLUDE syntax of the form shown below and utilizes the –isuffix and –ipath Compiler directives to locate the "member".

  ```
  %INCLUDE MYPDS(MYMEMBER);
  ```

  This provides an improved language compatibility with the application code without the need to modify the original underlying source code.

* Support for PL/I AREA data items up to 2Gb.

  Open PL/I now supports the declaration and usage of variables of type AREA up to 2Gb in size. This provides you with improved functionality and greater language compatibility when migrating applications from a z/OS environment as there is no need to modify the code in order to deal with a maximum area size of 32Kb.

* Enhanced compatibility with the DISPLAY() REPLY() syntax.

  The PL/I Compiler and runtime now provide a DISPLAY() REPLY() syntax that is no longer dependent upon the use of the SYSIN and SYSOUT DD's and that no longer causes behavioral differences if stream IO to SYSIN/SYSOUT is intermingled with programs using DISPLAY() REPLY().

* Support for big-endian style bit strings on little-endian platforms.

  Using a new Compiler directive –bitsltr to compile programs that have logic that is dependent on big-endian bitstring ordering enables you to utilize the code unchanged on Open PL/I little-endian platforms (such as Windows, Red Hat Linux, SUSE Linux). This enables you to migrate applications that make an assumption about bit ordering on the underlying operating system or hardware and to run them unchanged.

* Support for the –initcall Compiler directive.

  Compiling a PL/I program with the –initcall directive causes the specified program to be invoked prior to any user logic. This enables you to customize your environments and do things such as tracking which routines have been invoked, detect memory corruption prior to routine startup, establish database connectivity.

* Support for the "F" option in PLIDUMP.

  A PLIDUMP which was generated using the "F" option will now attempt to list all known information about files which have been accessed during the execution of the program and includes information about the last IO operation, key values, and a dump of buffers, if available. This enables you to identify more easily the cause of file-related failures and what file operations were in progress at the time of failure.

* Alternative Index Performance Improvements for the CASSPOOL command.
* Support of the SHAREOPTIONS property in a VSAM cluster.

Run-time Launch Configuration Files

Note: This feature is only supported in a Windows environment.

Use a run-time launch configuration file to ensure an application can be launched when it is deployed in a separate location to the run-time system (in the case of dynamically bound applications), or when the licensing daemon is not already running.

Terminfo Files

The following terminfo files have been added:

* *ansi80x25* - this is based on the old *ansi* file. A newer version of *ansi* exists in this release that has no function key support, which is consistent with *ansi* terminfo files on various other UNIX platforms. If you currently use *ansi* and require function key support, you should instead set the TERM environment variable to *ansi80x25* to continue previous behavior.

- *xterm-color* and *kterm-color* - these are now available on all UNIX platforms - previously, they were only available on Linux.
- *aixterm-old* (AIX systems only) - this has similar capabilities to the AIX OS terminfo file of the same name. It differs from the existing *aixterm* file, because it has no line drawing capability. Line drawing is only possible with *aixterm* if it is displayed on an appropriate display (X server).
- *vt220-w* - this is the wide (132-column) version of the vt220 file, and is based on the vt100-w file. For more information, see *Wide Terminal Mode* in the documentation referenced at the bottom of this section.

There have been a number of additions and fixes to existing terminfo files; refer to the *Terminfo Database and Terminal Devices* section of the documentation for full details.

There have also been a number of terminfo files that have been removed; refer to the *Backward Compatibility* section for a complete list.

XA Switch Modules

This release provides the following new functionality:

- New two-phase commit module for SQL Server based on Microsoft's XA switch. This provides support for xa_recover.
- Support for DB2 LUW version 10.5.
- Support for Oracle version 12.1.

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 you install 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. • 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).

- *.NET Compiler*
- *MTO - JCL ESMAC*
- *MTO - JCL MVS*
- *MTO - JCL System Catalog*
- *MTO - JCL Utils - IDCAMS*
- *Open PL/I Compiler*
- *Open PL/I Debugger*
- *Open PL/I RTS*
- *SQL: COBSQL*

.NET Compiler

Back to the list

- In member reference in managed COBOL syntax, you may now only use parentheses when referencing methods. You can no longer specify parentheses when referencing fields or properties, as this will produce a syntax error. For example:

```
set intLength to testString::Length()
```

must change to:

```
set intLength to testString::Length
```

MTO - JCL ESMAC

Back to the list

- As part of an enhancement to improve performance of the spool display function, several new indices have been added to the `casspool.dat` file. If you are upgrading from a previous release, you must convert the `casspool.dat` file of any enterprise server created before Enterprise Developer 2.2 Update 1 to the new format before starting any JES-enabled enterprise server and submitting jobs to it.

  This release provides the following scripts that convert the `casspool.dat` file to the new format:

  - On Windows: `fixcasspool.bat` in `%COBDIR%\bin` or `%COBDIR%\bin64`
  - On UNIX/Linux: `fixcasspool.sh` in `$COBDIR\bin`

  ,

  To convert the `casspool.dat` file, run the appropriate script from an Enterprise command prompt using the following syntax:

  - On Windows:

    `fixcasspool.bat <old-location>casspool.dat <new-location><backup_filename>`
  - On UNIX/Linux:

    `fixcasspool.sh <old-location>casspool.dat <new-location><backup_filename>`

  Where:

- *<old-location>* - the fully or partially qualified location of the existing `casspool.dat` file, if not in the current directory. Optional.
- `casspool.dat` - the spool file that will be updated. The file is located in the same directory as the enterprise server's system catalog.
- *new-location* - the fully or partially qualified location where the backup file will be created, if not in the current directory. Optional.
- *backup_filename* - the name of the file that will be a back-up of the old `casspool.dat` file. If the file name already exists, the script terminates without converting the `casspool.dat` file.

If you do not convert `casspool.dat`, attempts to start the enterprise server fail with the following messages:

```
JES000011E Batch Spool File Error; Status [39]
         JES000130E Note JES000011 Error - New casspool indexes may need
generating. See error
         description in product docs
```

2654417 (1090421)

MTO - JCL MVS

Back to the list

- The final disposition processing of temporary datasets has been corrected to be in line with the mainframe processing, with a default value of PASS unless DELETE has been specified in the DD card. Previously, the default value was DELETE.

  2671175 (1091627)
- When running batch programs, receiving an "Out of Space" error requires operator intervention to continue processing.

  2642115 (1089055)

MTO - JCL System Catalog

Back to the list

- You can now use MGMTCLAS to provide an EXPIRE AFTER number of days. This is used to calculate an expiry date for datasets allocated using the MGMTCLAS parameter.

  2664639 (1090992)
- MFLEX*.DAT files were not being moved with spool files. Spool housekeeping now deletes LEX files when it deletes JESYSMSG. Also, to identify any remaining orphan LEX files, the MF_SPOOL_HK_LEX_SCAN environment variable sets spool housekeeping to scan the data directory for LEX files older than the max retain period.

  2659555 (1090759)
- Spool housekeeping has been rewritten to provide a number of new features. These will be described in the product documentation.

  (592452)

MTO - JCL Utils - IDCAMS

Back to the list

- The state of VSAM virgin files is now being correctly processed.

  2686149 (1093587)
- A REPRO COUNT of zero is now processed as zero records to be included in the REPRO operation.

  2665006 (1091034)

Open PL/I Compiler

- On Intel platforms, the -bitsltr Compiler option can be used to store bit strings left-to-right within each byte. This is similar to Big Endian bit ordering on Intel platforms. The Intel default is to store bit strings right-to-left within each byte similar to the Intel hardware bit ordering.

   2675860 (1092098)
- The libraries `libmf.so`, `libespli.so` and `libespliz.so` are no longer delivered. This is transparent if linking PL/I objects using mfplx or ldpli, and no changes are needed to your build process.

   However, if linking PL/I objects using either the UNIX ld command or the Enterprise Developer cob command, you must include the libraries `libmfpli.so` when linking stand-alone Open PL/I objects (executed outside of Enterprise Server), or `libmfpliz.so` when linking PL/I objects executed under the control of Enterprise Server.

   To do this, use the option -lmfpli for stand-alone Open PL/I objects or -lmfpliz, respectively, for PL/I executed under Enterprise Server. These options replace the –lmf option.
- Open PL/I applications must be recompiled and re-linked in order to use them with this release.

Open PL/I Debugger

- The debugger now stops before an ON UNIT triggers. This lets you perform debugging on the ON UNIT itself. You can configure the ON UNITS the debugger stops on.

   2674783 (1092319)

Open PL/I RTS

- Writing to SYSPRINT when running outside of Enterprise Server now drives output directly to the terminal and does not buffer the I/O.

   2477031 (1076203)

SQL: COBSQL

- COBSQL now displays appropriate COBOL syntax errors after encountering EXEC SQL statement errors.

   2673619 (1093197)

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 RTS*
- *Adis*
- *CAS (COBOL App Server) General*
- *CAS Admin Console*
- *CAS Resource Manager Interface*
- *CAS Security*
- *CAS XA Switch modules*
- *CASRDO*
- *Compiler*
- *Compiler ECM Support*
- *Cobdebug*
- *Documentation*
- *ES Monitor/Control (ESMAC)*
- *File Handling - External File Handler*
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- *Web Service Client*
- *XDB Server*
- *XDB: Problems not classed above*
- *XML Syntax Support Preprocessor*
- *XML Syntax Support Runtime*

.NET Compiler

Back to the list

- When compiling for managed code with the RM(ANSI) directive, the EXIT PROGRAM statement now works as expected. Previously, it was causing all files open in the program to be closed, which should only occur if the RM directive (without the ANSI parameter) is specified.

  2690872 (1093437)
- (As 1091900) Previously, when the NOBOUND directive was set, generation of a level 88 condition name on a subscripted item could result in a system error.

  2685375 (1093076)
- An INITIALIZE statement without the REPLACING phrase now initializes PIC N data items to DBCS spaces (x"8140"). In a previous version, this was incorrectly initializing to ASCII spaces (x"20").

  2682846 (1092779)
- An INITIALIZE statement applied to a particular element of a subscripted group, where a space fill should precede a sub-occurs item, now applies the space filling to the correct element of the subscripted group.

  2682845 (1092778)
- A problem has been fixed where an INITIALIZE statement referencing a group that redefines something did not function correctly if the group itself was not otherwise referenced.

  2681790 (1092700)
- Arithmetic statements involving subscripted operands no longer cause bad code generation. Previously, this was likely to happen when the subscripted data item was declared at 01 level, or was declared within a group, which itself was never referenced.

  2677890 (1092368)

- In previous product versions, the event which was the target of an attach or detach statement could not be specified as the end of a member reference chain. This meant that it was not possible to have statements like:

```
attach method self::MyMethod to self::TextBox::TextChanged
```

This is now fixed.

2676123 (1092130)
- Property initializers as part of the 'new' (constructor) expression are now functioning correctly.

2674668 (1091974)
- Previously, when the NOBOUND directive was set, generation of a level 88 condition name on a subscripted item could result in a system error.

2673571 (1091900)
- Previously, a mixture of static and instance files within a class could result in bad code generation. This has now been resolved.

2672322 (1091732)
- Previously, in situations where a reference-modified move from a `pic x` to a `pic n` field has the same length expression on each side, compiling produced incorrect code which resulted in the target being truncated.

2670726 (1091595)
- Type inference for generic methods is now working as expected. Previously, in certain cases, it was causing 'COBCH0829 Could not find method...' errors.

2670658 (1091643)
- Programs compiled to managed code, and which use the SSRANGE directive, no longer produce system errors at compile time.

2668437 (1091389)
- After stepping into an INVOKE or a PERFORM statement, the call stack will now point to the INVOKE or PERFORM itself, and not to the statement following it.

(583690)
- When compiling for .NET, XML comments that are attached to types and members (for example, methods and fields) now generate warnings if the XML text is not correctly formatted.

(595368)
- Previous versions of the product allowed the caller of a method, in which the last parameter was an array, to specify a list of zero or more arguments of the array element type, in place of a single array argument. By default, this behavior is now only supported when the array parameter in the target method has the PARAMS attribute. To restore the old behavior, the new ILPARAMS directive has been introduced.

(599666)
- Previously, the resolution of shortened type names (those without explicit namespace) could fail when different programs had different ILUSING lists. This could occur when there were multiple programs in a project and one or more of them had $set statements with the ILUSING directive.

(599903)
- A problem where generic classes would wrongly appear to have errors on background parse has been resolved.

(601182)

.NET ESQL Support

Back to the list

- OpenESQL did not correctly handle EXEC ADO BIND CONNECTION statements that passed the connection name in a host variable.

  2681358 (1092636)
- Previously, the OpenESQL precompiler split DBCS SQL statements which resulted in receiving a managed OpenESQL run-time error when processing the statements.

  2672260 (1091722)
- The LIKE operator was not invoked properly for .NET DATAROWS cursor search conditions.

  2671820 (1091683)
- Some consistency issues with sensitive cursors have been resolved in the ODBC, JDBC and ADO run-time systems for OpenESQL.

  2667592 (1091300)

.NET RTS

Back to the list

- An error when converting values from type decimal to other COBOL data types has been fixed.

  2695116 (1093886)

Adis

Back to the list

- REVERSE-VIDEO now works as expected when using the X"AF" function.

  2683509 (1092851)
- MS ACCEPT statements now sound a beep when invalid characters are entered into integer or decimal fields. Integer fields no longer accept invalid characters and normalise.

  2680081 (1092542)
- MS ACCEPT statements now display numerics with space fill and sign leading so that integers and decimals are appropriately aligned.

  2680081 (1092543)
- The attributes specified in the screen section are now displayed correctly after a call to the X"AF" function 81 has been made.

  2650012 (1089634)

CAS (COBOL App Server) General

Back to the list

- Multiple casout calls (using the -r option) in a single process now work correctly.

  2694290 (1093800)
- When accessing TS/TD on error, the file status is now displayed correctly.

  2684719 (1093023)
- HSF records no longer contain incorrect dates when a task runs past midnight at the end of a month.

  2644616 (1089363)
- Messages issued from casstop are now sent to stdout.

  2643162 (1089019)
- All system abend messages are now reported to the console.

  (602933)

CAS Admin Console

Back to the list

- The JES Program Path and CICS Transaction Path now accept paths of up to 4096 characters.

  2665324 (1091104)

CAS Resource Manager Interface

Back to the list

- A thread synchronisation issue was causing responses to be lost intermittently. For stateful requests, this could result in lost SEPs (whereby a SEP would appear as busy even though it was not processing any work).

  2686429 (1093442)

CAS Security

Back to the list

- A new user objectclass instance added to an LDAP-based external security manager now has its initial login attempts count value set correctly.

  2637659 (1088656)

CAS XA Switch modules

Back to the list

- The Declared Global Temp table is being dropped at CICS end of task with XDB as resource manager.

  2682648 (1093069)
- A new SQL Server XA switch module provides support for xa_recover and also handles implicit rollback by SQL Server more cleanly than previous switch modules.

  2679162 (1092481)

CASRDO

Back to the list

- Clicking **Resources > JES > Catalog** in ESMAC now opens the initial screen without showing the results of any previous searches.

  2656391 (1090454)

Compiler

Back to the list

- LOCAL-STORAGE data in nested programs now behaves as expected and as it does on the mainframe - as LOCAL-STORAGE of the main program.

  2693843 (1093746)
- A MOVE from a group item to a DBCS target that requires padding now behaves as expected.

  2692634 (1093553)
- DELETE statements that contain the END-DELETE scope terminator now compile as expected.

  2690465 (1093235)
- UNSTRING on LINKAGE SECTION data items with reference modification could sometimes give the wrong result.

  2684812 (1092998)

- Using large EXEC SQL statements no longer causes the Compiler to hang.

  2684713 (1092993)
- The ? NUMERO SIGN (U+2116) Shift-Jis FA59/8782 is now converted correctly to EBCDIC value 446e under CHARSET(EBCDIC).

  2683297 (1092823)
- MOVE figurative constant to PIC G item under CHARSET(EBCDIC) now returns the expected results.

  2683091 (1092801)
- A MOVE CORRESPONDING statement with a GLOBAL subscripted target now compiles as expected.

  2682557 (1092981)
- A program compiled with the FDCLEAR Compiler directive and containing a numeric file record now compiles as expected.

  2678050 (1092326)
- The asterisk character is now treated correctly in COPY REPLACING text under mainframe emulation.

  2676006 (1092571)
- A literal greater than 80 bytes but less than 160 bytes in length and containing non-ASCII characters will now compile as expected with a mainframe dialect.

  2670083 (1091560)
- Programs that contain EXEC INCLUDE statements inserted by a preprocessor now debug as expected.

  2661838 (1091416)
- ISO2002 and SNI table VALUE syntax is now working as expected for multi-dimensional tables that are not directly nested within each other.

  2651916 (1089808)
- The Compiler error message 62 (COBCH0062) has been clarified by changing "Nested COPY replacement not supported" to "Nested COPY replacement causes termination of parent COPY replacement".

  (599823)
- The SQL TYPE DBCLOB(n) now creates the correct COBOL record structure.

  (599679)

Compiler ECM Support

Back to the list

- The SQL(CHECK) option no longer incorrectly affects the setting of the unrelated NCG option 'CHECK'.

  2685791 (1093351)

CICS BMS Screen Painter

Back to the list

- The BMS compiler no longer generates a MOD or copy file if errors or severe errors are encountered during compilation. To revert to the previous behavior, where the BMS compiler generates a MOD or copy file even if it encounters errors or severe errors, specify the /IE directive.

  (595227)

Cobdebug

Back to the list

- When stepping through a program that has a watchpoint set in it, all statements are now being stepped correctly.

2664045 (1091500)

Documentation

- You may now specify an SSL-enabled listener when submitting jobs via CASSUB. You achieve this by using the tcpssl protocol on the /s or -s switch.

  2671020 (1091619)

- When creating a VSAM data set using the DEFINE CLUSTER command, records are assumed to be variable-length, unless the NUMBERED parameter is used and the RECORDSIZE parameter specifies the same length for the average and maximum record size, in which case, fixed-length is assumed.

  2615989 (1088176)

- A compiler directive INIT-BY-TYPE has been provided to allow initialization of each data type to a sensible value for that type.

  2650462 (1091658)

- The INITIALIZE verb now supports multiple categories in a single REPLACING clause.
- Variable length record files that are 4 bytes or smaller are padded to 8 bytes.

  2537147 (1081777)

- The installation instructions now list the required libraries for IBM System z (390) in the *Software Requirements* section of the installation instructions of the product help.

  2683015 (1092919)

ES Monitor/Control (ESMAC)

- In the ESMAC (casrdo45) page, there is now provision to filter and list the members of a particular PDS. The filter text is PDSNAME(*). The PDSNAME should be the complete name of the PDS, and cannot contain any wildcards.

  2500753 (1078391)

File Handling - External File Handler

- Under Mainframe emulation, when an empty virgin VSAM file is opened for input or for input/output, a file status of 35 is returned, regardless of the access mode specified.

  2692826 (1093604)

- When using the RMFM File Handler, a file status '05' is returned when executing a DELETE FILE statement, if appropriate. This emulates the behavior of the RM/COBOL run-time.

  2685220 (1093089)

- A rollback recovery of a REWRITE where the record size was being reduced was producing incorrect results.

  2685069 (1093085)

- When a DD name is associated with several concatenated data sets of different charsets, the returned data has the charset encoding of the first data set. However, if the first data set is LSEQ, the returned data has the charset encoding of the application program.

  2677941 (1092434)

- cobfhrepro2 now produces the correct output for FCD2.

  2664465 (1090972)

- A new environment variable, STRICTVSAM, has been introduced. When it is set to ON and under a mainframe emulation, a file status of 37 is returned when you open an existing VSAM file for OUTPUT and the file has or previously had some data written to it, or if the file format is different from the file on disk. The default for this variable is OFF.

  2660766 (1090639)
- When reading concatenated datasets, each dataset in concatenation must use the same RECFM, either all FB or all VB.

  2654517 (1091793)
- The FOLDER section in a file handler configuration file now supports relative paths.

  2653787 (1090290)
- Btrieve files are now supported, using the xfh2btr call conversion module, for native COBOL, running in a Windows environment.

  2598434 (1086466)
- 64-bit fileshare clients would fail to connect if any cci configurations settings were used.

File Handling - Fileshare

Back to the list

- The Escape character was not being honoured for filenames passed to FSVIEW which caused filenames containing $ to be interpreted as environment variables.

  2660207 (1093021)
- MFJSORT now correctly displays the file status of a queried VSAM file, rather than a generic error message, when the file being queried returns a non-zero file status.

  2589273 (1092107)

File Handling - Sort / JCL Sort

Back to the list

- When VLFILL is specified in OUTFIL, the variable length records smaller than the LRECL/OUTREC are now correctly padded with the value specified in VLFILL rather than with spaces.

  2680553 (1092622)
- Under ICETOOL emulation, the maximum size of an ON Field for PD data type has been increased from 8 to 31 bytes in order to emulate mainframe behavior.

  2680285 (1092551)
- The PARM options CORE, SIZE and MSG are now parsed and ignored.

  2675829 (1092090)
- After a SORT operation, the memory allocated by SORTTEMPSPACE is correctly freed.

  2666797 (1091311)
- MFSORT now correctly sorts NU fields when SORT-EBCDIC is specified.

  2663772 (1090910)

HCO for Microsoft SQL Server

Back to the list

- The NOSTMTCACHE SQL compiler directive option is invalid and no longer available when setting SQL Preprocessor options from the IDE.

  2694876 (1093861)

- OpenESQL returned an error when a FETCH had more output host variables than the number of available result columns; OpenESQL now ignores excess columns, resulting in improved compatibility with DB2.

  2694548 (1093840)
- Previously, a problem occurred with DB2 YEAR() function when taking date duration or timestamp duration as argument with the directive SQL(DIALECT=MAINFRAME).

  2683713 (1092874)
- Using FETCH OR SELECT INTO statements that have more output host variables than the number of columns in the result no longer results in errors.

  2676276 (1092708)
- The SPD generator did not honor the EXTERNAL NAME option correctly during the generation of the stored procedure wrapper.

  2659338 (1090674)
- HCOSS now emulates mainframe SET CURRENT SQLID and SET CURRENT SCHEMA statements.

  2507765 (1078735)

JVM - Compiler

Back to the list

- The statement ACCEPT operand FROM DATE-ISO4 now works correctly in .NET and JVM COBOL.

  2681556 (1092861)
- When compiling for JVM COBOL, COMPUTE statements within a large perform range, where the arithmetic expression involves division by a power of 10 now produces the expected results.

  2680641 (1092792)
- A new Compiler directive has been introduced to control how a method that has an array as its last parameter can be called. When ILPARAMS is set (which is the default), you can call the method using a list of items of the same array element type, instead of specifying a single array. When ILPARAMS is not set, you can only specify a list of items if the target method has the PARAMS attribute. Previous compiler versions allowed the use of a list even when the method did not have the PARAMS attribute, which is equivalent to the current default behavior.

JVM - RTS

Back to the list

- Fixed an error in arithmetic statements in JVM COBOL where the target is a comp-2 item.

  2691797 (1093424)

LE370 Support

Back to the list

- LE370 parameters that continue on the next line are no longer flagged.

  2681691 (1092669)
- TSO ALLOCATE command emulation now supports the use of "F B".

  2668742 (1091453)
- An unsupported LE option in the code no longer invalidates the options that follow.

  2668740 (1091425)
- A fault that caused the data received by an EBCDIC program when a 'READ from SYSIN' was performed to be in ASCII format has been corrected.

  2657391 (1090401)

- CEE3PRM now successfully retrieves the parm value to the calling program.

  2654879 (1090140)

MDSA API for CAS

Back to the list

- If an enterprise server instance is started by an Enterprise Server user account that has execute privilege but not update privilege for that server, you now receive an INSUFFICIENT_ACCESS error when the server starts.

  2664445 (1091238)

MF Communications Server

Back to the list

- When using casout to get job information, sometimes you could receive an error and the output was trucated.

  2693283 (1093638)
- An issue where terminating 3270 sessions would result in high CPU usage in the MFCS process has been fixed.

  2682179 (1092886)
- The mfpackage utility for removing deployed services from Enterprise Server is now included with Micro Focus Enterprise Developer Unix Components.

  2675212 (1092127)
- In version 2.2 of this product, the received data was missing from the trace messages for CTG and ISC conversations. This has now been fixed.

  2674286 (1091971)
- Some of the Enterprise Server functions for informing running enterprise server of security updates and for retrieving the list of printers available on the server system were broken in Enterprise Developer 2.2. This has now been fixed.

  (601260)
- You no longer receive exceptions in MFCS when the data-trace option is enabled for a CTG listener.

  (601465)

MF Directory Server

Back to the list

- When using the export and import functionality of the MFDS XML Enterprise Server configuration, XRM name and label definitions are now exported and imported correctly.

  2683510 (1092852)
- When using the export and import functionality of the MFDS XML Enterprise Server configuration, the open and close string properties of XRM resources now support the inclusion of double quotes.

  2682635 (1092777)
- On Solaris SPARC, the value of the Enterprise Server Administration GUI journal size option was being incorrectly set to zero.

  2681195 (1092638)
- When adding or editing an IMS MPR definition in the Enterprise Server Administration GUI, you can now use comma as a separator in the class field to enter multiple class definitions.

  2676449 (1092164)

- The mfds export and import command line options -x and -g XML now also support exporting and importing enterprise server script configuration information.

  2668554 (1091412)
- XML import in the MFDS no longer fails if the XML source code contains long paths.

  2668553 (1091409)
- When using the Enterprise Server Administration to edit the properties of JES Initiators, JES Printers, IMS MPRs and XRMs, the GUI now rejects duplicate names.

  2668020 (1091336)
- Session cookies in the browsers for the Enterprise Server Administration GUI now use the HttpOnly flag for additional security.

  2666975 (1091258)
- The browser auto-complete feature is now disabled for the password fields in the Enterprise Server Administration GUI.

  2666975 (1091260)
- If the Enterprise Server Administration HTML GUI is in "restricted access" state, a logged on user now needs to have "administer user" levels permission to see the "Display" options in the LHS of the GUI. This includes the "Directories", "Statistics", "Sessions" and "Journal" menu options. The "administer user" option is available by default to any member of the #DSAdmin MFDS user group. In MLDAP ESM security, this permission is defined by Update, Add or Delete ACE permissions against the "User Administration" resource in the "Enterprise Server Administration" resource class under "Enterprise Server Resources".

  2663991 (1090934)
- When exporting the Enterprise Server configuration in XML format with the "mfds -x" command line option, the MSS ISC and CTG listener information was not formatted correctly, which resulted in an incorrect behavior when you reimported the XML configuration.

  2651735 (1090147)
- When you use the Enterprise Server Administration HTML GUI to create a user group, the following characters are no longer allowed in name: '< >', ';', '"' and '&'.

MF Server Administrator (GUI)

Back to the list

- When trying to change a password from the Enterprise Server Administration HTML logon page, additional checks are made before reporting the success or failure of the request.

  2659582 (1090525)
- The execution scripts configured for an enterprise server instance can now use the credentials specified on the Start\Stop page of the server in Enterprise Server Administration. For example, to use the specified credentials to start an enterprise server instance, you need a script with the following command:

  - On Windows:
    ```
    casstart /r%ES_SERVER% /u%TXUOPERATOR% /p%TXPOPERATOR%
    ```
  - On UNIX:
    ```
    $ES_SERVER, $TXUOPERATOR
    ```

  Where:

  - TXUOPERATOR resolves to the user id.
  - TXPOPERATOR resolves to the password.

  After the enterprise server instance uses these environment variables, they are reset to blank and are no longer available to query.

2599100 (1086661)

MFA: GUI components

- Missing SI characters no longer cause an abend. Incorrect DBCS character streams are now ignored.

  2667289 (1091404)
- After the MFA server sends a 9/218 error ("Unsupported DCB/DSORG"), the data set is released and can then be reallocated.
- If an x37 out of space abend occurs when running an MFDAS EXPORT command, the affected data set is deallocated and available for use.

MFA: Mainframe

- The MFA server now works with CA Endevor R16.0. You will need to update your MFA and MFAE JCL in order to use the new libraries.

  2692338 (1093691)

MFIO

- MFGENER now works with the server using FCD3 protocol.

  2676130 (1092134)
- The comments in the MFAVTAM sample member have been updated.

  2674286 (1091976)
- SM2 no longer segfaults when a member has been deleted on the mainframe.

Micro Focus Heartbleed Update

The OpenSSL library used in this product has been updated to version 1.0.1g to fix the "Heartbleed" vulnerability with TLS heartbeat requests.

MTO - CICS BMS Screen painter

- BMS COPY files will be found in the /SYSLIB folder when the /PREPASM directive is used to include the COPY files.

  2685507 (1093277)
- The message "BMSCH1101S COPY file expansion requires directive /PREPASM" is no longer displayed if copy file expansion fails due to errors in the copy file.

  2669082 (1091499)
- The BMS Compiler no longer fails with an access violation error when invoking a user pre-processor (/PCOMP=...).

  2669050 (1091679)
- The BMS Compiler no longer fails if the /MAP name exceeds seven characters. A message is displayed and the name is truncated to seven characters.

MTO - CICS Communications

- When converting a transaction typed on a DBCS terminal from EBCDIC to ASCII, the conversion did not use the length of the transaction but the length of the variable that was holding it. This has been fixed and the conversion now uses the length of the transaction.

    2676259 (1092144)

MTO - CICS ECM/Preprocessor/Translator

- DFHRESP(TIMEDOUT) was missing from the CICS precompiler tables. The value has now been added.

    2675857 (1092238)

MTO - CICS Emulation

- In CICS transaction routing, BMS Maps in DBCS environment are now displayed correctly.

    2680118 (1092510)
- When importing a startup list that had more than one group in it, only the first group was imported. This has been fixed.

    2659018 (1090500)
- When the casprt process dies, it will now be restarted automatically.

    2593342 (1086058)

MTO - CICS ESMAC

- The ESMAC page now displays CICS TERM definitions correctly.

    2676448 (1092163)

MTO - IMS DB

- An IMS application written in PL/I could produce an unexpected error RTS114 in MFIMSEP.

    2680509 (1092550)
- A non-zero return code from an IMS application program written in PL/I now sets JES COND CODE.

    2680115 (1092509)
- IMS Data Capture exit routines were not called for the destination parent segment during update of a concatenated segment in a logical DB when the logical child segment did not have an exit defined.

    2676941 (1092370)
- You could receive an error RTS 114 in MFIMSDBS if a BMP was killed after issuing a large number of uncommitted database updates.

    2671177 (1092024)
- Previously, Roll Forward recovery was incorrectly asking whether to recover the same file multiple times.

MTO - IMS MFS

Back to the list

- Screen data in a conversational transaction is no longer misaligned when the first field after the transaction code contains spaces.

  2680867 (1092593)

MTO - IMS Other

Back to the list

- The message "OPEN ERROR ON MESSAGES FILE, STATUS=35 DSN=IMSWND.MSG" was sometimes issued in place of an IMS error message, depending on the preceding program execution in a JES initiator.

  2665550 (1091186)

MTO - IMS TM

Back to the list

- IMS-TM no longer becomes unresponsive upon multiple application ABENDs.

  2664063 (1091514)

MTO - JCL ESMAC

Back to the list

- When browsing the catalog via ESMAC, the maximum number of lines displayed is controlled by the environment variable ES_MAX_CATALOG_LINES, which has a default value of 5000. This is introduced for stability and performance reasons. If you wish to display more than 5000 lines, you need to set the environment variable to a higher value in Configuration Information on the General tab in MFDS. See "Setting Environment Variables for Micro Focus Directory Server" in the online documentation for more information.

  2671855 (1091696)

MTO - JCL MVS

Back to the list

- A new environment variable, `JES_PRINT_SPOOL_MSG=[CONSOLE|LOG|SILENT]`, can be used to control the disposition of the spool dataset printing message (JES000029I). Environment values are:

  - CONSOLE - send the message to the console (default).
  - LOG - write the message to a special log file named PRNT_SPL_MSG_YYYY_MM_DD.DAT where YYYY_MM_DD is the current date. This file resides in the same directory as casspool.dat, and a new file is created every day.
  - SILENT - no message. Use this option with caution, as you will have no audit log of your spool datasets.

  Note: This environment variable is introduced for high print load users, where print messages to the console impact system performance.

  2660637 (1091746)

MTO - JCL System Catalog

Back to the list

- In the MVSCATPB API, the second and any subsequent reads of catalog records for dynamic PDS were not returning the extension lisy.

  2685834 (1093098)
- New empty dynamic pds members are now retained if they have been opened for output, to extend, or for an update.

  2681745 (1092834)
- Deleting the JESYSMSG from ESMAC (casrdo43) now deletes all the associated files.

  2659558 (1090837)
- The last change date on the catalog entry for a dynamic PDS model is set to the current date when a new member is added to the PDS.

  2581611 (1091084)

MTO - JCL TSO

Back to the list

- An issue related to temporary datasets later referred to as permanent ones has been corrected.

  2676531 (1092360)
- A problem when running batch programs with large parameters has been fixed. A parameter with length of up to 100 characters can now be passed to the user program.

  2671469 (1091663)
- Previously, after a batch job using IKJEFT01, a SEP was incorrectly terminating with CASKC0026E Error unloading service '' after IKJEFT step with DSN.

MTO - JCL Utils

Back to the list

- Setting MFALLOC_PCFILE=Y would not create the file if RECM=LSEQ.

  2682866 (1092920)
- Using MFGENER to copy RECFM=VB to RECFM=FB no longer results in bad data in the output file.

  2679429 (1092796)
- When copying an LSEQ dataset to a dataset with no dsorg specified, IEBGENER did not correctly assign the default dataset characteristics.

  2663396 (1090889)
- There is now an extra validation for IEBGENER to check that the attributes of concatenated SYSUT1 files are compatible.

  2654517 (1090132)
- When a job deletes a G0000V00 dataset belonging to a GDG, the DG manager updates its internal BIAS/G00000V00 table to reflect it, so that subsequent references to the GDG via relative BIASes within the same job are resolved the same way as on the mainframe.

  2650338 (1089941)

MTO - JCL Utils - IDCAMS

Back to the list

- An existing SYSIN of type Dynamisc PDSM no longer causes a failure.

  2686421 (1093226)
- It is now possible to use wildcards to specify the names of PDS members to delete.

  2684823 (1093005)

NCG

- An error could occur at generate time for programs with calls to INTRINSIC functions that had multiple ALL subscript parameters.

  2695026 (1093885)
- An issue in cob which caused a core dump when all entry points in the main program were invalid has been fixed.

  2663974 (1090927)
- An issue has been resolved where the debugger would not step into the code when a PERFORM statement is the last statement in a WHEN branch of an EVALUATE statement.

Open PL/I CICS Preprocessor

- Passing the CICS Preprocessor option -optcics with exci=y results in the correct preprocessing to enable batch operation with CICS connect if separate commands rather than mfplx are used to process the program. For example, to correctly preprocess and enable batch operation with CICS connect for the program pliexcit.pli, you would enter these separate commands:

```
mfpp –margins 2,72 pliexcit.pli -pp pliexcit.pp
        mfexecpp -cics -optcics exci=y pliexcit.pp -ppcics pliexcit.ppc
        mfpp pliexcit.ppc -pp pliexcit.pp2
        mfpli -mvs pliexcit.pp2 -o pliexcit.obj
        ldpli -mvs -dll pliexcit.obj
```

  2675232 (1092033)
- A semi colon is no longer emitted within the comment with the -full_list macro preprocessor option specified. Also, when using %INCLUDE, the generated comment line for multiple files included with a single statement no longer erroneously contains the name of the file which included them.

  2676504 (1092187)
- COMMAREA no longer incorrectly passes to linked-to programs.

  2667530 (1091299)

Open PL/I Compiler

- Using the concatenate operator with character varying strings now works correctly when compiled with -opt.

  2692333 (1093522)
- A problem with a CHAR(1) repetition factor of 32765 causing the Compiler to loop indefinitely has been fixed.

  2684548 (1092979)
- Procedures returning picture numeric data now work correctly when compiled with the -opt compiler option set to 3.

  2681995 (1092728)
- A possible compiler abort when using the -map option no longer occurs.

  2680528 (1092553)
- A problem that caused a compiler abort with ONCODE 90011 no longer occurs.

  2679977 (1092500)
- A problem causing the XMLCHAR built-in to not work correctly no longer occurs.

  2678830 (1092398)

- A problem causing the XMLCHAR built-in to not work correctly no longer occurs.

  2678830 (1092399)
- Internal: The undocumented option -newalign was provided to Luigi B. et al for this functionality specifically for NCG.

  2675416 (1092054)
- A problem with Static structure assignments causing Error MFPLI01233E no longer occurs.

  2675201 (1092023)
- A problem with binary integer constants in certain built-ins no longer occurs.

  2675077 (1092015)
- A problem causing a Compiler Abort ERROR 2000A no longer occurs.

  2673693 (1091875)
- Converting FIXED DEC to BIT no longer produces the wrong number of bits.

  2673494 (1091883)
- The ODBC pre-compiler no longer incorrectly passes a long SQL statement to pre-compiler services resulting in an MFPLI01250S error.

  2673288 (1091838)
- A problem with large string concatenation producing blanks and data loss during Restricted Expression Evaluation no longer occurs.

  2673288 (1092450)
- Unnamed structure members no longer cause compiler errors.

  2673130 (1091820)
- When a BYVALUE parameter is greater than 4 bytes, such as a non-ideal argument that is not a true immediate, the argument is now passed as -if enclosed by parentheses instead of generating a severe error.

  2667144 (1091256)
- A problem no longer occurs when passing a named constant of type pointer as an argument to a subroutine.

  2665622 (1091101)
- A program that previously triggered a SIGSEGV when compiling with the Open PL/I Compiler no longer does so.

  2645146 (1089173)
- The PL/I compiler now supports the REPATTERN built-in function.

  2467971 (1075524)

Open PL/I Macro Preprocessor

Back to the list

- The macro preprocessor no longer generates extraneous additional linefeed characters when using -margins with a %REPLACE statement where the new text exceeds the length of the original %REPLACE constant text.

  2692525 (1093557)
- The Open PL/I Macro Preprocessor no longer incorrectly handles the IBM deviation of the %INCLUDE which used the format: %INCLUDE PDS(MEMBER); The Macro Preprocessor now parses for "MEMBER" and uses the -isuffix and -ipath options to locate the %INCLUDE file.

  2691090 (1093340)
- The macro preprocessor no longer goes into an infinite loop when incorrectly coding a macro preprocessor function with missing parameters and punctuation.

2682716 (1092764)

- A %XINCLUDE is no longer skipped due when a prior %XINCLUDE is conditionally excluded.

2682455 (1092750)

- When a PL/I Macro uses the STATEMENT option of the PROCEDURE statement and is invoked within the input source using the keyword format without a trailing semi-colon, the macro preprocessor no longer goes into an infinite loop.

2681527 (1092655)

- When a macro generates a single line of returned CHAR data containing multiple logical lines and no carriage returns, the returned data no longer wraps at or near 256 bytes if using the -margins option. when using the -margins option, the macro preprocessor will now use the right margin as the point where wrap is attempted. This results in the customer macro producing a comment that is formatted similar to the mainframe format, providing an improvement over previous functionality.

2679415 (1092449)

- The macro preprocessor no longer fails processing or flags a macro as having incorrect function parameters if an unquoted period (.) is passsed to a macro preprocessor function.

2678366 (1092352)

- When a construct such as '01'/'02'/'03' exists in source code without any spaces between the literal constants and the divide symbols, a mismatched quote is no longer erroneously created by the macro preprocessor, causing %IF to be incorrectly evaluated.

2677263 (1092243)

- PL/I source code with mismatched single or double quotes and more than 16384 bytes before either another quote terminator or and end of the file no longer results in a heap corruption and termination of the macro preprocessor without first generating a preprocessed source deck.

2676511 (1092209)

- Using the macro preprocessor -full_list option on a user program that had a syntactically incorrect %INCLUDE statement no longer causes the macro preprocessor to trap.

2676508 (1092171)

- PL/I programs using the macro preprocessor built-in functions COMMENT() or QUOTE() no longer revieve warning messages, and the generated code is no longer different to what is generated on the mainframe.

2675054 (1092006)

- The macro preprocessor no longer erroneously generates an error message when a comment containing a percent sign (%) is immediately preceded by a multiplication symbol (*).

2673315 (1091839)

Open PL/I RTS

Back to the list

- When using buffered file I/O that is flushed to disk as a result of an implicit or explicit CLOSE, the "out of space" error now correctly raises a PL/I "ERROR" condition.

2680494 (1092560)

- Previously, when transitioning from one IMS trancode to the next, the PL/I run-time system was not initializing or deinitializing correctly.

2675644 (1092070)

- The ANY and ALL built-in functions no longer produce the wrong number of bits.

2673494 (1091882)

- If the EXTSM (sort engine) initializes but is not used, the sort engine now properly performs a clean-up and de-initialization before any subsequent re-initialization. This allows the sort engine to be in a proper state for subsequent calls to PLISRTD.

2672840 (1091787)

- The PL/I PLIDUMP facility has been enhanced to display information about the files which have been accessed during execution if the "F" PLIDUMP option is specified.

2671365 (1092268)

- Invoking the DELAY() statement with a negative value no longer causes the application to sleep for a longer than anticipated period given the specified value. The sleep period is now immediate.

Open PL/I SQL Preprocessor

Back to the list

- The OpenESQL pre-compiler sometimes incorrectly processed host variables in the FETCH INTO statement for PL/I compiles, resulting in ES0109 errors.

2683997 (1092921)

- The DB2 pre-compiler incorrectly generated MPLIE0095S errors if a fixed CHAR host variable was defined as greater than 254 characters.

2681503 (1092687)

- The DB2 pre-compiler failed to generate required code if the PL/I program had a one character name, which resulted in severe MFPLI00082S errors.

2681500 (1092774)

- A SQL preprocessor issue with using the [NODIALECT] option no longer occurs.

2677880 (1092301)

- The generated source code now contains %rdebug in the correct place.

2674774 (1091987)

- The SQL precompiler no longer incorrectly process PL/I programs with a particular language construct.

2673850 (1091889)

- Previously, you received an incorrect error message if an INIT clause in your code contained an undeclared variable.

2673452 (1091871)

- The SQL preprocessor could generate code that resulted in Compiler errors if an END <program name> statement was split over two lines.

2672588 (1091776)

RJSE - JCL

Back to the list

- MFA server can now import SYSOUT data sets with a maximum LRECL of 32K which is the system limit.

2658439 (1090815)

Run-Time System

Back to the list

- When a container end event is received, all external files that are open in the container now close correctly.

2513669 (1079282)

Setup Issues (UNIX)

Back to the list

- A problem with the installer where it was not performing a check for whether libstdc++ is installed has been fixed. You no longer receive an error "CASCD0144S SEP 00002 for ES ESDEMO exited with value 00127" when trying to start 32-bit enterprise servers.

  2672995 (1092055)

SQL: COBSQL

Back to the list

- COBSQL Pro*COBOL error messages displayed only up to 80 characters.

  2681983 (1092788)
- Previously, commented-out END-EXEC statements were causing a Compiler error. COBSQL now ignores such statements.

  2680341 (1092533)
- The COBSQL precompiler was updated so it does not attempt conversion of source lines containing the continuation character.

  2663986 (1090930)

SQL: DB2 ECM

Back to the list

- When a CREATE TABLE statement contained a PARTITION parameter, the HCO DDL processor sometimes generated invalid DDL.

  2682214 (1092725)
- A new option (SAVEDDL) is available in the HCO DDL processor. With this option set, any DDL converted from the input DDL file is saved and not executed. The DDL processor now supports specifying the IN <tablespace> and COMPRESS <option> parameters but not modifying them.

  2673448 (1091907)
- Previously, the HCO IMPORT tool could go into a loop if the LOB column was in the import data set.

  2673443 (1091887)
- When compiling on a 64-bit systems, the DB2 pre-compiler incorrectly generated an error "DB0121 Package name is too long."

  2673259 (1091920)
- The HCO DDL processor now accepts column names greater than 18 characters. Previously, in this situation, you received SQLCODE error -205 when the DDL was processed.

  2673085 (1091829)
- The HCO IMPORT tool now supports a new parameter (SAVEDEL) which enables converting DSN import files to delimited format. When used with this paramter, the HCO IMPORT tool only converts the file and does not perform an actual import.

  2672865 (1091891)
- The HCO Import Data tool was not checking for invalid lengths passed for VARCHAR column data; the tool now checks this and when an invalid length is passed, issues an error message identifying the affected column.

  2661781 (1091056)

SQL: HCO for SQL Server

Back to the list

- HCOSS now handles statements of type "SET hostVariable = CURRENT SQLID" correctly.

  2693537 (1093690)

- The HCOSS Assess Application Migration tool flagged CALL statements as errors without checking parameter directions. These CALL statements are now flagged as 'in doubt' to initiate an assessment of parameter directions.

    2685247 (1093156)
- The OpenESQL preprocessor and runtime now support AMODE(31) address pointers and swapping COMP fields in SQLDA for user-defined mainframe style SQLDAs.

    2684229 (1092978)
- COBOL stored procedures could not perform database updates when called from a SQL Server trigger.

    2680257 (1092809)
- OpenESQL and HCOSS now correctly compile statements that contain CASE expressions.

    2679336 (1092605)
- OpenESQL now supports a generic syntax for setting and rolling back to transaction save points that work with Oracle, DB2, and SQL Server.

    2676145 (1092138)
- Although mainframe DB2 supports FETCH INSENSITIVE from SENSITIVE STATIC cursors, which has a SQL Server equivalent KEYSET cursor, SQL Server does not support FETCH INSENSITIVE from KEYSET cursor. This is a permanent limitation.

    2676140 (1092137)
- OpenESQL did not support BLOB, CLOB, and DBCLOB host variables larger than 64K.

    2649752 (1089622)

SQL: OpenESQL

- OpenESQL did not support using the DB2 VALUES INTO statement with DB2 LUW.

    2694069 (1093906)
- The OpenESQL preprocessor incorrectly rejected host variable character definitions that contained x'091' characters.

    2692065 (1093465)
- You can now specify SQL(NOCHECKSINGLETON) in applications that require compatibility with older products to check for unfetched rows after a singleton SELECT. In such cases, the returned SQLCODE value is zero rather than an error or a warning.

    2691736 (1093420)
- The SQL(TSTAMPSEP)compiler directive could not be explicitly set to a space character, for example SQL(TSTAMPSEP=). This is now the default setting unless overridden by specifying SQL(DIALECT=MAINFRAME).

    2691212 (1093364)
- In the IDE, the TSTAMPSEP directive was not listed as an OpenESQL compiler directive option.

    2685702 (1093116)
- When SQL(NODETECTDATE) is set after SQL(DIALECT=MAINFRAME), HCOSS does not attempt to convert date, time or timestamp literals in static or dynamic SQL statements.

    2685422 (1093615)
- DB2 LUW applications could not use DECLARE GLOBAL TEMPORARY TABLE statements that were not syntactically valid for DB2 z/OS.

    2685219 (1093346)
- The sqlda.cpy copybook could not be compiled using the ENTCOBOL mainframe dialect.

    2682522 (1092825)

- A new XA switch module is now available that supports XA recovery.

  2680297 (1092528)
- Previously, you would receive error COBCH002 when SQL(NOPRE) was specified because the ODBC precompiler would try to generate code using a variable which was not defined.

  2679267 (1092438)
- The OpenESQL pre-compiler generated code that swap COMP host variables incorrectly if the SQL statement got an SQL runtime error.

  2677606 (1093013)
- The OpenESQL precompiler sometimes incorrectly generated swap code for COMP host variables if they were used for both input and output in same SQL statement which resulted in SQLCODE of +100 being returned.

  2675122 (1092454)
- A problem with SQL(CHECK) no longer occurrs when using binary host variables.

  2673281 (1091832)
- A problem with nested select queries in ESQL 'select into' statements has been fixed.

  2672519 (1091768)
- Previously, an incorrect code was generated for an INSERT statement that used an indicator variable array when DBMAN=ADO was set.

  2671938 (1091715)
- The support for EXEC SQL GET DIAGNOSTICS has been extended to include DB2_ROW_NUMBER, ROW_NUMBER and COLUMN_NUMBER as diagnostic items that can be retrieved by an application.

  2670955 (1091611)
- The OpenESQL preprocessor could sometimes improperly decode DBCS host variable characters which resulted in receiving an "ES0109 Invalid data name" message.

  2670725 (1091594)
- The OpenESQL pre-compiler incorrectly changed the underscore character (_) to a dash character (-) in an EXEC SQL WHENEVER statement.

  2670723 (1091593)
- Dynamic SQL statements were not releasing JDBC cursors.

  2670548 (1091585)
- OpenESQL for JVM COBOL prevented type byte[] host variables from being used.

  2667023 (1091240)
- The SQL Directives information available within the Visual Studio and Eclipse IDEs contained an error regarding the available options for the XDB(DATE) and XDB(TIME) directives.

  2666213 (1091185)
- Some issues relating to the use of PIC G /PIC N DISPLAY-1 and some DBCS host variables have been resolved.
- When using Data Direct ODBC drivers, PIC N NATIONAL host variables always uses UTF-16 instead of UTF-8 which previously happened on some platforms.
- Some problems with using Data Direct's ODBC driver for Microsoft SQL Server have been fixed.

UNIX Cob

- Cob now checks for duplicate symbols defined in objects that are passed to cob for linking.

  2651626 (1089779)
- Previously, ccbl was leaving behind a file named cobxi* in the `$TMPDIR` or `/var/tmp` directories.

Web Service Client

Back to the list

- Support for nested COUNT IN clauses has been added to the generated Web Service Console Client. Empty and unused array fields will no longer be returned in the client output.

  2278428 (1066547)

XDB Server

Back to the list

- MFDB2UNL.CBL now allows the use of semi-colons within SQL statements.

  2661513 (1090755)

XDB: Problems not classed above

Back to the list

- Previously, TESTCOVER configuration could cause spurious errors in XDB utilities.

  2677742 (1092299)

XML Syntax Support Preprocessor

Back to the list

- PREXML now handles conditional compilation correctly.

  2665552 (1091113)
- An XML file being opened for input is now closed correctly.

  2664760 (1091006)

XML Syntax Support Runtime

Back to the list

- The XML run-time system now handles non-US EBCDIC characters correctly.

  2665518 (1091086)

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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