Micro Focus Visual COBOL 2.2 Update 1 for Visual Studio

Release Notes

Micro Focus
The Lawn
22-30 Old Bath Road
Newbury, Berkshire RG14 1QN
UK
http://www.microfocus.com

2014-06-13

Contents

Micro Focus Visual COBOL 2.2 Update 1 for Visual Studio 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.

Product Description

Visual COBOL enables you to develop COBOL applications within Microsoft Visual Studio. You use the Visual Studio integrated development environment (IDE) to edit, compile and debug COBOL applications. The IDE provides all the functionality to manage projects and build applications.

The product is available in the following variants - Visual COBOL for Visual Studio 2010, Visual COBOL for Visual Studio 2012 and Visual COBOL for Visual Studio 2013 - each one of which target a different version of the deployment product:

- COBOL Server - the deployment environment for COBOL applications created with Visual COBOL for Visual Studio 2010 or Visual COBOL for Eclipse
- COBOL Server 2012 - the deployment environment for COBOL applications created with Visual COBOL for Visual Studio 2012
- COBOL Server 2013 - the deployment environment for COBOL applications created with Visual COBOL for Visual Studio 2013

Note: Visual COBOL now includes support for creating Web service and Enterprise Java Bean applications using the Interface Mapping Toolkit (IMTK) in conjunction with Enterprise Server. If you are upgrading to this release from an earlier version of Visual COBOL, you may need to apply for a new authorization code in order to access the functionality - please contact Micro Focus SupportLine to receive an updated authorization code. Note that the Visual COBOL Personal Edition license does not support the IMTK functionality.

Important: Application executables that were compiled using earlier Micro Focus products must be recompiled from the sources using Visual COBOL.

Installation

System Requirements

Hardware Requirements

Visual COBOL has the following requirements in addition to the requirements of Microsoft Visual Studio. See the Visual Studio documentation for details of the Microsoft requirements.

The disk space requirements are, approximately:

Platform	Visual COBOL	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

Note: If you are using Visual COBOL on a 64-bit operating system, you can produce either 32-bit or 64-bit applications.

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:

- Visual COBOL for Visual Studio 2012 or 2013 is not supported on versions of Windows earlier than Windows 7.
- The Enterprise Server feature is not supported on Windows XP.

Software Requirements

Visual Studio IDE

This product requires any of the following versions of Visual Studio:

- A full version of Microsoft Visual Studio 2010 or 2012 or 2013 Premium, Professional, or Ultimate edition, or the respective version of Microsoft's Visual Studio Integrated Shell.

  Note:

  - Microsoft Visual Studio Express Edition is not supported.
  - You can download the Visual Studio Integrated Shell from the *Microsoft Download Center*. If you choose to install the Shell, ensure you run the installer to complete the installation - run `vsintshell.enu.exe` from the location where you installed the download.
  - The Visual Studio 2013 Connected IDE experience is not available with the 2013 Shell.
- If you do not have any of these versions of Visual Studio installed, the setup file will install the Visual Studio Integrated Shell.

- Microsoft Windows SDK is required if you are using the Visual Studio Shell. See the *Microsoft Download Center* and search for Windows SDK.
- Microsoft .NET Framework 4.0. This is included with the above versions of Visual Studio.
- Microsoft .NET Framework 4.5. This is included with Visual Studio 2012.
- Microsoft .NET Framework 4.5.1. This is included with Visual Studio 2013.

Note:

- Visual Studio 2010 Service Pack 1 is required if you are using Visual COBOL for Visual Studio 2010 and Visual COBOL for Visual Studio 2012 or Visual Studio 2013 on the same machine. If you are connected to the Internet, the setup file downloads and installs Visual Studio 2010 Service Pack 1 automatically. If you do not have Internet access, you need to download Visual Studio 2010 Service Pack 1 on a machine that has Internet connection, and then copy the installer to your machine.
- In addition, when building a native COBOL project that contains resources you must replace the `cvtres.exe` in the `bin` and `bin64` directories of your Visual COBOL installation with the version of the file which gets installed with Visual Studio 2010 SP1. You can download Service Pack 1 for Visual Studio 2010 from the *Microsoft Download Center*.

Internet Explorer 10

Internet Explorer 10 (IE 10) is required by the installation of Visual Studio 2013. If you are installing Visual COBOL on a machine that has no Visual Studio 2013 installed, the setup file installs Visual Studio 2013 Shell provided that IE 10 is installed beforehand. You can download IE 10 from *Microsoft's Web site*.

IIS Express

IIS Express is required if you want to use the Web development tools. You can download IIS Express from the *Microsoft Download Center*.

Other Requirements

Important: This release requires version 10000.2.990 or later of the Micro Focus licensing software. For local servers, you do not need to install it separately, as the setup file installs a new Visual COBOL 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.

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

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

- *Windows Forms* on page 10
- *XML Extensions*

COBOL on Windows Azure

Back to Top

Windows Azure requires additional software. See the Microsoft Windows Azure web site for a full list of the required software, but the following is a summary of the main prerequisites:

- Windows 7, Windows Vista® SP1 or higher, or Windows Server® 2008
- Visual Studio's Visual Web Developer feature
- Windows Azure Tools version 2.1 for Visual Studio - this includes the Windows Azure SDK
- Internet Information Services (IIS) 7.0 - this must be installed and enabled, with ASP.NET, which is not enabled by default

Java Development Kit (JDK)

Back to Top

Native COBOL and Java Interoperability	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.
Compiling Java	Either the IBM or the Oracle Java Development Kit (JDK), version 1.5 or later, is required for compiling Java.
Interface Mapping Toolkit (IMTK)	**Restriction:** This feature applies only when the Enterprise Server feature is enabled. The JDK is required for generating Java interfaces from the Interface Mapping Toolkit or the `imtkmake` command.

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

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

Back to Top

Consolidated Trace Facility

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

Database Access

Back to Top

Before you can use Visual COBOL to develop and deploy SQL applications that use COBSQL, DB2 ECM, or OpenESQL, ensure any third-party software prerequisites are installed and the environment is set properly.

Database Access - COBSQL (Pro*COBOL)

Back to Top

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

Availability

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

XA Switch Module

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

Certification of RDBMS Precompilers for Native COBOL

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

Preprocessors

COBSQL supports the following database preprocessors:

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

Compiling

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

Back to Top

Database Access - OpenESQL

Availability

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

XA Switch Modules

When the Enterprise Server feature is enabled, the ODBC One-phase Commit and the SQL Server XA switch modules are provided and are available on the same platforms as are indicated in the *Availability* section above.

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

Native COBOL and .NET Managed COBOL

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

.NET Managed COBOL

- OpenESQL has been tested against the following ADO.NET data providers:
  - Microsoft provider for SQL Server
  - Microsoft provider for Oracle
  - IBM DB2
  - Oracle Data Provider for .NET (ODP.NET)
  - OleDb
  - Managed ODBC .NET providers

- Dynamic SQL using the SQL Descriptor Area (SQLDA) is not currently supported for OpenESQL applications compiled with the SQL(DBMAN=ODBC) directive.

SQL CLR Integration

The following software is required to use the SQL CLR integration feature, which is specifically for the development and deployment of COBOL stored procedures under Microsoft SQL Server.

Projects based on the SQL CLR Database Project template require:

- Visual Studio Professional 2010, Premium 2010, or Ultimate 2010
- SQL Server 2008 R2 targeting .NET CLR v2.0 frameworks (2.0, 3.0, 3.5)

Projects based on the SQL Server Database Project template require:

- All of the following:
  - Visual Studio Shell 2010, Visual Studio Professional 2010, Premium 2010, or Ultimate 2010
  - Subsequent installation of:
    - Visual Studio 2010 SP1 (for any previously installed edition of Visual Studio 2010)
    - Microsoft SQL Server Tools (SSDT SDK)
- Any of the following:
  - SQL Server 2008 R2 targeting .NET CLR v2.0 frameworks (2.0, 3.0, 3.5)
  - SQL Server 2012 targeting .NET CLR v4.0 framework (4.0, 4.5) or .NET CLR v2.0 frameworks (2.0, 3.0, 3.5)
  - SQL Server Azure targeting .NET CLR v4.0 framework (4.0, 4.5) or .NET CLR v2.0 frameworks (2.0, 3.0, 3.5)

SQL CLR Integration

The following software is required to use the SQL CLR integration feature, which is specifically for the development and deployment of COBOL stored procedures under Microsoft SQL Server.

Projects based on the SQL Server Database Project template require:

- Either of the following:
  - Visual Studio Shell 2012 and Microsoft SQL Server Tools (SSDT SDK)
  - Visual Studio Professional 2012, Premium 2012, or Ultimate 2012
- Any of the following:
  - SQL Server 2008 R2 targeting .NET CLR v2.0 frameworks (2.0, 3.0, 3.5)
  - SQL Server 2012 targeting .NET CLR v4.0 framework (4.0, 4.5), or .NET CLR v2.0 frameworks (2.0, 3.0, 3.5)
  - SQL Server Azure targeting .NET CLR v4.0 framework (4.0. 4.5) and also .NET CLR v2.0 frameworks (2.0, 3.0, 3.5)

Important: The SQL CLR Database project template is not supported with Visual Studio 2012. Projects based on the SQL CLR Database project template are automatically upgraded to use the SQL Server Database project template when opened in Visual COBOL for Visual Studio 2010.

Database Access - DB2 ECM

Back to Top

Availability

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

XA Switch Module

When the Enterprise Server feature is enabled, the DB2 XA switch module is provided and is available on the same platforms as are indicated in the *Availability* section above.

Certification of RDBMS Precompilers for Native COBOL

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

Preprocessor

DB2 ECM supports the following database preprocessors:

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

Windows Forms

Back to Top

- Microsoft Internet Information Service (IIS) is also required for generating Windows Forms test clients.

XML Extensions

Back to Top

- XML Extensions has the same requirements as Visual COBOL. Both 32-bit and 64-bit versions are available. See the *XML Extensions for Visual COBOL*, available from the Visual COBOL product documentation section of the Micro Focus SupportLine Web site for more details.
- Additionally, XML Extensions may be used in conjunction with Terminal Server.

Installing Visual COBOL for Visual Studio

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.

You can download Visual COBOL for Visual Studio 2012 or 2013 from the Micro Focus SupportLine Web site and from the *Product Updates* section.

Product Co-Existence

- Visual COBOL and COBOL Server cannot coexist on the same machine.
- Visual COBOL and Enterprise Developer cannot coexist on the same machine regardless of which IDE (Visual Studio or Eclipse) you install.
- Visual COBOL is available in different IDE variants, each one of which is targeted by one specific variant of the development product:

- COBOL Server - the deployment environment for COBOL applications created with Visual COBOL for Visual Studio 2010 or Visual COBOL for Eclipse
- COBOL Server 2012 - the deployment environment for COBOL applications created with Visual COBOL for Visual Studio 2012
- COBOL Server 2013 - the deployment environment for COBOL applications created with Visual COBOL for Visual Studio 2013

You can only deploy applications to the specific variant of COBOL Server that is targeted by the Visual COBOL variant used to build the applications. For example, if you build your application using Visual COBOL for Visual Studio 2012, you can only deploy the target files to COBOL Server 2012. The application will not run in COBOL Server or COBOL Server 2013.

Installation restrictions and requirements

Before starting the installation you should consider the following:

- Visual COBOL and Enterprise Developer cannot coexist on the same machine.
- If, when you install Visual COBOL for Visual Studio 2010, the machine does not have Microsoft Visual C++ 2010 Redistributable Runtime already installed, it is installed as required by Visual COBOL. The installation of Microsoft Visual C++ 2010 Redistributable Runtime adds a number of `.dll` files, without digital signatures, into the `winsxs` directory.
- If, when you install Visual COBOL for Visual Studio 2012 or 2013, the machine does not have Microsoft Visual C++ 2012 or 2013 Redistributable Runtime already installed, it is installed as required by Visual COBOL. The installation of Microsoft Visual C++ Redistributable Runtime adds a number of `.dll` files, without digital signatures, into the `winsxs` directory.
- If you are installing this as an upgrade, make sure that none of the product files are in use when you start the installation. Also, the Visual Studio Help Viewer must not be opened.
- 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) 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 a Visual COBOL command prompt.
     b. Install the service. Enter the following command: `mfds -i`
     c. Start the service. Enter the following command: `net start mf_ccitcp2`

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

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

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

Installing as an Upgrade

This release will update existing installations of Visual COBOL 2.2.

- Before installing this release as an upgrade to an existing installation of the previous version 2.2 of the product, you must uninstall any HotFixes of 2.2. This is to avoid some problems that might result in files not being installed.
- Before installing this release as an upgrade, ensure you create a back-up of your Enterprise Server configuration. To do this, on the Enterprise Server Administration home page, click Export and then select **Export Enterprise Server configuration and Security Manager definitions**. This creates a backup folder in the `c:\programdata\micro focus\Enterprise Developer\MFDS`. You can restore the Enterprise Server configuration after installing this release - click Import on the Enterprise Server Administration home page.

Installing

Note:

- Before installing, check *Installation Restrictions and Requirements*.
- See *Installing as an Upgrade* first for important information when upgrading an existing installation of Visual COBOL.
- This version of the product is a full install.

To install this product:

1. Run the `vcvs2010_221.exe` (`vcvs2012_22.exe` when installing the product for Visual Studio 2012 or `vcvs2013_22.exe` when installing the product for Visual Studio 2013) file and follow the wizard instructions to install the prerequisite software and the product.

Note:

- When the installation has completed, on some editions of Windows you might receive a notification that Visual Studio 2012 has compatibility issues. This is a Microsoft's known problem. To resolve it, follow the instructions in the notification for obtaining help online, or download the KB2781514 update for Visual Studio 2012 from the *Microsoft Download Center*.
- 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 **Add or Remove Programs** (Windows XP) or **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 Visual Studio and 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 Visual COBOL but you can install it if you wish.

Visual COBOL Installation Options

To install Visual COBOL you run `vcvs2010_221.exe` which contains a number of product `.msi` files (Windows Installer packages). When run, `vcvs2010_221.exe` performs some initial system checks then sequentially installs the `.msi` files.

Note: The following applies to `vcvs2012_22.exe` when installing the product for Visual Studio 2012. The following applies to `vcvs2013_22.exe` when installing the product for Visual Studio 2013.

`vcvs2010_221.exe` can take a number of parameters, enabling you to specify a number of different types of installation:

- Standard Installation

  Format:
  `vcvs2010_221.exe`
  Summary:
  Full installation including License Manager and Visual COBOL. During installation you can specify options including the location to which the components are installed.
- Non-interactive Installation

  Format:
  `vcvs2010_221.exe /passive`
  Summary:
  Full installation, but the components are installed non-interactively using default options and directories.
- Silent Installation

  Format:
  `vcvs2010_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:
  `vcvs2010_221.exe /q InstallFolder=d:\otherdirectory`
  Summary:
  Full installation, but the components are installed non-interactively with no user interface, and Visual COBOL is installed to `d:\otherdirectory`.

To see what parameters you can use, execute the following from the command line: `vcvs2010_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.

Microsoft Terminal Server

You can use this product with Microsoft Terminal Server but note that a separate end-user license is required for each user who accesses it, even if the product is running on a single machine. See your *End User License Agreement*.

Microsoft Terminal Server is an environment for running multiple instances of a single-user product. It is not a platform where a single-user product can be made to perform as a multi-user product.

To install onto a terminal server:

- Log on to the physical terminal server with a user ID that has administrator privileges.
- Use **Control Panel** > **Programs** (or **Add/Remove Programs** on older versions of Windows) and follow the instructions on the screen.

When you install the product on Microsoft Terminal Server or similar terminal software, do not execute more than one installation at the same time.

When you install Microsoft Terminal server, you must assign a unique port address to each user. Then the very first time that each user logs into Visual COBOL and starts the terminal server, they should:

1. Select **Options** > **Project** > **Port address for Web Server**.
2. Type in the assigned port address.

This is necessary because the default port address for the Web server is 80. Once this has been allocated to the first user, when the next user attempts to start the Web server, the software recognizes that this port is in use and rejects the attempt. Consequently each user requires an individual port address.

Installing from a Server

There are two methods for installing this product on users' machines using a server. You can:

- Copy the product onto the server and then use Setup under control of a third-party software distribution package, such as Microsoft's Systems Management Server (SMS), to install the product onto multiple users' machines.

  This method of installation and the associated file are not supported by Micro Focus. They are provided on an "as is" basis and have not been tested in any form. You can use them at your own discretion.
- Install onto the server. Then users run Setup to install from the server onto their own machines.

Both methods give you control of what options the user can install and mean you do not have to send the installation media to every user, as they install from the server instead.

Windows Compatibility Mode

In Windows Vista and Windows Server 2008, if you have problems starting Enterprise Server instances using the Micro Focus Enterprise Server Administration HTML GUI, ensure that none of the Enterprise Server program files are configured to use a Windows compatibility mode. You can check for compatibility modes by examining the file properties for the program file using Windows Explorer:

1. Open the **Properties** dialog box for the file.
2. Click the **Compatibility** tab.
3. Ensure that **Run this program in compatibility mode for** is not checked.
4. Click **Show settings for all users** and ensure that **Run this program in compatibility mode for** is not checked.
5. Click **OK** on both dialogs to update the file properties.

Verify that `<install-dir>\base\bin\mfds.exe` is not set to run in a compatibility mode.

- For 32-bit Enterprise Server, check `bin\cas*.exe` and `bin\mfcs.exe`
- For 64-bit Enterprise Server, check `bin\win64\cas*.exe` and `bin\win64\mfcs.exe`.

After Installing

You are now ready to run Visual COBOL. From the Windows taskbar click **Start > All Programs > Micro Focus Visual COBOL > Visual COBOL for Visual Studio *nnnn***.

Note: The Start menu is not available on Windows 8 and Windows Server 2012. You use the Start screen to invoke programs.

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

Database Access	Managed applications using SQL(DBMAN=ODBC) that were compiled in Visual COBOL 2.1 Update 1 must be recompiled in Visual COBOL 2.2 Update1.
Existing Applications	Application executables that were compiled using earlier Micro Focus products must be recompiled from the sources using Visual COBOL.

Please refer to the *Start Here* and *Product Information* sections in your product Help. Here, you will find information on getting started including tutorials and demonstration programs.

Note:

- The first release of Visual Studio 2010 has a browser-based help system, Microsoft Help Viewer 1.0, which does not include an index for the locally-installed help. Navigation of the content is only available using the table of contents and Search and the help contents for the Help system does not expand and collapse in the same way as previous Help systems.
- If you have problems trying to view the Micro Focus help, ensure that the Visual Studio Help Library is pointing to local help. From the Visual Studio menu click **Help > Manage Help Systems > Choose online or local help** and check the **I want to use local help** button.
- Visual Studio 2010 SP1 provides an upgrade of the help system, Microsoft Help Viewer 1.1, which provides a stand-alone help viewer with an index and a fully expandable table of contents.
- If you do not want to install Visual Studio 2010 SP1, you can install some third-party tools that enable the index or the fully expanding table of contents. For more information, see the topic *Help on Help*.

- To view the help in Visual Studio 2012, ensure that the Visual Studio Help Library is pointing to local help. From the Visual Studio menu click **Help > Set Help Preferences > Launch in Help Browser**.
- For full details of the Visual Studio 2012 Help system, see the locally installed Microsoft Help Viewer 2.0 Help, which is available from Help menu in the IDE.
- On Windows 8 and Windows Server 2012, an issue with Microsoft Help Viewer 2.0 and Internet Explorer's security being turned on can cause the Help content to be displayed as raw HTML code. To resolve the issue, you need to turn off the Internet Explorer Enhanced Security Configuration (IE ESC) for both administrators and users. Check the Microsoft Windows help for more information on how to do this.

- To view the help in Visual Studio 2013, ensure that the Visual Studio Help Library is pointing to local help. From the Visual Studio menu click **Help > Set Help Preferences > Launch in Help Browser**.
- For full details of the Visual Studio 2013 Help system, see the locally installed Microsoft Help Viewer 2.1 Help, which is available from Help menu in the IDE.

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**.

To repair your installation on older versions of Windows, such as Windows XP:

1. Click **Start Menu > Control Panel > Add/Remove Programs**.
2. Click your Micro Focus product in the list of installed programs.
3. Click **Click here for support information**.
4. Click **Repair**.

Uninstalling

Windows

To uninstall the product, you cannot simply delete its files from your hard disk. To uninstall the product:

1. Log in with the same user-ID as you used when you installed the product.
2. Click **Uninstall a program** under **Programs** (or **Add/Remove Programs** on older versions of Windows) in **Control Panel**.
3. On older versions of Windows such as Windows XP, ensure that **Show Updates** (at the top of the Add or Remove Programs dialog) is checked, so that any hot fixes or WrapPacks are listed.
4. Select the product and click **Remove** or **Uninstall** as appropriate.

When you uninstall, the only files deleted are those that the installation software installed. If the product directory has not been removed, delete any unwanted files and subdirectories within it using Windows Explorer.

Note: The installer creates separate installations for Micro Focus Visual COBOL and Micro Focus License Administration. Uninstalling only Visual COBOL does not automatically uninstall the Micro Focus License Administration or any of the prerequisite software.

To completely remove the product you must uninstall the Micro Focus License Administration as well.

You can optionally remove the prerequisite software. For instructions, check the documentation of the respective software vendor.

Some registry entries are not removed by the uninstallation process and you need to manually delete them.

The following folders might not be removed:

- The `Micro Focus` *`Product Name`* folder in the Start menu - you can delete it manually.
- `%systemdrive%\Users\Public\Documents\Micro Focus` - includes the binaries and the log files of the samples which you have built.
- `%ProgramData%\Micro Focus` - includes some data files used by the Micro Focus licensing system.
- `%Program Files%\Micro Focus` - you can delete it manually.

To silently uninstall the product, you need the setup file and you need to execute the following at the command line:

```
start /wait install-file.exe /quiet /uninstall
```

In addition, the following registry entries are not removed. These are created the first time that an Enterprise Server that has been enabled for performance monitoring starts up:

- Micro Focus Server\Performance\Active Servers
- Micro Focus Server\Performance\PerfIniFile

Licensing Information

Note:

- If you have purchased licenses for a previous release of this product, those licenses will also enable you to use this release.
- The latest version of the SafeNet licensing software is required. See the *Software Requirements* section in this document for more details.
- 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 Visual COBOL, contact your sales representative or Micro Focus SupportLine.

For instructions on using the Micro Focus Licensing Administration Tool, see *Licensing* in the Visual COBOL 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.

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**.

Alternatively, you can install the license file from within the IDE as follows:

1. Start Visual COBOL.
2. Click **Help > Micro Focus Product Help > Product Licensing** to open the **Product Licensing** dialog box.
3. Ensure **I have a full Visual COBOL license** is checked.
4. Click **Browse** next to the **License file** field.
5. Select the license file (which has an extension of `.mflic`), and then click **Open**.
6. Click **Authorize** to install the license.

   You should see a dialog box with a confirmation that the licenses have been installed successfully.

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.

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**.

To obtain more licenses

If you are unsure of what your license entitlement is or if you wish to purchase additional licenses for Visual COBOL, contact your sales representative or Micro Focus SupportLine.

New Features in Visual COBOL 2.2 Update 1

Visual Studio Support

The following enhancements to COBOL support in the IDE are now available:

Expanded Copybook View

(Visual Studio 2012 and 2013 only.) The Expanded Copybook View functionality in the editor was added in the 2.2 release and this has been enhanced in 2.2 Update 1 so it is now possible to debug into the expanded copybooks. The functionality includes:

- Stepping inline in the expanded copybook view when debugging - when stepping into or hitting a breakpoint in the copybook, the copybook automatically expands. You can disable this feature from the IDE preferences.
- Showing Pinned Data tips inside the expanded copybook.
- Support for **QuickWatch** and **Add Watch** inside the expanded copybook.
- Executing some of the debugger commands from the context menu from the expanded copybook view - for example, **Show Next Statement**, **Run To Cursor** and **Set Next Statement**.

Some limitations apply.

Call Hierarchy

(Visual Studio 2012 and 2013 only.) Visual COBOL now supports the Visual Studio **Call Hierarchy** window for analyzing COBOL PERFORM statements.

Find All References

The Find All References functionality now works for managed OO COBOL code.

Navigation

You can now use **Alt+Shift**+Up Arrow (or Down Arrow) to navigate the variables in the editor.

You can use the drop-down types and members to navigate to the different sections (Linkage section, File section etc.) in your source files.

Project Details Window

The **Project Details Window** now includes columns showing the COBOL dialect of the files and the SQL properties set on them.

Run-Time Configuration

- You can now use the application configuration file (`application.config`) in native COBOL projects to specify some additional settings such as the search order for called programs, command line handling, or file handling. You can do this from the new **Run-Time Configuration** tab.
- When an executable is built using the IDE, the application configuration file is automatically copied to the output folder and is renamed as `<executable-base-name>.exe.mfgcf`.

Samples

This release includes the following new samples:

- Airport Demo (managed) - shows how to create a COBOL WCF REST service and then use a client application to consume it.
- Airport Demo (native) - a basic lookup program that reads the information about airports from a .dat file and outputs the distance between two airports.

The Sandcastle sample has been updated and now uses Sandcastle Help File Builder v1.9.8.0.

Solution Explorer

(Visual Studio 2012 and 2013 only.) Support is now available in Solution Explorer for the following features:

- Errors and warnings filters - click the arrow next to the  (Pending Changes Filter) icon in the Solution Explorer toolbar, and either click  **Errors Filter** or  **Errors and Warnings Filter** to show the files that result in errors or also cause warnings.
- Searching in Solution Explorer - You can use the search field in Solution Explorer to search for files in your solution. Searching also finds copybooks in the copybook dependency view even if they are not part of any of the projects in the solution.

ACUCOBOL-GT Compatibility

The following ACUCOBOL-GT support has been added in this release:

-Di compiler option The -Di compiler option, which initializes Working-Storage data items based in their type, is now supported.

Btrieve Support

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

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

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.

Database Access

The following new features have been added as part of database access support:

DB2 ECM

- Support added for DB2 LUW version 10.5

- Enhanced RETURN-CODE processing

OpenESQL

- Enhanced internationalization support for UNICODE, DBCS and MBCS
- Enhanced GET DIAGNOSTICS statement support
- Enhanced LOB support for CLOB, BLOB and DBCLOB data types
- ADO.NET connection editor now provides context help
- Enhanced IDE support for OPTION directives
- Now provides support for the creation of save points and rolling back to save points

XA Switch Modules

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

The following new features have been added to XA switch module support:

- New generic two-phase commit module for SQL Server
- Support for DB2 LUW version 10.5
- Support for Oracle version 12.1

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 the Output window.

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.

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.

Line Numbering for COBOL Programs

This release provides options for auto-inserting or removing line numbers in source files open the editor. Features include:

- COBOL numbering - line numbers are inserted in the sequence area of the code (columns 1 - 6), starting at 000100 at the first line, and incrementing by 100.

  If it recommended that you use COBOL numbering only if your files are in fixed or variable source format.

- Standard numbering - line numbers are inserted immediately to the right of area B, in columns 73 - 80, starting at 00001000 at the first line, and incrementing by 1000.

  If it recommended that you use Standard numbering only if your files are in fixed format.

- The **Renumber** and **Unnumber** commands available from the context menu in the editor.

Managed COBOL

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.

Run-time Support

The following new features have been added as part of the run-time support

Run-time Launch Configuration Files

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.

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.

Known Issues

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

In addition, note the following:

ASP.NET

It is not possible to run ASP.NET Web Sites or Web Services on a production machine (one that has Micro Focus COBOL Server installed) without an additional setup. This is because the production machine does not contain development tools such as the COBOL Compiler. To workaround this, you need to do the following steps:

1. Compile the site prior to deploying it using the **Publish Web Site** command in Visual Studio.
2. Edit the `.asmx` file of the Web service project or the `.aspx` file of the Web site and delete the `Language="COBOL"` statement.
3. Edit the `Web.config` file with a text editor and delete the line which contains: `<compiler language="COBOL"...`
4. Ensure that a .NET Server license is installed using Apptrack.

COBOL Watchpoints

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

Documentation

- In Visual Studio 2012, clicking **Help** > **Micro Focus Product Help** > **Product Documentation** results in the message "Cannot find requested topic on your computer". If you see this message, click Micro Focus Visual COBOL 2.2 for Visual Studio 2012 in the **Contents** tab to display the documentation as expected.
- If you install Visual COBOL for Visual Studio 2012 and its documentation is not available in the Microsoft Help Viewer, perform the following steps:

  1. In Visual Studio 2012, click **Help** > **Add and Remove Help Content**.
  2. Choose the **Manage Content** tab.
  3. Check the **Disk** radio button, then navigate to the folder containing the Visual COBOL for Visual Studio 2012 documentation. By default, this is `C:\Program Files (x86)\Micro Focus\<product name>\help`.
  4. Select `helpcontentsetup.msha` and click **Open**.
  5. In the content list, click **Add** next to the Visual COBOL entry.
  6. Click **Update**.
  7. Click **Yes** on the User Account Control and Microsoft Help Viewer 2.0 dialog boxes to enable the update to continue.

     The documentation for Visual COBOL for Visual Studio 2012 is added to the Microsoft Help Viewer.

     

     Note:

     This problem only occurs if you install Visual COBOL for Visual Studio 2012 while documentation for Visual Studio 2012 is being downloaded or updated, which typically happens when you install Visual Studio 2012 or run it for the first time.

Enterprise Server

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

Expanded Copybook View (in Visual Studio 2012)

- When you add a COPY statement in a COBOL program and then show it in Expanded Copybook View, the line for the copybook statement is read-only. If you then perform an Undo in the COBOL program, the COPY statement is removed while the contents of the copybook is still shown in the program.
- **Replace All** does not work inside the Expanded Copybook View
- For copybooks with file extensions that are not traditionally associated with COBOL you must first add the file extension to the list of known copybooks extensions in **Tools > Options > Text Editor > File Extensions** before you can show them in Expanded Copybook View.

ICETOOL Emulation

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

Installation

- Before installing this release as an upgrade to an existing installation of the previous version 2.2 of the product, you must uninstall any HotFixes of 2.2. This is to avoid some problems that might result in files not being installed. This is required only on Windows.
- Before installing this release as an upgrade, ensure you create a back-up of your Enterprise Server configuration. To do this, on the Enterprise Server Administration home page, click Export and then select **Export Enterprise Server configuration and Security Manager definitions**. This creates a backup folder in the `c:\programdata\micro focus\Enterprise Developer\MFDS`. You can restore the Enterprise Server configuration after installing this release - click Import on the Enterprise Server Administration home page.
- When installing this product for Visual Studio 2010, if you already have Visual Studio 2010 Isolated Shell with Service Pack 1 (SP1) installed, you might experience problems with starting Visual Studio after the installation. This is a Microsoft issue relating to the Integrated Shell (installed as part of the Micro Focus product installer) overwriting some Visual Studio SP1 components. To resolve the issue you need to repair Visual Studio 2010 SP1.

Native COBOL

On Windows XP, when building a native COBOL application in Visual Studio, a dialog may pop up with error "Unhandled exception at 0xc0006866 in cobol.exe: 0xC0000005: Access violation reading location 0xc0006866)". This is caused by Symantec antivirus runtime protection. To resolve this, you need to apply the following fix from Symantec: *http://www.symantec.com/business/support/index?page=content&id=TECH97280&locale=en_US*.

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).

Visual Studio IDE

- In the properties of a managed project, the **Application** page currently allows you to select any of the static methods in the application as a **Startup** object. This is incorrect. You should always set only the first static method or the program name as a Startup object in order for the project to build.
- Using Call Hierarchy locks the source files currently opened in the editor. To work around this problem, you need to trigger a syntax check - for example, by making a small change to one of the open files.

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

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
  ```

SQL: COBSQL

Back to the list

- 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

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

- 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)

Documentation

Back to the list

- 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)
- 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)

ES Monitor/Control (ESMAC)

Back to the list

- 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

Back to the list

- 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)

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)
- 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)
- 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)

MFIO

Back to the list

- 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

Back to the list

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

NCG

Back to the list

- 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.

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)

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

Back to the list

- 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.

Visual Studio IDE

Back to the list

- When using a continuous integration system (such as Team Foundation Server), it was not possible to build any COBOL project unless the user account under which the builds were executed had been used to start Visual Studio at least once.

  2690873 (1093514)
- When you use the **Create Project From Existing Code Files** wizard to create COBOL projects, it now sets the output name or the assembly name to match the name of the project and also selects the correct build configuration.

  2684455 (1092962)
- When adding a file as a link to a virtual folder of a project when virtual view is switched on, the IDE no longer creates a physical folder when you switch off the virtual view in Solution Explorer.

  2676171 (1092151)
- Opening the project properties for a Managed Procedural Multi-Output project from the context menu now works correctly.

  2672907 (1091794)
- Creating a COBOL project in a directory containing DBCS characters could result in build errors.

  2664439 (1090964)
- Executables can now use run-time tunables without you having to set the COBCONFIG.BLOCK environment variable provided that the Application Configuration file for the executable is located in the same folder as the executable and is named `<executable-base-name>.exe.mfgcf`.

  2644263 (1089150)
- You now receive Compiler output when you are using MSBuild from the command line to build projects, when the verbosity level is set to Minimum.

  2617055 (1091210)
- Managed COBOL programs that use RM/COBOL data file support now work correctly when you debug or run them from within Visual Studio.

  2609061 (1087614)
- When debugging Web Applications, ensure that 'Use Managed Compatibility Mode' has been checked in **Tools > Options > Debugging > General**.
- An issue where changing the project properties would not trigger a background parse has been resolved.
- In a managed COBOL project in which some of the programs contained errors, if you opened a program that did not contain errors, it was sometimes marked as containing errors in Solution Explorer. If you subsequently opened the program containing errors and fixed them, the errors would not be removed from the Error List or from Solution Explorer.
- If you specified that a virtual folder should include file extensions that matched the extensions of items in the project, those items did not move to the virtual folder immediately.
- Previously, copybooks on sequential lines expanded inline in the source code were incorrectly colored as read-only though you could still edit the expanded code as expected.
- When you specified project location and project type in the **Create New Project From Existing Code** File wizard, if you added subfolders on the same page, the Next button would not be enabled.
- When converting Net Express projects to Visual Studio solutions, the conversion no longer creates a project named "***<SolutionName>* Shared**".
- Sometimes, it was not possible to type anything in a copybook expanded inline at the start of the line immediately following the end of the copybook.
- The column position for items in columns 128-256 appeared negative.
- When Virtual View was enabled, adding a form, a WPF object or a settings file to a .NET project resulted in an error.
- Deleting a virtual folder that contained other virtual folders could cause the IDE to hang.
- If you moved, renamed or deleted a virtual folder, turned off the Virtual Folder view and then turned it back on, files would sometimes move to other virtual folders or disappear from Solution Explorer.

- For native COBOL projects that contain dependencies on library files or objects that are not part of the project, if one of those dependencies is updated and you rebuild the project, the project will be relinked using those updated files.
- If you used the REPLACE statement in a program, the **Show All Copybooks** command would have no effect for that program.
- The default debugging options for Native COBOL in **Tools > Options > Debugging > COBOL** are now correctly enabled.
- It was not possible to navigate to an item in another file, where the item was on a line number greater than the number of lines in the current file.
- The Add Existing Item dialog now includes a filter which enables you to add files of several supported types at the same time.
- When navigating to an error on a source line that contains tabs, the highlighted code sometimes did not match the error.
- The Virtual View in Solution Explorer now provides a default virtual folder for service interfaces. The folder does not show though for existing projects in which you have added your own virtual folders.
- Previously, it was not possible to debug a project using "Start Project" if the output name of the project was specified on the "COBOL Link" tab in the project's properties.
- The Add Existing Item dialog now displays all supported COBOL file extensions, including any new ones that you have added to the IDE options. If you configure the IDE options to add or remove file extensions from the list of extensions for COBOL source files, you must restart the IDE before the change to take effect.
- If an error or warning is detected in a copybook, the icon for the program containing the error will now be updated to reflect this.
- The COBOL Source virtual folder now only contains files which can be compiled (which have their Build Action set to Compile in the file properties). Files which were previously in this virtual folder but do not compile will now appear in the Copybooks virtual folder or in the project root. .
- Copying block selections of code and pasting them in an expanded copy view no longer replaces the selected lines of code entirely with the pasted text.
- If a source file that contains errors or warnings is added to the project as a link, it is now correctly displayed in Solution Explorer with the error or warning icon instead of the link icon.
- If you created a virtual folder in Solution Explorer and specified file extensions for that folder that matched the extensions of existing items in the project, the new folder could not be expanded to view the files it contains.
- The members generated by the Implements Smart Tag are no longer inserted in unsuitable locations in the code when the expanded copybook view is turned on in the editor.
- Show All Copybooks would not show a copybook if, though it itself could be shown, it contained copybooks, all of which could not be shown inline.
- The following new default virtual folders are available in this release for non-Mainframe Subsystem projects - Content (for HTML and ASPX pages), Styles (for CSS stylesheets), Scripts (for JavaScript), Images (for bitmaps such as JPEG and PNG). For projects where you have created your own virtual folders, or have moved files between the virtual folders, your changes will be preserved and will override the new defaults.
- When adding existing files to a managed COBOL Mainframe Subsystem project, the Add Existing Item dialog now includes filters that enable you to only show the supported file types.
- The options in **Tools > Options > Text Editor > Micro Focus COBOL** are now set correctly after installing or updating the product.
- Changing the **Build Action** property for a file in a project configured to compile to multiple executables no longer causes a rebuild of the entire project.
- Sometimes, when showing copybooks inline, it was not possible to enter anything at the start of the line immediately following the end of the expanded copybook.

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.

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.

Disclaimer