



# Micro Focus Visual COBOL Development Hub 8.0

Release Notes

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# Visual COBOL Development Hub 8.0 Release Notes

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



**Note:**

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

## **Product Overview**

Visual COBOL Development Hub (Development Hub) is a part of the Visual COBOL product portfolio from Micro Focus which includes testing and developer productivity tools.

Development Hub is a companion of Visual COBOL for Eclipse. It enables the developers to use intelligent, integrated development tools in Eclipse while keeping the application source on a UNIX or Linux production-like server with access to middleware and test data. Developers get the power of Eclipse on their Windows or Linux desktop and can test their applications in a realistic environment without duplicating source code or emulating server behavior. With Visual COBOL, Visual COBOL Development Hub can be used for distributed development of COBOL for JVM applications.

# What's New

Enhancements are available in the following areas:

- [Micro Focus COBOL Extension for Visual Studio Code](#)
- [.NET 6 Support](#)
- [COBOL Language Enhancements](#)
- [Compiler Directives](#)
- [Data File Tools](#)
- [Enterprise Server](#)
- [Enterprise Server Common Web Administration](#)
- [Enterprise Server Security](#)
- [Micro Focus Unit Testing Framework](#)

## Micro Focus COBOL Extension for Visual Studio Code

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The Micro Focus COBOL extension for Visual Studio Code provides the following enhancements:

- The use of the Micro Focus COBOL extension with Visual COBOL 8.0 installed on the same machine enables COBOL Language Server support. This offers a rich COBOL editor experience inside Visual Studio Code including IntelliSense, Peek Definition, and Rename.



**Note:** The Micro Focus COBOL extension is available from the Microsoft Visual Studio Marketplace - [click here](#).

## .NET 6 Support

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This release provides the following enhancement:

- In all supported environments, you can use the .NET 6 SDK or Visual Studio code to build .NET 6 COBOL projects.  
Support for .NET Core 3.1 has been discontinued.

## COBOL Language

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The following enhancements have been made to the Micro Focus COBOL language:

- Further support for IBM Enterprise COBOL 6.3:
  - JSON PARSE and JSON GENERATE statements - for JSON GENERATE, anonymous objects can be generated using the OMITTED key word; the SUPPRESS phrase has been enhanced; the CONVERTING phrase is supported. For JSON PARSE, anonymous objects can be parsed using the OMITTED key word; the CONVERTING phrase is supported.
  - Intrinsic functions - the following list of functions is now supported: COMBINED-DATETIME, FORMATTED-CURRENT-DATE, FORMATTED-DATE, FORMATTED-DATETIME, FORMATTED-

TIME, INTEGER-OF-FORMATTED-DATE, SECONDS-PAST-MIDNIGHT, SECONDS-FROM-FORMATTED-DATE, TEST-FORMATTED-DATETIME, and UUID4.

- The AMODE Compiler directive has been enhanced to allow COBOL programs full access to the 64-bit address space (AMODE"64"). This emulates the LP"64" option in Enterprise COBOL.
- The DYNAMIC LENGTH clause, introduced in the last product release, is now supported in JVM COBOL (as well native COBOL).
- JVM COBOL enhancements:
  - When no explicit type is declared for a variable, but the value is a non-integer numeric (for example `declare var1 = 1.23`), it is assumed to be of type float-long.
  - The NAME OF expression has been introduced. It returns the unqualified name of the type or member specified.

## Compiler Directives

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The following Compiler directive is new in this release:

- DISPLAY-PICU - defines the way PIC U data items are displayed: either as ANSI or UTF-8.

The following Compiler directive has been enhanced in this release:

- AMODE - a new parameter "64" stores pointers in 64-bit format - see *COBOL Language Enhancements* for more details.

## Data File Tools

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The following enhancement has been made to the Data File Tools:

- The Data File Editor now supports opening and editing KSDS VSAM files stored in an MFDBFH datastore.

## Enterprise Server

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This release provides enhancements in the following areas:

- EZ Sockets now supports up to 4096 sockets on Linux, up from 1024, and enhanced tracing.
  - EZ Sockets applications, including ones that use the CICS listener CSKL (EZACIC02), can have more simultaneous connections.
  - EZ Sockets tracing now has options for logging the recent history only when any error or one of a set of particular errors occurs. This makes it easier to use tracing to diagnose EZ Sockets issues.
- Enterprise Server dataset management - dataset maximum retention period with the ability to alter and create reports:
  - ES\_JES\_ENFORCE\_EXPIRE\_DATE - helps determine whether or not to check the expiration date when deleting a catalogued dataset, and if expired, delete the dataset. If it hasn't expired and the PURGE option has not been specified, the dataset is not removed. The PURGE keyword is required to delete non-expired datasets. PURGE removes the underlying physical dataset file unless it is referenced by another catalog entry. SMS MANAGEMENTCLASS now supports maximum RETAIN days. See *Using SMS MGMT Classes* and the %SMS example command in the same topic.

- ES\_JES\_LISTCAT\_YMD - helps determine the date format used in the HISTORY report generated when the IDCAMS LISTCAT command specifies the ALL option.
- The EXPDT entry in a DD statement must be a four-digit year (YYYY); otherwise 1900 is the default, which is in-line with the mainframe processing, and prevents unexpired datasets from being erroneously removed (as was the case with the previous default of 2000). The ALTER command now takes the TO and FOR options to enable specification of the retention period for the entry being altered. The maximum retention period might be limited by the management class. The IDCAMS LISTCAT command ALL parameter now generates a separate HISTORY report that shows the creation date time and job, the last changed date time and Job, and the expiration date.
- HTTP compression - the Communications Server supports compressing large HTTP responses with gzip, and handles gzip-compressed HTTP requests. The Common Client supports gzip-compressed HTTP responses. Some large HTTP responses are compressed automatically if the client supports it. Large HTTP messages can be compressed, saving network bandwidth and improving performance.
- Task-cleanup performance - the performance of post-processing for tasks in MFCS has been improved.
- ICETOOL emulation - now supports the COUNT+n and COUNT-n syntax during trailer processing, where n is a numeric between 0-999. This adds to or subtracts from the COUNT value.
- Enterprise Server configuration - you can now change the recording directory of the dump, trace, HSF, and the console.log files of each region. See *Alternative Enterprise Server Output Locations* for more information.
- Compression on ECI calls via CASBNCCCL Client - when using the Micro Focus External Call Interface (ECI) over TCP/IP, the request and response data flows are now compressed using RLE.

## Enterprise Server Common Web Administration (ESCWA)

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This release includes the following enhancements:

- Oracle Coherence is now available as a PAC Scale-Out repository as an alternative to Redis.
- Reduced number of Redis instances required when a PAC incompatible upgrade is performed - it is now possible to have multiple PSORs in one REDIS instance. This allows for the REDIS instances provisioned in the PAC to be reused.
- Enhanced PAC diagnostics via CTF - a new option on the ES Control page is now available to enable or disable CTF for a running region without the need to recycle the region.
- ESCWA API, version 2 - includes updated versions of some of the existing API, version 1 endpoints, with improved JSON property names, more sensible URIs. The version 2 API is a single API standard across API endpoints. It includes a number of usability enhancements, has a better readability and discoverability, and includes an improved API documentation.
- Enterprise Server Configuration Manager
  - A variety of configuration options are available in ESCWA on the **General >Advanced** page for a region.
 

The property grid in ESCWA shows the full list of configurable properties, categorized by group, along with help text and some additional meta-information. Properties marked as dynamic in the property grid can also be updated in a running region.
  - A number of properties that were previously set with environment variables are now available in the ESCWA UI. The environment variables are still supported for backward compatibility.
- Accessibility enhancements - the ESCWA UI includes a number of improvements in the areas of usability with screenreaders, color contrast, and text and icon sizing and alignment. This is to give it an improved compliance with the 508 and WCAG 2.1 standards.

## Enterprise Server Security

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This release includes the following enhancements:

- AWS Secrets Manager - support is available for using an AWS Secrets Manager, `mfsecretsaws`, as a remote vault. See *The mfsecretsaws Vault Provider* .
- Protection for sensitive data - some sensitive data is now protected in the memory. This helps reduce the risk of exposing sensitive data such as passwords in core dumps and similar scenarios.
- An option to update short names - the ESF Update mechanism enables you to change between OS users ("long names") and ES userids ("short names") in running regions. This requires a non-default configuration setting.
- Caching improvements - ESF caching now caches more types of requests. This helps improve the Enterprise Server latency and throughput when external security is configured with caching.
- Support for Argon2 in password history - when Micro Focus passwords are used with the MLDAP ESM Module and password history is enabled, use Argon2 password verifiers in the history to avoid the potential exposure of passwords via weaker verifiers. This helps improve the security of the password-history mechanism.
- The product Help includes a new section, *Securing Enterprise Server*, which provides guidance on improving the security of Enterprise Server installations and the applications they host. This includes information on security and how to reduce security exposure.

## Micro Focus Unit Testing Framework

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The following enhancement has been made to the command-line version of the Micro Focus Unit Testing Framework:

- You can now use the Micro Focus Unit Testing Framework to build and run test cases from within a .NET 6 environment. Install the NuGet package supplied with Visual COBOL to enable the `mfunit` extensions to the `dotnet` command line utility.



# 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 Case Number followed by the Defect number (in parentheses).

- [Common Communications Interface](#)
- [Containers](#)
- [Enterprise Server](#)
- [Machine Administration](#)
- [File Handling](#)
- [Micro Focus Directory Server](#)
- [Run-time System](#)
- [SQL: OpenESQL](#)

## Common Communications Interface

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- For improved security, SSL/TLS connections are now restricted to TLS versions 1.2 and 1.3 by default. This is an industry best practice. If you need to use older, less-secure protocol versions with legacy clients or servers you should consult the product online help for instructions on configuring TLS protocol versions.

PSEC:103001 (87188)

## Containers

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- The containers image build tool now supports custom Java run-times which helps to keep the size of Java-based applications smaller.

(182004)

## Enterprise Server

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- The Security Manager passwords no longer appear in the `commonwebadmin.json` configuration file.

(203052)

- The X-XSS-Protection header will now be set on all requests instead of only on API requests.

01938835 (138176)

- In ESCWA, the colors and contrast have been adjusted to improve visual accessibility.


01995403 (158071)

- ESCWA now displays an improved message if there is an issue with loading the application, especially in the case where there is a browser incompatibility.

(241013)

- ESCWA now handles enterprise server regions that use character encodings other than windows-1252.

00370773 (11742)

- In ESCWA, the **Console Log** page now enables you to easily traverse and navigate the log. The new paging feature uses an API call from the Communications Server group documented in the Enterprise Server Administration Server API, typically located at `http://localhost:10086/docs/#/Communications_Server` on the machine where you have the product installed.  
02085456 (191017)
- ESCWA now supports multiple PACs in a single Redis store.  
(248003)
- ESCWA now handles enterprise server regions that use character encodings other than windows-1252.  
(91001)
- In ESCWA, on the **Communications Process** page you can now specify a Requested Status for the communications process.  
00669779 OCTCR50A69378 (69378)
- In ESCWA, the **Catalog DCB** page now displays the file size in bytes.  
01909652 (138002)
- ESCWA now supports Circular Logging. On the **Tracing and Logging Settings** page you can now specify the **Log Max File Size** and the **Log File Count** fields. By default, these fields are set to 1024kB and 5 respectively. See *Tracing and Logging Settings* in your product Help for more information.  
02083633 (191019)
- In ESCWA, a new optional **Logon security resource** has been added. This can be used to control users' ability to log on. See *Security Resources to Control ESCWA and API Access* in your product Help for more information.  
01886579 (124022)
- You can now define and install shared SOR Models. In the **SOR Model** dialog box, check **Shared** to enable the SOR Model to be shared between PACs.  
(244088)
- For LDAP-based security in Enterprise Server, the processing of password changes has been modified to address security issues, inconsistencies among configurations, and other issues. See *Understanding passwords with LDAP-based security* in your product Help for more information.  
(118088)
- Enterprise Server with LDAP-based security now denies a sign-on attempt by default if it includes a password-change request (a new password is supplied), and the password change fails. This was the existing behavior in some configurations but not in others. It is now consistent and configurable. See *MLDAP ESM Module Custom Configuration Information* in your product Help for more information.  
(108046)
- A change has been made to the way that TS queues and TD queues are stored in a PAC. This was to ensure that deleting a 0TSQ did not also delete all queues that had a 0TSQ\_ name prefix.  
 **Note:** After the update is applied you must cold start your PAC.  
(183044)
- In a PAC, the SIT setting is now honored when a TS or TD is to be applied to the enterprise server region if the TS or TD is not under a SOR, MFDBFH, or Fileshare. This means that if a SIT has to cold start for TS or TD and the files are either in the workarea or on disk then the SIT settings will be applied, otherwise the PAC-wide settings will be applied.  
02149316 (204020)
- EZASOKET traffic will now be assigned to Communications Process instance #1. You might need to consider this if you use load balancing.  
02060014 (201009)

- When a PAC is cold started, the configuration file specified by MFDBFH\_CONFIG will be uploaded to the PSOR and a temporary file created in the enterprise server region's workarea. This temporary file will be used by all the processes for that enterprise server region. Subsequent enterprise server regions joining the PAC will then create a temporary file in its workarea for the MFDBFH\_CONFIG from the PSOR store. If an enterprise server region in the PAC is killed or is terminated abruptly than the restart of the enterprise server region will try to recover the previous UUID left in the PAC and DEQ all remaining ENQs in MFDBFH that were created from the previous run. New messages will be created in the console.log identifying if the recovery was initiated and successful, if the enterprise server region could not be recovered automatically, the region will stop. A log file will be created in the workarea with the following file naming convention:

```
Caspac_Recover_UUID_XXXXXXXXXXXXX.log
```

For example: CASCD4012W Region was not stopped properly, recovering previous region UUID 14BAAA87B4C010BFBDE278A5F65B350C 18:15:17CASCD4014I UUID recovery file log C:\Users\mag.CORPDOM\Documents\Micro Focus User\Enterprise Developer\WORKAREA\RAS1\Caspac\_Recover\_UUID\_14BAAA87B4C010BFBDE278A5F65B350C.log 18:15:18. Using the caspac utility with the -aStatus parameter will display if the enterprise server region in a PAC has lost its connection to the PSOR. If you determine that the region is no longer in the PAC, then you can run the caspac utility with the -aRecoverUUID parameter to recover the enterprise server region. If the -aRecoverUUID parameter is used, then a file will be created in the current directory with the following file naming convention:

```
02081952 02123645 (182093)
```

```
Caspac_Recover_UUID_XXXXXXXXXXXXX.log.
```

See *caspac* in your product Help for more information.

- Functions have been added to file\_utilities which check a given file name against either a default blacklist containing operating system reserved file names, or a passed blacklist. Read, write, and delete in AES and MSCPD use this function to disallow secret names which are inappropriate names.

```
OCTCR50A7844 (112022)
```

- Fileshare is no longer used to locate the Resource Definition and CNV file.

```
00468648 (69010)
```

- MQ updates did not rollback on step failure. This has been fixed.

```
01976727 02161235 (155010)
```

- PSOR stores are now prefixed by the PAC NAME and a version number enabling you to run multiple PACs in the same PSOR, simplifying the incompatible upgrade process. The caspac utility enables you to add the PAC Name as part of the command line parameters using -pPACName or if not specified using the ES\_PAC environment variable. See *caspac* in your product Help for more information.

```
(202162)
```

- The XA reconnect mechanism now attempts to reconnect to all XA entries marked as "enabled" at the start up of the enterprise server region. To prevent the reconnect attempts, do one of the following:

- Remove the XA manager from the enterprise server region definition.
- Set the XA manager as disabled before starting the enterprise server region.

```
01991481 02003277 (151008)
```

- A new MLDAP ESM custom configuration section has been added. The [Prefix Search] option enables the Prefix Search wildcard optimization for limiting the scope of wildcard resource entities checked under a resource class. See *MLDAP ESM Module Custom Configuration Information* in your product Help for more information.

```
00726158 (73180)
```

- For LDAP-based security in Enterprise Server, the processing of password changes has been modified to address security issues, inconsistencies among configurations, and other issues. See *Understanding passwords with LDAP-based security* in your product Help for more information.

(118088)

- Enterprise Server with LDAP-based security will now by default deny a signon attempt if it includes a password-change request (a new password is supplied), and the password change fails. This was the existing behavior in some configurations but not in others. It is now consistent and configurable. See *MLDAP ESM Module Custom Configuration Information* in your product Help for more information.

(108046)

## File Handling

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- The `dbfhadmin` utility has been enhanced to allow the integrity of a datastore to be verified, and optionally, fixed up: use the `dbfhadmin -verify -list|-recover` options. See *The dbfhadmin Command Line Utility* in your product Help for more information.

00778044 (90143)

- The `dbfhadmin` command-line utility has been enhanced to provide the capability for verifying and optionally repairing (cross-)region databases.

02123645 (193071)

- The cross-region database heartbeat interval can now be configured using the `dbfhconfig -add|-update -heartbeat interval-in-seconds` command. The default heartbeat interval remains as 5 seconds. A warning message is now output to the Enterprise Server console during region database start-up if the heartbeat interval is configured to be >15 seconds. The larger the heartbeat interval, the longer the time that is required to be able to recover (cross-)region database resources. Recovery can only take place for a process if its associated heartbeat record has not heartbeat within the last "heartbeat-interval + 5" seconds.

02155269 (202149)

- The performance of PostgreSQL optimized I/O has been improved. If you use the `psqlodbc` device driver, you will need to ensure that you are running with version 12.02.0000 or later. This change has been tested with version 13.01.0000. To take advantage of the performance benefits of this change, specify `BatchSize=100` for each of your ODBC DSNs. Using a version of the driver earlier than 12.02.0000 could result in a performance degradation when deploying large files to datastores.

(125032)

- Table record locking and database record locking are incompatible and may lead to data corruption if used together by separate processes when processing the same file. MFDBFH has been enhanced to ensure that if a file is already opened in a process with table locking, all other processes attempting to open the same file, even if requesting database locking, will also use table locking. However, if a process has a file opened using database locking, other processes attempting to open the file will only be allowed to do so if they are transactional files (i.e. database record locking can only be used for transactional files). An attempt to open the file as non-transactional will fail. Refer to the *Record Locking Strategies* documentation for more information.

(102011)

- MFDBFH now enforces the existing requirement that a region database used by a PAC, or a region database used by an ES region configured to use `ES_LOCK_DB`, is not used by any other PAC or `ES_LOCK_DB` regions. This is necessary to avoid problems such as jobs with the same name submitted to two separate regions, but erroneously using the same region database, from being blocked by waiting on `SYSZJOB` and/or `SYSZJOB` ENQs. A check is now performed during region start-up to ensure that the region database is not already being used by another region. If it is, the region start up will fail, with error messages indicating the cause of the failure output to the ES console. Existing ES PACs/regions will need to be stopped and restarted for these new region database state checks to take effect. The `dbfhadmin -region -status [-reset]` command has been introduced to allow a region database's state to be displayed and, optionally, reset. See *Resource Locking* in your product Help for more information..

(121030)

## Machine Administration

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- A problem with using the .NET 3.5 framework has been fixed.  
(204144)
- A problem with CPU conversion has been corrected.  
(199042)

## Micro Focus Directory Server

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- The `mfd` `/s` option supports the specification of the optional Enterprise Server `user id` and `password` parameters using a configured Micro Focus Vault Facility location rather than using literal strings for credentials. For example:

```
mfd /s 1 mfsecret:user/user_001/id mfsecret:user/user_001/pwdwhere user/  
user_001/id and user/user_001/pwd
```

Are secrets stored in the default-configured vault. These values can be populated and administered using the `mfsecretsadmin` utility. See *Vault Facility* in your product Help for more information. The `mfd` `/x` and `/g` command-line options also support credentials stored in the vault.

02131532 (193088)

- If MFDS is configured to store sensitive values in the vault (for example, XA openstring or autostart credentials), these values were not being included in legacy data format or XML export of Enterprise Server configuration information. Subsequently, these values could not be reimported. These sensitive values are now included in the exported data. Micro Focus recommends that you protect the exported files with appropriate access control.  
(202272)

## Run-time System

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- The native COBOL multi-threaded demo is now available for Windows development products.  
(3765)
- Basic support for `xterm-256color` has been implemented.  
(57591)

## SQL: OpenESQL

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- A performance problem in a SQL program using fixed-length character arrays when compiling a COBOL program and using array fetch has been resolved.  
02152406 (203060)
- A new feature to assist migration between databases has been added. SQL error codes and messages may be mapped to different values or suppressed to match those expected by the application.  
(193003)

# Resolved Issues

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

- [Common Communications Interface](#)
- [Containers](#)
- [Data Tools](#)
- [Documentation](#)
- [Enterprise Server](#)
- [File Handling](#)
- [Interface Mapping Toolkit](#)
- [Micro Focus Common Client](#)
- [Micro Focus Directory Server](#)
- [Micro Focus License Administration](#)
- [Micro Focus Support](#)
- [Run-time System](#)
- [Setup](#)
- [SQL: COBSQL](#)
- [SQL: DB2 ECM](#)
- [SQL: Mainframe Batch Database Tools](#)
- [SQL: OpenESQL](#)
- [Visual Studio Code](#)

## Common Communications Interface

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- An invalid request no longer gives an unexpected "GkCWI: OPEN: unable to open connection: (8)" on Solaris 64-bit.  
(221007)
- Improvements have been made to the validation of server certificates for SSL/TLS connections.  
(244007)

## Containers

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- When building a base Docker image on UNIX/Linux platforms, you can now supply the `odbc` or `odbc-dev` parameters to install the odbc run-time library or odbc developer tools library respectively.  
(183056)

## Data Tools

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- When a filter is set on a data file, records outside of the filter are no longer inadvertently deleted when deleting filtered records.  
02151283 (204027)
- In the Data File Editor, records are now inserted correctly, even when the files are not stored on the C:\ drive.

02084190 (194028)

- Within the Data File Editor, when data files are opened through Enterprise Server, they will now close correctly when the related SEP is manually removed.

(235011)

- When working with data sets via ESCWA in the Data File Editor, if you attempt to filter the catalog without first logging in to ESCWA, you will now be prompted to log in instead of being shown an error. Also, entering correct login credentials after a previous failed login attempt no longer shows a 403 error, but will instead correctly log in and open the catalog.

01984967 02031391 (163059)

- Cosmetic changes have been made to some of the Data File Editor dialog boxes to ensure that all button/screen text is displayed correctly.

01984967 02031391 (162069)

- Within the Data File Editor, MFDBFH files (that is, those stored in a database) can now be opened as either shared or exclusive.

(234017)

- In the Data File Editor, hexadecimal values can now be used in the **Value** field when applying a filter to a data set.

02306658 (246107)

- In the Data File Editor, when the ruler is on, a vertical guideline is displayed down the page every 10 columns. Toggle the ruler off to remove the guidelines.

02306661 (246106)

## Documentation

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- The definitions for the ASSIGN directive parameters have been corrected in the documentation.

(10604)

- A restriction has been added to the documentation stating that you cannot call COBOL programs containing COMP-1 or COMP-2 parameters specified BY VALUE, and conversely, you also cannot call a C program using a COBOL program containing COMP-1 or COMP-2 parameters specified BY VALUE.

(8415)

- The documented syntax for CBL\_GET\_ERROR\_INFO has been corrected.

(124059)

- The parameter block for CBL\_GET\_OS\_INFO has been updated. The `cblte-osi-rtscapabilities` flag now contains a bit that indicates MFDBFH enablement.

(118068)

- When debugging in the IDE, you cannot extend the length of dynamic-length variables beyond their current size at the point of execution. Any data beyond the current size is truncated.

(209031)

- The documentation has been updated to clarify that the PREPLIST directive only affects preprocessors. It will not produce additional content for external compiler modules (ECMs), such as the DB2 ECM.

01717477 (97172)

- A note has been added to the `mfttrace.application` and `mfttrace.time` CTF documentation topics to state that these properties cannot be altered once the specified application has been started.

(4881)

- The documentation for the TEXTFILE and BINFILE Emitter properties has been updated to state when the LOCATION property is used.

(3896)

- The properties for the `mf.rts` CTF component have been updated/corrected in the documentation.

(195073)

- Additional links have been added to the documentation for 'dynamic length' items, to allow easier access to all information relating to this subject.

(230024)

- The documentation has been updated to better explain some of the options available when installing the Micro Focus License Manager.

(97130)

- A note has been added to the documentation to point out that the level numbers used in a segment layout file do not correspond to the level numbers that are used in the COBOL source (although the same group structure is maintained).

00778667 (97101)

- The Data File Tools restriction 'National data items are not supported in record or segment layouts' has been removed from the documentation.

(123088)

- The Large File Support for Fileshare documentation now points you towards the permissible file limits for indexed files.

(104263)

- The *Prerequisites* topic in the *Scale-Out Performance and Availability Clusters* section has been updated to include the support for Oracle 19c.

02038850 (167027)

- The *Application Server JCA support for Enterprise Server* topic has been updated to clarify support for 64- vs. 32-bit, and to remove indications of support for Red Hat 6.x EL on UNIX platforms.

(161102)

- The *Configuring Security using Active Directory* topic contained a broken link to the video covering how to define an external security manager. This has been fixed.

02004032 (158052)

- Anonymous binds have been disabled by default on MFDS instances which use "Restrict administration access". This means that applications such as ESCWA and MFCS which query MFDS Enterprise Server configuration data will be required to specify some form of credentials based on the MFDS security configuration. See *Class - Enterprise Server Administration* in your product Help for more information.

02209662 (244017)

- Within the documentation, refinements have been made to the tutorial: *Developing a PL/I application in Eclipse*.

(236024)

## Enterprise Server

### [Back to the list](#)

- The CPU Warning for a threshold incorrectly calculated that the process was using CPU. This has now been fixed.

00367274 (26052)

- An RTS 114 resulted when using the MQPUT1 with the ES\_MQMONE exit. This has been fixed.

02026475 (161077)

- In an HSF-enabled enterprise server region, a task that was killed for exceeding a threshold sometimes caused shared memory corruption if it was purged during a local trace table rollover. This would cause `casmgr` to trap and bring down the enterprise server region. This has been fixed.



- 02133017 (194118)
  - A SEP could stop producing system traces. This has been fixed.
- 02068443 (195029)
  - The list of SOR models was truncated if it exceeded 256 bytes for a given type (TS or TD). Previously, truncation could occur midway through a prefix, resulting in an incorrect prefix being applied to TS/TD processing. This has been fixed so that truncation occurs only after the last complete prefix. In addition, a warning message (CASSI9042W) is sent to the console log. If this message is detected, then the SOR models need to be reviewed and reduced to less than 256 bytes or, if not possible, then the user exit TSTDSRUE can be used instead.
- (245129)
  - A performance improvement has been made so that there is no attempt to access a TSQ during REQID generation in the START processing triggered by the EZASOKET listener.
- (153017)
  - A transient SEP in a PAC could hit a runtime error on process shutdown. This has been fixed.
- (221080)
  - The `casmgr` could crash after killing a process that exceeded a threshold and the enterprise server region was configured with a positive `dump_limit` value. This has been fixed.
- (204106)
  - When a terminal is installed without a `termtype` defined, and the `netname` is already in use, a new message "CASCL0002S Auto-install error, NETNAME xxxxx already in use" will be written to CSSL.
- 02166861 (221052)
  - When using `casout` in a PAC, the `PACNAME` was not added as a prefix to the security call. This has been fixed.
- 02008463 (156097)
  - A memory corruption when synchronizing a PSOR in shared memory has been fixed.
- 02211316 (245052)
  - If an alias transaction was marked disabled and used in a URIMAP, the transaction was still executed. This has been fixed.
- 02180247 (222112)
  - The EZASOKET listener will now reject connections when no more sockets are available instead of terminating and waiting for new sockets to be available to continue working.
- 02049614 (170013)
  - A timing issue that could have resulted in a SEP registered in the dispatch chain even after a registration error has been fixed.
- 02176557 (211023)
  - An issue where a job could be dispatched after the enterprise server region had started to shutdown has been fixed.
- 02103857 (191022)
  - Previously a dump of all the SOR stores was taken when a dump command was issued. In future, a dump of the SOR stores will only occur when a system dump has been requested. This will reduce the number of dumps generated in the system.
- 02131841 (193081)
  - When using query security for TRANSATTACH the wrong class XPCT was used instead of XTRAN, this has been fixed.
- 02198966 (244051)
  - In a PAC, if an enterprise server region could not be started and `casmgr` failed in initialization before connecting to the PAC, `cascd` could decrement the number of enterprise server regions contained in the PAC. This has been fixed.

02055658 (176012)

- A dead lock could occur if a process had been killed whilst in a third-party program by the threshold monitor thread. This has been fixed.

02064488 (175076)

- PCT block was not addressed under certain circumstances. This has now been fixed

02202935 (224016)

- If the entry point mapper was used to map MQ calls and the connection had been lost to MQ, a trap in `dfheibmq` could occur. This has been fixed.

02082822 (182086)

- When an enterprise server region is running in a PAC, certain locks that were unnecessarily stored in the database will now be stored in the enterprise server region's shared memory, improving performance.

01932670 (146018)

- Values returned in ESCWA/ESMAC for active TRANCLASS could be corrupted if CTF was active. This has been fixed.

(244052)

- When switching for MIQM from one MQSERVER to another MQSERVER, a network error could be returned by MQ resulting in an XA error code -5. If this happens the SEP will be recycled as the work cannot be processed in that state any longer.

02211334 (246063)

- If an error occurs when calling SAFMGR on SEP initialization after the enterprise server region was started successfully because the LDAP connection was lost, the SEP will now stop but the enterprise server region will not, and the next SEP will have a chance to reconnect to LDAP.

02031096 (174010)

- If the `casout` utility times out, it will now close the session enabling another request to reconnect to the server side.

01994995 (203057)

- If a TCLASS key contained the '@' character then Enterprise Server could not correctly read it. This has been fixed.

02287206 (260120)

- An issue where the group name specified on the `casstart` command line was not being passed and used correctly causing the region to not stay up has been fixed. The condition was that the default group associated with the user did not have permissions to start the region (`OPERCMDS casstart`).

02163023 (245046)

- In a PAC setup, ENQ's on the pipeline and webservice resources are no longer stored in the DB. They are stored in SHM.

00775012 (91020)

- An issue with EXEC CICS DELAY API when compiling with DIALECT(OSVS) has been fixed.

02206914 (236048)

- The TABLE resource under MFESMAC now controls whether the user can modify the services in ESMAC or ESCWA.

02131841 (194095)

- Security checks were being performed against an incorrect resource when cataloged datasets were accessed using the data file editor. This has been fixed.

02160499 (203144)

- A mutex was taken too early resulting in a serialization of work been processed when a terminal disconnect was issued. This has now been fixed.

02068931 (181001)

- A link to a remote PPT was not correctly removing the PPT from the PAC resulting in a subsequent inquire to find the PPT local. This has been fixed.

02206930 (235037)

- An issue where enterprise server regions did not start with the COBOL Server or Development Hub products has been fixed.

(199060)

- Improve performance by opening spool files once at the start of the process and not open/close for each request.

01994995 (194119)

- Custom HSF fields now correctly handle the maximum data length of 255 characters.

(5794)

- In ESMAC, a Cross-Site Scripting (XSS) vulnerability has been fixed.

00376857 (104212)

- The very first record written by an initialized SEP to an extended variable length ESDS file gave an error of EIBRESP2=110 with EIBRESP=0. This has been fixed.

00367116 (86028)

- When using the Micro Focus External Call Interface (ECI) over TCP/IP, the request and response data flows are now compressed using RLE.

3207572 (13314)

- Under some conditions, when a security look up failed the administrative LISTRESOURCE request would be driven. If the target class contained a significant number of members, the time taken to complete this could impact performance. A change in the ESM interface means the LISTRESOURCE request is no longer being executed.

00748245 (88213)

- When a LINK explicitly or implicitly specifying a remote transaction ID, EIBTRNID would be incorrectly populated with the target transid. This has been fixed.

02250109 (252012)

- When performing a dynamic remote LINK; that is, when using the SYSID option a PPT entry was being erroneously created in the local enterprise server region. This has been fixed.

02156790 (203165)

- Enterprise Server now appropriately populates the entity name when validating remote file access for `mfDataTools2`.

02111703 (191045)

- CASCD will no longer clear all remaining locks in the region database if it is being shut down while in quiesce mode.

(185025)

- A buffer insertion logic error resulting in a truncated Enterprise Server Environment has been fixed.

01920281 (142016)

- The ESMAC HTTP status codes have been updated to be more appropriate for certain errors.

(202271)

- Enterprise Server will no longer perform a recursive call while waiting for a TRANCLASS dispatch in a PAC.

02168754 (204246)

- The THRESHOLD CICS resource and its attributes are now prefixed by an underscore when exported with `casrdtex` as they are Micro Focus specific. The `casrdtup` import utility now also requires this underscore.

(245063)

- Parameters given to `mfconfigmanagerapi` calls were misaligned. The API was also using an incompatible library causing exception handling to fail when attempting to read the definition file. This has been fixed.

(194046)

- Dynamic debugging port operations are now under a Mutex.

02155297 (203227)

- Fixed an issue with the display of RTS error messages in the `console.log` file.

01838001 (116004)

- An issue where a SEP did not recycle on xa-start failure has been fixed.

01839273 (112032)

- The new user exit BKAUXTRC has been added. The BKAUXTRC exit will be called when a trace switch occurs in an enterprise server region. The current aux trace will be closed and renamed to `.bkp` and the BKAUXTRC exit is then called to archive the file so that trace is not lost in a busy system. See *Exit When a Trace Switch Occurs in an Enterprise Server Region* in your product Help for more information.

(162021)

- A new `RemShrQueues` action has been added to the `caspac` utility. This option enables you to delete all stores called `Shared_CasTSQ_RC`, `Shared_CasTSQ_NR`, `Shared_CasTDQ_RC`, and `Shared_CasTDQ_NR`. See `caspac` in your product Help for more information.

(217010)

- In ESCWA, a new option has been added to the **ES Control** page to enable CTF to be dynamically enabled/disabled on a started enterprise server region. See *ES Control* in your product Help for more information.

01926245 (142040)

- A new `caspac` action, `RemOldPAC`, has been added to enable the removal of old PAC stores not prefixed. See `caspac` in your product Help for more information.

(252007)

- You can now use the `caslock` command to view a list of locks for enterprise server regions that are members of a PAC. See *Lock Processing* in your product Help for more information.



**Note:** You cannot use `caslock` to remove locks in a PAC.

02205807 (236041)

- The HTML document lang attribute now changes when the language of the ESCWA application changes.

02010059 (156074)

- In ESCWA, removing a dynamic debugging session was incorrectly returned from the API request. This resulted in a "Request Failed: Unexpected error processing request" message on the dynamic debugging request page in the UI. This has been fixed.

02135527 (193107)

- The ESCWA UI files are now included in Solaris builds.

(103080)

- An issue with ESCWA encoding when operating with SJIS encoding has been fixed.

02157606 (204076)

- The ESCWA Client Web API documentation has been corrected for two endpoints:  
`/native/v1/regions/{host}/{port}/{region}/enqmodel/view/{resource}/discard` has been corrected to `/native/v1/regions/{host}/{port}/{region}/enqmodel/view/{resource}/uninstall`  
In addition: `/native/v1/regions/{host}/{port}/{region}/tsmodel/view/{resource}/discard` has been corrected to `/native/v1/regions/{host}/{port}/{region}/tsmodel/view/{resource}/uninstall`

(259031)

- The MfRequestedEndpoint value in the ESCWA configuration file (typically commonwebadmin.json) was being set to an invalid endpoint. When the ESCWA server starts, it uses this value as the endpoint for it to start on; if it is invalid, the ESCWA server would error and fail to start. This issue has been fixed by added server-side validation for the MfRequestedEndpoint field: the value must be in the format protocol:host:port; protocol must be "tcp" or "tcpssl"; host must be a valid hostname, IPv4, or IPv6 address, or "\*". The port must be a valid port number or "\*". Any request attempting to set MfRequestedEndpoint to a value that does not meet these validation requirements is rejected with a 400 "Bad Request" HTTP error. If the ESCWA configuration file has already been set to an MfRequestedEndpoint value, the ESCWA server will still fail to start, but will now output a more specific error message. In this case, the issue can be resolved by either manually editing the MfRequestedEndpoint value in the ESCWA configuration file, or by starting the ESCWA server with the following command line options: `BasicConfig.MfRequestedEndpoint=tcp:localhost:10086 --write=true` Replacing "tcp:localhost:10086" with the required endpoint.

01983736 (148074)

- Timeouts and performance issues on initially loading the spool table have been mitigated by preventing the spool table from sending an automatic request upon visiting or reloading the page. The "List" button now needs to be pressed to trigger the load or to apply a filter. This enables you to avoiding unnecessary requests that might timeout.

02152418 (203033)

- The ESCWA server now has improved handling of unexpected and unsupported properties in the configuration (commonwebadmin.json by default). An unsupported property in the default configuration file will result in the ESCWA server logging a warning, removing the property in question, and continuing. If an unsupported property is found and the configuration has been supplied or overridden using command line arguments, the ESCWA server will log an error and exit. This behavior can be controlled using the new `--strict-config` command line argument.

(143008)

- Safety checks for POST/PUT requests with empty bodies have been improved.

(178001)

- Improved usability of IMS API endpoints by expanding property descriptions in schemas to incorporate relevant sections and labelling from the product documentation. The improvements will enable you correlate API to relevant UI functionality, and to discern the purpose and relevance of schema properties in an endpoint from reading the descriptions.

00372390 (24044)

- The browser title is now set to the name of the selected enterprise server region.

00748187 (90012)

- In ESCWA, you can now download the information you can display on the JES Catalog Entry and Spool Job Output pages. The download functionality retrieves the values starting from page 1 and is not restricted to a page limit. Note: The download will use the Codeset and Details values as set on the page.

00366654 (12735)

- Issue where table row buttons could be moved past the right edge of the table and made inaccessible has been fixed. In addition, the cosmetic bug where table row separators and row highlighting did not extend to the right edge of the table in some circumstances has been fixed.

(237046)

- In ESCWA, to switch users you now need to logoff and then log back in using the appropriate credentials.

(101032)

- In ESCWA, incorrect instances of "Job Control Table" have been corrected to "Journal Control Table".

(87028)

- The spool table now caches the results of the last query executed and persists those results between pages, preventing the query from being unnecessarily rerun.  
02198043 (221138)
- In ESCWA on the JES Catalog page, the RECFM list now has the VBS option.  
00777434 (91091)
- In ESCWA, the catalog table now displays the error or information message when ESMAC would have display one, including when accessing a corrupt CATALOG.  
00779645 (97184)
- There is no longer an issue with incorrect error/success messages when deleting a dataset without relevant permissions in ESCWA. In this case, ESCWA now correctly handles the response from ESMAC.  
01810271 (123009)
- In ESCWA, modifying the SOR Connection Path(s) field in the Scale-Out Repository Configuration dialog box did not update the SOR connection information. This has been fixed.  
01907342 (127044)
- In ESCWA, you can now resize the columns for the Spool table.  
02022132 (162025)
- Errors in the ESAdminAPI.yaml file have been fixed.  
(124111)
- In ESCWA, while submitting JCL through the browser, special characters are now correctly preserved.  
(91119)
- The issue where the Apply button was left disabled when changing values on a Communications Process page has been fixed. The 'Client CA Root Certificates File' field is now correctly disabled when 'TLS Enabled' is unchecked. This will not have affected Communications Processes that had 'Client Authentication' set to "Accept all clients" before unchecking 'TLS Enabled' as the 'Client CA Root Certificates File' is removed under that condition.  
02183154 (222089)
- In ESCWA, the **Spool** page no longer uses deprecated ESCWA API.  
(71382)
- In ESCWA, the services table now auto resizes correctly when expanding tree elements.  
(99075)
- In ESCWA on the **Services** page, the name fields in the Service table rows are now aligned correctly.  
(62209)
- In ESCWA on the **Monitor** page, the graph now displays **Milliseconds** on the left y-axis label when it is set to display milliseconds.  
(57469)
- In ESCWA, URIMAP creation is now possible when **Usage** is set to **Pipeline**. Previously, an issue with the field validation incorrectly set the form to be in an error state when **Usage** is set to **Pipeline**, which disabled the **Save/Apply** button; the validation logic has been corrected.  
01858819 (118078)
- In ESCWA, the **Monitor Control** page has been fixed for an enterprise server region.  
(203107)
- In ESCWA, error messages can now be read by the screen reader.  
01995465 (162038)
- In ESCWA, the keyboard navigation of the add widget's dialog has been improved.  
02010047 (157066)

- The ESCWA UI has been re-themed to conform to Micro Focus standards. This changes the font, and uses title case where appropriate along with many other style and color changes.  
01995207 (157061)
- In ESCWA, the keyboard navigation of the tree has been improved.  
02010055 (156075)
- ESCWA now supports various accessibility technologies including text-to-speech voice readers and full keyboard-only navigation.  
01995445 (163045)
- A redundant error message, triggered when shutting down ESCWA, has been removed.  
00370913 (126001)
- ESCWA better reflects the status of enterprise server processes in error cases when starting and shutdown.  
02229975 (246126)
- ESCWA abended when an empty body was sent in a PUT or POST request. This has been fixed.  
(175064)
- An error occurred in ESCWA when trying to log on to an enterprise server region when already logged on. This has been fixed.  
(231033)
- In ESCWA, keyboard navigation issues with tree controls have been fixed.  
01995458 (157059)
- The German translation for ESCWA has been updated.  
(181003)
- The Content Security Policy HTTP headers on ESCWA has been improved.  
(71455)
- In ESCWA, once modifications for a security group had been saved you could not make subsequent saves till the page was refreshed. This has been fixed.  
(138140)
- When creating an ESM user, specifying a group did not add them to that group. This has been fixed.  
(143028)
- In ESCWA, the display of region trace has been fixed.  
(221090)
- ESCWA will now display transient SEPs on the SEP List Page.  
(198051)
- The occasional "Unable to locate translation string!" messages from ESCWA Server on AIX were incorrectly displayed. This has been fixed.  
(151015)
- The URIMap **Cipher** field's validation now account for xml files as permitted input.  
(107003)
- In ESMAC, a new option has been added to the **Control** page to enable CTF to be dynamically enabled/disabled on a started enterprise server region. See *Control* in your product Help for more information.  
(146114)
- ESCWA now supports displaying Queued Requests by TRANCLASS when the enterprise server region is a member of a PAC.  
(189004)

- In ESCWA on the **Control** page, a warning has been added above the **Dynamic CTF File Location** field and to the API documentation informing you to set the CTF Action field to `ALL Off` before changing the **Dynamic CTF File Location** field or the file being referenced.  
(244057)
- In ESCWA, check **mfcm** on the **ES Control** page to trace the Configuration Manager. See *ES Control* in your product Help for more information.  
(220010)
- The **Enterprise Server Administration Configuration** dialog now has an **External Communications Response Timeout** number picker, which is used to set the timeout for ESCWA requests that go through MFCC. This timeout is equivalent to setting the `MFC_TIMEOUT` environment variable, but is only applied on a per-request basis rather than an environment-level setting.  
00502152 (76011)
- In ESCWA, on the **Monitor** page the graph's x-axis has been corrected to display time in order from oldest to latest from left to right.  
(158066)
- UDP sockets are now closed when not required by MFDS communications.  
02181946 02193815 (222040)
- An issue with newly created Communications Processes being set to the started state but not actually being started has been fixed.  
(88221)
- `mfsecrets` would intermittently crash on HP UNIX when certain messages were loaded. This has been fixed.  
(106063)
- The `mfsecretsadmin` utility no longer displays spurious allocation errors on AIX PPC.  
(105093)
- When using `MFSecretsAPI` with the HashiCorp provider on a Solaris SPARC platform you will no longer get an error for referenced symbol not found.  
(103082)
- The `mfsecretsadmin` error callback formatting has changed to improve readability and remove unnecessary information.  
(8552)
- Secrets written from now on are transferable across platforms with different endianness.  
(104103)
- In the `ESMSSQL` switch, version 17 calls to `SQLSetConnectAttr` now check both the `sqlrtn` code value and the status item of the `XACallParam`.  
(110060)
- An extraneous MQ rollback for TM processes has been fixed.  
(231005)
- The DB2 switch module now provides more traces regarding CLI failures.  
02202803 (239025)
- XA switches now contain logic to trace XID in the Consolidated Trace Facility (CTF).  
01965103 02055821 (162072)
- The logic to parse the Open String option `ESLOGGING` now works correctly.  
02172047 (208024)
- The Oracle switch source now has the correct data alignment to prevent RTS 114 error when more than one Oracle XARs are specified in the enterprise server region.



01802747 (103172)

- When using ESF in Redundant mode and having multiple ESM in the relevant Security Manager List, even though a request was successfully handled by one of the first ESM, an event failure would be returned if the last ESM in the list reported a failure. This has now been fixed so that if the request is successfully handled by any ESM in the list then the last ESM will not return its failure status, instead it will be logged.

00372409 (11512)

- The MLDAP ESM, OS ESM, and PAM ESM modules now use the RACF password alphabet for encoding short passtokens rather than the base64 alphabet.

02168078 (202221)

- The `esfadmin` utility is now delivered in 32 and 64-bit versions.

02182768 (218011)

- The caching mechanism of Enterprise Server's External Security Facility (ESF) is now able to cache some requests it previously could not, such as Verify (signon) requests with long usernames or passwords, and Auth requests for some MQ-related resources. These changes make cache records somewhat larger, so fewer will fit in a cache of a given size. If you are using ESF caching you might want to increase the size of your cache by 20% to 40% to account for this change if you observe a decrease in the cache hit rate reported at enterprise server region shutdown.

02154022 (203072)

- In some configurations, Enterprise Server security could lose track of users' group membership information in a running region or instance of MFDS after an ESF Update request. This has been fixed.

00741997 02182494 (86057)

- The validation of server certificates for SSL/TLS connections in the Micro Focus Common Client has been improved. Specifically the standard PKIX (Public Key Infrastructure, X.509) rules are now followed except when connecting to the server using information obtained from the Micro Focus Directory Server (MFDS), if that information only contains an IP address and not a host name. In earlier product releases MFCC did not enforce PKIX when using information from MFDS regardless of whether the information included a hostname.

(52097)

- An invalid invocation of the SAFROUTE API under certain non-default configurations could cause a divide-by-zero trap. This has been fixed.

02016793 (163052)

- The performance of the optional "prefix search optimization" feature of the MLDAP ESM Module has been improved.

00726158 (142020)

- The External Security Facility can now optionally update the "short name" of signed-on users. See *Renaming ACEEs* in your product Help for more information.

00657507 (70355)

- HSF statistics for some hexadecimal TS/TD queue names could be incorrectly reported. This has been fixed.

(146013)

- HSF records would be missing when the task number rolled over from 99999. This has been fixed.

02026013 (165049)

- HSF records for transactions that were killed due to having exceeded a threshold would sometimes have a response time of 0. This has been fixed.

01687237 01817975 (97116)

- When the `casmgr` process was recovering locks in `mfdbfh`, it was holding the shared memory lock. While recovery was in progress, no other processes in the enterprise server region was able to access

shared memory. This was unnecessary and `casmgr` now releases the lock before initiating the recovery.

02088479 02086462 02085808 (185024)

- A memory corruption that could occur when the monitor thread killed a process under heavy load has been fixed.

02006375 (158087)

- New messages have been added to the `console.log` for startup sequences in order to be able to troubleshoot enterprise server region startup issues.

01935739 (138172)

- If a TSQ in the SOR contained a space `x'20'` in the name, then the delete of the queue failed. This is now fixed.

01829779 (182032)

- An RTS 173 occurred on an `ES_mF_write_record_in_store` entry point when an enterprise server region was not in a PAC and SSTM was used. This has been fixed.

01806033 (103156)

- If a transaction executing in a PAC environment with TRANCLASS max priority active was killed by the threshold mechanism, a hang could result on subsequent transactions executing in the same class due to the counter not being decremented. This has now been fixed.

02168754 (209029)

- An RTS 114 occurred when a transaction had a TRANCLASS defined and the purge threshold was reached. This has been fixed.

02144961 (204147)

- MFDBFH connections are now closed when a task is idle.

01984788 (150015)

- Enterprise Server now handles bundle manifest files that can contain multiple JSON transform resources.

01991361 (150057)

- Latency for queued transactions in a TRANCLASS was attributed to their response times, not latency. The latency is now correctly displayed in the latency field.

02176385 (209033)

- SCB was not being freed after normal shutdown of a transient SEP. Behavior modified to free the SCB after this occurs to avoid issues when a SEP with the same PID is launched.

02190327 (220061)

- Loading and calling the single-threaded version of support modules within a multi-threaded process was resulting in a hang. This has been fixed.

00779469 (92169)

- An issue with parallel one and two-phase XA connections has been fixed.

00700923 (73098)

- The XA recovery processing now supports a retry mechanism:

```
ES_XA_RECONNECT=Y,delay,retry_count
```

Where `retry_count` is the number of recovery retry attempts to be made if the XA verbs return an `xa-retry (04)` return code. In this case, messages are sent to the console. See *Environment variables in alphabetical order* in your product Help for more information.

02157658 (203087)

- The command-line utility `caspac`, now has the `RecoverUUID` action that enables you to specify the UUID of an enterprise server region that has left the PAC. The action will remove all entries related to that enterprise server region from the PSOR. See `caspac` in your product Help for more information.

(185013)

- The `casToken` and `csrf-token` security has been increased by increasing the token regeneration frequency.

00368452 (12551)

- The performance of the ESCWA Spool View has been improved when using a database hosted catalog file and when specifying a filter with a leading wildcard character.

01856008 (138119)

- An issue with the format of messages caused ESCWA to report success as a failure. This has been fixed.

(125020)

- The "job user" filter string entered in ESCWA or ESMAC were being folded to upper case and sometimes resulted in records not being displayed. This has been fixed.

00469828 (57335)

- Missing JSON properties have been added to the ESCWA active PCT API.

(222149)

- Character validation for HTTP cookie values in secure regions has been added.

02132269 (202051)

- The fix for OpenSSL Denial-of-Service (DoS) issue CVE-2022-0778 has been applied to the product.

(221130)

- When Enterprise Server's MLDAP ESM Module is used for security, with Micro Focus password hashes and password history enabled, history entries are now created with the correct type of hash (Argon2 by default).

(120086)

- In Enterprise Server, when using LDAP-based security, all-groups mode, and username mapping ("long names"), if a user's group membership was changed and the `esfupdate` utility was invoked with the `user` option to update information in the region for that user only, the user's new group membership is now calculated correctly. Previously some of the user's groups might have been missed when determining the set of groups.

(98040)

- For LDAP-based security with Enterprise Server, a new configuration option (password change failure) determines whether a failed attempt to change a password causes signon to fail. See *MLDAP ESM Module Custom Configuration Information* in your product Help for more information.

00736902 (99142)

- When a PAC uses Enterprise Redis, set up a custom hashing policy using the following rules:

- Rule 1: `. *? \{ ( ? < tag > . * ? ) \} . *`
- Rule 2: `( ? < tag > . * )`

01872664 (152015)

## File Handling

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- The `mfdbscatc` utility sometimes lost a directory element in a path when expanding an environment-based pathname. This is now resolved.

00707621 (69585)

- In response to a SORT215E error, an identifier has been included to locate the fail position when the reformatting error occurs; also, some OUTFIL variables are initialized.

01832594 (119050)

- The maximum line length of `fhredir.cfg` has been increased to allow for the full MFPORT/MFNODE to be set.  
01971422 01970683 (138292)
- An issue with Fileshare performance has now been resolved.  
(70294)
- An issue when trying to run Fileshare in background mode has been fixed.  
(101104)
- An error where incorrect results may have been returned when a READ on an alternate index was attempted without first performing a START has now been fixed.  
(138152)
- Temporary files should now be created correctly in the Data File editor when connecting to a remote file.  
(92087)
- WRITE operations to variable-length output pipes are no longer being treated as fixed-record-length WRITE operations; previously, the variable length set by a program was being ignored.  
02183108 (220017)

### Interface Mapping Toolkit

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- The HWTJGTST API now returns a correct value in the `JSONType` parameter when invoked with the `objOrEntryValueHandle` parameter set to a value of null, indicating the top of the JSON tree being parsed.  
02102661 (220107)
- COBOL clients no longer have duplicate data names in certain scenarios when the WSDL or JSON field name is greater than 30 characters.  
01815167 (111010)
- COBOL client data items now have the correct size for JSON fields with "int64" format.  
01815173 (104242)

### Micro Focus Common Client

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- The Micro Focus Common Client (used by COBOL web-service proxy programs) now supports the "gzip" content-encoding for HTTP messages. MFCC recognizes gzip'd response and request messages, respectively.  
00370460 01901934 (12322)
- A 114 Attempt to access item beyond bounds of memory (Signal 11) no longer occurs during FST101A test.  
(231036)

### Micro Focus Directory Server

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- The MFDS TLS redirect code has been hardened to improve security.  
01938276 02124054 02232906 (157050)
- HPUX `snprintf` caused TLS redirects to fail. This has been fixed.  
(216005)

- If a shortened hostname fails to resolve, then resolution of the full hostname is attempted.  
02207755 (240012)
- If there is a problem resolving the machine local hostname the MFDS process will display the following startup failure message rather than a "Bind fail=136" message:"CCITCP2-0252E hostname resolution error."  
(221047)
- On import of an MFDS repository, some configuration types (such as XRM and MQ Listener) were double-counted, which could result in the configured object limit being breached even though the number of imported items did not exceed it.  
(202284)
- The status of whether the vault is enabled and in use by the MFDS process was not displayed in the MFDS Web user interface as it was in Visual COBOL and Enterprise Developer 5.0. This has been fixed.  
(217031)
- The MFDS process could hang if too many enterprise server regions were defined and started. This has been fixed.  
02190282 (222092)
- MPR PWFI support has been added to MFDS via the `mfIMSMRPWFIDispatch` MLDAP API MPR property.  
(80014)
- In ESCWA, an error would occur when trying to modify a listener on a communications server other than the first. This has been fixed.  
02191654 (222078)
- There is no longer a long delay when attempting to shut down an enterprise server region that is retrying an ISC connection.  
01689657 OCTCR50A193010 OCTCR50A181100 (101059)

## Micro Focus License Administration

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- In a system where many licensed processes are attempting to get responses from the `mfcesd` daemon, it is possible for the underlying system kernel to constrain resources used by the UNIX domain sockets. This can cause the send response to fail with a resource unavailable temporarily error. This caused the ces daemon to lose its contact with the requesting client, resulting in a hung client process.

The CES daemon now recognizes this temporary constraint condition and throttles the connection slightly and retries. The daemon now always sends a response to the client process.

Micro Focus recommends that you also tune the kernel parameters shown below to allow more resources for a heavily used system, to prevent the underlying condition.

The following examples show the parameters to change and show very high values. Micro Focus recommends that a network expert or an administrator reviews these values and adjusts them to achieve a sensible balance:

```
# Increase number of incoming connections
net.core.somaxconn = 65535

# Increase number of incoming connections backlog
net.core.netdev_max_backlog = 65535
```

02196423 (245004)

## Micro Focus Support

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- The `mfpoll.txt` file now includes a new section that has information about whether the machine the `mfsupport` script is running on is a Virtual Machine or a physical one.  
00466174 (59146)

## Run-time System

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- The correct set of synchronization routines using semaphores are now defined in `$(COBDIR)/cpylib/cblproto.cpy` and `$(COBDIR)/include/cblproto.h`.  
(166016)
- There was an issue in the internal logic of the `cobutf8` utility, which could have resulted in a hang when a very large amount of data was converted to the application's input and the application was unable to process the data quickly enough. This has now been fixed.  
02115599 (190051)
- Timeouts larger than 35 minutes are now permitted with the use of `CBL_SEMAPHORE_ACQUIRE`, for 32-bit UNIX applications.  
02168295 (220103)
- On Solaris platforms, the `escwa32` command now starts `ESCWA`, as expected.  
(104059)
- If a shared object was created with `cob -z -d symbol_name -l shared_library`, where `symbol_name` is resolved in the shared library linked into the shared object, then a potential `SIGSEGV` sometimes occurred when the shared object was unloaded. This has been resolved.  
01848664 (118012)
- The Consolidated Tracing Facility (CTF) is now better protected when the process is processing asynchronous signals on UNIX.  
(218021)
- Issues relating to `MFDBFH` after a recoverable error that occurs in Enterprise Server have been resolved.  
(97119)
- The `-U` option of the Micro Focus Configuration Utility for the Microsoft Build Tools and SDK (command name: `cblms`) now works correctly if it specifies both a path and a version.  
(86023)
- A memory stomp, which was caused by text wrapping code when multi-byte characters were used, has been fixed.  
02175685 (208014)
- A memory leak caused by alias symbols has been resolved.  
01912000 (146043)
- Code has been removed that assumed that `Disk space exhausted` was the only failure mode for a disk write operation. It has been replaced with a query of `errno` when a write operation fails to output the expected number of bytes (so the run-time system now copes as well as the operating system does).  
01978959 (195086)
- Previously, it was not possible to use the old Microsoft bitmap fonts such as Courier, MS Serif and MS Sans Serif with the `PC_PRINTER_SET_FONT` library routine. This has now been corrected.



**Note:** Helvetica and Times fonts are no longer available on Windows, and Arial and Times New Roman fonts should be used instead.

02011925 (160003)

- The `cobfile` utility is not supported for Docker images that do not contain the `file` command. See your *Development Hub* product Help for more information.

(221036)

- When using the `PC_PRINTER_DRAW_RECTANGLE` library routine, if `box-style` is set to 1 (filled), and no pen has been set using `PC_PRINTER_SET_PEN`, the rectangle fill will be solid black.

(127027)

## SQL: COBSQL

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- COBSQL now exits when the CA-DB precompiler is specified but not installed.

(9638)

- The `SQLBGP` option has been added to the IDE.

(138181)

- The COBSQL preprocessor has been modified to insert Procedure Division Initialization logic after each `ENTRY` statement.

01780938 (118075)

## SQL: DB2 ECM

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- A new exit for `ESXACUSTOMEXT` has been added to the DB2 switch module. The build scripts have also been updated with some new options to enable this logic.

01688275 (104007)

- For custom exits, the XA-inquiry block must now be specified in the `LINKAGE SECTION` in the custom exit sources.

02170335 (204264)

- A problem with compiling `VARCHAR` or `LONG VARCHAR` arrays in a COBOL SQL program sometimes has been resolved.

02105414 (152006)

- A COBOL program using `EXEC SQL INSERT` or `FETCH` statements without a `FOR N ROWS` clause with arrays caused compiler errors. This has been resolved.

(155003)

## SQL: Mainframe Batch Database Tools

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- A problem retrieving `DECIMAL` data using `SQLTP2` when the `DECIMAL` field was followed by other fields has been fixed.

02140073 (201007)

- A problem when running `SQLTUL` on Linux caused an S806 error. This has been resolved.

02195601 02200011 (220086)

- A problem loading binary data in EBCDIC into a data set using `MBDT SQTUB` has been fixed.

(181081)

- A problem that prevented "SQLCODE: -9999, SQLSTATE: IM999" error to be returned without including the explicit underlying cause of the error has been corrected by additionally calling the `GetDiagnostics` function.  
00780459 (95019)
- A comma (,) is now supported as a decimal separator when DSNTEP2 displays values of decimal columns.  
02017265 (163008)
- An error occurred when DSNTIAUL unloaded a null value with its indicator set to a character other than "?". This has been fixed.  
02228124 (245142)
- A problem using MBDT SQLUTB when the decimal separator was set to comma (,) in Oracle has been fixed.  
(161097)
- A problem that occurred when the DATE reserved keyword was used as a table name but was specified without quotation marks has been fixed.  
02059727 (175083)
- A problem with loading data into a partition of a DB2 LUW table using SQLUTB with the REPLACE option has been corrected by now deleting the data in the partition and displaying the the number of rows affected in the SYSPRINT.  
01794378 (106059)

## SQL: OpenESQL

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- A problem that prevented the ESMSSQL switch from detecting when the PIP1 transaction is occurring caused `setCurrentConnection` to be performed on the incorrect connection. This has been fixed.  
01916096 (142006)
- OpenESQL has been modified to process RELEASE TO SAVEPOINT statements in RDBMSs.  
00370819 (13104)
- A problem that caused the OpenESQL native runtime to incorrectly handle WITH HOLD FOR UPDATE cursor against Oracle in 64-bit has been fixed.  
00745593 (121047)
- OpenESQL now supports a SYNC clause specified in a variable-length host variable declaration.  
02169632 (204218)
- A problem that prevented a properly executed EXEC SQL statement from returning the correct RETURN-CODE has been fixed.  
02036138 (167041)
- A problem that sometimes prevented an XA connection used with dynamic registration from working properly with MFDBFH with has been fixed.  
00779680 (146073)
- A problem with compiling an EXEC SQL statement of DECLARE CURSOR in which CTE starts with SELECT \* has been resolved.  
01798310 (105107)
- A problem that occurred when using CTE in SELECT INTO statement has been corrected.  
02117758 (194003)
- When an error occurs, the get error loop now exits if the last error message retrieved is the same as the current one.



02172041 (209005)

## Visual Studio Code

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- You no longer receive a Null Reference exception when running `MicroFocus.VSCodeJIT.exe /r` on machines that do not have Visual COBOL or Enterprise Developer for Visual Studio installed.

01855303 (120034)

# Known Issues

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

In addition, note the following:

- In Visual COBOL 4.0 and 5.0 in an extremely small and limited set of cases, an issue could occur with running .NET executables and .dll files, or JVM .class files, created with an earlier version of the product. This issue only occurred if:
  1. The application performs an IS NUMERIC condition test on a variable declared with USAGE NATIONAL.
  2. The application has been created with Visual COBOL 3.0 or earlier, then executed in Visual COBOL 4.0 or 5.0.

In these rare cases, the IS NUMERIC test could provide the wrong answer.

In order to resolve this issue, in Visual COBOL 6.0 and later, the .NET COBOL and JVM COBOL run-times reject any program using IS NUMERIC on a NATIONAL item which was compiled with a version 5.0 or earlier of the product. You receive a "missing method" exception. To resolve the issue, you need to recompile any programs that use this construct in the newer versions of Visual COBOL.

Program that do not use NATIONAL data, or those that have been recompiled in Visual COBOL 6.0 or later are not affected.

# Other Issues Resolved in This Release

The numbers listed are the Support Incident Numbers followed by the Defect number (in parentheses).

- 02150403 (203019)
- 02091353 (187001)
- 02121754 (202065)
- 02132897 02164401 (198046)
- 01995392 (158073)
- 02010044 (157065)
- 2836772 (7336)
- 02293789 (226006)
- 01912000 (142033)
- 01834420 (98086)
- 00620699 (71289)
- 01811748 (124010)
- 02135207 (193101)
- 02051091 (175018)
- 00725550 (92178)
- 01839124 02145513 (112009)
- 02045736 (166043)
- 01947033 (146111)
- 01994995 (195081)
- 02033743 (161099)
- 02110007 (191044)
- 02289051 (258146)
- 01794492 (105047)
- 00430214 (58005)
- 02254118 (253027)
- 02016027 (163039)
- 00367290 (31077)
- 01862519 (118040)
- 3188835 (11348)
- 00365049 (13049)
- 02161981 (204198)
- (259026)
- 00775199 (218016)
- (259059)
- (244058)

# Unsupported or Deprecated Functionality

This section includes information about features or functionality that are not supported.

- The SafeNet Sentinel licensing system has been deprecated and will be not available in this product starting with the next major release after release 9.0. The SafeNet Sentinel licenses will not be supported after release 9.0 and you need to use AutoPass licenses if you use these releases.

You can replace your SafeNet Sentinel licenses with AutoPass licenses starting with release 8.0. Contact Micro Focus Customer Care for further information.

- The HOSTSIGNS Compiler directive is no longer supported. Micro Focus recommends that you use the following Compiler directives instead: SIGN-FIXUP, HOST-NUMMOVE, and HOST-NUMCOMPARE. This is a change since version 3.0 of this product.

# Additional Software Requirements

To ensure full functionality for some features, you might be required to obtain and install additional third-party software.

[Click here](#) to see this information on the Product Documentation pages on Micro Focus Customer Care, in the product Help for Visual COBOL Development Hub.

# Installing Visual COBOL Development Hub

## Before Installing

### Downloading the Product

1. Log into the Software Licenses and Downloads (SLD) site at <https://sld.microfocus.com/mysoftware/download/downloadCenter>.
2. Select your account and click **Entitlements**.
3. Search for the product by using any of the available search parameters.
4. Click **Show all entitlements**.
5. Click **Get Software** in the Action column for the product you want to download or update.

In the **File Type** column, you see entries for "Software" for any GA products, and "Patch" for any patch updates.

6. Click **Download** on the relevant row.

### Issues with the Installation on UNIX and Linux

#### Installing on Red Hat 8.x s390

On Red Hat 8.x s390, the RPM non-root install method is not supported due to errors given by cpio. You receive the following messages:

```
error: unpacking of archive failed on file /usr/lib/.build-id/1b/af99f26c6b4c00ca499a3199a574b73aeb3854;6092b79c: cpio: symlink failed - No such file or directory
error: Micro_Focus_cobol_server-7.0.0.0-100700.s390x: install failed
```

As a result, the installation in this scenario is incomplete.

#### Installing while using AFS/Kerberos authentication

If you are using AFS/Kerberos authentication to log onto your Linux system then you need to ensure you have a local user ID which SOA and Visual COBOL components of the product can use. This user ID must be set up prior to running the installer. When running the installer you need to specify - `ESadminID=[User ID]` on the command line so it is used by the installer.

#### License Server

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

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

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

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

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

# System Requirements for Visual COBOL Development Hub

## Hardware Requirements

The disk space requirements are approximately:


Platform	Installer type	Setup file size	Disk space required for the installation	Disk space required for running the product	Licensing technology
POWER running AIX	Micro Focus	806 MB	3.22 GB	1.61 GB	41 MB
System Z running Red Hat Linux	Micro Focus	409 MB	1.64 GB	818 MB	39 MB
x86-64 running Red Hat Linux	Micro Focus	814 MB	2.26 GB	1.63 GB	50 MB
64 running Red Hat Linux	Micro Focus	502 MB	2 GB	1 GB	50 MB
Red Hat for Docker	Micro Focus	652 MB	2.61 GB	1.3 GB	50 MB
Amazon x64	Micro Focus	655 MB	2.62 GB	1.31 GB	50 MB
Amazon for Docker	Micro Focus	652 MB	2.61 GB	1.3 GB	50 MB
SPARC running Solaris	Micro Focus	683 MB	2.73 GB	1.37 GB	42 MB
x86-64 running Solaris	Micro Focus	685 MB	2.74 GB	1.37 GB	33 MB
System Z running SUSE SLES	Micro Focus	417 MB	1.67 GB	834 MB	39 MB
x64 running SUSE SLES	Micro Focus	655 MB	2.62 GB	1.31 GB	50 MB
SUSE for Docker	Micro Focus	654 MB	2.62 GB	1.31 GB	50 MB
x64 running Ubuntu	Micro Focus	734 MB	2.94 GB	1.47 GB	50 MB
Ubuntu for Docker	Micro Focus	657 MB	2.63 GB	1.31 GB	50 MB
x86-64 running CentOS	Micro Focus	814 MB	3.26 GB	1.63 GB	50 MB

## Operating Systems Supported

For a list of supported operating systems, see *Supported Operating Systems and Third-party Software* in your product documentation.

On some platforms, there is only a 64-bit version of this product. 64-bit versions of the product support compiling to and running 64-bit programs only.

## Software Requirements

 **Note:** This product includes OpenSSL version 1.1.1n-mf6 (modified).

The following topic lists the software requirements for Visual COBOL Development Hub.

- [Software required by the setup file](#)
- [Libraries required by the setup file](#)
- [Required environment variables](#)
- [License Manager requirements](#)

### Software required by the setup file

- The "awk", "ed", "ps", "sed", "tar", "sed" and "which" "tar" utilities must be installed and added to the PATH.
- If SELinux is installed and you plan to use anything other than core COBOL functionality, or plan to use Enterprise Server within an environment with ASLR enabled, the "SELINUX" configuration must be disabled. To do this, set `SELINUX=disabled` in `/etc/selinux/config`.
- Xterm, the terminal emulator for the X Window System, is part of your UNIX/Linux distribution but is not installed by default. Use your UNIX/Linux installation media to install it.

### Libraries required by the setup file

The following table lists the required libraries for Red Hat and SUSE Linux platforms. The setup file checks that both the 32-bit and 64-bit libraries listed below are installed on both 32-bit and on 64-bit Operating Systems for this product to install and work correctly.

If installing on a 64-bit OS, the 32-bit libraries are not installed by default and must be installed before you start the installation.

The following table shows which of the required libraries are not installed by default on the specified platforms - X indicates the libraries are missing.

Library	Platform								
	32-bit	64-bit	s390	SUSE 12 <sup>1</sup>	SUSE 15	Red Hat 7	Red Hat 8	CentOS 7	Ubuntu 18 and 20
glibc <sup>2</sup>	X	X	X			X	X	X	
libgcc	X	X	X			X	X	X	
libstdc++	X	X	X			X	X	X	
glibc-devel	X	X	X			X	X		
gcc <sup>3, 4</sup>	X	X	X	X	X	X	X	X	
cpp <sup>3</sup>		X				X	X	X	
libgc1c2		X							X

- Libraries marked with an 'X' are not included in the platform and need to be installed separately.



- <sup>1</sup>On SuSe 12 or 15, you can only install the 64-bit version of this product. The glibc-locale-32bit library is still required by the SafeNet Sentinel licensed components.
- <sup>2</sup>On 64-bit Red Hat 7, you only need to install glibc-2.17\*.x86\_64 and glibc-2.17\*.i686.
- <sup>3</sup>On Red Hat, these libraries are required to enable COBOL to compile.
- <sup>4</sup>On Red Hat, only the 64-bit gcc libraries are required.

Visit the [Red Hat Web site](#) for more information.

### Required environment variables

- Set the JAVA\_HOME environment variable. When installing the product, set this variable to a 64-bit Java installation or the installation terminates. For example, execute the following:

```
export JAVA_HOME=java_install_dir
```

where *java\_install\_dir* is the path to the JAVA installation directory such as `/usr/java/javan.n`

- Add \$JAVA\_HOME/bin to your system PATH variable. To do this, execute:

```
export PATH=$JAVA_HOME/bin:$PATH
```

- You need to set the LANG environment variable to pick up localized messages. If you do not set it as specified here, the installation will run but you might experience unexpected behavior from the installer.

The LANG settings are English and Japanese only so set it to one of the following locales:

```
C, default, en_GB, en_GB.UTF-8, en_US, en_US.UTF-8
```

```
ja_JP, ja_JP.SJIS, ja_JP.UTF-8, ja_JP.eucJP, ja_JP.eucjp, ja_JP.sjis, ja_JP.ujis, ja_JP.utf8, japanese
```

You can set LANG before running the setup file as follows:

```
export LANG=C
```

Alternatively, add it to the start of the setup command line:

```
LANG=C ./setupfilename
```

See *Using the LANG Environment Variable* for details.

### License Manager requirements

- For local servers, you do not need to install the Micro Focus License Administration tool separately, as the setup file installs a new Visual COBOL client and a new licensing server on the same machine.
- If you have any network license servers, you must update them before you update the client machines.
- If you are upgrading from Visual COBOL release 2.2 or earlier, uninstall the license manager before installing the product.

You can download the new version of the license server software by following these steps:

1. Log into the Software Licenses and Downloads (SLD) site at <https://sld.microfocus.com/mysoftware/download/downloadCenter>.
2. Select your account and click **Downloads**.
3. Select a product and a product version from your orders.
4. In the list of software downloads, locate the **License Manager**.
5. Click **Download** to download an archive with the installers.
6. Run the installer suitable for your Operating System to install License Manager on your machine.

## Basic Installation

The instructions in this section apply when you are performing a basic installation of this product for the first time. If you are an administrator, you can perform a basic installation on a local machine before

performing a more advanced installation when rolling out the product to developers within your organization.

For considerations when installing this product as an upgrade, for additional installation options or non-default installations, see *Advanced Installation Tasks* in your product Help.

## Installing Visual COBOL Development Hub

Micro Focus offers two types of installers on UNIX and Linux - a proprietary Micro Focus installer for installing on UNIX and Linux and a standard RPM (RPM Package Manager) installer for installing on Linux. See your product Help for instructions on how to use the RPM installer.

Before starting the installation, see *Software Requirements*.

These are the steps to install this product using the Micro Focus installer:

1. Give execute permissions to the setup file:

```
chmod +x setup_visualcobol_devhub_8.0_platform
```

2. Run the installer with superuser permissions:

```
./setup_visualcobol_devhub_8.0_platform
```

If you don't run this as superuser you will be prompted to enter the superuser password during the installation.



**Note:** On Ubuntu, the prompt for superuser password is not available. On this platform you must either log in as root or use the `sudo` command to get root permissions before you run the installer.

The COBOL environment is installed by default into `/opt/microfocus/VisualCOBOL`, (COBDIR).

### Enterprise Server System Administrator Process

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 affect the file access and creation.

You must supply the user ID at the command line - specify `-EsadminID=[ ID ]` as part of your command.

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` and follow the onscreen instructions.

### SafeNet Sentinel considerations

- The installation of this product could affect the SafeNet Sentinel licensed components running on your machine. During installation licensing is shutdown to allow files to be updated. To ensure the processes running on your machine are not affected, you need to use the `-skipsafenet` option, which skips the installation of SafeNet:

```
./setup_visualcobol_devhub_8.0_platform -skipsafenet
```

- To protect the SafeNet Sentinel installation from accidental updating you can create an empty file named `SKIP_SAFENET_INSTALL` in `/var/microfocuslicensing/` as follows:

```
touch /var/microfocuslicensing/SKIP_SAFENET_INSTALL
```

While the file is present, the SafeNet installer does not make changes to the installation or shutdown the running license daemons. If licensing needs to be updated later, you can rerun the

MFLicenseServerInstall.sh from within the \$COBDIR/safenet folder with the force command line option:

```
cd $COBDIR/safenet
./MFLicenseServerInstall.sh force
```

### AutoPass Licensing considerations

- The installation of this product could affect the AutoPass licensed components running on your machine. During installation, the licensing shuts down to allow files to be updated. To ensure the processes running on your machine are not affected, you need to use the -skipautopass option, which skips the installation of AutoPass:

```
./setup file -skipautopass
```

- To protect the AutoPass installation from accidental updating, you can create an empty file named SKIP\_AUTOPASS\_INSTALL in /opt/microfocus/licensing as follows:

```
touch /opt/microfocus/licensing/SKIP_AUTOPASS_INSTALL
```

While the file is present, the AutoPass installer does not make changes to the installation or shutdown the running license daemons. If licensing needs to be updated later, you can rerun the MFLicenseServerInstall.sh from within the \$COBDIR/safenet folder with the force command line option:

```
cd $COBDIR/safenet
./MFLicenseServerInstall.sh force
```

## Advanced Installation Tasks

This section includes instructions about how to perform a non-default installation, install this product as an upgrade, or about how to install the additional components.

The advanced installation tasks include:

- *Installing as an Upgrade* - included in these Release Notes
- *Command line installation options* - included in these Release Notes
- *Installing using an RPM installer on Linux* - available in the product Help and in the Micro Focus Infocenter

[Click here](#) to see this information on the Product Documentation pages on Micro Focus Customer Care.

## Installing as an Upgrade

This release works concurrently with the previous version of Visual COBOL Development Hub, so you do not need to uninstall it.

Install the latest version in a different location and set the environment to point to it. To do this, run the Visual COBOL Development Hub installer with the -installlocation option:

1. Execute the following command:

```
./InstallFile -installlocation="/opt/microfocus/VisualCOBOL"
```



**Note:** You can use variables when specifying an absolute path for -installlocation. For example, the following examples are equivalent:

```
-installlocation="/home/myid/installdir"
```

```
-installlocation="$HOME/installdir"
```

2. Execute cobsetenv to set the environment and point to the new install location:

```
. <product-install-dir>/bin/cobsetenv
```



**Note:** `cobsetenv` is only compatible with POSIX-like shells, such as `bash`, `ksh`, or `XPG4 sh`. It is not compatible with C-shell or pre-XPG4 Bourne shell.

### Preserving the MFDS and Enterprise Server region configuration

The following information applies when you are upgrading from releases 6.0 or 7.0.

If you install this release to the same install location as release 6.0 or 7.0, the product in the current location is moved to a backup directory name.

For example, if the 7.0 product is installed in the default install location, `/opt/microfocus/VisualCOBOL`, during the upgrade it is moved to `/opt/microfocus/VisualCOBOL.BKP.YYYY-MM-DD.HH:MM:SS`. The new release will be installed in `/opt/microfocus/VisualCOBOL`.

Note that your original installation might include some files that you changed or added to, and you need those changes preserved in the new installation.

During the upgrade, the installer moves a number of changed files to a different configuration location and symbolically links them back into the new release install location. The configuration location is one of the following:

- The default config location is `/opt/microfocus/config/`.
- For non-root installation, the default location is `$HOME/microfocus/config/`.
- To specify your own configuration location, run the setup file with the following command-line option: `-mfconfiglocation=[location]`

The setup file creates a directory in the configuration location using the sum of the value of the `$COBDIR` path. This is so that each configuration area is unique to each product installation. The configuration files and directories are then placed in this `COBDIR` hash-numbered directory. In the examples below, the install location generates a hash of 12345.

The file `/opt/microfocus/config/12345/COBDIRlocation.txt` details the `COBDIR` the configuration area is associated with.

Currently, the setup file only moves the following files and directories:

Source	Destination
<code>secrets</code>	<code>/opt/microfocus/config/12345/secrets/</code>
<code>commonwebadmin.json</code>	<code>/opt/microfocus/config/12345/escwa/commonwebadmin.json</code>
<code>mfdscfg.xml</code>	<code>/opt/microfocus/config/12345/mfds/mfdscfg.xml</code>
<code>mfds</code>	<code>/opt/microfocus/config/12345/mfds/mfds/</code>

If you have changed any other files in the original installation, you need to be copy these manually from the backup directory, `/opt/microfocus/VisualCOBOL.BKP.YYYY-MM-DD.HH:MM:SS`, into the install location after the upgrade installation is complete.

## Visual COBOL Development Hub Installation Options

### Installing into a different location

To install in a different location use the `-installlocation="Location"` parameter to specify an alternative directory location. For example:

```
./setup_visualcobol_devhub_8.0_platform -installlocation="full path of new location"
```



**Note:** You can use variables when specifying an absolute path for `-installlocation`. For example, the following examples are equivalent:

```
-installlocation="/home/myid/installdir"
```

```
-installlocation="$HOME/installdir"
```

You can see details about which additional parameters can be passed to the install script if you enter the `-help` option.

## Configuring the Enterprise Server installation

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

- ESsysLog** Use this to enable ("Y") or disable ("N") Enterprise Server system logging. Logging is enabled by default. Log files are saved in `/var/mfcobol/logs`.
- ESadminID** Sets the Enterprise Server System Administrator Process User ID from the command line - for example, `-ESadminID="esadm"`. The default user ID is the one that runs the installer.
- CASrtDir** Specifies the location where the Enterprise Server run-time system files are placed - for example, `-CASrtDir="/home/esuser/casrt/es"`. The default location is `/var/mfcobol/es`.

## Installing Silently

You can install Micro Focus products silently by using command line parameters to specify the installation directory, user information, and which features to install. You must execute the command with superuser permissions.

You can use the following command line arguments to install silently on UNIX/Linux. You need to execute the commands as root:

```
-silent -IacceptEULA
```

For example, execute:

```
setup_filename -silent -IacceptEULA
```

## After Installing

- Check the *Product Documentation* section of the [Micro Focus Customer Support Documentation Web site](#) for any documentation updates.

## Setting up the product

If you have installed the product to a directory other than the default one, you need to set the environment as described below.



**Note:** The default directory is `/opt/microfocus/VisualCOBOL`.

1. To set up your product, execute:

```
. <product-install-dir>/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.

 **Note:** If there are two or more products installed on the machine or the products are installed in non-default locations then the `/opt/microfocus/logs/MicroFocusProductRegistry.dat` data file can be used to find the product locations.

The file contains the following entries:


```
[ Install Location ]#[ Date of Installation ]#[ Product Name ]
```

For example:

```
/home/user1/VisCobol30#2017-01-20#Micro Focus Visual COBOL Development Hub  
3.0
```

```
/home/user1/CobolServer30#2017-01-20#Micro Focus COBOL Server 3.0
```

## Configuring the Remote System Explorer Support


 **Note:** The following only applies if you are using Visual COBOL Development Hub with Visual COBOL for Eclipse.

The remote development support from the Eclipse IDE relies upon Visual COBOL Development Hub running on the UNIX machine and handling all requests from the IDE for building and debugging programs. Visual COBOL Development Hub provides a UNIX daemon, the Remote Development Option (RDO) daemon, which initiates the RDO as Eclipse clients connect to it. Whichever environment is used to start the RDO daemon will be inherited for all servers and hence all build and debug sessions.

### Configuring the Environment

You may need to configure some aspects of the environment before you start the daemon. This is because when a build or debug session is initiated on the Development Hub from one of the Eclipse clients, the environment used will be inherited from whatever was used to start the daemon. A typical example of the kind of environment that might need to be set up would include database locations and settings for SQL access at build/run time.

### Starting the Daemon

 **Important:** Before starting the daemon you must have the following on your UNIX machine:

- A version of Perl.
- A version of Java 8 or later.
- The `as` (assembler) and `ld` (linking) programs on the path, as specified by the `PATH` environment variable.

The daemon can be run with or without parameters. If no parameters are specified, the process relies on the default values in `COBDIR/remotedev/rdo.cfg`.

Use the following syntax to start the daemon (with super-user authority) on the remote host:

```
COBDIR/remotedev/startrdodaemon [<port> <low port>--<high port>]
```

where:

- *<port>* is the port number that the daemon should use to listen for connections from Eclipse. If no value is given, it will default to the value specified in `COBDIR/remotedev/rdo.cfg`; the default value on installation is 4075.

**Example:** To start the daemon listening on port 4999:

```
COBDIR/remotedev/startrdodaemon 4999
```

This command will override the default port in `rdo.cfg`.

- `<low port>-<high port>` is the range of ports on which the servers (launched by the daemon) should use to communicate with Eclipse on the client machine. If no values are given, the range defaults to that specified in `$_COBDIR/remotedev/rdo.cfg`; the default range on installation is 10000-10003.

**Example:** To instruct the daemon (on port 4999) to instantiate servers using a range of ports 4090-4993:

```
$_COBDIR/remotedev/startrdodaemon 4999 4090-4993
```

This command will also override the default ports in `rdo.cfg`.

If the server has an active firewall, it is important that these ports are open in the firewall settings. You can use the `configrdo` utility to set the default ports in `rdo.cfg` to ones already open in the firewall. If you are running on Red Hat 7.2 (or later) or CentOS 7.2 (or later), you can also use the utility to open the required ports in the active firewall. See *Configuring the firewall* for more information.

## Stopping the Daemon

To stop the daemon, type the following command with super-user authority:

```
$_COBDIR/remotedev/stoprdo daemon <port>
```

# Configuring the firewall

If the server on which Visual COBOL Development Hub is installed is running a firewall, you must ensure that certain ports and services are allowed through so that Eclipse running on a client machine can communicate with it.

To ensure successful communication between the IDE and Visual COBOL Development Hub when a firewall is active, use the `configrdo` utility after initial setup or if you experience problems establishing a connection between the two.



**Tip:** If you run the client-side and/or server-side connection diagnosis tools, these include a number of tests relating to firewall configuration, and can indicate any problems with the current firewall settings.

Use `configrdo` to configure the following settings:

- Set the default RDO daemon and server ports used by Visual COBOL Development Hub.
- Open additional ports in the firewall.

This option is only available on the following platforms: Red Hat 7.2 and later, or CentOS 7.2 and later.

- Add the `ssh` and `samba` services to the firewall.

This option is only available on the following platforms: Red Hat 7.2 and later, or CentOS 7.2 and later.

These changes can be temporary (for the duration of the current firewall being active), or be made permanent (so that they persist after a system reboot). If you are not running any of the supported platforms listed above, use your operating system's firewall commands to perform the equivalent functions.

## To configure the firewall settings

To be able to run this utility:


- You must have super-user authority (e.g. root user)
- `$_COBDIR` must be set to the value of the product install folder for Visual COBOL Development Hub.

1. From a shell command, run the following:

```
$_COBDIR/remotedev/configrdo
```

2. At the `Daemon port` prompt, enter the port number that the daemon should listen on, or press **Enter** to accept the default.



 **Note:** The default settings for these port prompts are specified in the `rdo.cfg` configuration file.


The `Server range` is a range of port numbers that a required RDO server will be started on when the daemon receives a request.

3. At the `Server range low port` prompt, enter the starting number of the server port range and press **Enter**, or press **Enter** to accept the default.
4. At the `Server range high port` prompt, enter the ending number of the server port range and press **Enter**, or press **Enter** to accept the default.

The defaults are written to the `rdo.cfg` configuration file.

If you are running this utility on Red Hat 7.2 (or later) or CentOS 7.2 (or later), an additional prompt is displayed; otherwise, the utility closes.

5. At the `Do you want to configure the firewall` prompt, press **Y** and then **Enter** to configure further firewall settings, or press **N** and then **Enter** to close the utility. If you selected **Y**, the configured firewall zones are listed.
6. To configure an existing zone, press the corresponding number and then **Enter**, or press **Enter** for the default zone (as indicated at the end of the prompt).


 **Note:** At this point, you can also create a new zone: press **N** and then **Enter**, and then type the new zone name and press **Enter**. The new zone is listed, and you can now select its corresponding number to configure it.

The current firewall status is displayed, where it checks if the currently specified ports are open in the firewall; if they are not, the utility adds them to the firewall settings.

7. If you need to open more ports, press **Y** and then **Enter**, and then enter either a single port number, or a range, and then press **Enter**.

The additional ports are opened.


8. If either of the `ssh` and `samba` services are not running in the firewall zone, you are prompted to add them: press **Y** and then **Enter** or **N** and then **Enter**, as appropriate, for each service.

 **Note:** If the service is already running, you are not prompted.

An overview of the firewall settings is displayed.

9. To save the changes permanently (that is, even after the firewall is restarted), press **Y** and then **Enter**; to save the settings for the firewall until it is next stopped, **N** and then **Enter**.

The utility is closed.

 **Note:** If you need to remove any ports or services you have added to the firewall, use the `firewall-cmd` utility that is part of the operating system.

## Enabling SHIFT-JIS

By default, support for the character encoding for the Japanese language, Shift-JIS, is not available on Ubuntu and on RedHat OS version 8 or later.

You need to generate the Shift JIS locale on your machine to be able to execute Shift-JIS applications on these platforms. You can do this as follows:

1. On RedHat 8, ensure that the `glibc-locale-source` package is installed.
2. Execute the following command with superuser rights in order to generate a Shift-JIS locale using the charset:

```
sudo localedef -f SHIFT_JIS -i ja_JP ja_JP.sjis
```

3. Set the `COBUTF8` environment variable to the generated Shift-SJIS locale and `LANG` to a UTF8 locale:

```
export COBUTF8=ja_JP.sjis
export LANG=ja_JP.UTF-8
```



#### 4. Run the cobutf8 utility:

```
cobutf8 <command>
```

See your product documentation for more details about cobutf8.

## Repairing on UNIX

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

## Uninstalling



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

To uninstall this product:

1. Execute as root the `Uninstall_VisualCOBOLDevelopmentHub8.0.sh` script in the `$COBDIR/bin` directory.



**Note:** The installer creates separate installations for the product and for Micro Focus License Administration. Uninstalling the product does not automatically uninstall the Micro Focus License Administration or the prerequisite software. To completely remove the product you must uninstall the Micro Focus License Administration as well.

To uninstall Micro Focus License Administration:

1. Execute as root the `UnInstallMFLicenseServer.sh` script in the `/var/microfocuslicensing/bin` directory.

The script does not remove some of the files as they contain certain system settings or licenses.

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

# Licensing Information



## Note:

- If you have purchased licenses for a previous release of this product, those licenses will also enable you to use this release.
- If you are unsure of what your license entitlement is or if you wish to purchase additional licenses, contact your sales representative or [Micro Focus Customer Care](#).

## To buy and activate a full unlimited license

To buy a license for Visual COBOL, contact your sales representative or Micro Focus Customer Care.

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

## To start Micro Focus License Administration

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

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

## Installing licenses

You need a license file (with an `.xml` extension for AutoPass licenses). You need to install AutoPass licenses into the existing Micro Focus License Administration tool, and not in the AutoPass License Server.

## If you have a license file

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



**Note:** Authorization codes are only available with Sentinel RMS licensing.

## Authorizing your product when you have an Internet connection



### Note:

- This topic only applies if you have an authorization code. Authorization codes are only available with Sentinel RMS licensing.
- It is not possible to install licenses remotely. You must be logged into the machine on which you are installing the licenses.

The following procedure describes how to authorize your product using a local or network license server. The license server is set up automatically when you first install the product.

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. Authorization codes are only available with Sentinel RMS licensing.

This method of authorization is required if the machine you want to license does not have an Internet connection or if normal (automatic) authorization fails.

In order to authorize your product you must have the following:

- Access to a computer which is connected to the Internet.
- Your authorization code (a 16-character alphanumeric string).
- The machine ID. To get this, start the Micro Focus License Administration tool and select the **Get Machine Id** option by entering 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 entering 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 Visual COBOL, contact your sales representative or Micro Focus Customer Care.

# Updates and Customer Care

Our Web site provides up-to-date information 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:

- Product Updates on [Software Licenses and Downloads](#), where you can download fixes and documentation updates.
  1. Log into the Software Licenses and Downloads (SLD) site at <https://sld.microfocus.com/mysoftware/download/downloadCenter>.
  2. Select your account and click **Entitlements**.
  3. Search for the product by using any of the available search parameters.
  4. Click **Show all entitlements**.
  5. Click **Get Software** in the Action column for the product you want to download or update.

In the **File Type** column, you see entries for "Software" for any GA products, and "Patch" for any patch updates.
  6. Click **Download** on the relevant row.
- The *Examples and Utilities* section of the Micro Focus Customer Care Web site, including demos and additional product documentation. Go to <https://supportline.microfocus.com/examplesandutilities/index.aspx>.
- The *Support Resources* section of the Micro Focus Customer Care Web site, that includes troubleshooting guides and information about how to raise an incident. Go to <https://supportline.microfocus.com/supportresources.aspx>

To connect, enter <https://www.microfocus.com/en-us/home/> in your browser to go to the Micro Focus home page, then click **Support & Services > Support**. Type or select the product you require from the product selection dropdown, and then click **Support Login**.



**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, <https://www.microfocus.com/support-and-services/contact-support/>. If you obtained the product from another source, such as an authorized distributor, contact them for help first. If they are unable to help, contact us.

Also, visit:

- The Micro Focus Community Web site, where you can browse the Knowledge Base, read articles and blogs, find demonstration programs and examples, and discuss this product with other users and Micro Focus specialists. See <https://community.microfocus.com>.
- The Micro Focus YouTube channel for videos related to your product. See [Micro Focus Channel on YouTube](#).

<https://www.microfocus.com/en-us/resource-center/webinar>

## Information We Need

If your purpose in contacting Micro Focus is to raise a support issue with Customer Care, you should collect some basic information before you contact us, and be ready to share it when you do.

## Creating Debug Files

If you encounter an error when compiling a program that requires you to contact Micro Focus Customer Care, 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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