COBOL Analyzer 5.0

Release Notes

2019-06-24

Contents

COBOL Analyzer Release Notes - Version 5.0

These release notes contain a summary of the major features of Micro Focus COBOL Analyzer Version 5.0, as well as late-breaking information about the product.

Before using COBOL Analyzer, please read the *Getting Started* manual in the online help to gain an understanding of the user interface and tool metaphor. For more detail on the behavior, usage and limitations of COBOL Analyzer, please refer to the online help.

What's New

COBOL Analyzer Product Enhancements

Automated Business Rule Detection (Technical Preview)

A feature called Rules Autodetect for Business Rule Manager has been introduced in 5.0. In the Rules pane in Interactive Analysis for COBOL, click the new icon next to the Create Rule button to automatically generate an outline of the logic of the selected program under a new Business Function. Rules Sets are created for paragraphs and Rules are created for blocks of logic in the program. We plan to build upon this feature to refine the Rules that are created by developing more advanced algorithms. A license for Business Rule Manager is required to use the Rules Autodetect feature.

Registration

- Sources that were registered in-place but are not found in the expected locations are no longer automatically deleted from the repository during Source Synchronization. The Source Synchronization confirmation dialog now includes a **Missing files** button. Clicking the **Missing Files** button shows the files that were not present in the expected location. You can then decide if you need to restore the missing files to the expected locations, or you can manually select which of the missing files to be removed from the repository.
- For in-place registration workspaces, source files removed from registered source directories can now be deleted from the workspace during BRP. In the BRP configuration **Advanced** tab a new option called **Automatically unregister missing sources when running update** has been added. The option is unchecked by default, meaning that the default behavior to not delete removed sources is as before. Checking the option results in missing sources being deleted from the workspace when running BRP. The deleted files are logged in the `Update.log`.
- A new option for enabling/disabling Source Synchronization has been added. The default is enabled. The option is located in **Workspace Options** > **Registration** > **Source Synchronization** > **Enable Source Synchronization**. Disabling Source Synchronization stops any related checks and automated executions (if any were set). On a non-in-place workspace, Source Synchronization is automatically disabled if BRP registration is run. BRP on in-place registration workspace still uses Source Synchronization for updating, ignoring whether Source Synchronization is enabled or not.

Performance Impovements

- Invalidation performance when invalidating a single file has been improved.
- The performance of deleting business rules has been improved.

Reports

- The Cross Reference Report has been added to the Portability Assessment report.

Usability

- The default behavior for search results in the Code Search pane when a list is selected has been improved. When running a code search in Interactive Analysis with a list selected in the Code Search pane, the results are now saved in that selected list by default. If there is no list selected, the results are saved in a new list in **Internal** > *[query name]*. A new label in the lower left of the Advanced Search window shows information about where the results will be saved and whether they will accumulate or replace the current list items. Furthermore, if there is no list selected, the Accumulate Search button is disabled.
- Workspace and Project now have a single set of options assigned. The options are the same for all users. This fixes situations where users had different Workspace and Project option sets that could result in workspace corruption and confusion. The User Options will continue to be user-dependent.

Other Enhancements and Changes

- The ability to create reusable components from existing code has been improved and stabilized. Use the Login Analyzer pane in Interactive Analysis to create new components based on different algorithms.
- A new checkbox option called **Enable checker XML preprocessor** has been added to the Micro Focus dialect Workspace Options to allow setting the `p(prexml) warn endp` directive.
- The generation of business rules from the Code Search list in batch mode can now be done using `CreateRulesFromList.bj`.

Nonfunctional Changes

- Oracle JRE has been replaced with the Adopt OpenJDK JRE.
- Microsoft SQL Server 2017 is officially supported.

Upgrades from the Previous Version

All workspaces must be upgraded after installing COBOL Analyzer 5.0. Before upgrading, we recommend that you contact SupportLine for the latest COBOL Analyzer updates. SupportLine is also available to give guidance on best practices for workspace upgrades. Before performing the upgrade on important workspaces, be sure to back up the database and the workspace folder along with the `.rwp` file. If you experience any issues or errors with the workspace upgrade process, please contact SupportLine with a description of the problem and include the contents of the `Upgrade` folder from the workspace as an attachment.

Updating the CA Web Client

After installing COBOL Analyzer 5.0, follow these steps to continue using the CA Web client. If COBOL Analyzer was installed with the **Install Web Client** option selected, steps 1 through 6 below can be skipped.

1. Stop the Apache Tomcat service.
2. Delete `CAWeb.war` and the `CAWeb` folder from `C:\Program Files (x86)\Apache Software Foundation\Tomcat\webapps`.
3. Delete everything in the `...\Tomcat\temp` folder.
4. Delete everything in the `…\Tomcat\work\Catalina\localhost` folder.
5. Copy the `CAWeb.war` file from `[CA install directory]\Web Client` into the `…\Tomcat \webapps` folder.
6. Start the Apache Tomcat service.
7. In the properties for the COBOL Analyzer Web Service, go to the **Log On** tab, choose **This account** and enter the account of a user with access to CA and the workspace.
8. Restart the COBOL Analyzer Web Service.

   Note: The browser clients might need to hard refresh the CA Web page with **Ctrl+R** to get the latest version.

   Note: Due to an incompatibility between Java 8 and Tomcat 6.0, you might need to uninstall Tomcat 6.0 and install the Apache Tomcat 9.0.7 that is included with the CA 5.0 installer.

   Note: When using CA Web in Internet Explorer, disable compatibility mode.

Updating the Eclipse Plugins

Follow these steps after installing CA 5.0 to continue using the Clipper View and Search Assistant plugins.

1. On the CA server, in the properties for the COBOL Analyzer Web Service, go to the **Log On** tab, choose **This account** and enter the account of a user with access to CA and the workspace. Restart the COBOL Analyzer Web Service.
2. Open Eclipse or Enterprise Developer on the client machine.
3. Go to **Help** > **About Eclipse**.
4. Click the **Installation Details** button.
5. Select **COBOL Analyzer Access** and click **Uninstall**.
6. Click **Finish** and when prompted, restart Eclipse.
7. When Enterprise Developer/Eclipse opens again, click **Help** > **Install New Software**.
8. Click the **Add** button next to the **Work with combo** selection.
9. Click **Archive** and point to the `EAIntegration.repository.zip` file in `[CA install directory]\Bin`. Then add a name in the **Name** field and click **OK**.
10. In the Install window, check the box for **COBOL Analyzer Access**. Click **Next**.
11. Click **Next** again.
12. Accept the license agreement and when prompted, restart Eclipse.

Resolved Issues

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

- *CA - Administration*
- *CA - Analysis*
- *CA - Analysis - Diagrammer*
- *CA - Analysis - HyperView - Clipper*
- *CA - Backend - Analysis*
- *CA - Backend - Analysis - Cobol*
- *CA - Backend - Analysis - DDL*
- *CA - Backend - Parsing - Cobol*
- *CA - Backend - Parsing - Cobol/ACU*
- *CA - Backend - Parsing - Cobol/MicroFocus*
- *CA - Backend - Parsing - DDL*
- *CA - Backend - Parsing - EmbeddedSQL*
- *CA - Backend - Verification*
- *CA - Batch Refresh Process*
- *CA - Business Rules*
- *CA - Change Analyzer*
- *CA - Decision Resolution*
- *CA - Diagrammer*
- *CA - Documentation*
- *CA - CAWeb*
- *CA - Eclipse Plugins*
- *CA - ED/VC Integration*
- *CA - Homonyms*
- *CA - HyperView - Callie*
- *CA - HyperView - Clipper*
- *CA - HyperView - Code Animator*
- *CA - HyperView - Flowchart*
- *CA - HyperView - Impact*
- *CA - IDE*
- *CA - IDE - Options*
- *CA - IDE - Repository Browser*
- *CA - IDE - Source Editor*
- *CA - IDE - View*
- *CA - Installation*
- *CA - Reports*
- *CA - Reports - CRUD Report*
- *CA - Reports - Inventory*
- *CA - Reports - Portability Assessment*
- *CA - Tag Manager*
- *CA - Usability*
- *Licensing*

CA - Administration

- An error when creating an SQL Server workspace when the SQLCLI11 provider is missing has been fixed. SQLOLEDB will now be used if the SQLCI11 provider is missing.

  3175755 (1115752)

- An issue that prevented the creation of a workspace for a case-sensitive SQL Server database has been fixed.

  3170880 (1115677)

CA - Analysis

- Some discrepancies between the original file and the component file when using Logic Analyzer have been fixed.

  3168179 (1115047)

- The default value of the option for replacing certain data items with FILLERS has been changed so that the data items will not be replaced.

  3168178 (1115046)

- An issue where a CONTINUE statement was removed in a generated component using Logic Analyzer has been fixed.

  3168177 (1115045)

- The default for the Keep Legacy Copybooks option when extracting components in Logic Analyzer has been changed to true.

  3168176 (1115044)

- Legacy copybooks are no longer sliced by default.

  3168173 (1115043)

- An issue with extra spaces added in a created component from Logic Analyzer that resulted in a compilation error has been fixed.

  3168171 (1115041)

- External file names that do not point to files but to devices (like printers or readers) are not shown in the CRUD report.

  3167351 (1115294)

- Sources that were registered in-place but are not found in the expected locations will no longer automatically be deleted from the repository during Source Synchronization. The Source Synchronization confirmation dialog now includes a "Missing files" button. Clicking the Missing Files button will show the files that were not present in the expected location. You can then decide if you need to restore the missing files to the expected locations, or you can manually select which of the missing files are to be removed from the repository.

  3166382 (1114939)

- An issue with missing error, warning, and informational messages that was causing an incorrect error to display has been fixed.

  3161412 (1114483)

CA - Analysis - Diagrammer

- Unchecking an object in the Diagrammer scope editor now works correctly.

  2871804 (1106180)

CA - Analysis - HyperView - Clipper

- An issue causing single quotes to be added automatically to a constant's value when changing a Code Search query has been fixed.

3179718 (1116051)

CA - Backend - Analysis

• An issue with the value of variables with S9(8) or S9(9) in the Watch pane has been resolved.

3181023 (1116271)

• An issue where running the recovery utility would cause some relationships to not be generated during subsequent verifications has been fixed.

3158276 (1114227)

• An issue with Queue Processor errors during verification related to the management code search query results lists has been fixed.

3154874 (1114421)

• Superfluous 01 levels items are no longer added to the sliced program from Logic Analyzer.

3132413 (1111936)

CA - Backend - Analysis - Cobol

• The code has been modified to prevent an alternative entry point to generate a severe error when the alternative entry point name is the same as entry point defined in the program.

3163003 (1114729)

• An issue with program calls not resolving correctly when a file extension is included in the call statement has been fixed.

3162899 (1114668)

• An issue where the HasEnd attribute was not correctly set for some statement types in Interactive Analysis has been fixed.

3158009 (1114255)

• An issue with extra quit records in the queue causing Queue Processors to wrongly be closed has been fixed.

3157112 (1114136)

• An issue with copybook resolution when library names are used has been fixed.

3129526 (1111637)

CA - Backend - Analysis - DDL

• The support for stored procedures has been improved.

3168761 (1115175)

CA - Backend - Parsing - Cobol

• An issue causing incorrect verification errors for 78-level data items and EXIT perform statements reported for specific RM/COBOL programs has been fixed.

3187257 (1116643)

• RM/COBOL support now allows data item names of up to 128 characters.

3182342 (1116262)

• An issue with top level 78 constants causing a verification error for RM/COBOL has been fixed.

3181416 (1116246)

• Invalidation performance when invalidating a single file has been improved.

3175782 (1115893)

- An issue that caused confusion with 'A scope-delimiter did not have a matching verb and was discarded' errors has been fixed.

  3175469 (1115753)
- A new checkbox option called "Enable checker XML preprocessor" has been added to the Micro Focus dialect Workspace Options to allow setting the "p(prexml) warn endp" directive.

  3174424 (1115669)
- An issue with consecutive double quotation marks in compiler directive options has been fixed.

  3174238 (1115604)
- An error when processing large EXEC code blocks has been fixed.

  3173686 (1115592)
- An error when verifying COBOL files in workspaces that have a lot of copybook folders has been fixed.

  3171469 (1115449)
- An issue where new directives were ignored during COBOL reverification has been fixed.

  3154974 (1113983)
- An issue where an undeclared variable was causing a critical verification error has been fixed.

  3154616 (1113994)

CA - Backend - Parsing - Cobol/ACU

- A parsing error for ACUCOBOL has been fixed.

  3170316 (1115296)

CA - Backend - Parsing - Cobol/MicroFocus

- An error caused by a reference to an external program in a copybook has been fixed.

  3193838 (1117148)
- A memory access violation reported for specific COBOL sources has been fixed.

  3192872 (1117073)
- An issue with homonyms and duplication of COBOL copybook search paths has been resolved.

  3179045 (1116161)

CA - Backend - Parsing - DDL

- Support for the Oracle SQL Create Table statement has been improved.

  3179672 (1116101)
- Several issues with parsing DLL sources have been fixed.

  3172446 (1115442)
- Limited support for CREATE PROCEDURE statements has been added. A "Defines Stored Procedure" relationship will now be created, but every statement after it will be ignored.

  3156692 (1114123)

CA - Backend - Parsing - EmbeddedSQL

- A verification error related to the UNION clause has been fixed.

  3163695 (1114727)
- Several SQL parsing errors have been fixed.

  3162629 (1114694)

- An SQL parsing error has been fixed.

  3162629 (1115405)
- The parser has been modified to properly process CAST keyword.

  3175328 (1115713)
- SQL parsing support for the RANK analytic function has been added.

  3175321 (1115712)
- An issue with memory access errors during SQL verification has been fixed.

  3162629 (1115769)
- An issue when verifying SQL statements in COBOL that caused some programs to receive a memory access violation error has been fixed.

  3162629 (1115777)
- An issue that could cause COBOL verification to hang has been fixed.

  3162629 (1115780)
- An issue with embedded SQL during COBOL verification that could result in an unexpected end of source error has been fixed.

  3162629 (1115782)
- An issue with verifying certain COBOL programs with embedded SQL statements that could cause an empty hypercode error has been fixed.

  3162629 (1115783)
- The support for the SET statement has been improved to allow for the use of parenthesized expressions.

  3156915 (1114122)
- A verification error from SQL CONNECT statements with the AT clause has been fixed.

  3139537 (1112593)

CA - Backend - Verification

- A critical error when verifying KornShell script files has been fixed.

  3174482 (1115624)

CA - Batch Refresh Process

- For in-place registration workspaces, source files removed from registered source directories can now be deleted from the workspace during BRP. In the BRP configuration Advanced tab a new option called "Automatically unregister missing sources when running Update" has been added. The option is unchecked by default, meaning that the default behavior to not delete removed sources will remain as before. Checking the option will result in missing sources being deleted from the workspace when running BRP. The deleted files will be logged in the Update.log.

  3189631 (1116895)
- An issue causing BRP's verify log to not show verified items has been fixed.

  3187659 (1116701)
- An issue preventing Flowchart diagrams from being generated in batch has been fixed.

  3184292 (1116399)
- Source Synchronization is not performed when the in-place registration is off and the files are registered through BRP.

  3175337 (1115701)
- An issue with SetProject.bj not working correctly has been fixed.

  3170465 (1115358)

- An issue where AffectedCodeReport.bj did not correctly generate the report for the selected project has been fixed.

  3169832 (1115209)
- The Batch Change Analyzer script has been fixed to produce an output report.

  3169805 (1115207)
- An issue with SetProject.bj not working correctly has been fixed.

  3168437 (1115069)
- An issue with source synchronization when re-running the BRP has been fixed.

  3164729 (1114834)
- An issue with source synchronization on upgraded workspaces that have files registered through BRP has been fixed.

  3164020 (1114746)
- The diagram can now be generated without errors.

  3163958 (1114703)
- An issue with running ImpactReportFromList.bj with a large number of starting points has been fixed.

  3129068 (1111569)

CA - Business Rules

- The performance of rule deletion has been improved.

  3174167 (1115824)
- An issue with performance when switching from the Grouping pane to the Triggering pane has been fixed.

  3174164 (1115591)
- Due to performance issues the rule logs are now turned off by default. Because of that there is no information if the imported rules are newer or not so no rule updating was done. Now when importing rules, if there are any rules that can be updated and the logging is turned off, you will be prompted to confirm if the imported rules should replace the existing ones.

  3173874 (1115564)
- The generation of business rules from the Code Search list in batch mode can now be done using CreateRulesFromList.bj.

  3172316 (1115428)
- The Triggered Rule form is now resizable and can be maximized. The columns are auto-sized by the width of the content.

  3167719 (1115076)
- The 'Select Triggered Rule Set' pane has been fixed to display the names of rule sets and rule set functions correctly.

  3143734 (1113059)
- When importing or exporting rules, the last folder location is now remembered in the file selection dialog.

  3143731 (1113105)
- An issue causing blinking while moving a Rule Set from one Business Function to another has been fixed.

  3143729 (1113038)

CA - Change Analyzer

- An issue causing the creation of more than one starting point list has been fixed.

  3181228 (1116504)
- The variable names no longer exceed 30 characters in the generated slice.

  3168362 (1115204)
- The results of a previous search in Change Analyzer are now deleted only after another search is run.

  3168354 (1115072)
- The default pane layout for Change Analyzer has been adjusted.

  3165933 (1115074)
- Cross program analysis has been improved.

  3165927 (1115508)
- Issues in Change Analyzer where certain data flow patterns would not be reported (redefinitions, file relationships across multiple programs, etc.) have been fixed.

  3165864 (1114882)
- An issue with Change Analyzer lists not updating correctly when running the process to find affected fields a second time has been fixed.

  3163418 (1114664)
- Issues where Change Analyzer would not follow dataflow links across redefinitions or across READ INTO file operations have been fixed.

  (635646)

CA - Decision Resolution

- An issue with multiple decision relationships having the same name that could cause an error in Decision Resolution has been fixed.

  3177757 (1115985)

CA - Diagrammer

- An issue when creating a new relationship with "Entry Point" selected as the first entity type has been fixed.

  3184783 (1116604)

CA - Documentation

- The software prerequisites in the Installation Guide have been updated.

  3188780 (1116754)
- The Registering Source Files topic has been updated for in-place registration.

  3182666 (1116264)
- The RXP Query Syntax topic has been updated.

  3180001 (1116099)
- The Location of Source Files option has been added to Configuring General Settings topic under Using the Batch Refresh Process.

  3168675 (1115177)

CA - CAWeb

- The correct source is opened when opening source from relations.

3191476 (1117408)

- The Export to CSV button has been added in the result window for Code Search Queries and Code Search Reports in the Web client. The CSV file contains the same information as the results view.

3178278 (1115992)

- An issue that could result in a pop-up error in the Web client when loading the repository browser has been fixed.

3169200 (1115244)

- An issue with special characters not showing in the source view in the Web client has been fixed.

3159911 (1114500)

CA - Eclipse Plugins

- An issue with adding files to Eclipse projects from Search Assistant results has been fixed.

3171829 (1115487)

CA - ED/VC Integration

- An issue with processing EXEC SQL statements has been fixed.

3155180 (1114094)

CA - Homonyms

- An issue that would sometimes cause a copybook with the same name from an incorrect directory to be used during verification has been fixed.

3189370 (1116861)

CA - HyperView - Callie

- The .dgm.xml format is not supported and is now removed from the diagram output format descriptions in the following .bj script files: DiagramBAV.bj, DiagramFlowchart.bj, DiagramProject.bj, DiagramQuick.bj, DiagramTS.bj, DiagramCallie.bj.

3166404 (1114927)

- The description of the COBOL Code Search query "IF statements not deeper than 3 levels" has been changed.

3165328 (1114833)

CA - HyperView - Clipper

- Running a detailed report against a list in Interactive Analysis now includes all results regardless of which project is selected.

3188544 (1116748)

- The default behavior for search results in the Code Search pane when a list is selected has been improved. When running a code search in Interactive Analysis with a list selected in the Code Search pane, the results will now be saved in that selected list by default. If there is no list selected, the results will be saved in a new list in Internal > [query name]. A new label in the lower left of the advanced search window will show information about where the results will be saved and whether they will accumulate or replace the current list items. Furthermore, if there is no list selected, the Accumulate Search button will be disabled.

3187518 (1116665)

- Code Search queries imported from plugins can now be edited by the owner. The owner is the user at the time of import. If for some reason the current user cannot be obtained, the queries will be left as System and can not be edited.

3161533 (1114496)

CA - HyperView - Code Animator

• An issue causing a crash when using Animator over a perform section statement has been resolved.

3184282 (1116400)

CA - HyperView - Flowchart

• The Flowchart pane in Interactive Analysis now draws the flowchart when there is no initial paragraph or section defined.

3178001 (1115944)

CA - HyperView - Impact

• The ImpExBav.bj batch script has been removed from the tool to avoid confusion since that functionality had never existed.

3168607 (1115176)

CA - IDE

• A new option for enabling/disabling Source Synchronization has been added. The default is enabled. The option is located in Workspace Options > Registration > Source Synchronization > Enable Source Synchronization. Disabling Source Synchronization will stop any related checks and automated executions (if any were set). On a non-in-place workspace, Source Synchronization will be automatically disabled if BRP registration is run. BRP on in-place registration workspace will continue using Source Synchronization for updating, ignoring if Source Synchronization is enabled or not.

3175327 (1115894)

CA - IDE - Options

• The Repository Browser (Search) pane has been replaced with the new Find feature, and the related General tab options in the Workspace Options have been removed.

3173184 (1115507)

CA - IDE - Repository Browser

• An issue that could cause certain Query Repository queries to return no results has been fixed.

3183901 (1116397)

• The Repository browser now shows the "Called By COBOL" relationship for C files and the "Calls C File" relationship for COBOL files.

3155857 (1115036)

CA - IDE - Source Editor

• Editing and saving files when using in-place registration will no longer cause Source Synchronization to flag the file as changed.

3169643 (1115195)

CA - IDE - View

• The Code Search window is now resizable and works correctly for all text size settings.

3179717 (1116050)

- An issue with the browsing dialog used in the Add Files/Folders functionality that was causing problems with the Chart Viewer scaling has been fixed.

  3169247 (1115155)

CA - Installation

- When the MSI is clicked, the graphics now show the correct version. Note that the product should generally be installed by running the EXE and not the MSI.

  3196498 (1117398)
- An error causing Prerequisite Checker to report the checksum of Java Parser .dll as not valid has been fixed.

  3167805 (1115017)
- It is no longer possible to install EA and CA on the same machine. This fix prevents a situation that could lead to corruption of the environment.

  3157481 (1114191)

CA - Reports

- An issue in the Portability Assessment dialog where the last generated report button was inactive when the report had previously been generated has been fixed.

  3189499 (1116840)
- The Missing Files report in the Verification Report can now be executed for a project.

  3162995 (1114852)

CA - Reports - CRUD Report

- The CRUD Report is no longer visible in the Getting Started pane for non-master users.

  3167473 (1114998)

CA - Reports - Inventory

- Inventory report now shows missing values for projects.

  3169394 (1115158)

CA - Reports - Portability Assessment

- The Cross Reference Report has been added to the Portability Assessment report.

  3166746 (1114951)
- The list of system programs in the Supported and Unsupported System Programs reports in the Portability Assessment reports has been updated.

  3128415 (1111507)

CA - Tag Manager

- An issue that could cause tags to not be applied to objects in a project has been fixed.

  3178543 (1116063)

CA - Usability

- A more informative message will be shown in the case of a user access error when opening a workspace.

  3192829 (1117063)

- An issue causing the filter in Folder view to not show results for files has been fixed. An issue causing the search object name filter in Folder view to not show the saved filter when changing the focus has been fixed.

  3166583 (1115073)
- Ctrl+F now works as expected.

  3166578 (1115385)

Licensing

- An issue where the license initialization would fail when starting the product has been fixed.

  3167420 (1115062)
- There is no longer an entry in the Uninstall column for licenses installed on remote machines.

  3131570 (1112101)

Updates and SupportLine

Our Web site gives up-to-date details of contact numbers and addresses.

Contacting Micro Focus

Micro Focus is committed to providing world-class technical support and consulting services. Micro Focus provides worldwide support, delivering timely, reliable service to ensure every customer's business success.

All customers who are under a maintenance and support contract, as well as prospective customers who are evaluating products, are eligible for customer support. Our highly trained staff respond to your requests as quickly and professionally as possible.

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Information Needed by Micro Focus SupportLine

When contacting Micro Focus SupportLine, please include the following information if possible. The more information you can give, the better Micro Focus SupportLine can help you.

- The name and version number of all products that you think might be causing an issue.
- Your computer make and model.
- System information such as operating system name and version, processors, and memory details.
- Any detailed description of the issue, including steps to reproduce the issue.
- Exact wording of any error messages involved.
- Your serial number or works order (WO) number.

To find out these numbers, look in the subject line and body of your Electronic Product Delivery Notice email that you received from Micro Focus, or on the box in which the product was supplied, and on the red card supplied in the DVD case .

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