TestStand 4.2 Process Model Changes

This document outlines the updates made in TestStand 4.2 to the default process model files, model types, and modelsupport2.dll to implement using expressions and predefined macros to specify the file path of reports. Additionally, this document includes changes for bug fixes related to the model files.

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# Sequential Process Model Changes

## Test UUTs Sequence

The following table includes the new steps added to the Test UUTs sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Check if Generate Path by Expr  *(ID#:fOasIvYD7UaMNcHOoEzSoB)* | Determines whether an expression specifies the report file path and sets the value of the local variable GeneratePathByExpression accordingly. TestStand uses this variable in further processing to determine whether an expression specifies the report file path. |
| If (step after Send Model State Message: 'Identified')  *(ID#:L9M+a/I2QUCL7q36MHeqyA)* | Evaluates whether an expression specifies the report file path and redirects the step execution flow accordingly. |
| Determine Report File Path Expression  *(ID#:2gNPJFOsFEShMiYps/07kC)* | Determines the final evaluated report file path during execution when an expression specifies the report file path. The DetermineReportFilePathNameExpr function in modelsupport2.dll determines the report file path. If the report file path expression includes a <UUTStatus> macro, TestStand sets the report file path to a temporary report file and regenerates the final report file path after the MainSequence callback executes. The Determine Report File Path Expression step executes if the UUT loop index is 1 or if the report file path expression includes a <UUT> or a <UUTStatus> macro. |
| Else (step after Determine Report File Path Expression)  *(ID#:adAZaHxVBEmGAcGFu9SUkB)* | Redirects the execution flow when an expression does not specify the report file path. |
| If (step after Set Report)  *(ID#:10bZ5Ms0mEuWV23/exXcGB)* | Evaluates whether an expression specifies the report file path and includes a <UUTStatus> macro. The step then controls the execution flow accordingly. |
| Generate UUTStatus map lookup Key  *(ID#:4NsDtIR1yU2h7jJnmMBpfA)* | Generates a unique key string that corresponds to the report file path that contains the UUT status. The step also determines whether the key exists in the map and sets the KeyExistsInMap local variable accordingly. |
| If (step after Generate UUTStatus map lookup Key)  *(ID#:BIxycYL4OkWCEB6yrVbOQB)* | Evaluates whether the variable with the same name as the value of the key exists in the Locals.UUTStatusPathMap variable and controls the execution flow accordingly. |
| Get Report File Path from UUT Status Path Map  *(ID#:vcvM07LY3EywS7AoyDx3mA)* | Determines the report file path from the corresponding key if it exists and stores the path in the ReportFilePath local variable. TestStand accesses the report file path by looking up the value of the variable with the name key. |
| Determine Report File Path Expression  *(ID#:xD29Cj4i50K7nb3G1jNJ5A)* | Regenerates the report file path and stores the path in the ReportFilePath local variable. TestStand calls the DetermineReportFilePathNameExpr function in modelsupport2.dll to determine the report file path. |
| Add Report File Path to UUT Status Map If It Does Not Exists  *(ID#:tGobqsZ23km/VH65NKrOGA)* | Adds a new element to Locals.UUTStatusPathMap with the name as the status and the value as the report file path if it does not already exist. |
| If  *(ID#:a4ZM527o0EWSPOYme0cWSD)* | Evaluates whether the report file path includes a <UUT> macro and controls the execution flow accordingly. |
| CalculateAppendIfExists  *(ID#:CMzDpIeH1EOvwNh6+i9B9A)* | Determines whether to append the report to a file when a file with the same name exists when TestStand generates reports for each UUT. TestStand appends the reports to an existing file when you enable the Append if File Already Exists option in the Report Options dialog box. |
| Else If  *(ID#:34FsDqlFoUu4UEk+WdjKPA)* | Evaluates whether an expression specifies the report file path and includes a <UUTStatus> macro. The step then controls the execution flow accordingly. |
| CalculateAppendIfExists  *(ID#:mWtwkYlij0KO6nbv0O07CC)* | Determines whether to append the report to a file when a file with the same name exists. TestStand appends the reports to an existing file when you enable the Append if File Already Exists option in the Report Options dialog box or when the  KeyExistsInMap variable is True. |

The following table includes the new local variables added to the Test UUTs sequence.

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| GeneratePathByExpression (Boolean) | Indicates whether an expression specifies the report file. |
| KeyExistsInMap (Boolean) | Indicates whether a file path already exists and where to save the report. |
| UUTStatusPathMap (Array of containers) | Maintains a map that identifies the report file path for a UUT status. |
| UUTStatusMapLookupKey (String) | Contains the key to the Locals.UUTStatusPathMap variable. |
| KeyLookupString (String) | Contains the lookup string for the Locals.UUTStatusPathMap variable. |

## Single Pass Sequence

The following table includes the new steps added to the Single Pass sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Check if Generate Path by Expr  *( ID#:ecwPkB5JtkCNTK3ZPjpeUC)* | Determines whether an expression specifies the report file path and sets the value of the local variable GeneratePathByExpression accordingly. TestStand uses this variable in further processing to determine whether an expression specifies the report file path. |
| If (step after Check if Generate Path by Expr)  *(ID#:L9M+a/I2QUCL7q36MHeqyA)* | Evaluates whether an expression specifies the report file path and redirects the step execution flow accordingly. |
| Determine Report File Path Expression  *(ID#:pvxAzN4p20+rP1c2pPn7jC)* | Determines the final evaluated report file path during execution when an expression specifies the report file path. The DetermineReportFilePathNameExpr function in modelsupport2.dll determines the report file path. If the report file path expression includes a <UUTStatus> macro, TestStand sets the report file path to a temporary report file and regenerates the final report file path after the MainSequence callback executes. The Determine Report File Path Expression step executes if the UUT loop index is 1 or if the report file path expression includes a <UUT> or a <UUTStatus> macro. |
| Else (step after Determine Report File Path Expression)  *(ID#:Srbd+iY2o0KzUXNUciaS/A)* | Redirects the execution flow when an expression does not specify the report file path. |
| If (step after Set Report)  *(ID#:MLh4+baUzk+fidnm01HUJB)* | Evaluates whether an expression specifies the report file path and includes a <UUTStatus> macro. |
| Determine Report File Path Expression  *(ID#:YWYB0CR0Xk6Ai3XcLULXZB)* | Regenerates the report file path and stores the path in the ReportFilePath local variable. TestStand calls the DetermineReportFilePathNameExpr function in modelsupport2.dll to determine the report file path. |

The following table includes the new local variables added to the Single Pass sequence.

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| GeneratePathByExpression (Boolean) | Indicates whether an expression specifies the report file. |

## Get Report Options Sequence

The following table includes the modified steps in the Get Report Options sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Read Report Option Defaults  *(ID#:pl0Z1blwZ0aWx2NpBA9ehD)* | The call to the ReadReportOptionDefaultsEx function has been changed to a call to the ReadReportOptionDefaultsExpr function, which includes all the functionality of the old function and additionally reverse-maps the report file path expression to the corresponding report options if needed. For example, when the report file path expression uses a <UUT> macro, the function internally sets the NewFileNameForEachUUT report options subproperty to True. |

## Get Station Info Sequence

The following table includes the modified steps in the Get Station Info sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Get Current User  *(ID#:yG2e0SYFRE+bOSdhKvvc7D)* | Expression has been modified to set the current user parameter to empty string when the StationGlobals.TS.CurrentUser property does not exist to prevent the step from returning an error when no user is logged in. |

# Parallel Process Model Changes

## Test UUTs Sequence

The following table includes the new steps added to the Test UUTs sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Check if Generate Path by Expr  *(ID#:EQLHHC2WbEaZdw0y6syXID)* | Determines whether an expression specifies the report file path and sets the value of the local variable GeneratePathByExpression accordingly. TestStand uses this variable in further processing to determine whether an expression specifies the report file path. |

|  |  |
| --- | --- |
| If (step after Wait For Dialog Initialization)  *(ID#:/y7mJsjx30eIjM0etP3uGD)* | Evaluates whether an expression specifies the report file path and redirects the step execution flow accordingly. |
| Determine Report File Path Expression  *(ID#:Y9+UkyLxzUus73IgfxKKQB)* | Determines the final evaluated report file path during execution when an expression specifies the report file path. The DetermineReportFilePathNameExpr function in modelsupport2.dll determines the report file path. Determine Report File Path Expression executes when you configure the report options to generate a single report file for all UUTs. When the report file path expression contains <UUT>, <TestSocket>, or <UUTStatus> macros, TestStand skips this step. |
| Else (step after Determine Report File Path Expression)  *(ID#:5/5XdbW99UeaPBVyidP9cA)* | Redirects the execution flow when an expression does not specify the report file path. |

## Single Pass Sequence

The following table includes the new steps added to the Single Pass sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Check if Generate Path by Expr  *(ID#:2Wx6X4Rh+0eGCNYmN3ixVB)* | Determines whether an expression specifies the report file path and sets the value of the local variable GeneratePathByExpression accordingly. TestStand uses this variable in further processing to determine whether an expression specifies the report file path. |
| If (step after Check if Generate Path by Expr )  *(ID#:BLcUvSXnVUap1T9naU5omA)* | Evaluates whether an expression specifies the report file path and redirects the step execution flow accordingly. |
| Determine Report File Path Expression  *(ID#:hQy9eDktD0eaCm01R09EbA)* | Determines the final evaluated report file path during execution when an expression specifies the report file path. The DetermineReportFilePathNameExpr function in modelsupport2.dll determines the report file path. Determine Report File Path Expression executes when you configure the report options to generate a single report file for all UUTs. When the report file path expression contains <UUT>, <TestSocket>, or <UUTStatus> macros, TestStand skips this step. |
| Else (step after Determine Report File Path Expression)  *(ID#:7fXSXVvuhU+ZbWKMDO5icA)* | Redirects the execution flow when an expression does not specify the report file path. |

## Test UUTs - Test Socket Entry Point Sequence

The following table includes the new steps added to the Test UUTs – Test Socket Entry Point sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| If (step after Send Model State Message: 'Identified')  *(ID#:/UlWhbsSlkOuuTFnYtC0NC)* | Evaluates whether an expression specifies the report file path and redirects the step execution flow accordingly. |
| Determine Report File Path Expression  *(ID#:eeeOYM5OhEGgx/KLUcElWA)* | Determines the final evaluated report file path during execution when an expression specifies the report file path. The DetermineReportFilePathNameExpr function in modelsupport2.dll determines the report file path. If the report file path expression includes a <UUTStatus> macro, TestStand sets the report file path to a temporary report file and regenerates the final report file path after the MainSequence callback executes. The Determine Report File Path Expression step executes if the UUT loop index is 1 or if the report file path expression includes a <UUT>, <TestSocket>, or <UUTStatus> macro. |
| Use Model UUT Report File Path?  *(ID#:BsigelVZCE25REi6Az0Y6D)* | Sets the TestSocket.ReportFilePath variable under Parameters to the value of the ModelData. UUTReportFilePath variable under Parameters.  This step executes when you configure the report options to generate a single report file for all UUTs. When the report file path expressions contains a <UUT>, <TestSocket>, or <UUTStatus> macro, TestStand skips this step. |
| Else (step after Use Model UUT Report File Path?)  *(ID#:GheHqXIYmUuS0uGtWHgcuC)* | Redirects the execution flow when an expression does not specify the report file path. |
| If (step after Acquire Report Writing Mutex)  *(ID#:bU7ycAXqDUay3/UUo07V2C)* | Evaluates whether an expression specifies the report file path and includes a <UUTStatus> macro. |
| Generate UUTStatus map lookup Key  *(ID#:dIKBAJ079kyrdGa0U5qv9C)* | Generates a unique key string that corresponds to the report file path that contains the UUT status and TestSocket index. The step also determines whether the key exists in the map and sets the KeyExistsInMap local variable accordingly. |

|  |  |
| --- | --- |
| If (step after Generate UUTStatus map lookup Key)  *(ID#:WkVQSxWeNkqQZzFj/hDpcB)* | Evaluates whether the variable with the same name as the value of the key exists under the Parameters.ModelData.UUTStatusPathMap variable and controls the execution flow accordingly. |
| Get Report File Path from UUT Status Path Map  *(ID#:bofaArqyHUSkEr0pD5BnBB)* | Determines the report file path from the corresponding key if it exists and stores the path in the ReportFilePath TestSocket variable. TestStand accesses the report file path by looking up the value of the variable with the name key. |
| Determine Report File Path Expression  *(ID#:66qXTAgiGkKf0ZmhnP3WQB)* | Regenerates the report file path and stores the path in the ReportFilePath TestSocket variable. TestStand calls the DetermineReportFilePathNameExpr function in modelsupport2.dll to determine the report file path. |
| Add Report File Path to UUT Status Map If It Does Not Exists  *(ID#:M/NoodIqvkuwx4WqoxnPOC)* | Adds a new element to Parameters.ModelData.UUTStatusPathMap with the name as the status and the value as the report file path if it does not already exist. |
| If  *(ID#:x3SxrDE4JEeAteCJk4oLQD)* | Evaluates whether the report file path includes a <UUT> macro and controls the execution flow accordingly. |
| CalculateAppendIfExists  *(ID#:5jr9lZS+pEWUDxGzZx1HsA)* | Determines whether to append the report to a file when a file with the same name exists when TestStand generates reports for each UUT. TestStand appends the reports to an existing file when you enable the Append if File Already Exists option in the Report Options dialog box. |
| Else If  *(ID#:fZAbJwyxkkGLOkYCnSruRD)* | Evaluates whether an expression specifies the report file path and includes a <UUTStatus> macro. The step then controls the execution flow accordingly. |
| CalculateAppendIfExists  *(ID#:ii2LnMcDNUiiIuk/L70+bB)* | Determines whether to append the report to a file when a file with the same name exists. TestStand appends the reports to an existing file when you enable the Append if File Already Exists option in the Report Options dialog box or when the  KeyExistsInMap variable is True. |

The following table includes the new local variables added to the Test UUTs – Test Socket Entry Point sequence.

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| KeyExistsInMap (Boolean) | Indicates whether a file path already exists and where to save the report. |
| UUTStatusMapLookUpKey (String) | Contains the key to the Parameters.ModelData.UUTStatusPathMap variable. |
| KeyLookupString (String) | Contains the lookup string for the Parameters.ModelData.UUTStatusPathMap variable. |

## Single Pass – Test Socket Entry Point Sequence

The following table includes the new steps added to the Single Pass – Test Socket Entry Point sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| If (step after Setup Result Settings)  *(ID#:B/1atu91JU6xng7Tbh+FaC)* | Evaluates whether an expression specifies the report file path and redirects the step execution flow accordingly. |
| Determine Report File Path Expression  *(ID#:3a+uTd2QukSIVcHq9/eZHD)* | Determines the final evaluated report file path during execution when an expression specifies the report file path. The DetermineReportFilePathNameExpr function in modelsupport2.dll determines the report file path. If the report file path expression includes a <UUTStatus> macro, TestStand sets the report file path to a temporary report file and regenerates the final report file path after the MainSequence callback executes. The Determine Report File Path Expression step executes if the UUT loop index is 1 or if the report file path expression includes a <UUT>, <TestSocket>, or <UUTStatus> macro. |
| Use Model UUT Report File Path?  *(ID#:6Rl1sn9lqUSIpCQEa/nx6A)* | Sets the TestSocket.ReportFilePath variable under Parameters to the value of the ModelData. UUTReportFilePath variable under Parameters.  This step executes when you configure the report options to generate a single report file for all UUTs. When the report file path expressions contains a <UUT>, <TestSocket>, or <UUTStatus> macro, TestStand skips this step. |
| Else (step after Use Model UUT Report File Path?)  *(ID#:beuJ2FECk0OTCMDP0S29qD)* | Redirects the execution flow when an expression does not specify the report file path. |
| If (step after Acquire Report Writing Mutex)  *(ID#:IrvGI6M/zE2ZhwIg59McJA)* | Evaluates whether an expression specifies the report file path and includes a <UUTStatus> macro. The step then controls the execution flow accordingly. |
| Generate UUTStatus map lookup Key  *(ID#:Bvj+S70ShUexFzrjW4i2BA)* | Generates a unique key string that corresponds to the report file path that contains the UUT status and TestSocket index. The step also determines whether the key exists in the map and sets the KeyExistsInMap local variable accordingly. |
| If (step after Generate UUTStatus map lookup Key)  *(ID#:hKvzJFgEgUWP3cCtY1xHaC)* | Evaluates whether the variable with the same name as the value of the key exists under the Parameters.ModelData.UUTStatusPathMap variable and controls the execution flow accordingly. |
| Get Report File Path from UUT Status Path Map  *(ID#:wjlqXRfYEEiDxOmLzGz2YA)* | Determines the report file path from the corresponding key if it exists and stores the path in the ReportFilePath TestSocket variable. TestStand accesses the report file path by looking up the value of the variable with the name key. |
| Determine Report File Path Expression  *(ID#:ldLPr62/1UmJcvaA0ehNuC)* | Regenerates the report file path and stores the path in the ReportFilePath TestSocket variable. TestStand calls the DetermineReportFilePathNameExpr function in modelsupport2.dll to determine the report file path. |
| Add Report File Path to UUT Status Map If It Does Not Exists  *(ID#:VNFH6cYlKU2UVqBbg/Fk9B)* | Adds a new element under Parameters.ModelData.UUTStatusPathMap with the name as the status and the value as the report file path if it does not already exist. |
| If  *(ID#:ssoaKRYrqEe9GuV1VOEoZC)* | Evaluates whether the report file path includes a <UUT> macro and controls the execution flow accordingly. |
| CalculateAppendIfExists  *(ID#:NCVufdK7LE2vxNkQGGKj9C)* | Determines whether to append the report to a file when a file with the same name exists when TestStand generates reports for each UUT. TestStand appends the reports to an existing file when you enable the Append if File Already Exists option in the Report Options dialog box. |
| Else If  *(ID#:i45K/mPTNkemAna5h1+zYB)* | Evaluates whether an expression specifies the report file path and includes a <UUTStatus> macro. The step then controls the execution flow accordingly. |
| CalculateAppendIfExists  *(ID#:HzBz3XAtsU6D227Gax/vrC)* | Determines whether to append the report to a file when a file with the same name exists. TestStand appends the reports to an existing file when you enable the Append if File Already Exists option in the Report Options dialog box or when the  KeyExistsInMap variable is True. |

The following table includes the new local variables added to the Single Pass – Test Socket Entry Point sequence.

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| KeyExistsInMap (Boolean) | Determines whether a file path already exists and where to save the report. |
| UUTStatusMapLookUpKey (String) | Acts as the key to the Parameters.ModelData.UUTStatusPathMap variable. |
| KeyLookupString (String) | Acts as the lookup string for the Parameters.ModelData.UUTStatusPathMap variable. |

## Get Report Options Sequence

The following table includes the modified steps in the Get Report Options sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Read Report Option Defaults  *(ID#:Hq2Wzn7LM0uI6x67SkaTrA)* | The call to the ReadReportOptionDefaultsEx function has been changed to a call to the ReadReportOptionDefaultsExpr function, which includes all the functionality of the old function and additionally reverse-maps the report file path expression to the corresponding report options if needed. For example, when the report file path expression uses a <UUT> macro, the function internally sets the NewFileNameForEachUUT report options subproperty to True. |

## Get Station Info Sequence

The following table includes the modified steps in the Get Station Info sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Get Current User  *(ID#:yG2e0SYFRE+bOSdhKvvc7D)* | Expression has been modified to set the current user parameter to empty string when the StationGlobals.TS.CurrentUser property does not exist to prevent the step from returning an error when no user is logged in. |

# Batch Process Model Changes

## Test UUTs Sequence

The following table includes the new steps added to the Test UUTs sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Check if Generate Path by Expr  *(ID#:dnCPW0IylkG2tGqkaeEwwA)* | Determines whether an expression specifies the report file path and sets the value of the local variable GeneratePathByExpression accordingly. TestStand uses this variable in further processing to determine whether an expression specifies the report file path. |
| If (step after Wait For Dialog Initialization)  *(ID#:PRsXB10VIkmm9301CniF+B)* | Evaluates whether an expression specifies the report file path and redirects the step execution flow accordingly. |
| Determine Batch Report File Path Expression  *(ID#:CIgzx1Ez0UGMg/5Npm/00C)* | Determines the final evaluated batch report file path during execution when an expression specifies the report file path. When the batch report file path expression contains the <Batch> macro, TestStand skips this step. |
| Determine Report File Path Expression  *(ID#:0rxGdbL2Qkyi9SQ63X3tAB)* | Determines the final evaluated report file path during execution when an expression specifies the report file path. The DetermineReportFilePathNameExpr function in modelsupport2.dll determines the report file path. If the report file path expression includes a <UUTStatus> macro, TestStand sets the report file path to a temporary report file and regenerates the final report file path after the MainSequence callback executes. The Determine Report File Path Expression step executes when you configure the report options to generate a single report file for all UUTs. When the report file path expression includes a <UUT>, <TestSocket>, <Batch>, or <UUTStatus> macro, TestStand skips this step. |
| Else (step after Determine Report File Path Expression)  *(ID#:RFlPoqXkBkySJkpsrICbJB)* | Redirects the execution flow when an expression does not specify the report file path. |

## Single Pass Sequence

The following table includes the new steps added to the Single Pass sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Check if Generate Path by Expr  *(ID#:BzpnJA6tn0amlC911FiqeD)* | Determines whether an expression specifies the report file path and sets the value of the local variable GeneratePathByExpression accordingly. TestStand uses this variable in further processing to determine whether an expression specifies the report file path. |
| Clear Batch UUT Report File Path Map  (*ID#:EQ7Tiv5tTUmZOV0nJSLZhA*) | Clears the Batch UUT status path map. When you do not use an expression o specify the report path or when the report path does not include the <UUTStatus> macro, TestStand skips this step. |
| If (step after Add TestSocket Threads to Batch )  *(ID#:kAniH2IEckSXDCgMVu9q+B)* | Evaluates whether an expression specifies the report file path and redirects the step execution flow accordingly. |
| Determine Report File Path Expression  *(ID#:DzALx1Zf+UKEx09ia0YxqB)* | Determines the final evaluated batch report file path during execution when an expression specifies the report file path. The DetermineReportFilePathNameExpr function in modelsupport2.dll determines the batch report file path. When the batch report file path expression contains the <Batch> macro, TestStand skips this step. |
| Determine UUT Report File Path Expression  *(ID#:sRDQDRTt9kCVunBOOYJ2ZC)* | Determines the final evaluated report file path during execution when an expression specifies the report file path. If the report file path expression includes a <UUTStatus> macro, TestStand sets the report file path to a temporary report file and regenerates the final report file path after the MainSequence callback executes. The Determine UUT Report File Path Expression step executes when you configure the report options to generate a single report file for all UUTs. When the report file path expression includes a <UUT>, <TestSocket>, <Batch>, or <UUTStatus> macro, TestStand skips this step. |
| Else (step after Determine Report File Path Expression)  *(ID#:jRe5Ak0bz0eVtgNrzQx6LD)* | Redirects the execution flow when an expression does not specify the report file path. |

## Add Path To Map Sequence

The following table includes the step in the new Add Path To Map sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Add Report File Path to UUT Status Map If It Does Not Exists  *(ID#:4i7ltIi5hkmVphGBpFxOpA)* | Adds a new element to the Map passed in as parameter using MapKey as the key and ReportFilePath as the value. |

## Test UUTs - Test Socket Entry Point Sequence

The following table includes the new steps added to the Test UUTs – Test Socket Entry Point sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| If (step after Sync With Controller -- ReadyToRun)  *(ID#:GRKGhgvkMki5kWIl9tKvYD)* | Evaluates whether an expression specifies the report file path and redirects the step execution flow accordingly. |
| Determine Report File Path Expression  *(ID#:p9RFl0eIs0+fn9JULo9dCD)* | Determines the final evaluated report file path during execution when an expression specifies the report file path. The DetermineReportFilePathNameExpr function in modelsupport2.dll determines the report file path. If the report file path expression includes a <UUTStatus> macro, TestStand sets the report file path to a temporary report file and regenerates the final report file path after the MainSequence callback executes. The Determine Report File Path Expression step executes if the UUT loop index is 1 or if the report file path expression includes a <UUT>, <TestSocket>, <Batch>, or <UUTStatus> macro. |
| Use Batch UUT Report File Path?  *(ID#:gTrvrndnRUiS4Hlnst2yIC)* | Sets the TestSocket.ReportFilePath variable under Parameters to the value of the ModelData. UUTReportFilePath variable under Parameters.  This step executes when you configure the report options to generate a single report file for all UUTs. When the report file path expressions contains a <UUT>, <TestSocket>, or <UUTStatus> macro, TestStand skips this step. |
| Else (step after Use Batch UUT Report File Path?)  *(ID#:oy9/5VAjXEajMrgKOSiBvC)* | Redirects the execution flow when an expression does not specify the report file path. |

|  |  |
| --- | --- |
| If (step after Acquire Report Writing Mutex)  *(ID#:Sk2SF2SIbkSogSin+cA1zC)* | Evaluates whether an expression specifies the report file path and includes a <UUTStatus> macro. The step then controls the execution flow accordingly. |
| Generate UUTStatus map lookup Key  *(ID#:jIEoh3Sep0yJmTKOiSDXiB)* | Generates a unique key string that corresponds to the report file path that contains the UUT status, Batch Number, and TestSocket index. The step also determines whether the key exists in the map and sets the KeyExistsInMap local variable accordingly. |
| If (step after Generate UUTStatus map lookup Key)  *(ID#:ZHD/Od5hS0+uJx5TQcHq4D)* | Evaluates whether the variable with the same name as the value of the key exists under the Parameters.ModelData.UUTStatusPathMap variable and controls the execution flow accordingly. |
| Get Report File Path from UUT Status Path Map  *(ID#:0dC6lKr3qkiAsP2ASiiYSA)* | Determines the report file path from the corresponding key if it exists and stores the path in the ReportFilePath TestSocket variable. TestStand accesses the report file path by looking up the value of the variable with the name key. |
| Else (step after Get Report File Path from UUT Status Path Map?)  *(ID#:TuOi4IY3qE2u/xkNRH02dA)* | Redirects the execution flow when the key does not exist under Parameters.ModelData.UUTStatusPathMap. |
| Determine Report File Path Expression  *(ID#:qktB2GYS10CgmckKLpZj0A)* | Regenerates the report file path and stores the path in the ReportFilePath TestSocket variable. TestStand calls the DetermineReportFilePathNameExpr function in modelsupport2.dll to determine the report file path. |
| If (step after Determine Report File Path Expression)  *(ID#:SsiaX7yPxEKLFceAtmP1oC)* | Evaluates whether the new file for each UUT option is selected or whether the report file path includes a <UUT> macro. |
| Add Report File Path to UUT Status Map  *(ID#:FGgVzY9DaEmVcWcN3MjiLC)* | Adds a new element to Parameters.ModelData.UUTStatusPathMap with the name as the status and the value as the report file path if it does not already exist. Update the variable in this step to keep the operation of updating the variable and writing the report file atomic. |
| Set KeyExistsInMap to True  (*ID#:T0LINlWvF0OCY4M3QBxO5C*) | Sets the KeyExistsInMap local variable to True to prevent other execution threads from truncating the file after this thread appends to the file and leaves the critical section. |
| Clear Existing File if Needed  (*ID#:YCFwJfxtJ0qy+uVc4m3WUC*) | Calls the ClearExistingReportFile method in modelsupport2.dll and truncates the report file. |
| If (step after Acquire Report Writing Mutex)  *(ID#:UcYa+zQDFUuiRvTZgC6U9B)* | Evaluates whether the new file for each UUT option is selected, whether the report file path includes a <UUT> macro, and whether the <UUT> macro is used. The step controls the execution flow accordingly. |
| CalculateAppendIfExists  *(ID#:gHl0QFMM0EKsVpoIqt4tVB)* | Determines whether to append the report to a file when a file with the same name exists when TestStand generates reports for each UUT. TestStand appends the reports to an existing file when you enable the Append if File Already Exists option in the Report Options dialog box or when the KeyExistsInMap variable is True. |
| Else  *(ID#:NdTB/9V7NkCmrkaAOUjL0C)* | Determines whether an expression specifies the report file path and includes a <UUTStatus> macro. The step then controls the execution flow accordingly. |

The following table includes the new local variables added to the Test UUTs – Test Socket Entry Point sequence.

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| KeyExistsInMap (Boolean) | Indicates whether a file path already exists and where to save the report. |
| UUTStatusMapLookUpKey (String) | Contains the key to the Parameters.ModelData.UUTStatusPathMap variable. |
| KeyLookupString (String) | Contains the lookup string for the Parameters.ModelData.UUTStatusPathMap variable. |

## Single Pass – Test Socket Entry Point Sequence

The following table includes the new steps added to the Single Pass – Test Socket Entry Point sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| If (step after Sync With Controller -- ReadyToRun)  *(ID#:5Nv1FEJES0a/xL+tw3JWQC)* | Evaluates whether an expression specifies the report file path and redirects the step execution flow accordingly. |

|  |  |
| --- | --- |
| Determine Report File Path Expression  *(ID#:kgvaN/VrxUiHO6Ya4GmzcB)* | Determines the final evaluated report file path during execution when an expression specifies the report file path. The DetermineReportFilePathNameExpr function in modelsupport2.dll determines the report file path. If the report file path expression includes a <UUTStatus> macro, TestStand sets the report file path to a temporary report file and regenerates the final report file path after the MainSequence callback executes. The Determine Report File Path Expression step executes if the UUT loop index is 1 or if the report file path expression includes a <UUT>, <TestSocket>, <Batch>, or <UUTStatus> macro. |
| Use Batch UUT Report File Path?  *(ID#:1D0UjSIJWEm6Lopo5tLKJB)* | Determines whether to use the batch report file path in the model data to store the UUT report in this TestSocket. This step executes when you configure the report options to generate a batch report file. When the report file path expressions contains a <UUT>, <TestSocket>, <Batch>, or <UUTStatus> macro, TestStand skips this step. |
| Else (step after Use Batch UUT Report File Path?)  *(ID#:rDbApq7Zfk+i/SJt5i/+IC)* | Redirects the execution flow when an expression does not specify the report file path. |
| If (step after Acquire Report Writing Mutex)  *(ID#:m0GQdfbj9UyGz34g90GXvD)* | Evaluates whether an expression specifies the report file path and includes a <UUTStatus> macro. The step then controls the execution flow accordingly. |
| Generate UUTStatus map lookup Key  *(ID#:Q0YgI0KY4k2tHMaQL9Qk0B)* | Generates a unique key string that corresponds to the report file path that contains the UUT status, batch number, and TestSocket index. The step also determines whether the key exists in the map and sets the KeyExistsInMap local variable accordingly. |
| If (step after Generate UUTStatus map lookup Key)  *(ID#:mT/69dzD4EyhmihnRpMOFA)* | Evaluates whether the variable with the same name as the value of the key exists under the Parameters.ModelData.UUTStatusPathMap variable and controls the execution flow accordingly. |
| Get Report File Path from UUT Status Path Map  *(ID#:7xNYE+Y1+Uy5zXSB6sN1EA)* | Determines the report file path from the corresponding key if it exists and stores the path in the ReportFilePath TestSocket variable. TestStand accesses the report file path by looking up the value of the variable with the name key. |

|  |  |
| --- | --- |
| Else(step after Get Report File Path from UUT Status Path Map)  (*ID#:5vCyyupmTUmscMzL0PO5OB*) | Redirects the execution flow when the key does not exist under Parameters.ModelData.UUTStatusPathMap. |
| Determine Report File Path Expression  *(ID#:N4W3r4Lb0EKdFmXfUQX+UD)* | Regenerates the report file path and stores the path in the ReportFilePath TestSocket variable. TestStand calls the DetermineReportFilePathNameExpr function in modelsupport2.dll to determine the report file path. |
| If (step after Determine Report File Path Expression)  *(ID#:il3jYmG+KkyudScXD3CbIA)* | Evaluates whether the report file path includes a <UUT> macro and controls the execution flow accordingly. |
| Add Report File Path to UUT Status Map  *(ID#:i6ofZT7tZkayDDOR1iChpC)* | Adds a new element to Parameters.ModelData.UUTStatusPathMap with the name as the status and the value as the report file path if it does not already exist. Update the variable in this step to keep the operation of updating the variable and writing the report file atomic. |
| Set KeyExistsInMap to True  (*ID#:T0LINlWvF0OCY4M3QBxO5C*) | Sets the KeyExistsInMap local variable to True to prevent other execution threads from truncating the file after this thread appends to the file and leaves the critical section. |
| Clear Existing File if Needed  (*ID#:YCFwJfxtJ0qy+uVc4m3WUC*) | Calls the ClearExistingReportFile method in modelsupport2.dll and truncates the report file. |
| If (step after Acquire Report Writing Mutex)  *(ID#:KySzzK1rdECp5R7FB9xSjD)* | Evaluates whether the <UUTStatus> macro is used and <UUT> macro is not used, and controls execution flow accordingly. |
| CalculateAppendIfExists  *(ID#:SkpbEJNKxkK/tdMpkb3uMC)* | Determines whether to append the report to a file when a file with the same name exists when TestStand generates reports for each UUT. TestStand appends the reports to an existing file when you enable the Append if File Already Exists option in the Report Options dialog box or when the KeyExistsInMap variable is True. |
| Else  *(ID#:zoLlQcch/UOBWrRUbNm0pC)* | Redirects the execution flow when an expression does not specify the report file path, the <UUTStatus> macro is not used, or <UUT> macro is used. |

The following table includes the new local variables added to the Single Pass – Test Socket Entry Point sequence.

|  |  |
| --- | --- |
| **Variable Name** | **Description** |
| KeyExistsInMap (Boolean) | Indicates whether a file path already exists and where to save the report. |
| UUTStatusMapLookUpKey (String) | Contains the key to the Parameters.ModelData.UUTStatusPathMap variable. |
| KeyLookupString (String) | Contains the lookup string for the Parameters.ModelData.UUTStatusPathMap variable. |

## Get Report Options Sequence

The following table includes the modified steps in the Get Report Options sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Read Report Option Defaults  *(ID#:nEOVNtJk7kyif3VwQwJVSB)* | The call to the ReadReportOptionDefaultsEx function has been changed to a call to the ReadReportOptionDefaultsExpr function, which includes all the functionality of the old function and additionally reverse-maps the report file path expression to the corresponding report options if needed. For example, when the report file path expression uses a <UUT> macro, the function internally sets the NewFileNameForEachUUT report options subproperty to True. |

## Get Station Info Sequence

The following table includes the modified steps in the Get Station Info sequence.

|  |  |
| --- | --- |
| **Step Name** | **Description** |
| Get Current User  *(ID#:Ercc2tjYZUeUJPqIRbz/MD)* | Expression has been modified to set the current user parameter to empty string when the StationGlobals.TS.CurrentUser property does not exist to prevent the step from returning an error when no user is logged in. |

# Type Changes

The following table includes the type changes in TestStand 4.2.

|  |  |
| --- | --- |
| **Type Name** | **Description** |
| ReportOptions | Added the following subproperties to support using expressions to specify the report file path.   * ReportFileSequentialModelExpression – Contains the report file path expression string for client files that use the Sequential model. * ReportFileParallelModelExpression – Contains the report file path expression string for client files that use the Parallel model. * ReportFileBatchModelExpression – Contains the report file path expression string for client files that use the Batch model. * BatchFileBatchModelExpression – Contains the batch report file path expression string for client files that use the Batch model. * NewFileNameForEachUUTStatus – The model sets this Boolean property to True during run time when the report file path expression includes a <UUTStatus> macro. * ReportPathMacroListString – List of macros the report file path uses during execution to ensure the macro list does not change during execution. * BatchReportPathMacroListString –List of macros the batch report file path uses during execution to ensure the macro list does not change during execution. * CheckIfMacroListIsUnchanged – Indicates whether the model checks whether the macros used in the report file path change during the execution. |

|  |  |
| --- | --- |
| NI\_ParallelModelData | Added the following subproperties to support using expressions to specify the report file path.   * GeneratePathByExpression – The model sets this Boolean property to True during run time when an expression determines the report file path. * UUTStatusPathMap – Array of containers that holds the report file path-key pair during execution. The key is a combination of the UUT status and the test socket index. The model uses this property to determine whether to create the report file path when the report file path expression contains a <UUTStatus> macro. |
| NI\_BatchModelData | Added the following subproperties to support using expressions to specify the report file path.   * GeneratePathByExpression – The model sets this Boolean property to True during run time when an expression determines the report file path. * UUTStatusPathMap – Array of containers that holds the report file path-key pair during execution. The key is a combination of the UUT status, the test socket index, and the batch number. The model uses this property to determine whether to create the report file path when the report file path expression contains a <UUTStatus> macro. |

# Exported function added in modelsupport2.dll

The modelsupport2.dll file includes and exports the ReadReportOptionDefaultsExpr and and DetermineReportFilePathNameExpr functions to support using expressions to specify the report file path.

ReadReportOptionDefaultsExpr

This function reads the report options from the configuration file and sets the corresponding variables. When an expression specifies the report file, this function maps the report file path expression to the following corresponding report options:

* + When the report file path expression uses the <UUT> macro, the function internally sets the NewFileNameForEachUUT report options subproperty to True.
  + When the report file path expression uses the <UUTStatus> macro, the function internally sets the NewFileNameForEachUUTStatus report options subproperty to True.
  + When the report file path expression uses the <TestSocket> macro, the function internally sets the NewFileNameForEachTestSocket report options subproperty to True.
  + When the report file path expression uses the <Batch> macro, the function internally sets the NewFileNameForEachBatch report options subproperty to True.
  + When the batch file path expression uses the <Batch> macro, the function internally sets the NewBatchFileNameForEachBatch report options subproperty to True.
  + When the batch and report file path expression are similar, the function internally sets the StoreUUTReportWithBatchReport report options subproperty to True.

## DetermineReportFilePathNameExpr

This function processes the report and batch file path expressions and returns the file paths where TestStand saves the final report. TestStand first evaluates the expression in the context of the respective sequence contexts. TestStand then replaces the macros in the evaluated expression to generate the final report file path. If the report file path expression contains a <UUTStatus> macro and the **uutStatus** parameter of the function is set to Nothing, the function returns a temporary file path as the report file path. TestStand generates the actual report file path after the MainSequence callback executes when the UUT Status is available.