

**MBF.TestAutomation Guide**

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| **10** | **10.0** | **20 Aug 2010** | **Update for VSTest Migration** |  | **Bhaskar S** | **Vivek Kumar** |  |

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**Automation Code Path**

Automation Code for MBF core components is present under the path *”\MBI\Main\MBI\Tests\MBF.TestAutomation”*

**Test Automation Code Structure**

­­Automation code is structured on the same lines as the MBF development code mentioned below are the paths where the test automation suite is located.

## MBF.Net Object Model

### Sequence Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation”*. This folder contains all the BVT, P1 and P2 test cases for Derived, Segmented, Sparse, Sequence Range, Virtual, Virtual Data, Qualitative, Compound and Sequences test cases.

## Encoding & Translation test cases

### Translation Test cases

Present under location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Algorithms\Translation”*. This folder contains all the BVT and P1 test cases for Translation i.e., Codons, Protein translation, Complementation and Transcription.

### Encoding Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO\Encoding”*. This folder contains all the BVT and P1 test cases for Encoding i.e., Encoding map, Sequence Decoder, Sequence Encoder, IupacNAEncoding, Ncbi2NAEncoding, Ncbi4NAEncoding, NcbiEAAEncoding and NcbiStdAAEncoding.

## Parsers and Formatters which support different file formats

### FastA Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO\Fasta”*. This folder contains all the BVT and P1 test cases for FastA Parsers & Formatters.

### GenBank Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO\Genbank”*. This folder contains all the BVT and P1 test cases for GenBank Parsers & Formatters.

### Gff Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO\GFF”*. This folder contains all the BVT and P1 test cases for Gff Parsers & Formatters.

### FastQ Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO\FastQ”*. This folder contains all the BVT and P1 test cases for FastQ Parsers & Formatters.

### Phylogenetic Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO\Newick”*. This folder contains all the BVT and P1 test cases for Newick Parsers & Formatters.

### Snp Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO”*. This folder contains all the BVT and P1 test cases for Snp Parsers.

### Bed Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO”*. This folder contains all the BVT and P1 test cases for Bed Parsers & Formatters.

### SAM Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO”*. This folder contains all the BVT and P1 test cases for Sam Parsers.

### BAM Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO”*. This folder contains all the BVT and P1 test cases for Bam Parsers & Formatters.

### ClustalW parser Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO”*. This folder contains all the BVT and P1 test cases for ClustalW Parsers.

### Nexus parser Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO”*. This folder contains all the BVT and P1 test cases for Nexus Parsers.

### Phylip parser Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO”*. This folder contains all the BVT and P1 test cases for Phylip Parsers.

### FileVirtualQualitativeSequenceProvider Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO”*. This folder contains all the BVT and P1 test cases for FileVirtualQualitativeSequenceProvider class.

### FileVirtualSequenceProvider Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\IO”*. This folder contains all the BVT and P1 test cases for FileVirtualSequenceProvider class.

## PAMSAM Assembly Algorithms

### PAMSAM Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\PAMSAM”*. This folder contains all the BVT and P1 test cases for PAMSAM assembly algorithm.

## MBF Registration

### Registration Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Registration”*. This folder contains all the BVT and P1 test cases for MBF.Registration.

## MBF Matrix

### Matrix Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Matrix”*. This folder contains all the BVT test cases for MBF.Matrix.

## MBF Logging

### Logging Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Logging”*. This folder contains all the BVT test cases for MBF.Logging.

## Alignment and Assembly Algorithms

### Alignment Test cases

Present under location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Algorithms\Alignment”*. This folder contains all the BVT, P1 and P2 test cases for Alignment i.e., NeedlemanWunsch algorithm, SmithWaterman algorithm, PairwiseOverlap algorithm, MUMmer algorithm, NUCmer algorithm and Sequence alignment.

### Assembly Test cases

Present under location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Algorithms\Assembly”*. This folder contains all the BVT and P1 test cases for Assemblies i.e., Simple sequence assembler, PaDeNA and Simple consensus method.

## Web-Service Clients for executing Blast queries

### NCBI Blast Web Service Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Web\Blast”*. This folder contains all the BVT and P1 test cases for NCBI Blast web service test cases.

### EBI Blast Web Service Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Web\EbiBlast”*. This folder contains all the BVT and P1 test cases for EBI Blast web service test cases.

### Azure Blast Web Service Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Web\AzureBlast”*. This folder contains all the BVT and P1 test cases for Azure Blast web service test cases.

### BioHPC Web Service Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Web\BioHPC”*. This folder contains all the BVT and P1 test cases for BioHPC web service test cases.

### ClustalW Web Service Interface Implementation Test cases

Present under the location *“\MBI\Main\MBI\Tests\MBF.TestAutomation\Web\ClustalW”*. This folder contains all the BVT and P1 test cases for ClustalW web service interface implementation test cases.

**Dependencies**

The binaries on which the automation is dependent are

* “\MBI\Main\MBI\Build\Binaries\Debug\MBF.dll”
* .Net 4.0

**Test cases Automated**

3388 test cases are totally automated, the spread sheet embedded below shows the test cases which are automated are marked as “Automated” as per the PS query below. This 3388 also includes the Unit test cases which are already automated as part of Unit testing.



**Overview of Test cases Automated**

The below matrix shows the number of test cases automated out of 6223 test cases which was identified as part of M2, M3, M4, M5, Beta 1, M6, M7, Beta 2, M8, M9 and V1.

|  |  |  |
| --- | --- | --- |
| **Priority** | **Number of Test cases** | **PS Query** |
| BVT | 1044 |  |
| P1 | 1667 |  |
| P2 | 677 |  |

**How to Run the Automation?**

The pre-condition and the Steps to run the automation is as below.

## Pre-condition for Microsoft/External Internal

* .NET Framework 4.0 needs to be installed on the machine where the automation is run.

## Run in Visual Studio

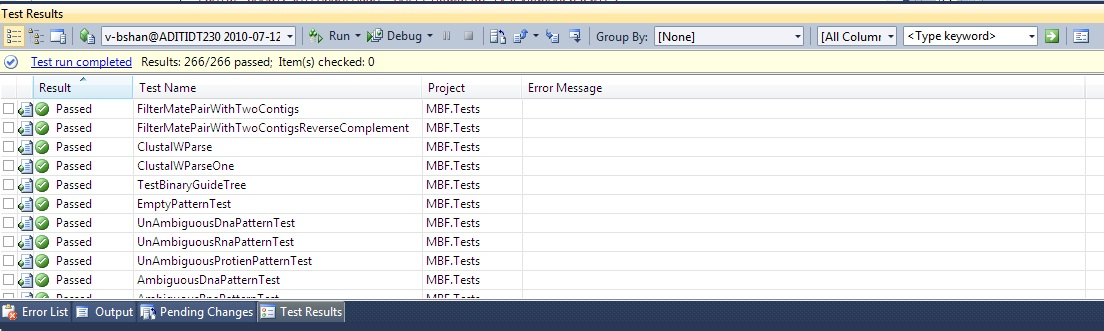
* Launch Visual Studio 2010
* Build MBF.TestAutomation.proj
* In Test View, window select the test cases which needs to be run
* Click on the Run Selection button in the Test View window

## Run in Command Prompt

* Launch Visual Studio command prompt
* Run command “**MSTest** **/testcontainer:**MBF.TestAutomation.dll” (more command line options can be viewed at <http://msdn.microsoft.com/en-us/library/ms182489.aspx>)

**How to Validate the Pass/Fail status of Test cases?**

On Running the Automation, the Test Results window in the Visual Studio 2010 would display the Total Number of Test cases executed, Total Test cases which was run successfully, Total test cases failed, Total test cases ignored, Total test cases aborted and the time taken to run all the test cases, as per the screen shot below.



A transaction file (.trx) will be created for every run and can be found under *“\MBI\Main\MBI\TestResults”* which would provide the log information, old logs can also be viewed by just importing the .trx file in the Test Results window.

Also additional log information can be found in the location *“\TestResults\Out\MBF.log”.*

Ideally the Results should say Test run Completed with all test cases passed as in the screen shot above should show as 266/266, which means 266 out of 266 passed.

If any test cases failed, Double click on the test case and that would say the details of failure.

**How to update the Sequences and Files in the xml?**

The Config file for running the automation is Present under the location “\MBI\Main\MBI\Tests\MBF.TestAutomation\TestUtils\TestsConfig.xml”. Below example shows one of the nodes used to run one of the BVT test cases, where we update the information of FastA file used for in the test case, the expected sequence and other details related to the Test case which is required for validation of a specific sequence present in the FastA file.

<!-- This node contains the Fasta file information for running the BVT test cases. -->

<SimpleFasta>

<FilePath>TestUtils\Simple\_Fasta\_Protein.fasta</FilePath>

<ExpectedSequence>IFYEPVEILGYDNKSSLVL</ExpectedSequence>

<ExpectedSequenceCount>435</ExpectedSequenceCount>

<AlphabetName>Protein</AlphabetName>

<SequenceID>gi|186972391|gb|ACC99454.1| maturase K [Scaphosepalum rapax]</SequenceID>

<FormatString>>gi|186972391|gb|ACC99454.1| maturase K [Scaphosepalum rapax]IFYEPVEILGYDNKSSL</FormatString>

<ExpectedSequenceAfterAdd>IFYEPVEILGYDNKSSLVL</ExpectedSequenceAfterAdd>

</SimpleFasta>

This file can be updated to change the sequence or the file from which the Sequence is to be read and accordingly other values in the node needs to be updated for validation and the file should be updated added if any in the location “\MBI\Main\MBI\Tests\MBF.TestAutomation\TestUtils” and the project needs to be built and then follow the steps as said in section “How to Run Automation?”. Similar to the TestsConfig.xml, MUMmerTestsConfig.xml, FastQTestsConfig.xml, NUCmerTestsConfig.xml, QualitativeTestsConfig.xml, MSAConfig.xml , GFFTestsConfig.xml and other config xml’s can be updated.

**How to Validate the Code Coverage?**

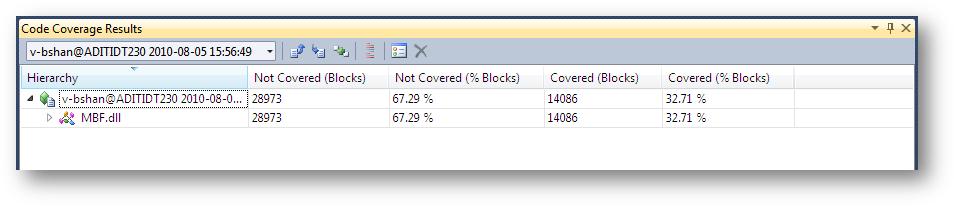
Below are the steps which need to be performed for validating the code coverage for MBF.dll.

## Pre-requisite for running the Code Coverage tool Magellan

* Install Visual Studio 2010

## Steps for Running Code Coverage in Visual Studio

* Launch Visual Studio 2010
* Enable the checkbox for Code Coverage (under Data and Diagnostics Tab) in local.testsettings & TraceAndTestImpact.testsettings files under *“\MBI\Main\MBI\”* and double click on Code Coverage option and specify the dll which needs to be instrumented and specify the key for the same
* Change all the project reference in *“\MBI\Main\MBI\MBI.Sln”* to dll reference for MBF.TestAutomation.csproj and its references
* Build in Debug mode
* Select and Run all the test cases
* Once all the test cases are run, launch Code Coverage Results window and see the results as in the screen shot below



Review and Sign-off

[Below is a list of the project team members and required reviewers and as distinguished from approvers.]

|  |  |  |  |
| --- | --- | --- | --- |
| Person | Role | Contact | Reviewed Date |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Glossary/ Definitions

[Below is a list of common terms and their definitions that are used throughout this document:]

|  |  |
| --- | --- |
| Term | Definition |
| BVT | Build Verification Test |
| PS | Product Studio |