

MATLAB[®] Compiler SDK[™]

MATLAB[®] Production Server[™] Testing Guide



MATLAB[®]

R2016b

 MathWorks[®]

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MATLAB® Compiler SDK™ MATLAB® Production Server™ Testing Guide

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MATLAB Production Server Integration Testing

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Write a Test Client

Integration testing with the MATLAB embedded server instance requires a client that calls the compiled MATLAB functions. The client can be coded using any of the MATLAB Production Server client APIs.

At a minimum, the client must:

- 1 Instantiate the client runtime.
- 2 Connect to the embedded server instance using the port specified in the Production Server Compiler app.
- 3 Call the functions being tested with appropriate data.

For information on writing client code, see:

- “Java Client Programming”
- “.NET Client Programming”
- “C Client Programming”
- “Python Client Programming”

Test Client Data Integration Against MATLAB

This example shows how to test the integration between a Java[®] client and the `addmatrix` MATLAB function. Using the Production Server Compiler app, you start a testing session and inspect the values passed between the client and the MATLAB function. You also set breakpoints in the MATLAB function and inspect the data using the MATLAB debugger.

- 1 In MATLAB, enter the function to deploy on MATLAB Production Server.

```
function a = addmatrix(a1, a2)
```

```
a = a1 + a2;
```

- 2 In a text editor, paste the following Java client code.

```
import java.net.URL;
import java.io.IOException;
import com.mathworks.mps.client.MWClient;
import com.mathworks.mps.client.MWHttpClient;
import com.mathworks.mps.client.MATLABException;

interface MATLABAddMatrix
{
    double[][] addmatrix(double[][] a1, double[][] a2)
        throws MATLABException, IOException;
}

public class MPSCClientExample {

    public static void main(String[] args){

        double[][] a1={{1,2,3},{3,2,1}};
        double[][] a2={{4,5,6},{6,5,4}};

        MWClient client = new MWHttpClient();

        try{
            MATLABAddMatrix m = client.createProxy(new URL("http://localhost:9910/addmatrix"),
                                                    MATLABAddMatrix.class);
            double[][] result = m.addmatrix(a1,a2);

            // Print the magic square

            printResult(result);

        }catch(MATLABException ex){

            // This exception represents errors in MATLAB
            System.out.println(ex);
        }catch(IOException ex){

            // This exception represents network issues.
            System.out.println(ex);
        }finally{
```

```
        client.close();
    }
}

private static void printResult(double[][] result){
    for(double[] row : result){
        for(double element : row){
            System.out.print(element + " ");
        }
        System.out.println();
    }
}
}
```

3 Save the file as `MPSCClientExample.java`.

4 At the system command prompt, compile the Java client using the `javac` command.

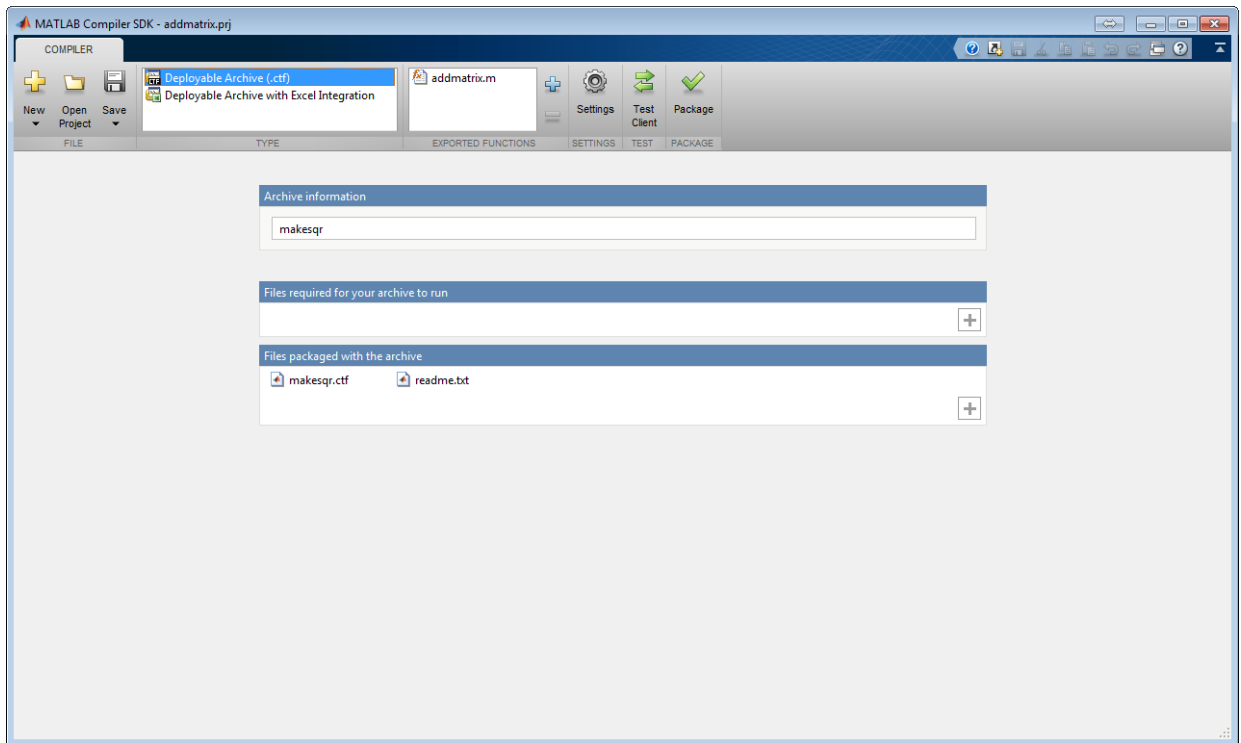
```
javac -classpath "matlabroot\toolbox\compiler_sdk\mps_client\java\mps_client.jar" MPSCClientExample.java
```

5 In MATLAB, open the Production Server Compiler app.

a On the toolstrip, select the **Apps** tab.

b Click the arrow on the far right of the tab to open the apps gallery.

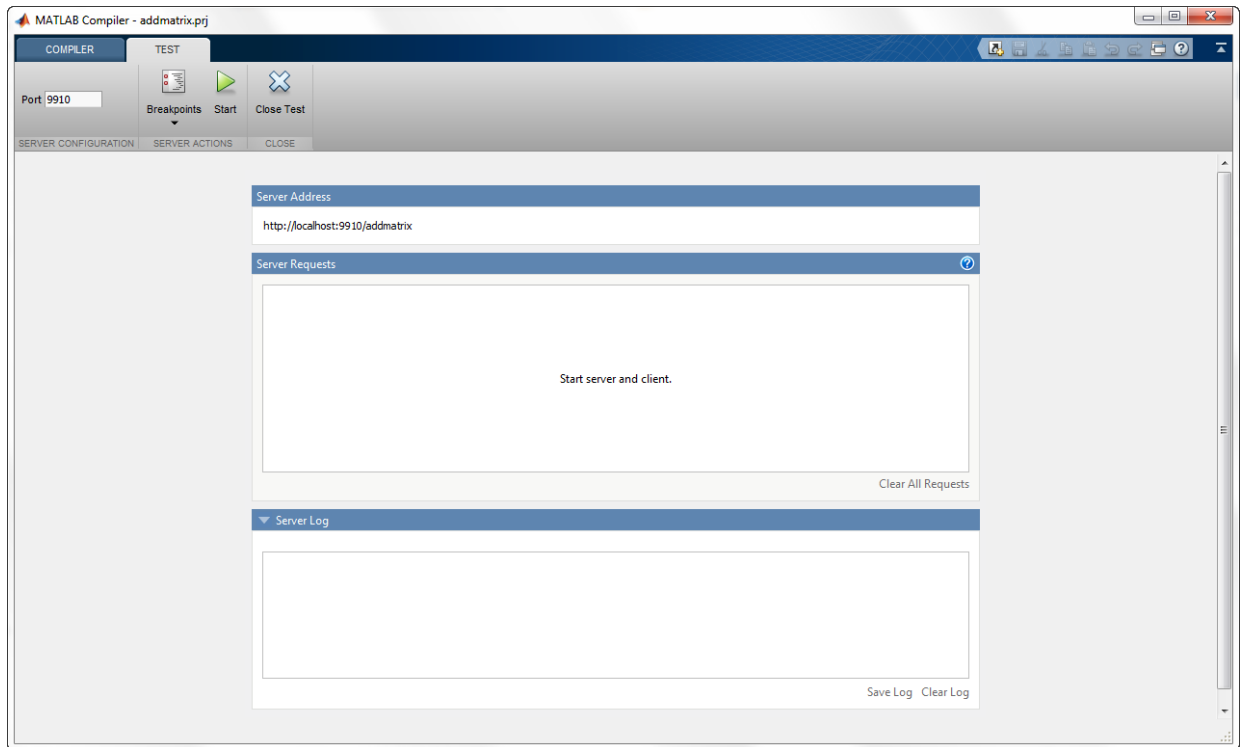
c Click **Production Server Compiler**.



- 6 In the **Type** section of the toolstrip, select **Deployable Archive** from the list.
- 7 Specify the MATLAB functions to deploy.
 - a In the **Exported Functions** section of the toolstrip, click the plus button.
 - b Using the file explorer, locate and select the `addmatrix.m` file.

`addmatrix.m` is located in `matlabroot\extern\examples\compiler`.
 - c Click **Open** to select the file and close the file explorer.

`addmatrix.m` is added to the field.
- 8 Click **Test Client**.



9 Check the value of the **Port** field.

It must be:

- an available port
- the same port number the client is using

For this example, the client expects use the port 9910. If the port is not available, you will need to update the client and recompile it.

10 Click **Start**.

11 At the system command prompt, run the Java client.

```
java -classpath .;"matlabroot\toolbox\compiler_sdk\mps_client\java\mps_client.jar" MPSCClientExample
```

Note: You cannot run the Java client from the MATLAB command prompt.

The application returns the following at the console:

```
5.0 7.0 9.0
9.0 7.0 5.0
```

The **Server Requests** section of the app shows that the request completed successfully.

- 12 Click the completed message in the app to see the values exchanged between the client and MATLAB.

ID	Function	Status
0	[a]=addmatrix(a1,a2)	Complete

Input				Output			
Name	Size	Bytes	Class	Name	Size	Bytes	Class
a1	2x3	48	double array	a	2x3	48	double array
a2	2x3	48	double array				

Clear All Requests

- 13 Click **Input** to view the arrays passed into MATLAB.
- 14 Click **Output** to view the array returned to the client.
- 15 Click **Breakpoints > Break on MATLAB function entry**.
- 16 At the system command prompt, run the Java client.

```
java -classpath .;"matlabroot\toolbox\compiler_sdk\mps_client\java\mps_client.jar" MPSCClientExample
```

Note: You cannot run the Java client from the MATLAB command prompt.

- 17 When the MATLAB editor opens, note that a breakpoint is set at the first line in the function and that processing has paused at the breakpoint.

You now can use all of the MATLAB debugging tools to step through your function.

Note: You can create a timeout error in the client if you take a long time stepping through the MATLAB function.

- 18** Switch to the main MATLAB window.
- 19** Note that variables **a1** and **a2** are displayed in the MATLAB workspace.
- 20** In the MATLAB editor, click **Continue**.

The application returns the following at the console:

```
5.0 7.0 9.0
9.0 7.0 5.0
```

The **Server Requests** section of the app shows that the request completed successfully.

- 21** Click **Stop** to shutdown the test server.
- 22** Click **Close Test**.

Related Examples

- “Write a Test Client” on page 1-2
- “Compile Deployable Archives with Production Server Compiler App”

Functions — Alphabetical List

productionServerCompiler

Test, build and package functions for use with MATLAB Production Server

Syntax

```
productionServerCompiler  
productionServerCompiler project_name  
productionServerCompiler -build project_name  
productionServerCompiler -package project_name
```

Description

`productionServerCompiler` opens the Production Server Compiler app for the creation of a new compiler project.

`productionServerCompiler project_name` opens the appropriate compiler app with the project preloaded.

`productionServerCompiler -build project_name` runs the appropriate compiler app to build the specified project. The installer is not generated.

`productionServerCompiler -package project_name` runs the appropriate compiler app to build and package the specified project. The installer is generated.

Examples

Create a New Production Server Project

Open the Production Server Compiler app to create a new project.

```
productionServerCompiler
```

Package a Deployable Archive using an Existing Project

Open the appropriate compiler app to package an existing project file.

```
productionServerCompiler -package my_magic
```

Input Arguments

project_name — name of the project to be compiled

character array

Specify the name of a previously saved project. The project must be on the current path.

Introduced in R2014a

Apps — Alphabetical List

Production Server Compiler

Test and Package MATLAB functions for deployment to MATLAB Production Server

Description

The **Production Server Compiler** app tests the integration of client code with MATLAB functions. It also packages MATLAB functions into archives for deployment to MATLAB Production Server.

Open the Production Server Compiler App

- MATLAB Toolstrip: On the **Apps** tab, under **Application Deployment**, click the app icon.
- MATLAB command prompt: Enter `productionServerCompiler`.

Examples

- “Create a Deployable Archive for MATLAB Production Server”
- “Build Excel Add-In and Deployable Archive”

Parameters

type — type of archive generated

Deployable Archive | Deployable Archive with Excel Integration

Type of archive to generate as a character array.

exported functions — functions to package

list of character arrays

Functions to package as a list of character arrays.

archive information — name of the archive

character array

Name of the archive as a character array.

files required for your archive to run – files that must be included with archive
list of files

Files that must be included with archive as a list of files.

files packaged with the archive – optional files installed with archive
list of files

Optional files installed with archive as a list of files.

Settings

Additional parameters passed to MCC – flags controlling the behavior of the compiler
character array

Flags controlling the behavior of the compiler as a character array.

testing files – folder where files for testing are stored
character array

Folder where files for testing are stored as a character array.

end user files – folder where files for building a custom installer are stored
character array

Folder where files for building a custom installer are stored are stored as a character array.

packaged installers – folder where generated installers are stored
character array

Folder where generated installers are stored as a character array.

Programmatic Use

productionServerCompiler

Introduced in R2013b

