

MATLAB<sup>®</sup> Production Server<sup>™</sup>

Excel<sup>®</sup> Client Guide



MATLAB<sup>®</sup>

R2015b



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*MATLAB<sup>®</sup> Production Server<sup>™</sup> Excel<sup>®</sup> Client Guide*

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## 1

### Integrating with MATLAB Production Server

<b>Install the Deployable Archive</b> .....	<b>1-2</b>
<b>Install the Excel Add-In</b> .....	<b>1-3</b>
Install with the Generated Installer .....	<b>1-3</b>
Install with the Raw Files .....	<b>1-4</b>
<b>Data Marshaling Rules</b> .....	<b>1-6</b>
Default Marshaling Rules .....	<b>1-6</b>
Change Rules for Marshaling Data into MATLAB .....	<b>1-6</b>
Change Rules for Marshaling Data into Excel .....	<b>1-7</b>
<b>Change the Server Configuration</b> .....	<b>1-8</b>
<b>Enable Client Logging</b> .....	<b>1-10</b>
<b>XLA File Not Generated</b> .....	<b>1-12</b>
<b>Server Configuration Add-in Not Enabled</b> .....	<b>1-13</b>
<b>Error Using a Variable Number of Outputs</b> .....	<b>1-14</b>



# Integrating with MATLAB Production Server

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- “Install the Deployable Archive” on page 1-2
- “Install the Excel Add-In” on page 1-3
- “Data Marshaling Rules” on page 1-6
- “Change the Server Configuration” on page 1-8
- “Enable Client Logging” on page 1-10
- “XLA File Not Generated” on page 1-12
- “Server Configuration Add-in Not Enabled” on page 1-13
- “Error Using a Variable Number of Outputs” on page 1-14

## Install the Deployable Archive

The Production Server Compiler app generates a deployable archive containing the compiled MATLAB® code used by the add-in. This archive needs to be deployed to a MATLAB Production Server™ instance before the add-in will work.

To install the deployable archive on a server instance:

- 1 Locate the archive in the `for_redistribution_files_only\server\` folder.

The file name is similar to *archiveName.ctf*.

- 2 Copy the archive file to the `auto_deploy` folder of the server instance.

For more information, see “MATLAB Production Server” documentation.

## Install the Excel Add-In

### In this section...

“Install with the Generated Installer” on page 1-3

“Install with the Raw Files” on page 1-4

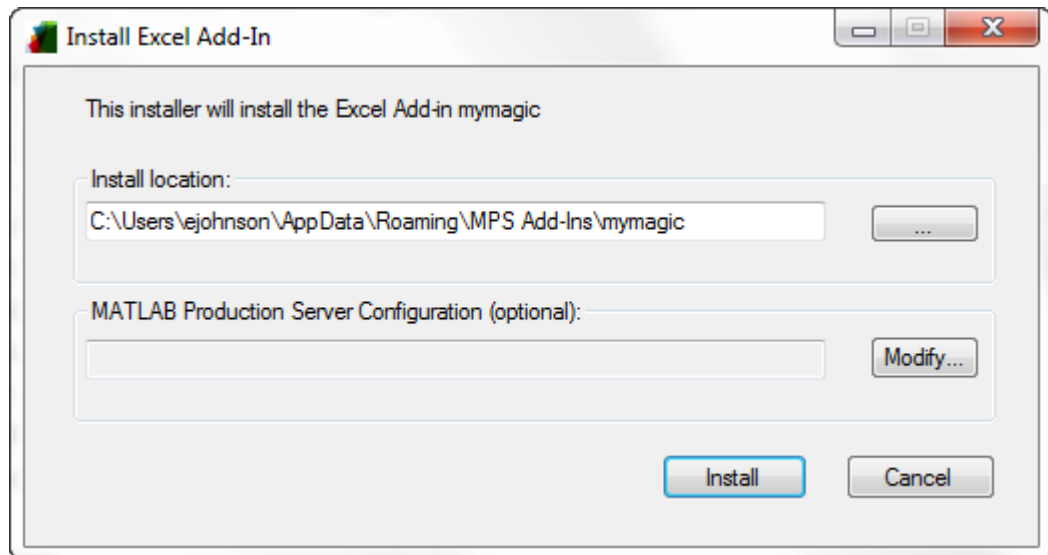
### Install with the Generated Installer

**Note:** The client installer installs under user's local profile which does not require administrative privileges.

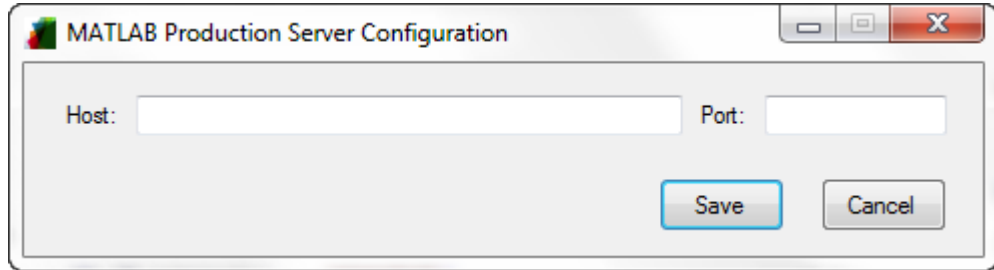
The Production Server Compiler app generates an installer that you use to install the add-in and configure it to connect to a MATLAB Production Server instance.

To install the add-in:

- 1 Locate the installer in the `for_redistribution\client` folder.
- 2 Double click the installer to start it.



- 3 In the **Install location** field, enter the location where the Excel® add-in is installed.
- 4 Specify the URL of the deployable archive powering the Excel add-in.
  - a Click **Modify**.



- b In the **Host** field, enter the host name or the full URL of the machine running the MATLAB Production Server instance with the deployable archive.
    - c In the **Port** field, enter the port number on which the server instance listens for incoming requests.

The default port number is **9910**.
    - d Click **Save**.
- 5 Click **Install**.

## Install with the Raw Files

In the `client\for_redistribution_files_only` you will find the following files:

- `projName.dll`— Dynamic library required by the add-in
- `projName.bas` — VBA module file created for the add-in
- `projName.xla` — Excel add-in file

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**Note:** If `projName.xla` is not generated, you can still install the add-in using `projName.bas`. See “XLA File Not Generated” on page 1-12 for more information.

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- `serverconfig.dll`- Excel add-in that manages the server configuration

On the machine running the add-in, you must register the following DLLs with the `regAsm /codebase` command:

- `mymagic.dll`



- `serverconfig.dll`

If `mymagic.xla` is generated, install the add-in into Excel. If not, import `mymagic.bas` to the workbook's Visual Basic project.

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**Note:** If you do not have administrative privileges on the machine, you can run `regAsm` with the `/regfile` option.

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## Data Marshaling Rules

### In this section...

“Default Marshaling Rules” on page 1-6

“Change Rules for Marshaling Data into MATLAB” on page 1-6

“Change Rules for Marshaling Data into Excel” on page 1-7

### Default Marshaling Rules

These types of data do not have natural mappings between MATLAB and Excel:

- Dates: Excel has a special data type for dates, and MATLAB does not.
- Blank cells: MATLAB has no equivalent construct for a blank cell in an Excel spreadsheet.

If you do not change the marshaling rules when compiling the add-in, the rules for marshaling Excel data into MATLAB are:

- Excel dates are marshaled into MATLAB doubles.
- Empty cells are marshaled into zeros.

If you do not change the marshaling rules when compiling the add-in, the rules for marshaling MATLAB data into Excel are:

- MATLAB NaNs are marshaled into Visual Basic<sup>®</sup> #QNANs.
- MATLAB does not return any Excel dates.

### Change Rules for Marshaling Data into MATLAB

You can change how dates and empty cells are marshaled into MATLAB when compiling the add-in:

- Excel dates can be marshaled as MATLAB strings.
- Empty cells can be marshaled as MATLAB NaNs.

To change the marshaling rules:

- 1 In the class mapper portion of the **MATLAB Compiler** project window, select the signature of the function you want to modify.

- 2 Select **Data Conversion Properties** from the context menu.
- 3 Select the input argument rules to change.
- 4 Click outside of the dialog box to close it.

## Change Rules for Marshaling Data into Excel

You can change how dates and NaNs are marshaled into Excel when compiling the add-in:

- MATLAB NaNs can be converted into zeros.
- MATLAB numeric values can be converted into Excel dates.

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**Note:** To see a date in the expected format, ensure that the Excel cell is formatted to display its contents in a date format.

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To change the marshaling rules:

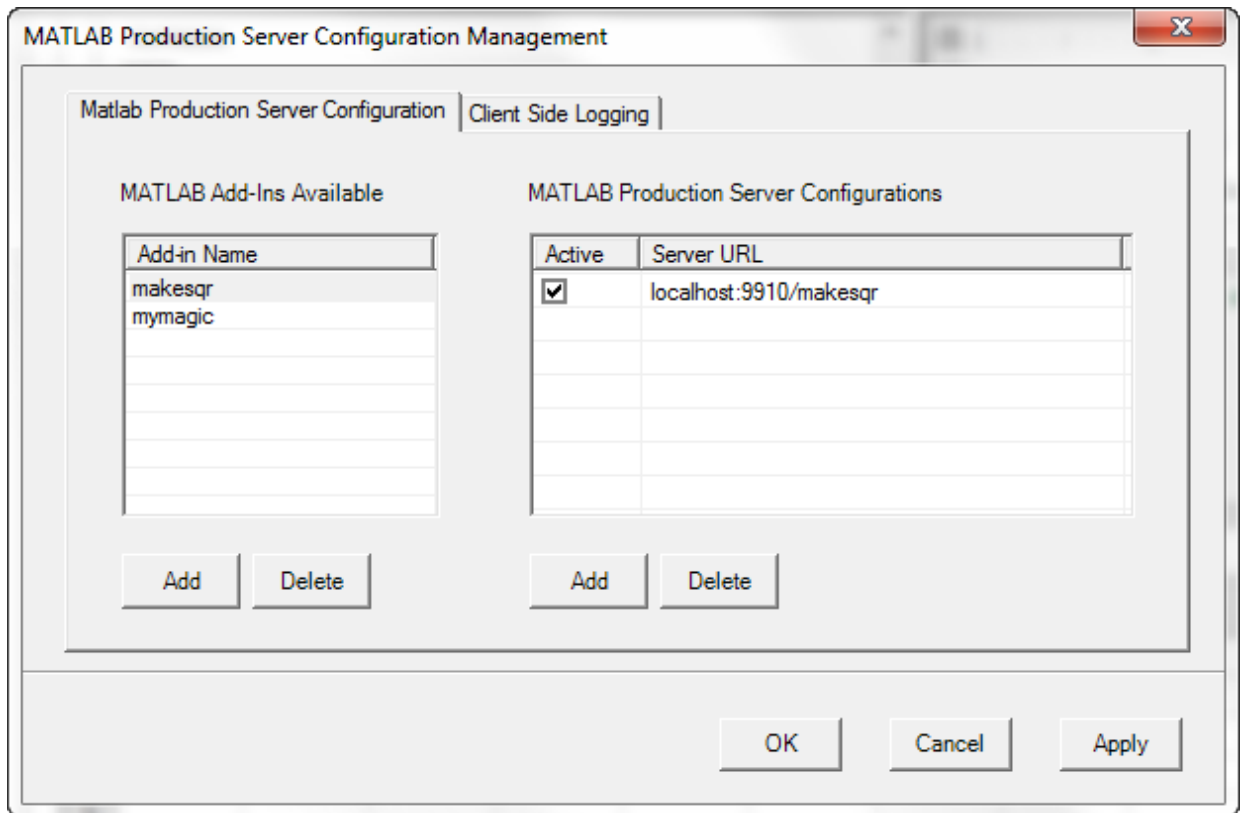
- 1 In the class mapper portion of the **MATLAB Compiler** project window, select the signature of the function you want to modify.
- 2 Select **Data Conversion Properties** from the context menu.
- 3 Select the output argument rules to change.
- 4 Click outside of the dialog to close it.

## Change the Server Configuration

Before you can use an add-in uses code running on a MATLAB Production Server instance, you must configure it to connect to a MATLAB Production Server instance.

To configure the server information for an add-in:

- 1 In Excel, select **Add-Ins > Configure MATLAB Production Server**.



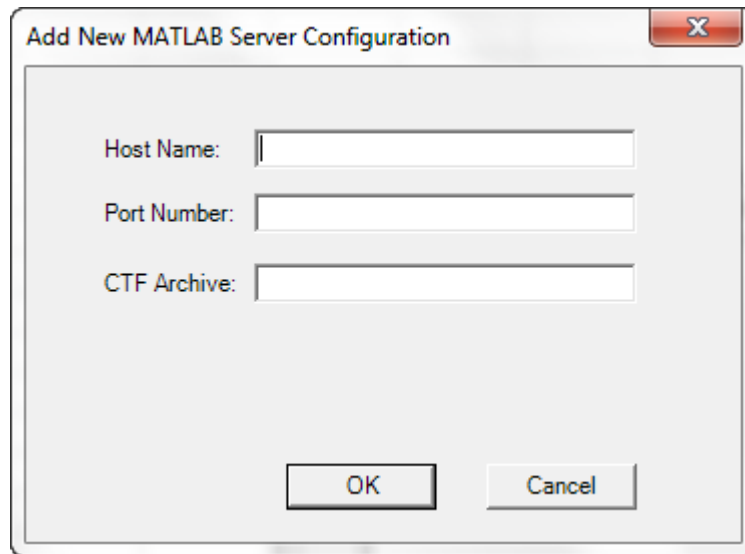
- 2 Select the **MATLAB Production Server Configuration** tab.
- 3 Select the add-in to configure.

If the add-in is not listed, click the **Add** button under the **MATLAB Add-ins Available** table. Enter the name of the add-in and click **OK**.

- 4 Select the URL of the server hosting the deployable archive implementing the MATLAB function for the add-in.

If the server URL is not listed:

- 1 Click the **Add** button under the **MATLAB Production Server Configurations** table.



The image shows a dialog box titled "Add New MATLAB Server Configuration". It has a standard Windows-style title bar with a close button (X) in the top right corner. The main area of the dialog contains three text input fields, each with a label to its left: "Host Name:", "Port Number:", and "CTF Archive:". Below these fields are two buttons: "OK" and "Cancel".

- 2 Enter the host name for the server instance in the **Host Name** field.
- 3 Enter the port number on which the server instance listens for requests in the **Port Number** field.

The default port number is **9910**.

- 4 Enter the name of the deployable archive in the **CTF Archive** field.

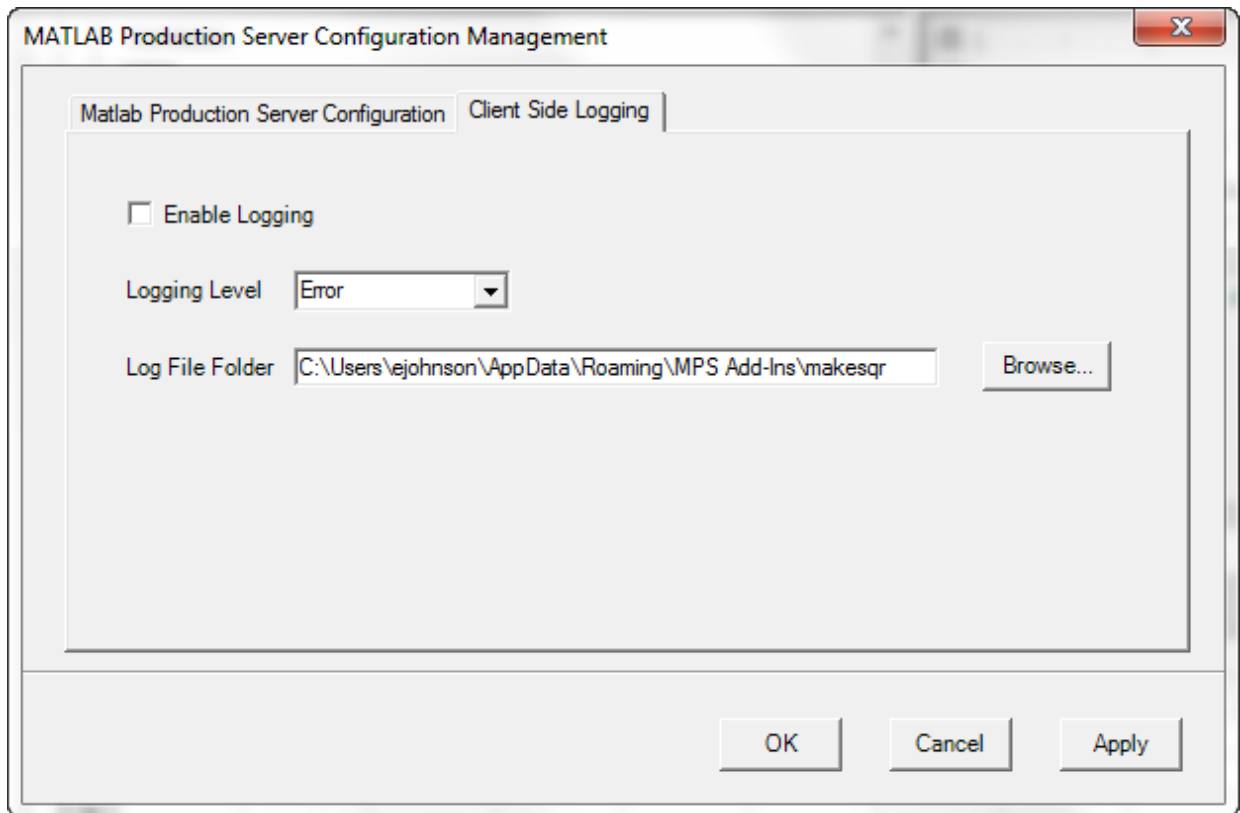
The name of the deployable archive is the archive name specified in the Production Server Compiler app.

- 5 Click **OK**.
- 5 Click **OK**.

## Enable Client Logging

Client logging writes messages to a persistent log file. The messages are useful for debugging issues with the add-in. Client logging is disabled by default. To activate it:

- 1 In Excel, select **Add-Ins > Configure MATLAB Production Server**.



- 2 Select the **Client Side Logging** tab.
- 3 Check the **Enable Logging** box.
- 4 Select the logging level from the **Logging Level** drop down list.
  - **Error** — Log error messages.
  - **Information** — Log information about server interactions in addition to error messages.

- **Verbose** — Log everything.
- 5** In the **Log File Folder** box, enter the folder into which log files are written.

When client logging is enabled all registered MATLAB Production Server add-ins generate log files. The files follow the naming convention *logFolder\addinName-date.log*.

## **XLA File Not Generated**

The compiler may not generate the *projName.xla* file for a number of reasons, including that Excel is not configured to trust access to the VBA project object model. When this happens, you can install the add-in by importing the *projName.bas* file into the workbook's Visual Basic project.



## Server Configuration Add-in Not Enabled

If your trust settings in Excel are configured to either disable all add-ins or to require add-ins to be published by a trusted publisher, it is possible that the **Configure MATLAB Production Server** add-in is not available after installation. In most cases, the add-in is installed but disabled.

To check if the add-in is installed in Excel:

- 1 Select **File>Options**.
- 2 Select **Add-Ins**.
- 3 Look for **ServerConfig.Connect** in the list of disabled add-ins.

You can enable the add-in by adjusting the trust settings in Excel.

## Error Using a Variable Number of Outputs

If your add-in throws the error:

Error in myfunc: Object reference not set to an instance of an object

The likely cause is that the MATLAB function used by the add-in returns a variable number of outputs.

Add-ins using code run on a MATLAB Production Server instance do not support MATLAB functions that return a variable number of outputs. You can either rewrite your MATLAB function to return a fixed number of outputs, or you can create an add-in that runs locally to your Excel installation.