

**MATLAB® Online Server™**

End User's Guide



**MATLAB®**

R2023a



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*MATLAB® Online Server™ End User's Guide*

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## MathWorks Product Usage

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# MathWorks Product Usage

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## Use MATLAB Online Hosted by Your Organization

If your organization hosts MATLAB Online using MATLAB Online Server, then you can access MATLAB Online from a standard web browser and log in using your organization credentials. In this environment, your IT administrator configures the network drives, local storage folders, MATLAB versions, and MATLAB add-ons that you can access.

### Access MATLAB Online

You can access MATLAB Online from most modern web browsers running on Windows®, Mac, Linux®, and Chrome® OS, including the current versions of these browsers:

- Google Chrome®
- Mozilla® Firefox®
- Apple Safari
- Microsoft Edge®

For the best overall experience, use Google Chrome.

To access MATLAB Online:

- 1 In your browser, enter the URL to the MATLAB Online login page provided by your IT administrator. A typical URL has this format, where *myorganization* is the name of your organization.

```
https://matlab.myorganization.com
```

- 2 From the login page, log in to MATLAB Online using your organization credentials. If you do not know your credentials or have questions about the login process, contact your administrator.
- 3 If your administrator set up multiple MATLAB versions, then after you log in, select from the available options you have access to (for example, **R2023a** and **R2023a with GPU**). If you do not have access to a version of MATLAB that you expect, contact your administrator.

You can now begin using MATLAB Online. If you experience any of these issues when logging in, contact your administrator.

- MATLAB Online stops responding during the login process.
- You receive a message the maximum number of licenses has been exceeded.
- You receive an error that no resources are available.

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**Note** You can open only one MATLAB Online session at a time. You cannot run multiple session in different browser tabs, for example.

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### Manage Files and Folders

MATLAB Online integrates with your network file system as defined by your administrator. The Current Folder Browser displays the root of this file system. From this folder, you can navigate to the files and folders you have access to. If you do have access to the files or folders that you expect, contact your administrator.

## Upload and Download Files

- To upload a file, on the **Home** tab, click **Upload**. Alternatively, drag and drop your file into the Current Folder browser.
- To download a file, on the **Home** tab, click **Download**. You must have access to the file to download it.

## Specify File Names

Because MATLAB Online Server hosts MATLAB Online on a Linux platform, MATLAB recognizes only the Linux file path format, such as the forward slash (/) for file path separators. This behavior is true even if you log in to MATLAB Online from a Windows machine.

To avoid specifying file separators altogether, construct file paths using the `fullfile` function. This function builds full file names from component parts with the appropriate file separator characters, which is especially useful if you plan to share your code with people running MATLAB on different platforms. For example:

```
fullfile(matlabroot, 'toolbox', 'matlab', 'general');
```

Other functions that are useful for working with files and paths include:

- `filesep` — Return the platform specific file separator character.
- `fileparts` — Get the parts of a filename.
- `path` — View or change the MATLAB search path.
- `pathsep` — Get the search path separator for current platform.

## Manage Add-Ons

MATLAB add-ons encompass a wide variety of resources, including products, apps, support packages, and toolboxes. For add-ons published by MathWorks, your IT administrator must install them.

Depending on how your administrator configured the server, you might be able to install third-party toolboxes from the Add-On Explorer. For details, see “Get and Manage Add-Ons”.

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**Note** MATLAB Online Server does not support all MathWorks products or functionality. For example:

- Simulink® is not supported.
- C/C++ and MEX code generation from MATLAB algorithms is not supported.

For a complete list of supported software, see [MATLAB Online Server Specifications and Limitations](#).

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## Customize Layout

Most of the options used to customize the MATLAB desktop layout also apply to customizing the MATLAB Online layout. For details, see “Change Desktop Layout”.

Some of the key differences include:

- MATLAB Online defaults to a two-column layout instead of a three-column layout.

- Undocking tools and documents is not supported in MATLAB Online.
- Instead of opening in new browser windows, some apps in MATLAB Online open in new browser tabs.

## Navigate Using Keyboard Shortcuts

Because MATLAB Online runs in a browser, keyboard navigation in MATLAB Online differs slightly from keyboard navigation on the MATLAB desktop. For a list of keyboard shortcuts, see the MATLAB Online sections in “Use Keyboard Shortcuts to Navigate MATLAB”.

Keyboard shortcut limitations include:

- Saving workspace variables using **Ctrl+S** is not supported.
- Customizing keyboard shortcuts is not supported.

## Use Source Control

If your IT administrator has configured a home directory on a network drive that can be shared between your computer and MATLAB, you can use Git™ source control to interact with GitHub® repositories from MATLAB Online. The folder and files you interact with in this shared directory are shown in the MATLAB folder browser. For more details, see “Use Git in MATLAB”.

Use command-line Git source control. For example, to clone a public repository:

```
!git clone https://github.com/path/to/repo.git
```

To clone a private repository, provide your username and password to the repository.

```
!git clone https://GitUser:Password@github.com/GitUser/repo.git
```

## Connect to Hardware

MATLAB Online cannot interact with most hardware, including instrument control. However, these exceptions apply:

- USB webcams are supported through Google Chrome only. See “Webcam Support in MATLAB Online” (MATLAB Support Package for USB Webcams).
- Raspberry Pi® hardware communication is supported. See “Connect to Raspberry Pi Hardware Board in MATLAB Online” (MATLAB Support Package for Raspberry Pi Hardware).

## End MATLAB Session

When you are done using MATLAB, sign out to end your session. If you close your browser without signing out, the session remains active until the session timeout limit is reached. The default is 15 minutes. If MATLAB Online detects 15 consecutive minutes of inactivity, it logs you out of the session. If you need a longer session timeout limit, contact your administrator.

When you log out, MATLAB Online automatically saves and restores these items between sessions:

- MATLAB path
- MATLAB settings and preferences



- Files in your home folder

The following items are not automatically saved and restored between sessions:

- Workspace variables
- Dynamic Java<sup>®</sup> classpath

## **See Also**

### **Related Examples**

- “Perform Database Queries in MATLAB Online Hosted by Your Organization” on page 1-8
- “Use Parallel Computing in MATLAB Online Hosted by Your Organization” on page 1-6
- “MATLAB Online” on page 1-10

## Use Parallel Computing in MATLAB Online Hosted by Your Organization

If your organization hosts MATLAB Online using MATLAB Online Server, then some Parallel Computing Toolbox™ and MATLAB Parallel Server™ settings are controlled by your administrator.

### Parallel Pool Settings

When you use a function such as `parfor` or `spmd`, the server running MATLAB Online Server automatically creates a parallel pool of local workers to run your code by calling the `parpool` function. For example:

```
n = 100; A = 200; a = zeros(1,n);
parfor i = 1:n
    a(i) = max(abs(eig(rand(A))));
end
```

```
Starting parallel pool (parpool) using the 'local' profile ...
Connected to the parallel pool (number of workers: 2).
```

This behavior is exactly like desktop MATLAB, except that your administrator sets the default number of local workers available to each MATLAB Online session (here, 2 workers).

If your administrator has disabled the use of Parallel Computing Toolbox or local workers, you can expect to see the following results in the command window.

```
parallel.clusterProfiles
ans =
1x1 cell array
{'local'}

parpool

Unable to run the 'parpool' function, because it is not supported for MATLAB Online. To
use this function, use an installed version of MATLAB on your computer.
```

### MATLAB Parallel Server Cluster Profiles

Before you can use a MATLAB Parallel Server cluster, your administrator must upload the profile for that cluster. This profile is created by the MATLAB Parallel Server cluster administrator or the desktop MATLAB user who creates an MJS-based cluster for their own use.

In MATLAB Online Server, the user uploads the cluster definition, imports it into MATLAB, and uses the `parpool` function to select that profile for use.

```
parallel.importProfile('MJSProfile1')
ans =
'MJSProfile1'

parallel.clusterProfiles % displays the cluster profiles available for use
ans =
1x2 cell array
{'local'} {'MJSProfile1'}

parpool('MJSProfile1') % use the MJSProfile1 cluster profile to start a parpool
Starting parallel pool (parpool) using the 'MJSProfile1' profile ...
Connected to the parallel pool (number of workers: 4).

ans =
ClusterPool with properties:
```

```
Connected: true
NumWorkers: 4
Cluster: MJSProfile1
AttachedFiles: {}
AutoAddClientPath: true
IdleTimeout: 30 minutes (30 minutes remaining)
SpmdEnabled: true
EnvironmentVariables: {}
```

To create an MJS cluster, see “Discover Clusters and Use Cluster Profiles” (Parallel Computing Toolbox) and “Set Up Resources” (MATLAB Parallel Server).

## See Also

### Related Examples

- “Use MATLAB Online Hosted by Your Organization” on page 1-2
- “Get Started with Parallel Computing Toolbox” (Parallel Computing Toolbox)

## Perform Database Queries in MATLAB Online Hosted by Your Organization

If your organization hosts MATLAB Online using MATLAB Online Server, then you can use database drivers to query your desired database from MATLAB Online.

### Prerequisites

To connect to a database from MATLAB Online, your server administrator must specify additional configurations to enable communication between MATLAB Online and the database. To see if the database you want to connect to is already enabled for your installation, contact your administrator.

### Connect to Database

To connect to your database, upload the driver for your database:

- 1 Get your database driver. Common JDBC Drivers are available at Driver Installation.
- 2 In MATLAB Online, create a folder for the drivers. For example: `MyDatabaseDrivers`.
- 3 Upload the JAR or ZIP file containing your database driver to that folder.
- 4 Verify that your folder and file are on the MATLAB Online path. Right-click the folder, select **Add to Path**, and then choose **Selected Folders and Subfolders**. For more details about the MATLAB search path, see “What Is the MATLAB Search Path?”

### Query Database

For details on querying your database, see the “Database Toolbox” documentation. The following example MATLAB code for MySQL can help you get started.

```
% Configure the database vendor type.
opts = configureJDBCDataSource("Vendor", "MySQL");

% Set database connection options.
% Replace < > values with your desired settings.
%
% * <MySQL-Data-Base> is a user-friendly name for your database setup.
% * <database.mycompany.com> is the server name of the database.
% * <portnumber> is the port number of the database.
% * </path/to/driver.jar> is the location you uploaded your driver to.
%   For example: /home/username/mysql-connector-java-8.0.18.jar
%
opts = setConnectionOptions(opts, ...
    "DataSourceName", "<MySQL-Database-Name>", ...
    "Server", "<database.mycompany.com>", ...
    "PortNumber", <portnumber>, ...
    "JDBCDriverLocation", "</path/to/driver.jar>");

% Configure with your database username and password.
username = '<database_username>';
password = '<database_password>';

% Validate the connectivity from your MATLAB session to the
% database. If status = 1, the connection was successful.
```

```
[status, message] = testConnection(opts, username, password);

% Save your JDBC configuration as your <MySQL-Database-Name> value.
saveAsJDBCDataSource(opts);

% Establish a connection to your database.
conn = database('<MySQL-Database-Name>', username, password);

% Construct SQL statement for your <database.table> schema.
statement = 'select * from <database.table> limit 10';
data = select(conn, statement);
```

When querying the database, if you encounter any of the errors in the following table, apply the suggested solution.

Error	Possible Solution
requires Database Toolbox	While running any commands, if you receive this error message, contact your administrator to request that they enable Database Toolbox™ for your environment.
JDBC data source does not contain driver location	Validate that your driver is available on your MATLAB Online search path.
JDBC Driver Error: Communications link failure	Check with your administrator that the database server and port have been configured for MATLAB Online Server.

If you encounter any other difficulties querying the database, see “Troubleshooting in Database Toolbox” (Database Toolbox).

## See Also

## Related Examples

- “Use MATLAB Online Hosted by Your Organization” on page 1-2
- “Get Started with Database Toolbox” (Database Toolbox)

## **MATLAB Online**

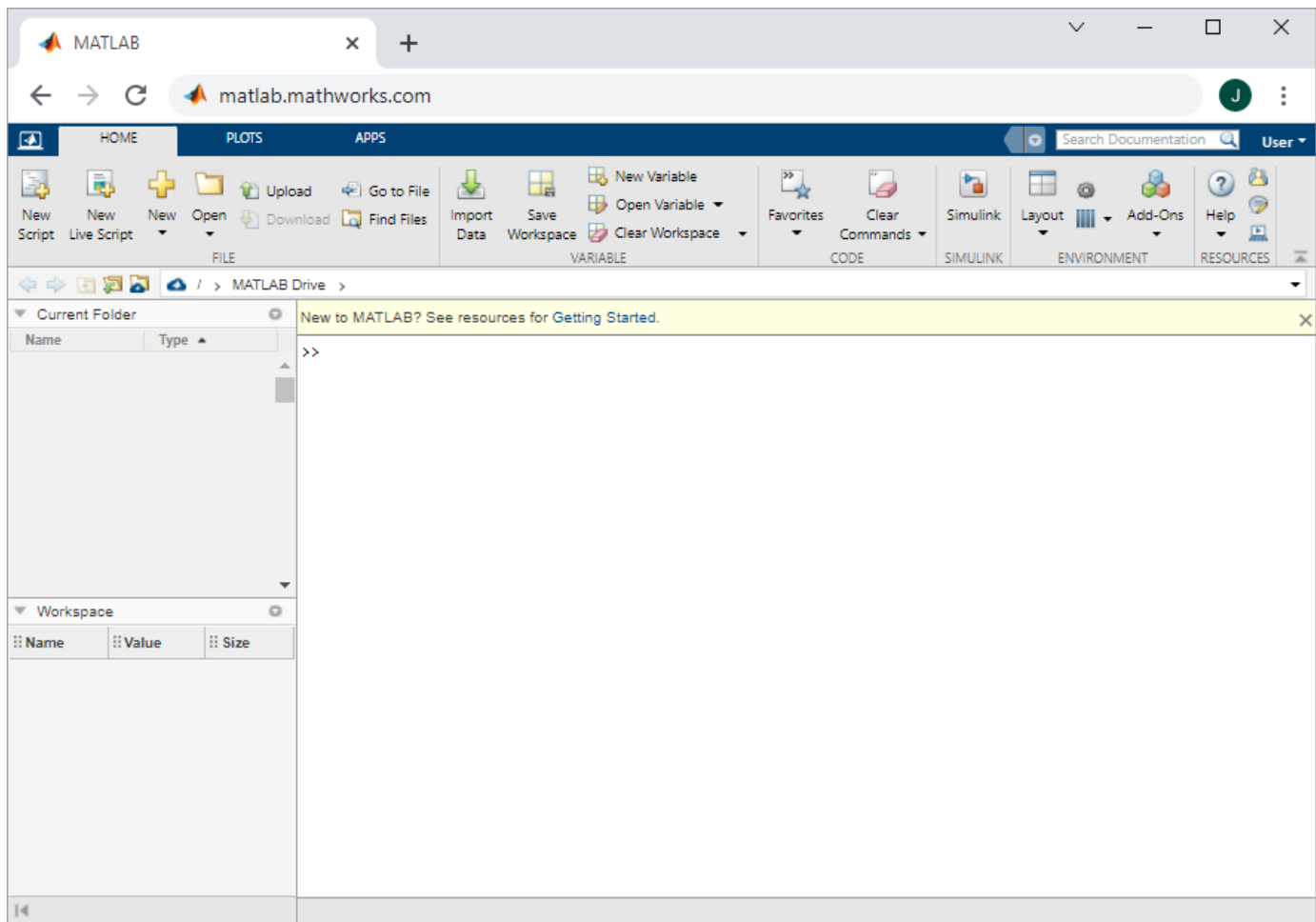
MATLAB Online provides access to the latest version of MATLAB from a standard web browser using MathWorks hosted computing resources and storage.

With MATLAB Online, you can:

- Access the latest version of MATLAB with all the latest features available to you through your current license.
- Use MATLAB in your web browser without any downloads, installation, or maintenance.
- Store MATLAB files in your MATLAB Drive™.
- Collaborate with other MATLAB users by giving them view-only or can-edit access to your MATLAB files.
- Create a link to your work and share it globally.
- Synchronize your desktop files with MATLAB Online and MATLAB Drive using the MATLAB Drive Connector.

To start using MATLAB Online, go to <https://matlab.mathworks.com/>.

For more information about MATLAB Online, including supported license types, specifications, limitations, and system requirements, see MATLAB Online Overview.



MATLAB Online is hosted by MathWorks. To host and manage MATLAB Online using MATLAB Online Server, see “Host MATLAB Online on Your Infrastructure”.

## See Also

### More About

- “Access Files in MATLAB Online”
- “Share Folders Using MATLAB Drive”
- “Use Keyboard Shortcuts to Navigate MATLAB”

