

MATLAB Distributed Computing Server

Perform MATLAB and Simulink computations on clusters, clouds, and grids

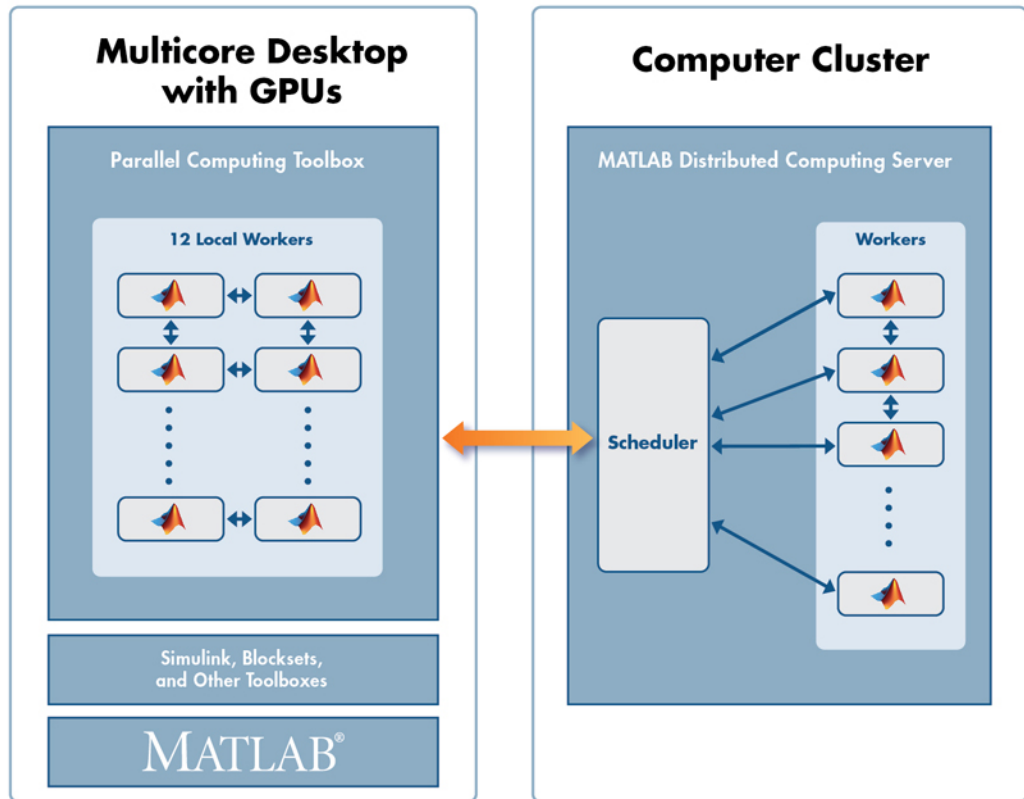
Overview

MATLAB Distributed Computing Server™ lets you run computationally intensive [MATLAB®](#) programs and [Simulink®](#) models on computer clusters, clouds, and grids. You develop your program or model on a multicore desktop computer using [Parallel Computing Toolbox™](#) and then scale up to many computers by running it on MATLAB Distributed Computing Server. The server supports batch jobs, parallel computations, and distributed large data. The server includes a built-in cluster job scheduler and provides support for [commonly used third-party schedulers](#).

MATLAB Distributed Computing Server provides licenses for all MathWorks toolboxes and blocksets, so you can run your MATLAB programs on a cluster without having to separately acquire additional product-specific licenses for each computer in the cluster.

Key Features

- Access to all eligible licensed toolboxes or blocksets with a single server license on the distributed computing resource
- Execution of GPU-enabled functions on distributed computing resources
- Execution of parallel computations from applications and software components generated using [MATLAB Compiler™](#) on distributed computing resources
- Support for all hardware platforms and operating systems supported by MATLAB and Simulink
- Application scheduling using a built-in job scheduler or third-party schedulers such as Platform LSF®, Microsoft® Windows® HPC Server 2008, Altair PBS Pro®, and TORQUE



Using MATLAB Distributed Computing Server to scale up Parallel Computing Toolbox applications for execution on a cluster. Executables and shared libraries generated from parallel MATLAB applications with MATLAB Compiler can also run computations on the server.

Using MATLAB Distributed Computing Server

MATLAB Distributed Computing Server runs on a distributed computing resource, such as computers in a cluster or virtual machines in a cloud computing service. The server provides access to multiple *workers* (MATLAB computational engines that run independently of client sessions) that receive and execute MATLAB code and Simulink models. Multiple users can run their applications on the server simultaneously.

MATLAB and Simulink users interact with MATLAB Distributed Computing Server through Parallel Computing Toolbox. Users program parallel applications using the toolbox on their workstations. To execute programs on the server, they either initiate an interactive session or submit jobs for batch execution.

With MATLAB Compiler, MATLAB users can build standalone executables or shared libraries from parallel MATLAB programs for royalty-free distribution in desktop or Web applications. These executables and shared libraries can distribute MATLAB computations to MATLAB Distributed Computing Server workers.

Simulink users can run multiple simulations at the same time. Also, by distributing a code generation process across multiple workers, they can accelerate code generation builds for Simulink models that contain large model reference hierarchies.

Licensing

A MATLAB Distributed Computing Server license provides access to a specific number of MATLAB workers that run simultaneously on a cluster. The cluster requires only the server license. Additional toolbox or blockset licenses are not required for each computer in the cluster. During application execution on the cluster, MATLAB

workers provide licenses for the toolboxes and blocksets that the user who launches the application is licensed to use.

As a result, multiple MATLAB and [Simulink](#) users, each licensed for different toolboxes and blocksets, as well as users of software components generated by [MATLAB Compiler](#) from parallel MATLAB programs, can run computations on the server using one MATLAB Distributed Computing Server license.

View webinar: [Parallel Computing with MATLAB for Administrators](#)

Requirements and Installation

Hardware and Software Support

MATLAB Distributed Computing Server can be installed on all hardware platforms and operating systems that [MATLAB](#) and [Simulink](#) support. Server workers can execute MATLAB GPU code on CUDA-enabled GPUs that are available on the computer on which the workers are running.

Multiple MATLAB Distributed Computing Server workers can be launched on a single computer. However, the benefits accrue only with sufficient availability of RAM and enough processing cores on that computer. The recommendation is to run one worker per processing core.

Learn more about [system requirements for MATLAB Distributed Computing Server](#).

Supported Schedulers

MATLAB Distributed Computing Server can be integrated with any scheduler. The server comes with MATLAB job scheduler, which is intended for personal or workgroup clusters that run MATLAB jobs exclusively.

MATLAB Distributed Computing Server supports commercially available third-party schedulers, either directly or indirectly. Platform LSF, Microsoft Windows HPC Server, Altair PBS Pro, and TORQUE are directly supported. All other schedulers, such as Grid Engine, can be integrated using the server's generic scheduler API (sample integration scripts are available in the product). For all schedulers, server workers are launched in the same way as other programs that run on the cluster.

Learn more about [scheduler support and integration](#).

The screenshot shows the Admin Center interface with three main sections: Hosts, MATLAB Job Scheduler (MJS), and Workers.

Hosts Section:

	Host			MDCE Service		MJS	Workers
	Hostname	Reachable	Cores	Status	Up Since	Name	Count
Start mdce Service...	node1	yes	2	running	2012-01-12 13:02	MyMJS	2
Stop mdce Service...	node2	yes	2	running	2012-01-12 13:02	MyMJS	2
Test Connectivity...	node3	yes	2	running	2012-01-12 13:02	MyMJS	2
	node4	yes	2	running	2012-01-12 13:02	MyMJS	2

MATLAB Job Scheduler (MJS) Section:

	Name	Hostname	Status	Up Since	Workers
Start...	MyMJS	node1	running	2012-01-12 14:51	8

Workers Section:

	Worker				MJS		
	Name	Hostname	Status	Up Since	Connection	Name	Hostname
Start...	node1_worker01	node1	idle	2012-01-12 15:04	connected	MyMJS	node1
Stop...	node1_worker02	node1	idle	2012-01-12 15:05	connected	MyMJS	node1
Resume	node2_worker01	node2	idle	2012-01-12 15:05	connected	MyMJS	node1
	node2_worker02	node2	idle	2012-01-12 15:05	connected	MyMJS	node1
	node3_worker01	node3	idle	2012-01-12 15:05	connected	MyMJS	node1
	node3_worker02	node3	idle	2012-01-12 15:05	connected	MyMJS	node1
	node4_worker01	node4	idle	2012-01-12 15:06	connected	MyMJS	node1
	node4_worker02	node4	idle	2012-01-12 15:06	connected	MyMJS	node1

At the bottom, it shows "Last updated: Thu Jan 12 15:16:38 EST 2012" and an "Update" button set to "every 2 minutes".

Admin Center, available with the MATLAB job scheduler. You can use Admin Center to launch and monitor processes associated with running server workers.

Installation and Configuration

Detailed instructions for configuring the installation are available online. Installation instructions include customizations for operating systems and integration with various schedulers.

Learn how to [set up MATLAB Distributed Computing Server on a cluster](#).

Resources

Product Details, Demos, and System Requirements

www.mathworks.com/products/distriben

Trial Software

www.mathworks.com/trialrequest

Sales

www.mathworks.com/contactsales

Technical Support

www.mathworks.com/support

Online User Community

www.mathworks.com/matlabcentral

Training Services

www.mathworks.com/training

Third-Party Products and Services

www.mathworks.com/connections

Worldwide Contacts

www.mathworks.com/contact