
Getting Started with Membase Server

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Abstract

This article provides a guide to getting your Membase Server up and running through the preparation of your system, installation of the software, and completing the initial setup.

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For queries regarding the documentation, please contact techzone-editor@couchbase.com.

For documentation on Membase, please see [Membase](#).

[Couchbase](#)

Table of Contents

1. Overview	1
2. Preparation	1
3. Installing Membase Server	3
3.1. Red Hat Linux Installation	3
3.2. Ubuntu Linux Installation	4
3.3. Microsoft Windows Installation	4
3.4. Mac OS X Installation	9
4. Setting up Membase Server	12
5. Testing Membase Server	18
6. Next Steps	19

Overview

To start using Membase Server, you need to follow these steps:

1. Prepare your target system by ensuring that you meet the system requirements. See [Preparation](#).
2. Install Membase Server using one of the available binary distributions. See [Installing Membase Server](#).
3. Test the installation by connecting to the Membase Server and storing some data using the native Memcached protocol. See [Testing Membase Server](#).
4. Setup the new Membase Server system by completing the web-based setup instructions. See [Setting up Membase Server](#).

Preparation

Warning

Heterogeneous or mixed deployments (deployments with both Linux and Windows server nodes) are not supported at this time. It is recommended that when deploying to multiple systems, that system be running the same operating system.

When running Membase Server your system should meet or exceed the following system requirements.

Supported Platforms

The following operating systems are supported:

- RedHat Enterprise Linux 5.2 and 5.4 (32-bit and 64-bit)
- Ubuntu Linux 9.10 and 10.04 (32-bit and 64-bit)
- Windows Server 2008 (32-bit and 64-bit)
- Mac OS X 10.5 or higher, 10.6 or higher preferred (64-bit only)

Hardware Requirements

The following hardware requirements are recommended for installation:

- Quad-core, 64-bit CPU running at 3GHz
- 16GB RAM (physical)

A minimum specification machine should have the following characteristics:

- Dual-core CPU running at 2GHz
- 4GB RAM (physical)

Storage Requirements

For running Membase Server you must have the following storage available:

- 100MB for application logging
- Disk space to match your physical RAM requirements for persistence of information

Web Browser (for administration)

The Membase Server administration interface is supported using the following Web browsers, with Javascript support enabled:

- Mozilla Firefox 3.6 or higher

To enable JavaScript, select the Enable JavaScript option within the Content panel of the application preferences.

- Safari 5 or higher

To enable JavaScript, use the checkbox on the security tab of the application preferences.

- Google Chrome 11 or higher

To enable JavaScript, use the Allow all sites to run JavaScript (recommended) option within the Content button of the Under the Hood section of the application preferences.

- Internet Explorer 7 or higher

To enable JavaScript, by enabling Active Scripting within the Custom Level , section of the Security section of the Internet Options item of the Tools menu.

Network Ports

The following network ports are used by Membase Server and must be opened on servers, data clients and administration clients as noted below. Firewall configurations should be updated accordingly to allow traffic through on these ports. For the Membase Server ports are used for communication with data clients, administration clients, and for inter-node data transfer within the Membase cluster. You may choose to configure explicit host access for different ports, for example explicitly allowing port 11211 between each Membase Server and data clients that use it.:

Table 1. Network Ports used by Membase Server

Port	Purpose	Membase Server	Membase Client	Administration Client
8091	Web Administration Port	Yes	No	Yes
11211	Data Port	Yes	Yes	Yes
11210	Internal Cluster Port	Yes	No	No
4369	Erlang Port Mapper (epmd)	Yes	No	No
21100 to 21199 (inclusive)	Node data exchange	Yes	No	No

Existing NorthScale Memcached Server Installations. Membase Server provides the management, provisioning, and clustering system that supports multi-tenancy with both memcached and Membase services. Membase Server is 100% compatible with Open Source memcached and Membase. Web applications that use memcached can now use Membase Server's Membase functionality, out of the box.

Installing Membase Server

To install Membase Server on your machine you must download the appropriate package for your chosen platform from <http://www.couchbase.com/downloads>. For each platform, following the corresponding platform-specific instructions.

Red Hat Linux Installation

The RedHat installation uses the RPM package. Installation is supported on RedHat and RedHat based operating systems such as CentOS.

To install, use the **rpm** command-line tool with the RPM package that you downloaded. You must be logged in as root (Superuser) to complete the installation:

```
root-shell> rpm --install membase-serverversion.rpm
```

Where `version` is the version number of the downloaded package.

Once the **rpm** command has been executed, the Membase server starts automatically, and is configured to automatically start during boot under the 2, 3, 4, and 5 runlevels. Refer to the RedHat RPM documentation for more information about installing packages using RPM.

Once installation has completed, the installation process will display a message similar to that below:

```
Starting Membase server: [ OK ]
```

```
You have successfully installed Membase Server.  
Please browse to http://hostname:8091/ to configure your server.  
Please refer to http://membase.com/support for  
additional resources.
```

```
Please note that you have to update your firewall configuration to  
allow connections to the following ports: 11211, 11210, 4369, 8091  
and from 21100 to 21199.
```

```
By using this software you agree to the End User License Agreement.  
See /opt/membase/LICENSE.txt.
```

Once installed, you can use the RedHat **chkconfig** command to manage the Membase Server service, including checking the current status and creating the links to enable and disable automatic startup. Refer to the RedHat documentation for instructions.

To continue installation you must open a web browser and access the web administration interface. See [Setting up Membase Server](#).

Ubuntu Linux Installation

The Ubuntu installation uses the DEB package.

To install, use the **dpkg** command-line tool using the DEB file that you downloaded. The following example uses **sudo** which will require root-access to allow installation:

```
shell> dpkg -i membase-serverversion.deb
```

Where `version` is the version number of the downloaded package.

Once the **rpm** command has been executed, the Membase server starts automatically, and is configured to automatically start during boot under the 2, 3, 4, and 5 runlevels. Refer to the Ubuntu documentation for more information about installing packages using the Debian package manager.

Once installation has completed, the installation process will display a message similar to that below:

```
Selecting previously deselected package membase-server.  
(Reading database ... 218698 files and directories currently installed.)  
Unpacking membase-server (from membase-server-community_x86_64_1.7-beta.deb) ...  
Setting up membase-server (1.7~basestar) ...  
* Started Membase server
```

```
You have successfully installed Membase Server.  
Please browse to http://tellurium-internal:8091/ to configure your server.  
Please refer to http://couchbase.com for additional resources.
```

```
Please note that you have to update your firewall configuration to  
allow connections to the following ports: 11211, 11210, 4369, 8091  
and from 21100 to 21199.
```

```
By using this software you agree to the End User License Agreement.  
See /opt/membase/LICENSE.txt.
```

Once installed, you can use the **service** command to manage the Membase Server service, including checking the current status. Refer to the Ubuntu documentation for instructions.

To continue installation you must open a web browser and access the web administration interface. See [Setting up Membase Server](#).

Microsoft Windows Installation

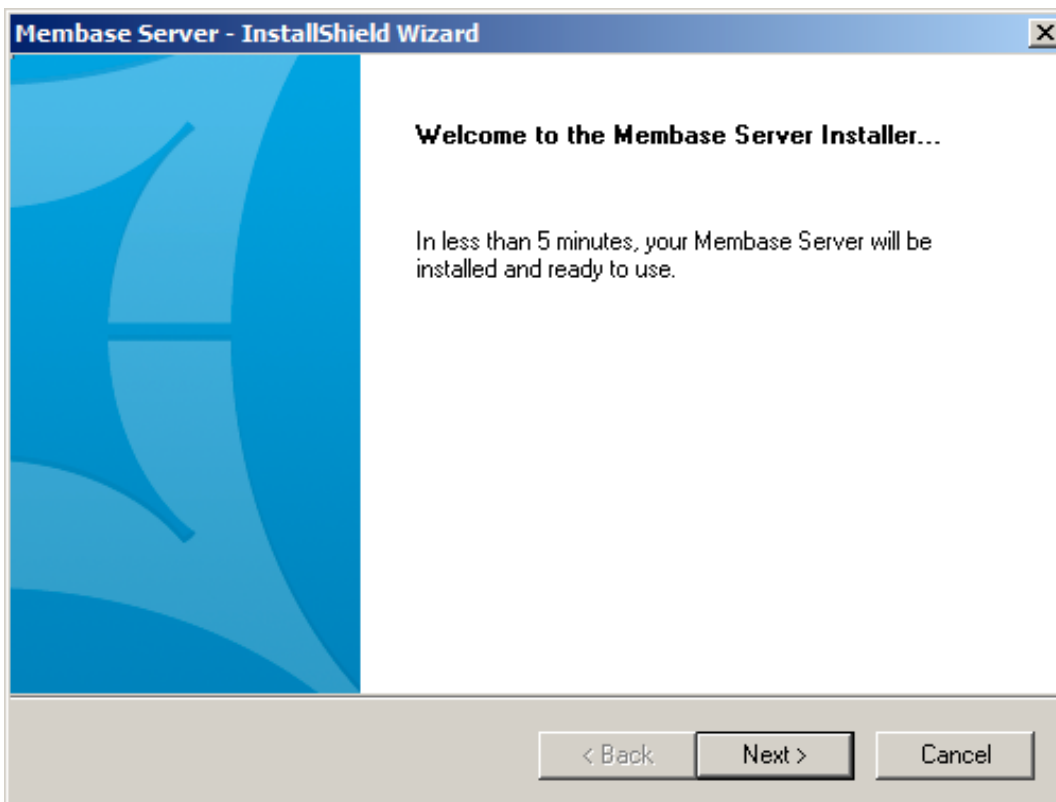
To install on Windows you must download the Windows installer package. This is supplied as an Windows executable. You can install the package either using the GUI installation process, or by using the unattended installation process.

GUI Installation

To use the GUI installer, double click on the downloaded executable file.

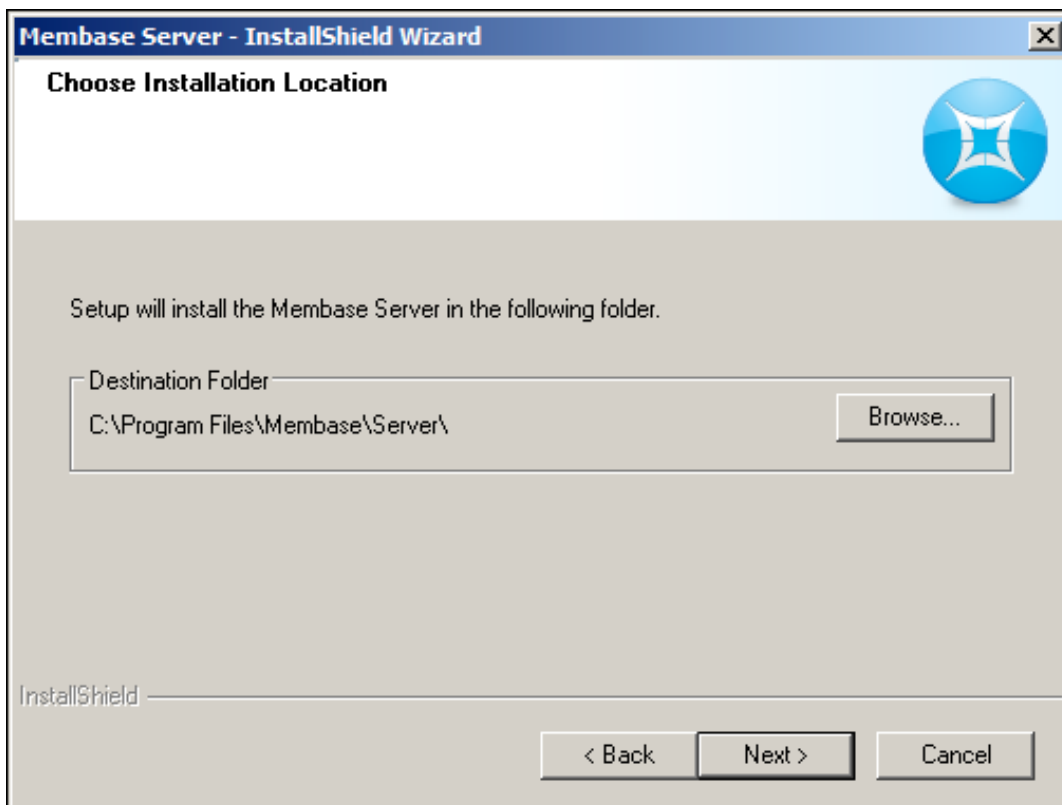
The installer will launch and prepare for installation. You can cancel this process at any time. Once completed, you will be provided with the welcome screen.

Figure 1. Windows Installation Welcome Screen



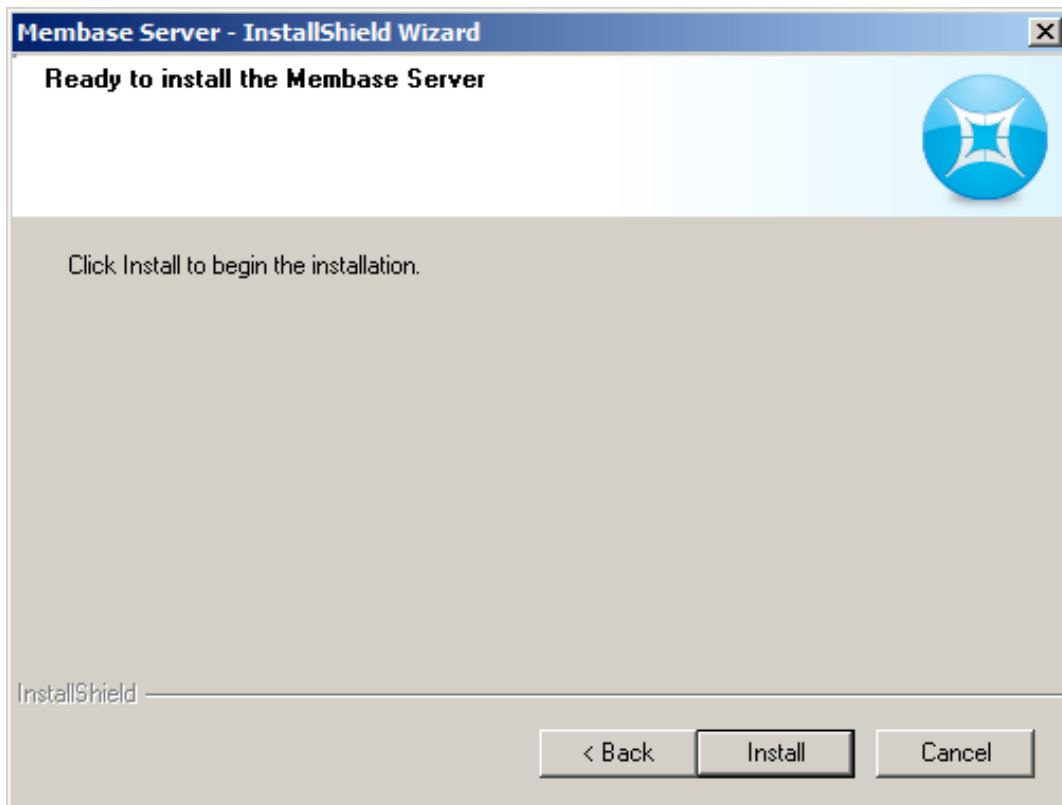
Click Next to start the installation. You will be prompted with the Installation Location screen. You can change the location where the Membase Server application is located. Note that this does not configure the location of where the persistent data will be stored, only the location of the application itself. To select the install location, click the Browse button to select the folder. Click Next to continue the installation.

Figure 2. Windows Installation Location Screen



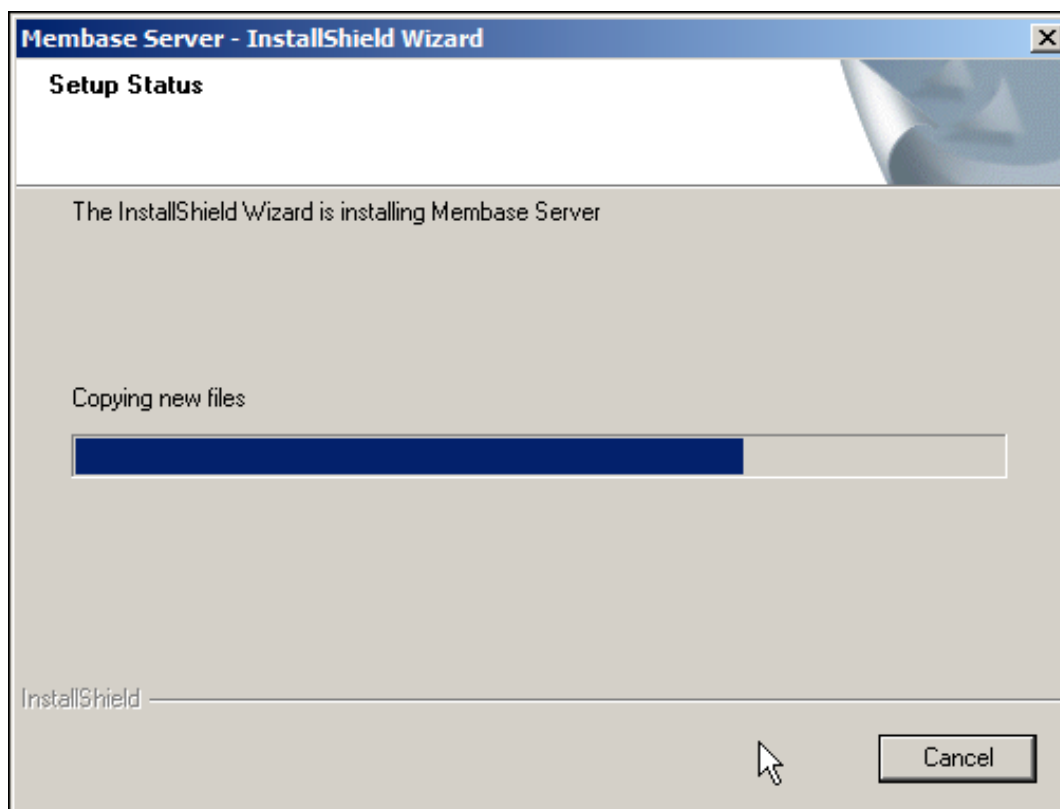
Configuration has now been completed. You will be prompted to confirm that you want to continue installation. Click Next to confirm the installation and start the installation process.

Figure 3. Windows Installation Ready Screen

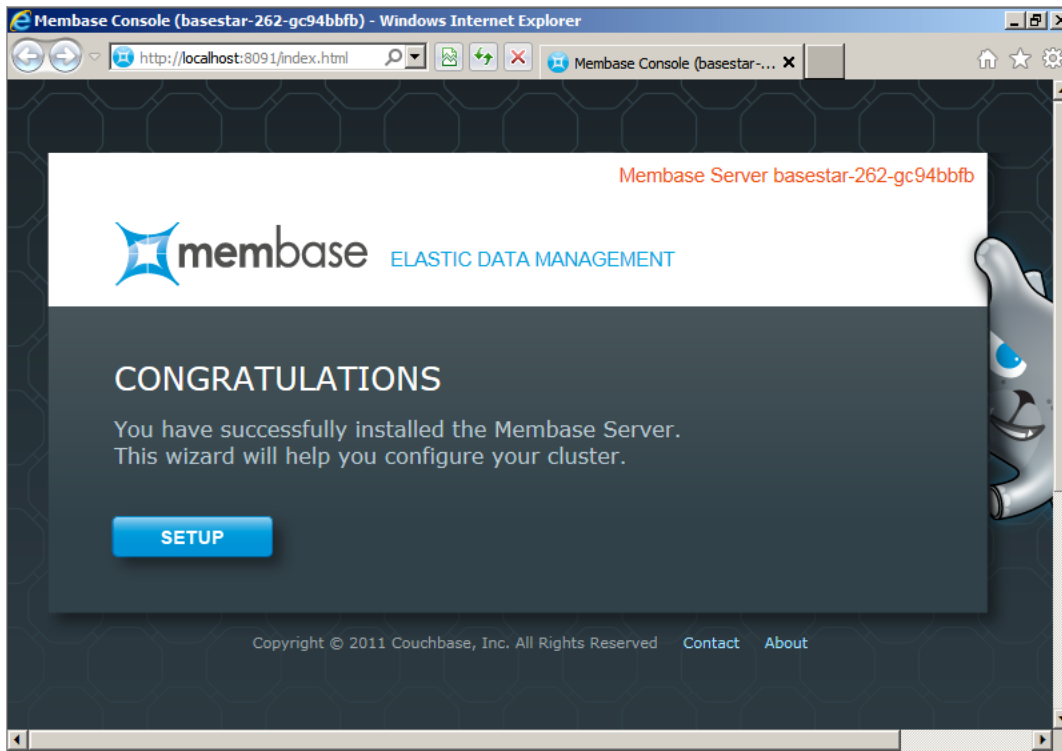


The install will copy over the necessary files to the system. During the installation process, the installer will also check to ensure that the default administration port is not already in use by another application. If the default port is unavailable, the installer will prompt for a different port to be used for administration of the Membase server.

Figure 4. Windows Installation Progress Screen



Once the installation process has been completed, you will be prompted with the completion screen. This indicates that the installation has been completed and your Membase Server is ready to be setup and configured. When you click Finish , the installer will quit and automatically open a web browser with the Membase Server setup window.

Figure 5. Windows Installation Completion Screen

To continue installation you should follow the server setup instructions. See [Setting up Membase Server](#).

Unattended Installation

The unattended installation process works by first recording your required installation settings using the GUI installation process outlined above which are saved to a file. You can then use the file created to act as the option input to future installations.

To record your installation options, open a Command Terminal or Powershell and start the installation executable with the `/r` command-line option:

```
C:\Downloads> membase_server_<version>.exe /r
```

You will be prompted with the installation choices as outlined above, but the installation process will not actually be completed. Instead, a file with your option choices will be recorded in the file `C:\Windows\setup.iss`.

To perform an installation using a previously recorded setup file, copy the `setup.iss` file into the same directory as the installer executable. Run the installer from the command-line, this time using the `/s` option.

```
C:\Downloads> membase_server_<version>.exe /s
```

You can repeat this process on multiple machines by copying the executable package and the `setup.iss` file to each machine.

Mac OS X Installation

The Mac OS X installation uses a Zip file which contains a standalone application that can be copied to the [Applications](#) folder or to any other location you choose. The installation location does not affect the location of the Membase data files.

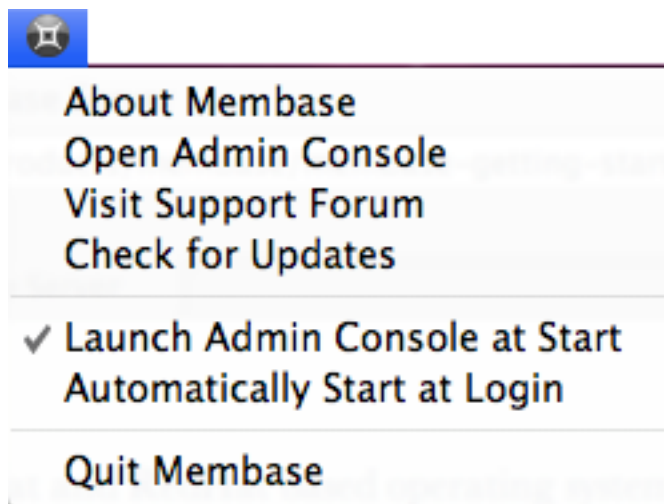
To install:

1. Download the Mac OS X Zip file.
2. Double-click the downloaded Zip installation file to extract the contents. This will create a single file, the [Membase.app](#) application.
3. Drag and Drop the [Membase.app](#) to your chosen installation folder, such as the system [Applications](#) folder.

Once the application has been copied to your chosen location, you can double-click on the application to start it. The application itself has no user interface. Instead, the Membase application icon will appear in the menubar on the right-hand side. If there is no active configuration for Membase, then the Membase Web Console will be opened and you will be asked to complete the Membase Server setup process. See [Setting up Membase Server](#) for more details.

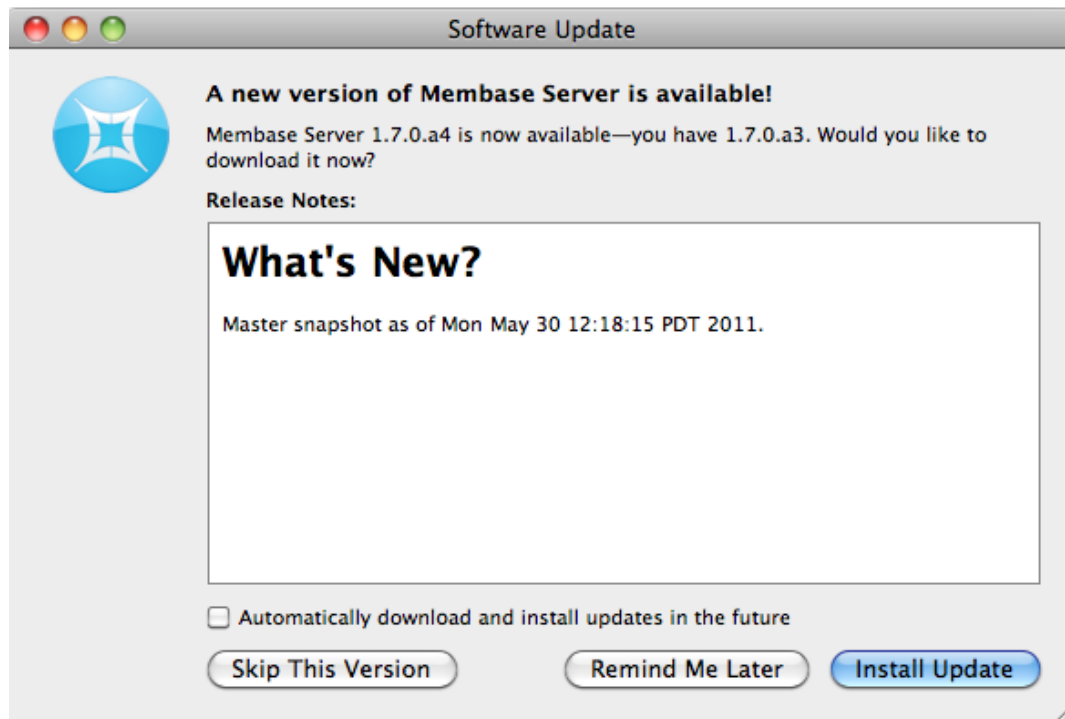
The Membase application runs as a background application. Clicking on the menubar gives you a list of operations that can be performed, as shown in [Figure 6. Membase Server on Mac OS X Menubar Item](#).

Figure 6. Membase Server on Mac OS X Menubar Item



The individual menu options perform the following actions:

- **About Membase**
Opens a standard About dialog containing the licensing and version information for the Membase Server installed.
- **Open Admin Console**
Opens the Web Administration Console in your configured default browser.
- **Visit Support Forum**
Opens the Membase Server support forum within your default browser at the Couchbase website where you can ask questions to other users and Couchbase developers.
- **Check for Updates**
Checks for updated versions of Membase Server. This checks the currently installed version against the latest version available at Couchbase and offers to download and install the new version. If a new version is available, you will be presented with a dialog containing information about the new release.

Figure 7. Membase Server on Mac OS X Update Notification

If a new version is available, you can choose to skip the update, notify the existence of the update at a later date, or to automatically update the software to the new version.

If you choose the last option, the latest available version of Membase Server will be downloaded to your machine, and you will be prompted to allow the installation to take place. Installation will shut down your existing Membase Server process, install the update, and then restart the service once the installation has been completed.

Once the installation has been completed you will be asked whether you want to automatically update Membase Server in the future.

Note

Using the update service also sends anonymous usage data to Couchbase on the current version and cluster used in your organization. This information is used to improve our service offerings.

You can also enable automated updates by selecting the Automatically download and install updates in the future checkbox.

- Launch Admin Console at Start

If this menu item is checked, then the Web Console for administering Membase Server will be opened whenever the Membase Server is started. Selecting the menu item will toggle the selection.

- Automatically Start at Login

If this menu item is checked, then Membase Server will be automatically started when the Mac OS X machine starts. Selecting the menu item will toggle the selection.

- Quit Membase

Selecting this menu option will shut down your running Membase Server, and close the menubar interface. To restart, you must open the Membase Server application from the installation folder.

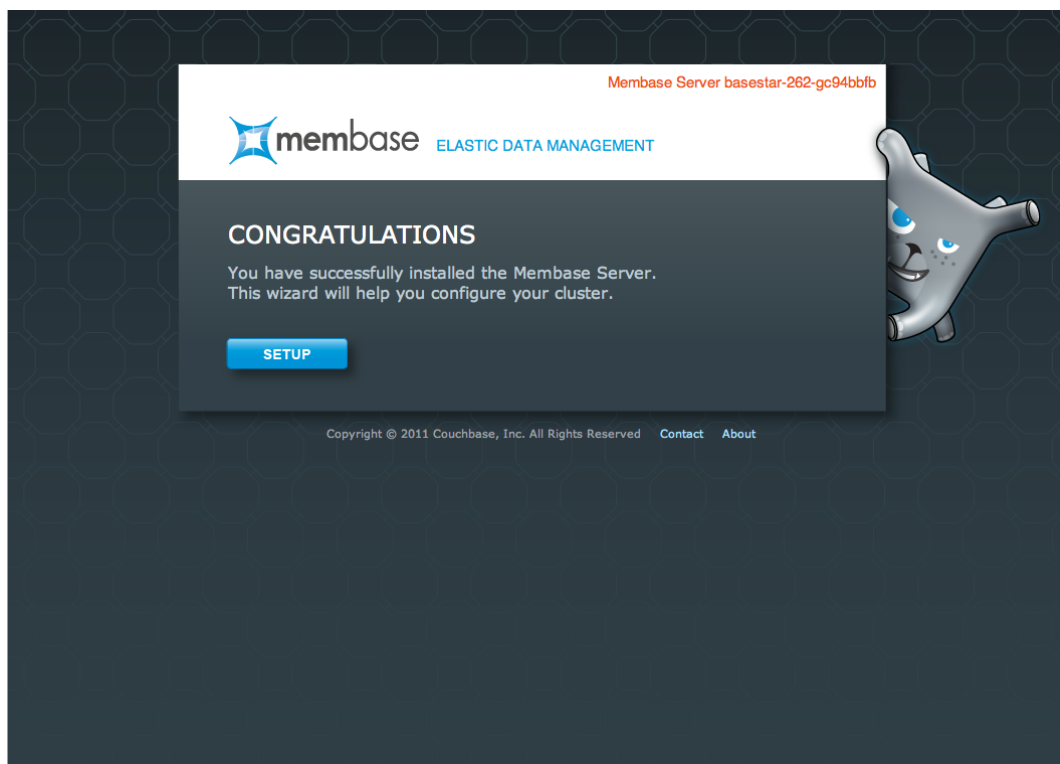
Setting up Membase Server

To setup the Membase Server you must use the web browser setup screens to configure the Membase Server installation, including setting the memory settings, disk locations, and existing cluster configuration. You will also be asked to create a password to be used when logging in and administering your server.

To start the configuration and setup process, you should open the Membase Web Console. On Windows this is opened for you automatically. On all platforms you can access the web console by connecting to the embedded web server on port 8091. For example, if your server can be identified on your network as [servera](#), you can access the web console by opening <http://servera:8091/>. You can also use an IP address or, if you are on the same machine, <http://localhost:8091>.

1. Once you have opened the web console for the first time immediately after installation you will be prompted with the screen shown below.

Figure 8. Membase Server Setup



Click the **SETUP** button to start the setup process.

2. First, you must set the disk storage and cluster configuration.

Figure 9. Membase Server Setup Step 1 (New Cluster)

CONFIGURE SERVER Step 1 of 4

Configure Disk Storage

Path: Free: 14 GB

Join Cluster / Start new Cluster

If you want to add this server to an existing Membase Cluster, select "Join a cluster now". Alternatively, you may create a new Membase Cluster by selecting "Start a new cluster".

If you start a new cluster the "Per Server RAM Quota" you set below will define the amount of RAM each server provides to the Membase Cluster. This value will be inherited by all servers subsequently joining the cluster and it cannot be modified in an existing cluster, so please set appropriately.

☒ Start a new cluster.

RAM Available: 2009 MB

Per Server RAM Quota: MB (256 MB — 1607 MB)

☐ Join a cluster now.

Next

Configure Disk Storage

The Configure Disk Storage option specifies the location of the persistent (on-disk) storage used by Membase Server. The setting affects only this server and sets the directory where all the data will be stored on disk.

Join Cluster/Start New Cluster

The Configure Server Memory section sets the amount of physical RAM that will be allocated by Membase Server for storage.

If you are creating a new cluster, you specify the memory that will be allocated on each node within your Membase cluster. You must specify a value that will be supported on all the nodes in your cluster as this is a global setting.

If you want to join an existing cluster, select the radio button. This will change the display and prompt the IP address of an existing node, and the username and password of an administrator with rights to access the cluster.

Figure 10. Membase Server Setup Step 1 (Existing Cluster)

The screenshot shows a window titled "CONFIGURE SERVER" with a subtitle "Step 1 of 4". The window is divided into two main sections. The first section, "Configure Disk Storage", shows a "Path:" field with the value "c:/Program Files/Membase/Server/var/lib/i" and a "Free:" field with the value "53 GB". The second section, "Join Cluster / Start new Cluster", contains two paragraphs of text. The first paragraph explains that if you want to add a server to an existing cluster, you should select "Join a cluster now". The second paragraph explains that if you start a new cluster, the "Per Server RAM Quota" you set below will define the amount of RAM each server provides to the Membase Cluster. Below the text are two radio buttons: "Start a new cluster." and "Join a cluster now.". The "Join a cluster now." option is selected. Below the radio buttons are three input fields: "IP Address:", "Username:" (with the value "Administrator"), and "Password:". A blue "Next" button is located at the bottom right of the window.

CONFIGURE SERVER Step 1 of 4

Configure Disk Storage

Path: Free: 53 GB

Join Cluster / Start new Cluster

If you want to add this server to an existing Membase Cluster, select "Join a cluster now". Alternatively, you may create a new Membase Cluster by selecting "Start a new cluster".

If you start a new cluster the "Per Server RAM Quota" you set below will define the amount of RAM each server provides to the Membase Cluster. This value will be inherited by all servers subsequently joining the cluster and it cannot be modified in an existing cluster, so please set appropriately.

☐ Start a new cluster.

☒ Join a cluster now.

IP Address:

Username:

Password:

Next

Click Next to continue the installation process.

3. You must specify the default bucket for this server.

Figure 11. Membase Server Setup Step 2

CREATE DEFAULT BUCKET Step 2 of 4

Bucket Settings

Bucket Name: default

Bucket Type: ☐ Memcached ☒ Membase

Memory Size

Per Node RAM Quota: MB

Cluster quota (1.56 GB)

Other Buckets (0 B) This Bucket (1.56 GB) Free (0 B)

Total bucket size = 1607 MB (1607 MB x 1 node)

Replication

☒ Enable Replication Number of replica (backup) copies

[Back](#) [Next](#)

The options are:

- **Bucket Type**

Specifies the type of the bucket to be created, either [Memcached](#) or [Membase](#). See [Membase Data Buckets](#) for more information.

The remainder of the options differ based on your selection.

When selecting the [Membase](#) bucket type:

- **Memory Size**

This option specifies the amount of available RAM configured on this server which should be allocated to the default bucket.

- **Replication**

For Membase buckets you can enable replication to support multiple replicas of the default bucket across the servers within the cluster. You can configure up to three replicas. Each replica receives copies of all the key/value pairs that are managed by the bucket. If the host machine for a bucket fails, a replica can be promoted to take its place, providing continuous (high-availability) cluster operations in spite of machine failure.

You can disable replication by setting the number of replica copies to zero (0). This will configure the default bucket as local-only and therefore only accessible on this machine.

When selecting the [Memcached](#) bucket type:

- **Memory Size**

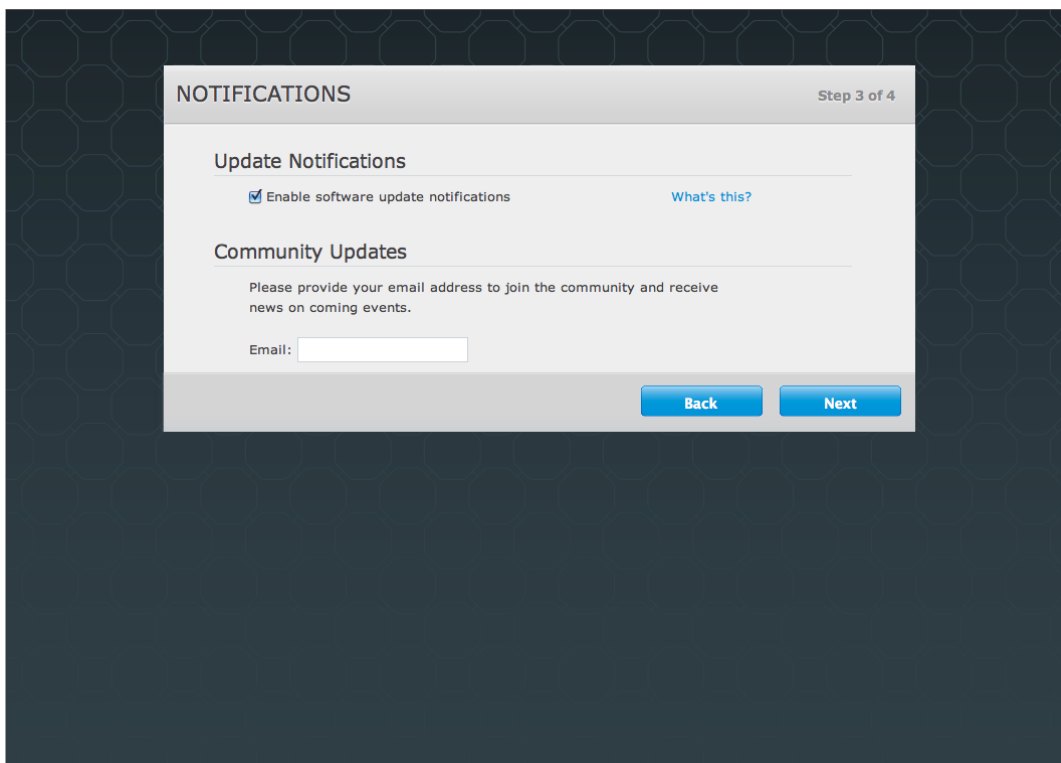
The bucket is configured with a per-node amount of memory. Total bucket memory will change as nodes are added/removed.

For more information, see [Memory Quotas](#).

Click Next to continue the setup process.

4. You can optionally enable the notification system within the Membase Web Console.

Figure 12. Membase Server Setup Step 3



If you select the Update Notifications option, the Web Console will communicate with Couchbase servers to confirm the version number of your Membase installation. During this process, the client submits the following information to the Couchbase server:

- The current version of your Membase Server installation. When a new version of Membase Server becomes available, you will be provided with notification of the new version and information on where you can download the new version.
- Basic information about the size and configuration of your Membase cluster. This information will be used to help us prioritize our development efforts.

Note

The process occurs within the browser accessing the web console, not within the server itself, and no further configuration or internet access is required on the server to enable this functionality. Providing the client accessing the Membase server console has internet access, the information can be communicated to the Couchbase servers.

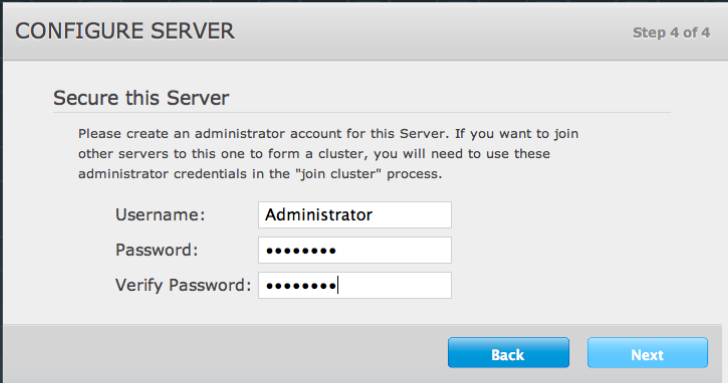
The update notification process the information anonymously, and the data cannot be tracked. The information is only used to provide you with update notification and to provide information that will help us improve the future development process for Membase Server and related products.

Supplying your email address will add you to the Couchbase community mailing list, which will provide you with news and update information about Couchbase and related products. You can unsubscribe from the mailing list at any time using the unsubscribe link provided in each email communication.

Click Next to continue the setup process.

5. The final step in the setup process is to configure the username and password for the administrator of the server. If you are create a new cluster then this information will be used to authenticate each new server into the cluster. The same credentials are also used when using the Membase Management REST API. Enter a username and password. The password must be at least six characters in length.

Figure 13. Membase Server Setup Step 4



CONFIGURE SERVER Step 4 of 4

Secure this Server

Please create an administrator account for this Server. If you want to join other servers to this one to form a cluster, you will need to use these administrator credentials in the "join cluster" process.

Username:

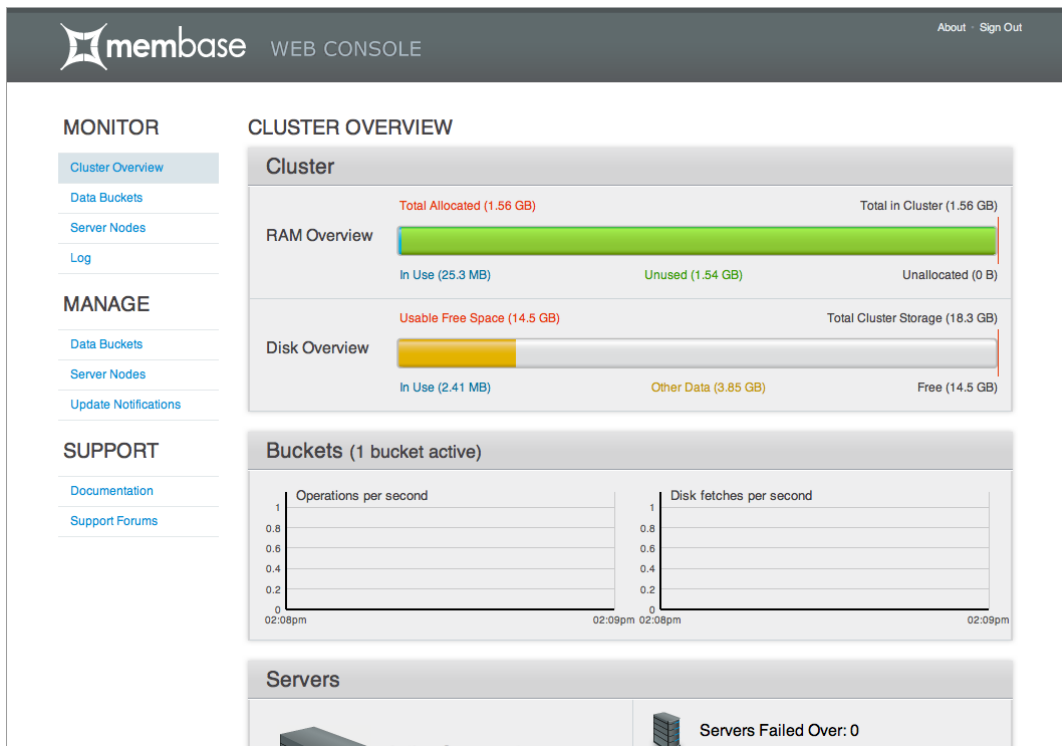
Password:

Verify Password:

[Back](#) [Next](#)

Click Next to continue the complete the process.

Once the setup process has been completed, you will be presented with the Membase Web Console showing the Cluster Overview page.

Figure 14. Membase Server Setup Completed

Your Membase server is now running and ready to use.

Testing Membase Server

You can test your Membase Server installation by using Telnet to connect to the server and using the Memcached text protocol. This is the simplest method for determining if your Membase Server is running.

Note

You will not need to use the Telnet method for communicating with your server within your application. Instead, use one of the Membase SDKs.

You will need to have **telnet** installed on your server to connect to Membase Server using this method. Telnet is supplied as standard on most platforms, or may be available as a separate package that should be easily installable via your operating systems standard package manager.

Connect to the server:

```
shell> telnet localhost 11211
Trying 127.0.0.1...
Connected to localhost.localdomain (127.0.0.1).
Escape character is '^['.
```

Make sure it's responding (stats is a great way to check basic health):

```
stats
STAT delete_misses 0
STAT ep_io_num_write 0
STAT rejected_conns 0
...
STAT time 1286678223
...
STAT curr_items_tot 0
```

```
...  
STAT threads 4  
STAT pid 23871  
...  
END
```

Put a key in:

```
set test_key 0 0 1  
a  
STORED
```

Retrieve the key:

```
get test_key  
VALUE test_key 0 1  
a  
END
```

Disconnect:

```
quit  
Connection closed by foreign host.  
shell>
```

All of the Memcached protocols commands will work through Telnet.

Next Steps

- For instructions on how to use the Membase Web Console to manage your Membase Server installation, see [Membase Web Console](#).
- If you already have an application that uses the Memcached protocol then you can start using your Membase Server immediately. If so, you can simply point your application to this server like you would any other memcached server. No code changes or special libraries are needed, and the application will behave exactly as it would against a standard memcached server. Without the client knowing anything about it, the data is being replicated, persisted, and the cluster can be expanded or contracted completely transparently.

If you do not already have an application, then you should investigate one of the available Membase client libraries to connect to your server and start storing and retrieving information. For more information, see [Couchbase SDKs](#).