MarkLogic Server

Installation Guide for All Platforms

MarkLogic 8
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1.0 Requirements and Database Compatibility

This chapter introduces MarkLogic Server, lists the product requirements and supported platforms, and describes the database compatibility with previous releases. It includes the following sections:

- Introduction
- MarkLogic Server Assumptions
- Memory, Disk Space, and Swap Space Requirements
- Supported Platforms
- Supported Filesystems
- Upgrades and Database Compatibility
- MarkLogic Converters Installation Changes in Version 8 Releases Starting at 8.0-8

1.1 Introduction

MarkLogic Server is a powerful NoSQL database for harnessing your digital content base, complete with Enterprise features demanded by real world, mission-critical applications. MarkLogic enables you to build complex applications that interact with large volumes of content in JSON, XML, SGML, HTML, and other popular content formats, as well as binary formats. The unique architecture of MarkLogic ensures that your applications are both scalable and high-performance, delivering query results at search-engine speeds while providing transactional integrity over the underlying content repository. MarkLogic can be configured for a distributed environment, enabling you to scale your infrastructure through hardware expansion.

This installation guide explains the procedures needed to install MarkLogic on your system. It is intended for a technical audience, specifically an IT staff with experience in JSON and XML. This document only explains how to install the software, not how to use the software. To learn how to get started using the software, see the rest of the MarkLogic documentation (available on docs.marklogic.com), including the following documents:

- *Getting Started With MarkLogic Server*
- MarkLogic Server *Administrator's Guide*
- MarkLogic Server *Application Developer's Guide*
- MarkLogic Server *Search Developer's Guide*
- *JavaScript Reference Guide*
- *MarkLogic XQuery and XSLT Function Reference*
- MarkLogic Server *Release Notes*

1.2 MarkLogic Server Assumptions

When MarkLogic installs, it sets memory and other settings based on the size of the computer in which it is running. MarkLogic is a scalable, multi-threaded server product, and as such it assumes it has the entire machine available to it, including the cpu and disk I/O capacity. It is important to follow the guidelines set up in this chapter. Furthermore, MarkLogic assumes there is only one MarkLogic Server process running on any given machine, so it is not recommended to run multiple instances of MarkLogic on a single machine.

1.3 Memory, Disk Space, and Swap Space Requirements

Before installing the software, be sure that your system meets the following requirements:

- 512 MB of system memory, minimum. 2 GB or more recommended, depending on database size.

  The first time it runs, MarkLogic Server automatically configures itself to the amount of memory on the system, reserving as much as it can for its own use. If you need to change the default configuration, you can manually override these defaults at a later time using the Admin Interface.

- 1.5 times the disk space of the total forest size. Specifically, each forest on a filesystem requires its filesystem to have at least 1.5 times the forest size in disk space (or, for each forest less than 32GB, 3 times the forest size) when the `merge max size` database merge setting is set to the default of 32GB. This translates to approximately 1.5 times the disk space of the source content after it is loaded. *

  For example, if you plan on loading content that will result in a 200 GB database, reserve at least 300 GB of disk space. The disk space reserve is required for merges.

- On Linux systems, swap space equal to the amount of physical memory on the machine or 32GB, whichever is lower. MarkLogic also recommends setting Linux Huge Pages on Red Hat Enterprise Linux 6 and 7 systems to 3/8 the size of your physical memory. For details on setting up Huge Pages, see https://access.redhat.com/solutions/46111.

  If you have Huge Pages set up on a Linux system, your swap space on that machine should be equal to the size of your physical memory minus the size of your Huge Page (because Linux Huge Pages are not swapped), or 32GB, whichever is lower. For example, if you have 48GB of physical memory, and if you have Huge Pages set to 18 GB, then you need swap space of 30 GB (48 - 18).

  At system startup on Linux machines, MarkLogic Server logs a message to the `ErrorLog.txt` file showing the Huge Page size, and the message indicates if the size is below the recommended level.

  If you are using Red Hat Enterprise Linux 6 or 7, you must turn off Transparent Huge Pages (Transparent Huge Pages are configured automatically by the operating system).

- On Windows systems twice the physical memory is also recommended for the swap (page) file. You configure this in the System Control Panel > Advanced system settings > Performance Settings > Advanced tab. Set the Virtual memory settings on that tab to twice your physical memory.
- On Solaris systems, swap space at least equal to the amount of physical memory on the machine. Swap space equal to twice the amount of physical memory is highly recommended.

  For example, if you have a Solaris machine with 32 GB of memory, you should ideally configure the swap space to be 64 GB (and at least 32 GB).

* You need at least 2 times the `merge max size` of free space per forest, regardless of the forest size. Therefore, with the default `merge max size` of 32GB, you need at least 64GB of free space. Additionally, if your journals are not yet created, you need 2 times the journal size of free disk space (if the journal space is not yet allocated). Therefore, to be safe, you need (with the default `merge max size` and a 2G journal size) at least 68GB of free space for each forest, no matter what size the forest is.

1.4 Supported Platforms

MarkLogic Server is supported on the following platforms:

- Microsoft Windows Server 2012 (x64), Microsoft Windows Server 2008 (x64)
- Windows 7 (x64) or later *
- Sun Solaris 10 (x64)
- Red Hat Enterprise Linux 7 (x64) ** *** ****
- Red Hat Enterprise Linux 6 (x64) ** *** ****
- SUSE Linux Enterprise Server 11 (x64) SP3 ** ***
- CentOS 6 (x64) ** *** ****
- CentOS 7 (x64) ** *** ****
- Amazon Linux (x64) ** ***
- Mac OS X 10.8 or later *****

* Microsoft Windows 7 (x64) or later is supported for development only. If MarkLogic Server fails to start up on Windows with the error “the application failed to initialize properly (0xc0150002)”, then a dependency is missing from your environment and you need to download and install the following DLL for 64-bit versions of Windows: http://www.microsoft.com/downloads/details.aspx?FamilyID=eb4ebe2d-33c0-4a47-9dd4-b9a6d7bd44da&DisplayLang=en. Additionally, if you get an error on startup saying you need MSVCR100.dll, the install the Microsoft Visual C++ 2010 SP1 Redistributable Package (x64) http://www.microsoft.com/en-us/download/details.aspx?id=13523.

** Either `none`, `mq-deadline` or `kyber` I/O scheduler is required to ensure efficient disk I/O for MarkLogic Server on Linux. When configuring an I/O scheduler with SSDs in a virtualized environment (including any cloud-based virtual machines), the OS I/O scheduling should be set to `none` for 4.x kernels or `noop`/`none` for older 3.x kernels. For more details, see http://help.marklogic.com/Knowledgebase/Article/View/8/0/notes-on-io-schedulers, https://lonesysadmin.net/2013/12/06/use-elevator-noop-for-linux-virtual-machines/, and https://access.redhat.com/solutions/5427.

*** The `redhat-lsb`, `glibc`, `gdb`, and `cyrus-sasl-lib` packages are required on Red Hat Enterprise Linux. Additionally, on 64-bit Red Hat Enterprise Linux, both the 32-bit and the 64-bit `glibc` packages are required. Red Hat Enterprise Linux/CentOS, Version 6 RPM is the version that should be used to install MarkLogic 8 on Amazon Linux.

**** Red Hat Enterprise Linux 6 (x64) and Red Hat Enterprise Linux 7 (x64) are also supported on VMware ESXi 5.5 and 6.0 (installed on bare metal).

***** Mac OS X is supported for development only. Conversion (Office and PDF) and entity enrichment are not available on Mac OS X. A 64-bit capable processor is required (http://support.apple.com/kb/HT3696).

1.5 Supported Filesystems

MarkLogic relies on the operating system for filesystem operations. While any filesystem that works properly (including under heavy load) should work, the following table lists the operating systems along with the filesystems under which they are supported. Other filesystems may work but have not been thoroughly tested by MarkLogic.

Operating System	Supported Filesystems
Linux (all varieties)	XFS (recommended), EXT3, EXT4, as well as the clustered filesystems for shared-disk failover mentioned in Requirements for Shared-Disk Failover in the *Scalability, Availability, and Failover Guide*. **Warning** Do not use `data=writeback` with EXT3 and EXT4 filesystems. NAS is supported on Red Hat 6 and NetAPP.
Sun Solaris	UFS, as well as the clustered filesystems for shared-disk failover mentioned in Requirements for Shared-Disk Failover in the *Scalability, Availability, and Failover Guide*.
Windows	NTFS
Mac OS	HFS+
All	Hadoop HDFS, Amazon S3 (no journaling with S3)

Additionally, HDFS storage is supported with MarkLogic on the HDFS platforms described in HDFS Storage in the *Query Performance and Tuning Guide*.

1.6 Upgrades and Database Compatibility

MarkLogic 8 supports upgrades from MarkLogic 5, MarkLogic 6, or from MarkLogic 7 or later databases. If you are upgrading from an earlier version of MarkLogic Server, you must first upgrade to 5, 6, or 7 before moving to MarkLogic 8. For the procedure for upgrading, see “Upgrading from Previous Releases” on page 13.

During the upgrade, the security database, the schemas database, and the configuration files are automatically upgraded. The security database is upgraded with the latest execute privileges and the schemas database is upgraded with the latest version of the schemas used by MarkLogic Server. The upgrade occurs as part of the installation procedure.

Databases that contain your own content are also upgraded to work with MarkLogic 8; once you upgrade to MarkLogic 8, you will no longer be able to use that database with previous versions of MarkLogic. MarkLogic Corporation strongly recommends performing a backup of your databases before upgrading to MarkLogic 8. Additionally, MarkLogic Corporation recommends

that you first upgrade to the latest maintenance release of the major version of MarkLogic you are running before upgrading to MarkLogic 8.

For the procedure for upgrading to MarkLogic 8, see "Upgrading from Previous Releases" on page 13. For details about known incompatibilities between MarkLogic 7 and MarkLogic 8, see Known Incompatibilities with Previous Releases in the *Release Notes*.

This section contains database compatibility information between various releases, and includes the following sections.

- Prerequisites for Application Services Portion of the Upgrade
- MarkLogic 8 Databases are Compatible With MarkLogic 6 and MarkLogic 7
- MarkLogic 8 Database Compatibility With MarkLogic 5

1.6.1 Prerequisites for Application Services Portion of the Upgrade

When Upgrading from releases prior to MarkLogic 5 to MarkLogic 8, the upgrade reconfigures the Docs and App Services App Servers, which by default are on port 8000 and port 8002 in older releases. In order for those App Servers to be upgraded, the following conditions must be met:

- Either no App Server is running on port 8000 or the App Server on port 8000 has a root of `Docs/`.
- Either no App Server is running on port 8002 or the App Server on port 8002 has a root of `Apps/` or `Apps/appbuilder`.

If the above conditions are met, then those App Servers are reconfigured during the MarkLogic 8 upgrade and the resulting configurations have the following settings:

App-Services:

App-Services App Server	
Port	`8000`
Name	`App-Services`
Root	`Apps/`
Error Handler	`error-handler.xqy`
URL Rewriter	`rewriter.xqy`
Database	`App-Services`

Manage:

Manage App Server	
Port	`8002`
Name	`Manage`
Root	`Apps/`
Error Handler	`manage/error-handler.xqy`
URL Rewriter	`manage/rewriter.xqy`
Database	`App-Services`
Privilege	`manage`

If the conditions are not met, then the upgrade logs an error to the `ErrorLog.txt` file and the Application Services portion of the upgrade is skipped. MarkLogic Server will still operate, but you will not be able to use Query Console, the Management API, and the rest of the Application Services features. To restore the Application Services functionality after a failed upgrade, create two App Servers with the configuration shown above. If you have any problems, contact MarkLogic technical support.

1.6.2 MarkLogic 8 Databases are Compatible With MarkLogic 6 and MarkLogic 7

MarkLogic 8 does not require a reindex from MarkLogic 6 or MarkLogic 7 databases. Therefore, if you are upgrading from MarkLogic 6 or MarkLogic 7, the database will not reindex, even if `reindex enable` is set to `true`.

1.6.3 MarkLogic 8 Database Compatibility With MarkLogic 5

To take advantage of index improvements, MarkLogic 8 does require a reindex when upgrading from MarkLogic 5 and earlier databases. When you upgrade to MarkLogic 8, all databases with `reindex enable` set to `true` will automatically begin reindexing immediately. If you do not want the databases to reindex, you must set `reindex enable` to `false` *before* upgrading (that is, you must set `reindex enable` to `false` in MarkLogic 5). You can always reindex your content later by changing this setting back to `true` after installing MarkLogic 8.

Also, you can reindex your content a little bit at a time by enabling reindexing for a while, then disabling it for a while, then enabling it, and so on. You might want to use this technique to reindex your database during non-peak hours, for example, over a period of hours or days or weeks, depending on how large your database is. Always ensure that you have the proper system requirements, as defined in “Memory, Disk Space, and Swap Space Requirements” on page 5.

1.7 MarkLogic Converters Installation Changes in Version 8 Releases Starting at 8.0-8

MarkLogic converters are used to convert Microsoft Office Word, Excel, and PowerPoint documents, as well as Adobe PDF files, to XHTML. *MarkLogic filters* are used to filter a variety of document formats, extract metadata and text from them, and return XHTML. The following MarkLogic XQuery API functions, described in the *MarkLogic XQuery and XSLT Function Reference*, provide this functionality:

```
xdmp:word-convert
xdmp:excel-convert
xdmp:powerpoint-convert
xdmp:pdf-convert
xdmp:document-filter
```

Converters/filters are also used as part of *conversion pipeline* in Content Processing Framework. For more details, see The Default Conversion Option in the *Content Processing Framework Guide*.

Prior to MarkLogic release 8.0-8, converters/filters were bundled and automatically installed with MarkLogic Server. In MarkLogic version 8 releases starting at 8.0-8, converters/filters are offered as a separate package, *MarkLogic Converters*.

This change provides better flexibility and enables you to install/uninstall MarkLogic converters/filters separately from MarkLogic Server.

With this change, MarkLogic Server does not include MarkLogic Converters. To use converters/filters, install both packages: MarkLogic Server and MarkLogic Converters. An `XDMP-CVTNOTFOUND` error will be thrown upon an attempt to use converters/filters on a MarkLogic node with no MarkLogic Converters installed.

The version of MarkLogic Converters is synchronized with the version of MarkLogic Server. For example, MarkLogic Converters 8.0-8 corresponds to MarkLogic Server 8.0-8 and may be installed with it.

You can obtain the version of MarkLogic Converters installed on a node by calling to MarkLogic server-side API function `xdmp:host-status` and examining the value of the `converters-version` element in the response. If the converters package is not installed on a node, the `converters-version` element will be empty.

MarkLogic Converters packages for all supported platforms are available for download at the same location where MarkLogic Server packages are available, namely at http://developer.marklogic.com.

If you want to use the converters package with MarkLogic 8.0-8 or later version 8 release, you will have to perform a two-step installation: first install MarkLogic Server and then install MarkLogic Converters.

For details on MarkLogic Server and MarkLogic Converters installation for all supported platforms, see “Installing MarkLogic” on page 17.

If you want to uninstall MarkLogic 8.0-8 or later version 8 release, and if the converters package was previously installed with it, you will have to perform a two-step uninstall: first uninstall MarkLogic Converters and then uninstall MarkLogic Server.

For details on MarkLogic Server and MarkLogic Converters uninstall for all supported platforms, see “Removing MarkLogic” on page 34.

2.0 Procedures

This section describes the following procedures to install MarkLogic on your system.

- Upgrading from Previous Releases
- Installing MarkLogic
- Starting MarkLogic Server
- Configuring the First and Subsequent Hosts
- Entering a License Key
- Checking for the Correct Software Version
- Configuring MarkLogic Server on UNIX Systems to Run as a Non-daemon User
- Removing MarkLogic

2.1 Upgrading from Previous Releases

If you have previously installed MarkLogic on a machine, you must uninstall the old release before proceeding with the new installation. For information on removing the software, see “Removing MarkLogic” on page 34 or the *Installation Guide* from the previous release. This section describes the following information and upgrade paths:

- Note That Reindexing is On By Default
- Upgrading from Release 8.0-1 or Later
- Upgrading from Release 7.0, 6.0, Or 5.0
- Upgrading from Release 4.2 or earlier

If you are upgrading a cluster to a new release, see Upgrading a Cluster to a New Maintenance Release of MarkLogic Server in the *Scalability, Availability, and Failover Guide*. The security database and the schemas database must be on the same host, and that host should be the first host you upgrade when upgrading a cluster.

2.1.1 Note That Reindexing is On By Default

Before upgrading to MarkLogic 8 from MarkLogic 5, be aware that database reindexing is enabled by default.

> **Note:** If you are upgrading from MarkLogic 6 or MarkLogic 7, a reindex is not required, so you can skip this section.

If you have a very large database, or if you have many databases configured, they will start reindexing after you install MarkLogic 8, as soon as you accept the license key. Reindexing is a CPU and disk-intensive process, and it can take some time. Consequently, it can slow down the machine, particularly if the machine has a slow disk system (for example, a development laptop).

If you want to delay reindexing, set `reindex enable` to `false` in your database configurations *before* you install MarkLogic 8 (that is, you must set `reindex enable` to `false` in MarkLogic 5). MarkLogic 8 will then run in 5.0 compatibility mode until reindexing is enabled and completes. To re-enable indexing, set `reindex enable` to `true` in each of your database configurations after completing the installation (that is, after accepting the license key and after performing the configuration and security database upgrades). After reindexing has been enabled, it will commence immediately and continue until it is done, or until reindexing is disabled. For details about database compatibility, see “Upgrades and Database Compatibility” on page 8.

2.1.2 Upgrading from Release 8.0-1 or Later

Note: This section does not apply to Early Access (ea) releases.

To upgrade from release 8.0-1 or later to the current MarkLogic 8 release (for example, if you are installing a maintenance release of MarkLogic 8), perform the following basic steps:

1. Shut down MarkLogic 8 (as described in step 1 of “Removing MarkLogic” on page 34).
2. Uninstall the old MarkLogic 8 release (as described in “Removing MarkLogic” on page 34).
3. Install the new MarkLogic 8 release (as described in “Installing MarkLogic” on page 17).

   Note: If you want to install MarkLogic 8.0-8 or later version 8 release, and you plan to use the converters package with it, you will have to perform a two-step installation: first install MarkLogic Server and then install MarkLogic Converters. For more detail, see “MarkLogic Converters Installation Changes in Version 8 Releases Starting at 8.0-8” on page 11 and “Installing MarkLogic” on page 17.

If you are upgrading a cluster to a new release, see Upgrading a Cluster to a New Maintenance Release of MarkLogic Server in the *Scalability, Availability, and Failover Guide*. The security database and the schemas database must be on the same host, and that host should be the first host you upgrade when upgrading a cluster.

If you are upgrading two clusters that make use of database replication to replicate the security database on the master cluster, then you must enter the following to manually upgrade the security database configuration files on the machine that hosts the replica security database:

```
http://host:8001/security-upgrade-go.xqy?force=true
```

Warning: There is no direct upgrade path from Early Access releases of MarkLogic 8 to this release. If you need to move any data from an Early Access release to this release, you must re-create the data in the current release.

2.1.3 Upgrading from Release 7.0, 6.0, Or 5.0

MarkLogic 8 installs in the same default directory as MarkLogic 7, MarkLogic 6, and MarkLogic 5, so there is no need to move any old files around. The upgrade to MarkLogic 8 does incorporate an automatic update to the Security database and to the configuration files. The Security database upgrade occurs when you first access the Admin Interface after the MarkLogic 8 installation.

Uninstalling a previous release of MarkLogic does not remove or delete the user data files (the forests and configuration information). When upgrading to MarkLogic 8, you must first uninstall previous releases of MarkLogic Server.

Note: If you are upgrading a cluster of two or more servers, you must first upgrade the server in which the Security database is mounted. The Security database must be available before subsequent hosts can join the cluster.

The basic steps to upgrade from MarkLogic 7, MarkLogic 6, or MarkLogic 5 to MarkLogic 8 are as follows:

1. As a precaution, perform database backups on your MarkLogic Server 7.0, 6.0, or 5.0 databases.
2. If you are upgrading from MarkLogic 5 and do not want to reindex a database, disable reindexing for that database before installing the new release (for example, set `reindexer enable` to `false` on the Database Configuration page of the Admin Interface in MarkLogic 5). The entire database will be reindexed after upgrading to MarkLogic 8 unless you disable reindexing. For details, see “Upgrades and Database Compatibility” on page 8. You can always reindex the database later by setting `reindexer enable` database configuration option to `true`.
3. Shut down MarkLogic 7, MarkLogic 6, or MarkLogic 5 (as described in step 1 of “Removing MarkLogic” on page 34).
4. Uninstall MarkLogic 7, MarkLogic 6, or MarkLogic 5 (as described in “Removing MarkLogic” on page 34).
5. Install MarkLogic 8 (as described in “Installing MarkLogic” on page 17).

   Note: If you want to install MarkLogic 8.0-8 or later version 8 release, and you plan to use the converters package with it, you will have to perform a two-step installation: first install MarkLogic Server and then install MarkLogic Converters. For more detail, see “MarkLogic Converters Installation Changes in Version 8 Releases Starting at 8.0-8” on page 11 and “Installing MarkLogic” on page 17.

6. Start MarkLogic 8 (as described in “Starting MarkLogic Server” on page 23).

7. Open the Admin Interface in a browser (http://localhost:8001/).
8. When the Admin Interface prompts you to upgrade the Security database and the configuration files, click the button to confirm the upgrade.
9. If you have CPF installed in any database and you want to use any of the new pipelines in MarkLogic 8, then you must reinstall CPF for those databases. To reinstall CPF for a database, in the Admin Interface navigate to Databases -> *database-name* -> Content Processing, click the Install tab, and click the Reinstall button. This loads all of the new pipelines into the triggers database configured for that database.

There are some known application incompatibilities between MarkLogic 8 and MarkLogic 7, as well as some incompatibilities between 6.0 and 5.0. Some of the incompatibilities might require minor code changes to your applications. For details on these incompatibilities, see the Release Notes.

2.1.4 Upgrading from Release 4.2 or earlier

MarkLogic 8 only supports upgrading from Release 5.0 or later; it does not provide a direct upgrade path for previous releases of MarkLogic Server. If you are upgrading from a 4.2 or earlier release of MarkLogic Server, either install this release as a clean installation or upgrade your existing release to the latest Release 5.0, 6.0, or 7.0 before installing this release. For details on upgrading a Release 4.2 or earlier release, see the *Installation Guide* for MarkLogic Server 4.2. If you are upgrading from 4.2 and do not want to reindex your content, set the `reindexer enable` to `false` before upgrading. You can run MarkLogic 8 in either 4.2 or 5.0 compatibility mode, as described in “Upgrades and Database Compatibility” on page 8.

2.2 Installing MarkLogic

This section describes the procedure for installing MarkLogic Server on each platform. Perform the procedure corresponding to the platform to which you are installing.

If you are upgrading a cluster to a new release, see Upgrading a Cluster to a New Maintenance Release of MarkLogic Server in the *Scalability, Availability, and Failover Guide*. The security database and the schemas database must be on the same host, and that host should be the first host you upgrade when upgrading a cluster.

Platform	Perform the following:
Windows x64	1. Shut down and uninstall the previous release of MarkLogic Server (if you are upgrading from 7.0, 6.0, or 5.0, see “Upgrading from Release 7.0, 6.0, Or 5.0” on page 15, if you are upgrading from 8.0-1 or later, see “Removing MarkLogic” on page 34). 2. Download the MarkLogic Server installation package to your desktop. The latest installation packages are available from http://developer.marklogic.com. 3. Double click the `MarkLogic-8.0-1-amd64.msi` icon to start the installer. **Note:** If you are installing a release other than 8.0-1, double-click on the appropriately named installer icon. 4. The Welcome page displays. Click Next. 5. Select Typical. 6. Click Install. 7. Click Finish. **Note:** If you are installing MarkLogic 8.0-8 or later version 8 release, and you plan to use the converters package, perform also the following steps: 8. Download the MarkLogic Converters package for Windows platform (e.g. `MarkLogicConverters-8.0-8-amd64.msi`) from http://developer.marklogic.com to your desktop. 9. Double click the `MarkLogicConverters-8.0-8-amd64.msi` icon to start the converters' installer. 10. The welcome page displays: “Welcome to the MarkLogic Converters Setup Wizard”. Click Next. 11. “Choose Setup Type” page displays. Select Typical. 12. “Ready to Install” page displays. Click Install to start the installation. 13. “Installing MarkLogic Converters” page displays. You may observe the progress there. 14. Then the final page displays: “Completing the MarkLogic Converters Setup Wizard”. Click Finish

Platform	Perform the following:

Red Hat Linux x64	1. Shut down and uninstall the previous release of MarkLogic Server (if you are upgrading from 7.0, 6.0, or 5.0, see "Upgrading from Release 7.0, 6.0, Or 5.0" on page 15, if you are upgrading from 8.0-1 or later, see "Removing MarkLogic" on page 34).
	2. Download the MarkLogic Server installation package to `/tmp` or another location using your web browser. The latest installation packages are available from the http://developer.marklogic.com.
	Note: If you are using Firefox or another browser that is configured to associate `rpm` files, the browser will prompt you for the `root` password (if you are not already running as `root`) and you can follow the prompts to complete the installation. When the installation is complete, you can skip the next step. Otherwise, continue to the next step.
	3. As the `root` user, install the package with the following command:
	`rpm -i /tmp/MarkLogic-8.0-1.x86_64.rpm`
	Note: If you are installing a release other than 8.0-1, replace the characters 8.0-1 in the line above with the appropriate release number.
	4. If you are using HDFS, make sure the server is configured to use HDFS with a Hadoop HDFS client and any needed environment variables set in the `/etc/sysconfig/MarkLogic` file. For details, see HDFS Storage in the *Query Performance and Tuning Guide*.
	Note: If you are installing MarkLogic 8.0-8 or later version 8 release, and you plan to use the converters package, perform also the following steps:
	5. Download the MarkLogic Converters package for Linux platform (e.g. `MarkLogicConverters-8.0-8.x86_64.rpm`) from http://developer.marklogic.com to `/tmp` or another location.
	6. As the `root` user, install the package with the following command:
	`rpm -i /tmp/MarkLogicConverters-8.0-8.x86_64.rpm`

Platform	Perform the following:

Sun Solaris x64	1. Shut down and uninstall the previous release of MarkLogic Server (see “Removing MarkLogic” on page 34).
	2. Download the MarkLogic Server installation package to `/var/spool/pkg` using your web browser. The latest installation packages are available from http://developer.marklogic.com.
	3. Unpack the compressed tar file in `/var/spool/pkg` with the following shell commands:
	`cd /var/spool/pkg`
	`uncompress MARKlogic-8.0-1-amd64.tar.Z`
	`tar xf MARKlogic-8.0-1-amd64.tar`
	`rm MARKlogic-8.0-1-amd64.tar`
	Note: If you are installing a release other than 8.0-1, replace the characters 8.0-1 in the line above with the appropriate release number.
	4. As the `root` user, install the package with the following command:
	`/usr/sbin/pkgadd -d /var/spool/pkg/MARKlogic-8.0-1-amd64 -n MARKlogic`
	Note: If you are installing MarkLogic 8.0-8 or later version 8 release, and you plan to use the converters package, perform also the following steps:
	5. Download the MarkLogic Converters package for Solaris platform (e.g. `MARKlogicConverters-8.0-8-amd64.tar.Z`) from http://developer.marklogic.com to `/var/spool/pkg`.
	6. Unpack the compressed tar file in `/var/spool/pkg` with the following shell commands:
	`cd /var/spool/pkg`
	`uncompress MARKlogicConverters-8.0-8-amd64.tar.Z`
	`tar xf MARKlogicConverters-8.0-8-amd64.tar`
	`rm MARKlogicConverters-8.0-8-amd64.tar`
	7. As the `root` user, install the package with the following command:
	`/usr/sbin/pkgadd -d /var/spool/pkg/MARKlogicConverters-8.0-8-amd64 -n MARKlogicConverters`

Platform	Perform the following:
Mac OS X	1. Download the MarkLogic Server installation package to your desktop. The latest installation packages are available from the http://developer.marklogic.com. 2. Double click the `MarkLogic-8.0-1-x86_64.dmg` icon to open the folder that contains the `MarkLogic-8.0-1-x86_64.pkg` installer. Double click on the installer to start. 3. The Welcome page displays. Click Continue. 4. In the Select a Destination window, select a destination to install MarkLogic Server or Continue to select the default destination. 5. In the Installation Type window, click Install. An Installation window appears that displays the progress of the installation. 6. When the installation Summary window appears, click Close. 7. A MarkLogic control window appears from which you can start/stop MarkLogic Server, open the Admin Interface, and view the Error Log. **Note:** If you are installing MarkLogic 8.0-8 or later version 8 release, and you plan to use the converters package, perform also the following steps: 8. Download the MarkLogic Converters package for Mac OS platform (e.g. `MarkLogicConverters-8.0-8-x86_64.dmg`) from http://developer.marklogic.com to your desktop. 9. Double click the `MarkLogicConverters-8.0-8-x86_64.dmg` icon to open the folder that contains `MarkLogicConverters-8.0-8-x86_64.pkg` installer. Double click on the installer to start. 10. The Welcome page displays. Click Continue. 11. In the Select a Destination window, select the default destination. 12. In the Installation Type window, click Install. An Installation window appears that displays the progress of the installation. 13. When the installation Summary window appears, click Close.

Note: It is not recommended to install the converters while MarkLogic Server is running. The reason for this is that the server checks the converters presence and version number only upon start-up. So the server will not have accurate information about the converters in this case. The recommended installation procedure is to stop the server if it is running, install or upgrade the server, install the converters, then start the server.

The following table shows the installation directory (`<marklogic-dir>`) and the default data directory for each platform:

Platform	Installation Directory	Default Data Directory (for configuration and log files)
Windows	`c:\Program Files\MarkLogic\`	`c:\Program Files\MarkLogic\Data`
Red Hat Linux	`/opt/MarkLogic`	`/var/opt/MarkLogic`
Sun Solaris	`/opt/MARKlogic`	`/var/opt/MARKlogic`
Mac OS X	`~/Library/MarkLogic`	`~/Library/Application Support/MarkLogic/Data`

The default forest directory is the same as the default data directory if the optional data directory is not specified during forest creation. On UNIX platforms, if you want MarkLogic Server to use another location for its default data directory, make your data directory (`/var/opt/MarkLogic` on Linux and `/var/opt/MARKlogic` on Solaris) a soft link to the alternate location.

In MarkLogic 8.0-8 and later version 8 releases, MarkLogic Converters installation directory remains the same as in previous releases, namely:

Platform	Converters Installation Directory
Windows	`c:\Program Files\MarkLogic\Converters`
Red Hat Linux	`/opt/MarkLogic/Converters`
Mac OS X	`~/Library/MarkLogic/Converters`

Note: When a new node joins an existing cluster, the server does not try to figure out automatically whether the MarkLogic Converters package is needed or not. An `XDMP-CVTNOTFOUND` error will be thrown if converters/filters built-in functions are called on nodes that do not have MarkLogic Converters installed.

2.3 Starting MarkLogic Server

MarkLogic Server will automatically start when the computer reboots. To start MarkLogic Server without rebooting, perform the following command for the platform on which you are running:

Platform	Perform the following:
Windows	Select Start > Programs > MarkLogic Server > Start MarkLogic Server. **Note:** When you start MarkLogic Server from the Start menu, the Windows service configuration for MarkLogic Server is set to start automatically. Also, if you are using Windows Vista or Windows 7, to start the service you must right-click the Start MarkLogic Server link in the Start menu and choose Run as Administrator, then choose to allow the action.
Red Hat Linux	As the `root` user, enter the following command: `/etc/init.d/MarkLogic start`
Sun Solaris	As the `root` user, enter the following command: `/etc/init.d/MarkLogic start`
Mac OS X	Select System Preferences > MarkLogic to open the MarkLogic control window. Click Start MarkLogic Server.

This starts all of the App Servers that are configured on your MarkLogic Server.

2.3.1 Verifying Converters Installation In MarkLogic Version 8 Releases Starting at 8.0-8

In MarkLogic 8.0-8 or later version 8 releases, after starting MarkLogic Server, you may verify whether the converters package was installed with use of the XQuery API function `xdmp:host-status` or the JavaScript API function `xdmp.hostStatus`.

Suppose you want to verify whether converters are installed on a node with hostname `englab.marklogic.com`.

Open Query Console URL in a browser:

```
http://englab.marklogic.com:8000/qconsole/
```

Perform steps described in one of the following sub-sections, depending on your API of choice.

2.3.1.1 Obtaining Converters Version with XQuery API

In the Query Console, select XQuery as Query Type.

Execute the following code:

```
xquery version "1.0-ml";
xdmp:host-status(xdmp:host("englab.marklogic.com"))
```

In the response, look for the `converters-version` element, for example:

```
<converters-version>8.0-8</converters-version>
```

If converters are not installed, the above element will have an empty value.

2.3.1.2 Obtaining Converters Version with JavaScript API

In the Query Console, select JavaScript as Query Type.

Execute the following code:

```
'use strict';
xdmp.hostStatus(xdmp.host("englab.marklogic.com"))
```

In the response, look for the `convertersVersion` element, for example:

```
"convertersVersion" : "8.0-8"
```

If converters are not installed, the above element will have an empty string as its value.

2.4 Configuring the First and Subsequent Hosts

The following configuration procedures different depending on if you run MarkLogic Server in a cluster configuration or on a single host. The procedures are as follows:

- Configuring a Single Host or the First Host in a Cluster
- Configuring an Additional Host in a Cluster
- Leaving a Cluster and Becoming a Single Host

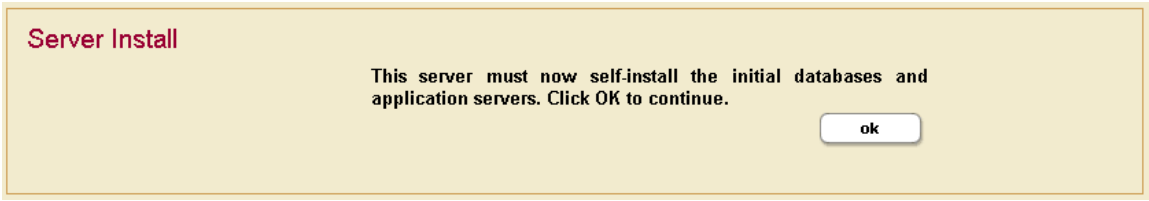
If you are configuring MarkLogic Server as a standalone host, or if this is the first host in a cluster configuration, follow the installation instructions in Section 2.4.1. Otherwise, follow the installation instructions in Section 2.4.2.

If you are upgrading a cluster to a new release, see Upgrading a Cluster to a New Maintenance Release of MarkLogic Server in the *Scalability, Availability, and Failover Guide*. The security database and the schemas database must be on the same host, and that host should be the first host you upgrade when upgrading a cluster.

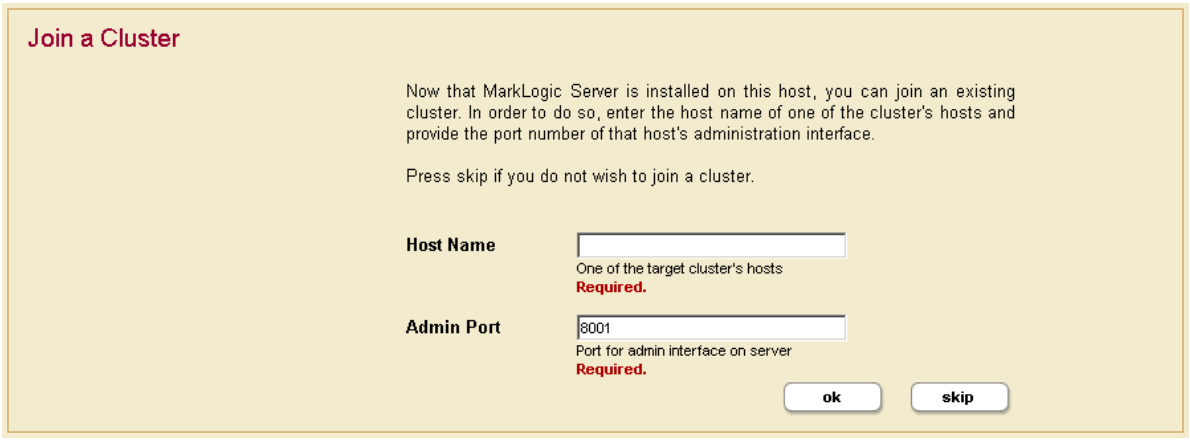
2.4.1 Configuring a Single Host or the First Host in a Cluster

To configure this installation as a single host, or as the first host in a cluster, perform the following steps:

1. Install MarkLogic and start MarkLogic as described in “Installing MarkLogic” on page 17 and “Starting MarkLogic Server” on page 23.
2. Log into the Admin Interface in a browser. It is on port 8001 of the host in which MarkLogic is running (for example, on the localhost, `http://localhost:8001`). The Server Install page appears.

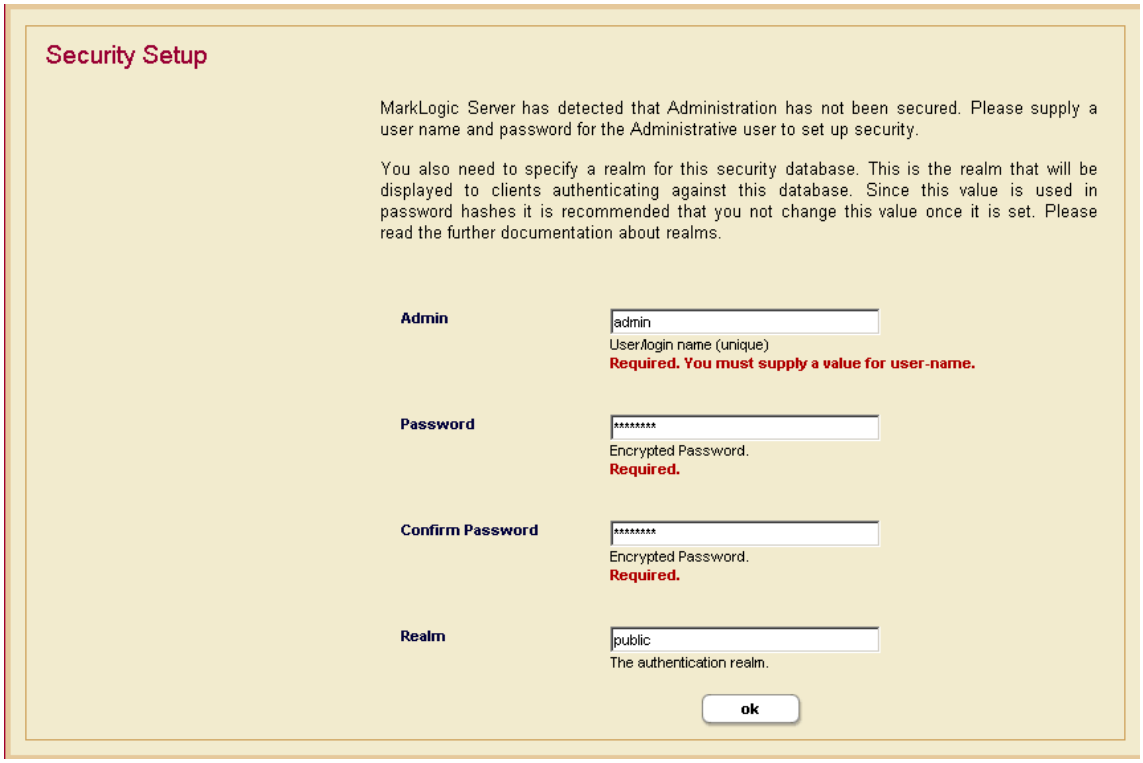


3. Click OK to continue.
4. Wait for the server to restart.
5. After the server restarts, you will be prompted to join a cluster.



6. Click Skip.

7. You will be prompted to create an admin user. Enter the login name and password for the admin user.



8. Click OK.

9. You will be prompted to log in with your admin username and password.

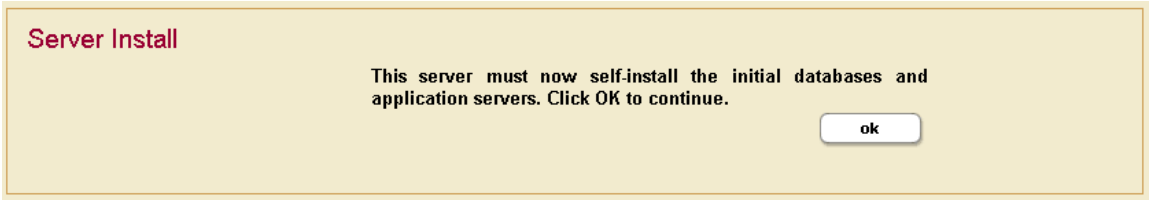
You will now see the Admin Interface. If you do not need to add any hosts at this time, skip to Section 2.6 on page 30.

2.4.2 Configuring an Additional Host in a Cluster

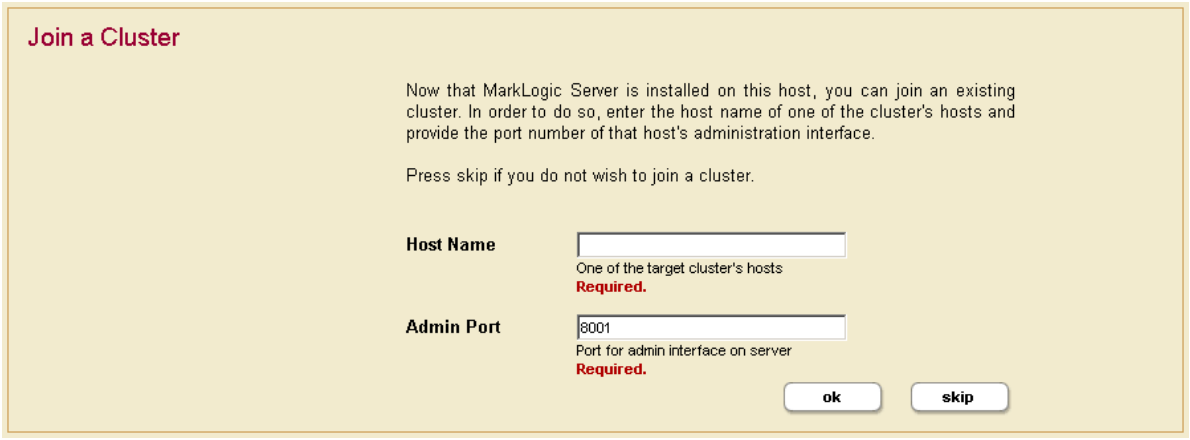
All hosts in a cluster have to be on the same platform. To configure this installation as an additional host in a cluster of the same platform, perform the following steps:

1. On the node you want to add to an existing cluster, install MarkLogic and start MarkLogic, as described in “Installing MarkLogic” on page 17 and “Starting MarkLogic Server” on page 23.

2. Log into the Admin Interface in a browser. It is on port 8001 of the host in which MarkLogic is running (for example, on the localhost, `http://localhost:8001`). The Server Install page appears.

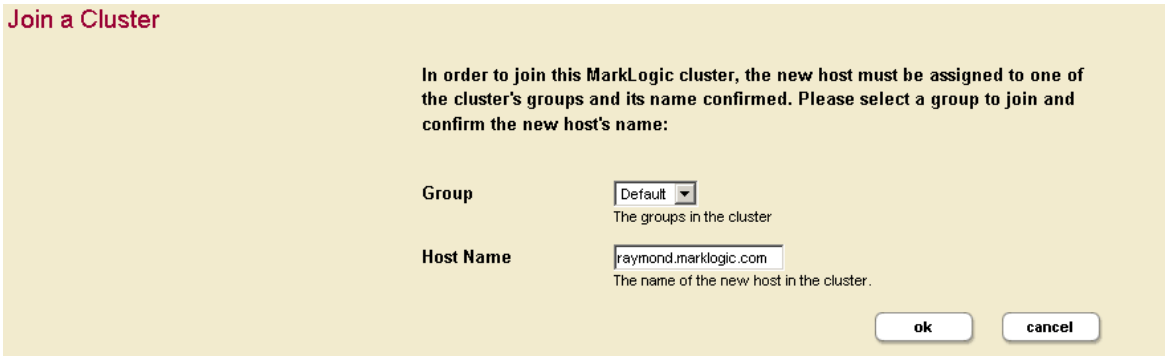


3. Click OK to continue.
4. Wait for the server to restart.
5. After the server restarts, you will be prompted to join a cluster.

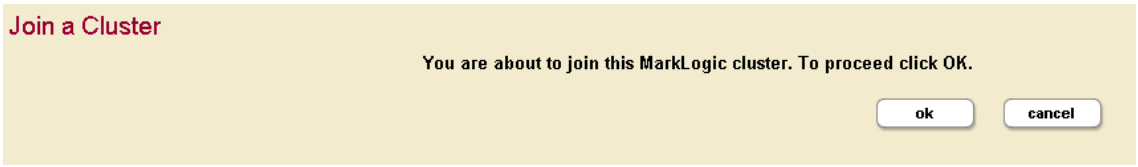


6. Enter the DNS name or the IP address of one of the machines in the cluster. For instance, if this is the second host you are installing, you can enter the DNS name of the first host you installed.
7. Click OK.
8. You will be prompted for an admin username and password. You can use the admin username and password you created when installing the first host. Click OK.

9. Select a Group to assign this host. Click OK.



10. Click OK to confirm that you are joining the cluster.



11. You have now joined the cluster.



12. Click OK to transfer the cluster configuration information.

You have completed the process to join a cluster and will now see the Admin Interface.

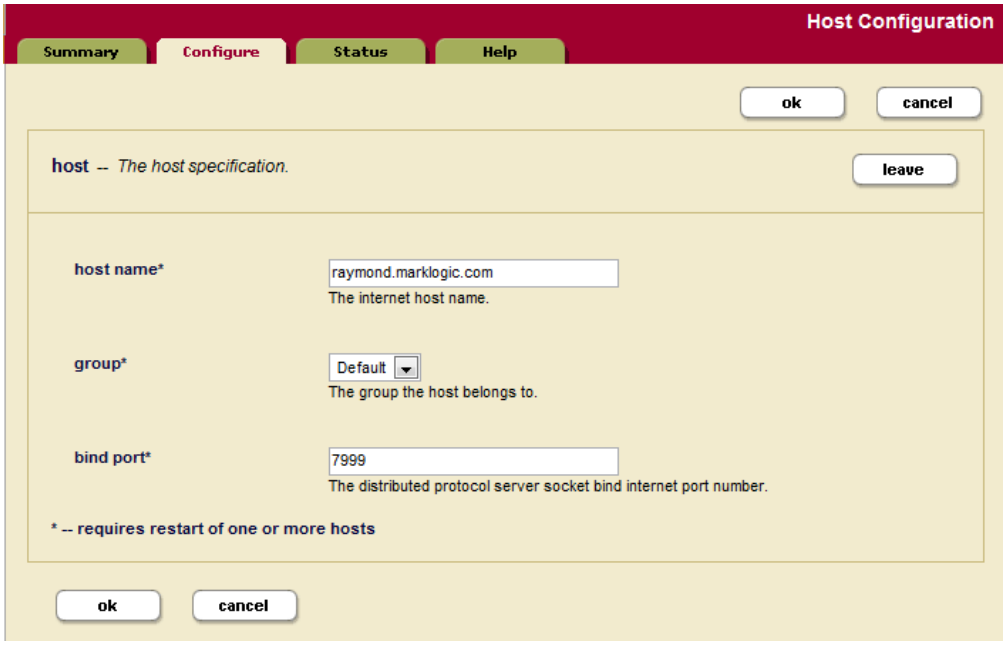
2.4.3 Leaving a Cluster and Becoming a Single Host

If your host is currently in a cluster of multiple hosts, and you would like to leave the cluster and switch to a single host environment, follow the steps in this section.

A host cannot leave a cluster if there are still forests assigned to it or if it has any foreign clusters associated with it; you must delete all forests assigned to the host and de-couple any clusters associated with a host before you can leave the cluster. However, you can delete the configuration only for a forest and the forest data will remain on the filesystem, allowing you to add the forest back to the host after changing the configuration. For instructions on adding a forest to a host, see the *Administrator's Guide*.

Perform the following steps to leave the cluster to which a host is connected.

1. Run the Admin Interface from the host you want to remove from the cluster.
2. Click the Hosts icon in the left menu tree. The Host Summary page appears.
3. Click the name of the host you want to remove from the cluster, either from the left menu tree or from the Host Summary page. The Host Configuration page appears:



Note: The Leave button only appears if the Admin Interface is running from this host.

4. Click the Leave button
5. Click OK to confirm leaving the cluster.
6. The host restarts to load the new configuration.
7. Follow the instructions in sections "Configuring a Single Host or the First Host in a Cluster" or "Configuring an Additional Host in a Cluster" as appropriate.

2.5 Entering a License Key

MarkLogic will run without a license key, but you should enter a valid key for what you are licensed for after installing MarkLogic. At any time, you can change the license key for a host from the Host Status page. You might need to change the license key if your license key expires, if you need to use some features that are not covered in your existing license key, if you upgrade your hardware with more CPUs and/or more cores, if you need a license that covers a larger database, if you require different languages, or for various other reasons. Changing the license key sometimes results in an automatic restart of MarkLogic (for example, if your new license enables a new language).

To change the license key for a host, perform the following steps using the Admin Interface:

1. Click the Hosts icon on the left tree menu.

2. Click the name of the host in which contains you want to change the license key, either on the tree menu or the summary page. The Host Configuration page appears.

3. Click the Status tab. The Host Status page appears.

4. Click the License Key button. The License Key Entry page appears.

5. Enter your new license key information. For information about licensing of MarkLogic Server, contact your MarkLogic sales representative.

6. After entering valid information in the Licensee and License Key fields, click OK. If it needs to, MarkLogic will automatically restart, and the new license key will take effect.

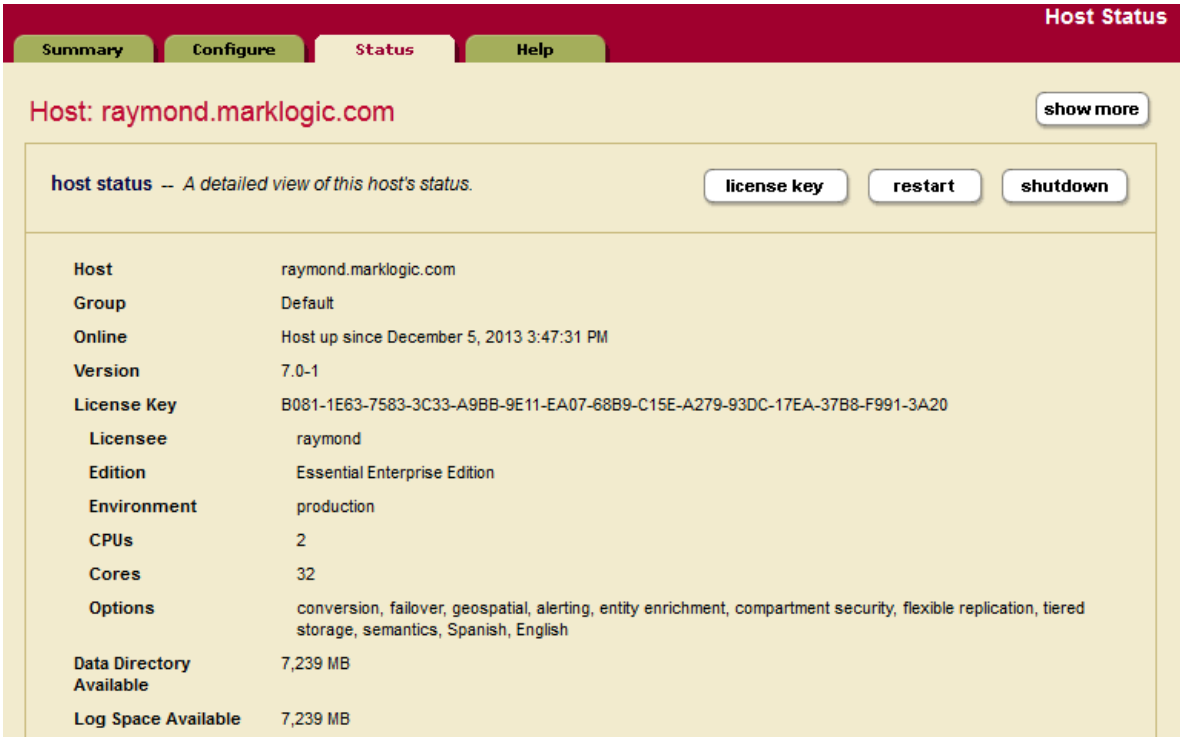
2.6 Checking for the Correct Software Version

After logging in with your admin username and password, the Admin Interface appears. In the left corner of the Admin Interface, the version number and product edition are displayed.

To view more details about the release of MarkLogic Server that is installed and licensed, complete the following steps:

1. Click the Hosts icon on the left tree menu.
2. Select the name of the host you just installed, either from the left menu tree or from the Host Summary page.
3. Click the Status tab. The Host Status page appears.

4. Check that <*version*> is correct.



To begin using MarkLogic Server, see the following document:

- *Getting Started With MarkLogic Server*

Otherwise, you are finished with the Admin Interface for now. You have successfully installed MarkLogic on your system.

2.7 Configuring MarkLogic Server on UNIX Systems to Run as a Non-daemon User

On UNIX-based systems (Linux and Solaris), MarkLogic runs as the UNIX user named `daemon`. This section describes how to change a configuration to run as a different named UNIX user. This procedure must be run by the `root` user. Additionally, the root user is still required for installing and uninstalling MarkLogic and for starting and stopping MarkLogic from the startup scripts.

To modify an installation to run as a user other than `daemon`, perform the following steps:

1. In a command window on the machine in which you installed MarkLogic, log in as the `root` user.

2. Make sure MarkLogic is stopped. If it is still running, stop it as follows:

Platform	Perform the following to stop MarkLogic:
Red Hat Linux	As the `root` user, enter the following command: `/etc/init.d/MarkLogic stop`
Sun Solaris	As the `root` user, enter the following command: `/etc/init.d/MarkLogic stop`

3. Edit the configuration file for your platform using a text editor such as `vi`.

Platform	Configuration File to Edit
Red Hat Linux	`/etc/marklogic.conf`
Sun Solaris	`/etc/MarkLogic.conf`

On Linux systems, you must create the `/etc/marklogic.conf` file if it does not exist. This file is only read by the MarkLogic startup; it is never written to; therefore, it will survive an uninstall of MarkLogic.

4. In the file, edit the `MARKLOGIC_USER` environment variable to point to the user in which you want MarkLogic Server to run. For example, if you want it to run as a user named `raymond`, change the following line:

```
MARKLOGIC_USER=daemon
```

to the following:

```
MARKLOGIC_USER=raymond
```

5. Save the changes to the `/etc/marklogic.conf` (Linux) or `/etc/MarkLogic.conf` file (Solaris).

6. If you have not yet started MarkLogic after performing a clean installation (that is, after installing into a directory where MarkLogic has never been installed), then you are done and you can skip the rest of the steps in this procedure. If have an existing installation (for example, if you are upgrading to a maintenance release), then continue with the following steps.

7. For all of the MarkLogic files owned by `daemon`, you need to change the owner to the new user. This includes all forest data and all of the configuration files. By default, the forest data is in the following directories:

Platform	Default Data Directory (for configuration and log files, and default forest directory)
Red Hat Linux	`/var/opt/MarkLogic`
Sun Solaris	`/var/opt/MARKlogic`

   For example, on a Linux system, perform a command similar to the following, which changes the owner to the user specified earlier in the `/etc/sysconfig/MarkLogic` file:

```
chown -R raymond /var/opt/MarkLogic
```

8. Make sure to change the owner for all forests in the system, otherwise forests will fail to mount upon startup. Note that the above command only changes the owner for forests installed in the default directory. You need to run a similar command on the data directory for each forest in which a data directory is specified.
9. When you have completed all the file and directory ownership changes, start MarkLogic as described in “Starting MarkLogic Server” on page 23.

Once you have performed this procedure, all new files created by MarkLogic are created with the new user ownership; there will be no need to change any ownership again.

Warning: On Linux systems, use the `/etc/marklogic.conf` script to set environment variables. Any configuration changes you make to the MarkLogic-supplied startup script (for example, `/etc/sysconfig/MarkLogic` on Linux) will not survive an upgrade and need to be merged in during any upgrade of MarkLogic (because the installation installs a new version of the startup scripts). Under Linux, the unistall process saves an old version of the scripts (for example, `/etc/sysconfig/MarkLogic.rpmsave`), so you can use that version to merge in your changes. If you perform a clean installation (not an upgrade installation), however, you will need to run this entire procedure again. If you use `/etc/marklogic.conf` for your environment variable changes, they will survive and upgrade and you will not need to merge your changes.

The following are default values of environment variables you can override in `/etc/marklogic.conf` on Linux-based systems (you will have to create the file if it does not exist):

```
MARKLOGIC_INSTALL_DIR=/opt/MarkLogic
MARKLOGIC_DATA_DIR=/var/opt/MarkLogic
MARKLOGIC_FSTYPE=ext4
MARKLOGIC_USER=daemon
MARKLOGIC_PID_FILE=/var/run/MarkLogic.pid
MARKLOGIC_UMASK=022
MARKLOGIC_DISABLE_JVM=0
MARKLOGIC_EC2_HOST
TZ=:/etc/localtime
```

2.8 Removing MarkLogic

To remove MarkLogic from your system, complete the following steps for the corresponding platform:

Platform	Perform the following:
Windows	1. Stop MarkLogic: Select Start > Programs > MarkLogic Server > Stop MarkLogic Server. **Note:** If you are using Windows Vista or Windows 7, to stop the service you must right-click the Stop MarkLogic Server link in the Start menu and choose Run as Administrator, then choose to allow the action. 2. If you are uninstalling MarkLogic 8.0-8 or later version 8 release, and you previously had the converters package installed, you need to uninstall it prior to uninstalling MarkLogic Server: select MarkLogic Converters in Add/Remove Programs of Control Panel, right click on it, and select Uninstall. 3. Uninstall MarkLogic: select MarkLogic Server in Add/Remove Programs of Control Panel, right click on it, and select Uninstall

Platform	Perform the following:

Red Hat Linux	1. Stop MarkLogic: as the `root` user, enter the following command:
	`/etc/init.d/MarkLogic stop`
	2. If you are uninstalling MarkLogic 8.0-8 or later version 8 release, and you previously had the converters package installed, you need to uninstall it prior to uninstalling MarkLogic Server: as the `root` user, enter the following command:
	`rpm -e MarkLogicConverters`
	3. Uninstall MarkLogic: as the `root` user, enter the following command:
	`rpm -e MarkLogic`

Sun Solaris	1. Stop MarkLogic: as the `root` user, enter the following command:
	`/etc/init.d/MarkLogic stop`
	2. If you are uninstalling MarkLogic 8.0-8 or later version 8 release, and you previously had the converters package installed, you need to uninstall it prior to uninstalling MarkLogic Server: as the `root` user, enter the following command:
	`/usr/sbin/pkgrm MARKlogicConverters`
	3. Uninstall MarkLogic: as the `root` user, enter the following command:
	`/usr/sbin/pkgrm MARKlogic`

Platform	Perform the following:

Mac OS X	1. Stop MarkLogic: select System Preferences > MarkLogic to open the MarkLogic control window, and click Stop MarkLogic Server.
	2. If you are uninstalling MarkLogic 8.0-8 or later version 8 release, and you previously had the converters package installed, you need to uninstall it prior to uninstalling MarkLogic Server, with use of the following commands:
	`sudo pkgutil --forget com.marklogic.converters`
	`rm ~/Library/MarkLogic/Converters`
	3. No action is necessary when upgrading. If you want to remove the user data and do a fresh install, then remove the following directory:
	`~/Library/Application Support/MarkLogic/Data`
	4. To entirely remove MarkLogic, remove the following directories:
	`~/Library/MarkLogic`
	`~/Library/Application Support/MarkLogic`
	`~/Library/StartupItems/MarkLogic`
	`~/Library/PreferencePanes/MarkLogic.prefPane`
	5. To make Mac OS X completely forget it ever had a MarkLogic installation, run the following command from a terminal window:
	`sudo pkgutil --forget com.marklogic.server`

Note: Using this procedure to remove MarkLogic from your system will not remove user data (configuration information, XQuery files used by HTTP or XDBC servers, or forest content). This data is left in place to simplify the software upgrade process. If you wish to remove the user data, you must do so manually using standard operating system commands.

In case you previously used converters/filters and want to remove this functionality:

- To remove MarkLogic Converters from a node that has MarkLogic 8.0-8 or later version 8 release installed, you can use package management tool, such as Control Panel on Windows or `rpm` on Linux, to uninstall MarkLogic Converters.
- To remove converters/filters from a node that has MarkLogic 8.0-7 or earlier release installed, you need to uninstall that release of MarkLogic, and then install MarkLogic Server 8.0-8 or later version 8 release but do not install MarkLogic Converters.

3.0 Copyright

MarkLogic Server 8.0 and supporting products.

NOTICE

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This technology is protected by one or more U.S. Patents 7,127,469, 7,171,404, 7,756,858, 7,962,474, 8,935,267, 8,892,599 and 9,092,507.

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4.0 Technical Support

MarkLogic provides technical support according to the terms detailed in your Software License Agreement or End User License Agreement.

We invite you to visit our support website at http://help.marklogic.com to access information on known and fixed issues, knowledge base articles, and more. For licensed customers with an active maintenance contract, see the Support Handbook for instructions on registering support contacts and on working with the MarkLogic Technical Support team.

Complete product documentation, the latest product release downloads, and other useful information is available for all developers at http://developer.marklogic.com. For general questions, join the general discussion mailing list, open to all MarkLogic developers.