

# **Endeca® MDEX Engine**

## **Installation Guide**





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# Preface

Oracle Endeca's Web commerce solution enables your company to deliver a personalized, consistent customer buying experience across all channels — online, in-store, mobile, or social. Whenever and wherever customers engage with your business, the Oracle Endeca Web commerce solution delivers, analyzes, and targets just the right content to just the right customer to encourage clicks and drive business results.

Oracle Endeca Commerce is the most effective way for your customers to dynamically explore your storefront and find relevant and desired items quickly. An industry-leading faceted search and Guided Navigation solution, Oracle Endeca Commerce enables businesses to help guide and influence customers in each step of their search experience. At the core of Oracle Endeca Commerce is the MDEX Engine,™ a hybrid search-analytical database specifically designed for high-performance exploration and discovery. The Endeca Content Acquisition System provides a set of extensible mechanisms to bring both structured data and unstructured content into the MDEX Engine from a variety of source systems. Endeca Assembler dynamically assembles content from any resource and seamlessly combines it with results from the MDEX Engine.

Oracle Endeca Experience Manager is a single, flexible solution that enables you to create, deliver, and manage content-rich, cross-channel customer experiences. It also enables non-technical business users to deliver targeted, user-centric online experiences in a scalable way — creating always-relevant customer interactions that increase conversion rates and accelerate cross-channel sales. Non-technical users can control how, where, when, and what type of content is presented in response to any search, category selection, or facet refinement.

These components — along with additional modules for SEO, Social, and Mobile channel support — make up the core of Oracle Endeca Experience Manager, a customer experience management platform focused on delivering the most relevant, targeted, and optimized experience for every customer, at every step, across all customer touch points.

## About this guide

This guide contains installation instructions for setting up the MDEX Engine on Windows, UNIX, and Linux.

## Who should use this guide

This guide is intended for system administrators installing the Endeca MDEX Engine on Windows, UNIX, or Linux, as well as for developers who are building applications using the Endeca Information Access Platform.



**Note:** Unless otherwise indicated, whenever this document specifies UNIX, it applies to Linux as well.

## Conventions used in this guide

This guide uses the following typographical conventions:

Code examples, inline references to code elements, file names, and user input are set in monospace font. In the case of long lines of code, or when inline monospace text occurs at the end of a line, the following symbol is used to show that the content continues on to the next line: `~`

When copying and pasting such examples, ensure that any occurrences of the symbol and the corresponding line break are deleted and any remaining space is closed up.

## Contacting Oracle Support

Oracle Support provides registered users with important information regarding Oracle Endeca software, implementation questions, product and solution help, as well as overall news and updates.

You can contact Oracle Support through Oracle's Support portal, My Oracle Support at <https://support.oracle.com>.



## Chapter 1

# Installing the MDEX Engine

This section contains instructions for installing the MDEX Engine.

## Before you install

This section provides an overview of the MDEX Engine, system requirements, and other information that you need to know before installing.

## MDEX Engine overview

The Endeca MDEX Engine is the indexing and query engine that provides the backbone for all Endeca solutions.

The MDEX Engine uses proprietary data structures and algorithms that allow it to provide real-time responses to client requests. The MDEX Engine stores the indices that were created by the Endeca Information Transformation Layer (ITL). After the indices are stored, the MDEX Engine receives client requests via the application tier, queries the indices, and then returns the results.



The MDEX Engine is designed to be stateless. This design requires that a complete query be sent to the MDEX Engine for each request. The stateless design of the MDEX Engine facilitates the addition of MDEX Engine servers for load balancing and redundancy. Because the MDEX Engine is stateless, any replica of an MDEX Engine on one server can reply to queries independently of a replica on other MDEX Engine servers.

Consequently, adding replicas of MDEX Engines on additional servers provides redundancy and improved query response time. That is, if any one particular server goes down, a replica of an MDEX Engine provides redundancy by allowing other servers in the implementation to continue to reply to queries. In addition, total response time is improved by using load balancers to distribute queries to a replica MDEX Engine on any of the additional servers.

The MDEX Engine package contains the following components:

MDEX Engine Component	Description
Dgraph	<p>The Dgraph is the name of the process for the MDEX Engine. A typical Endeca implementation includes one or more Dgraphs. Optionally, it can include an Agraph that manages a number of Dgraphs.</p>
Agraph	<p>The Agraph is the name of the program that runs in a distributed configuration in addition to the Dgraph. The Agraph typically resides on a separate machine.</p> <p>The Agraph program is responsible for receiving requests from clients, forwarding the requests to the distributed Dgraphs, and coordinating the results. From the perspective of the Endeca Presentation API, the Agraph program behaves similarly to the Dgraph program.</p> <p>Agraph-based implementations allow parallelization of query processing. The implementation of this parallelization results from partitioning the set of records into two or more disjoint subsets of records and then assigning each subset to its own Dgraph.</p> <p> <b>Note:</b> Starting with the MDEX Engine version 6.0, (namely, with installations on the 64-bit platforms) a more powerful Dgraph can accommodate much larger data sets without the need to implement an Agraph.</p>
Dgidx	Dgidx is the indexing program that reads the tagged Endeca records that were prepared by Forge and creates the proprietary indices for the Endeca MDEX Engine.
Agidx	Agidx is the program that creates a set of Agidx indices which support the Agraph program in a distributed environment.
dgwordlist	The dgwordlist utility is used to manually compile the text-based worddat dictionary into the binary spelldat dictionary. This enables use of the Aspell dictionary module in the MDEX Engine.
enecerts	The Endeca enecerts utility creates the SSL certificates.

## System requirements

This section describes the MDEX Engine installation requirements.

## Hardware requirements

In this guide, the term “x64” refers to any processor compatible with the AMD64/EM64T architecture. You might need to upgrade your hardware, depending on the data you are processing. All run-time code must fit entirely in RAM. Likewise, hard disk capacity must be sufficient based on the size of your data set. Please contact your Endeca representative if you need more information on sizing your hardware.

### Linux on x64 or Windows on x64

Minimum hardware requirements:

- x64 processor, minimum 1.8 GHz
- At least 2 GB of RAM, depending on the size of the application data set
- 80 GB hard drive

Recommended hardware requirements:

- x64 3.0+ GHz processors; Endeca recommends Intel Xeon or AMD Opteron processors
- 8 GB of RAM or more, depending on the size of the application data set
- One 72GB or 146 GB hard drive per CPU, minimum 10,000 or 15,000 RPM spindle speed
- Gigabit ethernet
- RAID 10 or 6 configuration



**Note:** If you are using RHEL 4 and the virtual address size of your Dgraph processes exceeds available RAM, Endeca recommends that you upgrade to the latest version of RHEL 5 to avoid known problems with RHEL 4 performance in this scenario.

### Solaris on SPARC

Minimum hardware requirements:

- Sun UltraSPARC IV 2.1 GHz processor
- At least 1 GB of RAM, depending on the size of the application data set
- 80 GB hard drive

Recommended hardware requirements:

- Sun SPARC64-VII 2.5 GHz processor or better



**Note:** Endeca specifically recommends the M3000 server model as a good entry-level SPARC64-VII server.

- 8 GB of RAM or more, depending on the size of the application data set
- One 80 GB hard drive per CPU, minimum 10,000 RPM spindle speed
- Gigabit ethernet

## Supported operating systems

The Endeca software supports the following 64-bit operating systems running on servers with x64 or SPARC processor capabilities:

Platform	Description
LINUX RHEL 4	<ul style="list-style-type: none"> <li>• Red Hat Enterprise Linux ES (version 4 for x64) running on x64 processors.</li> </ul>

Platform	Description
	<ul style="list-style-type: none"> <li>Red Hat Enterprise Linux AS (version 4 for x64) running on x64 processors.</li> </ul> <p>For best performance on Red Hat Linux version 4 (ES and AS), Endeca recommends version 4.6.</p> <p>If you are using RHEL 4 and the virtual address size of your Dgraph processes exceeds available RAM, it is recommended that you upgrade to the latest version of RHEL 5 to avoid known problems with RHEL 4 performance in this scenario.</p> <p>Endeca also recommends upgrading to the latest version of RHEL5 if you are indexing large data sets.</p>
<b>LINUX RHEL 5</b>	<ul style="list-style-type: none"> <li>Red Hat Enterprise Linux Server (version 5 for x64) running on x64 processors.</li> <li>Red Hat Enterprise Linux Advanced Platform (version 5 for x64) running on x64 processors.</li> </ul> <p>For best performance on Red Hat Linux version 5 (Server and Advanced), Endeca recommends the latest version of RHEL 5.</p>
<b>Windows 2003</b>	<ul style="list-style-type: none"> <li>Windows Server 2003 x64 running on x64 processors.</li> </ul> <p>For best performance on Windows Server 2003, Endeca recommends the Enterprise Edition Service Pack 2.</p>
<b>Windows 2008 R2</b>	<ul style="list-style-type: none"> <li>Windows Server 2008 R2 x64 running on x64 processors.</li> </ul> <p>The Endeca software requires Enterprise Edition R2 or higher.</p> <p> <b>Note:</b> Windows 7 is not supported for production deployment, but operates sufficiently to enable training and small-scale development work. Developers who use Windows 7 may select either a per-machine installation, which requires administrative rights, or a per-user installation, which does not require administrative rights but has reduced capabilities.</p>
<b>Solaris</b>	<p>Solaris 10 running on 64-bit SPARC processors.</p> <p>For best performance on SPARC Solaris version 10, Endeca recommends Solaris 10 Update 5.</p>



**Note:** 32-bit versions of any operating systems are not supported by the MDEX Engine in any environment. Starting with version 6.x release of the MDEX Engine, only 64-bit based hardware and operating systems platforms are supported. Beyond upgrading to 64-bit platforms, no change to the deployment methodology or existing technical artifacts (ITL pipelines, application code, etc) is required related to this topic.

## Support for VMware

The MDEX Engine is supported on VMware ESX 3.5 and vSphere 4 for the following guest operating system platforms:

Platform	ESX 3.5	vSphere 4	Recommended MDEX Engine server configuration
<b>RHEL 5</b>	Yes	Yes	<ul style="list-style-type: none"> <li>Configure four VCPUs on a virtual machine</li> <li>Allocate a single Dgraph per virtual machine</li> <li>Specify four threads for each Dgraph</li> </ul>
<b>Windows 2003</b>	Yes	No	<ul style="list-style-type: none"> <li>Configure four VCPUs on a virtual machine</li> <li>Allocate a single Dgraph per virtual machine</li> <li>Specify four threads for each Dgraph</li> </ul>
<b>Windows 2008 R2</b>	No	Yes	<ul style="list-style-type: none"> <li>Configure four VCPUs on a virtual machine</li> <li>Allocate a single Dgraph per virtual machine</li> <li>Specify four threads for each Dgraph</li> </ul>

The number of threads should not exceed the number of VCPUs. Endeca does not recommend running more than one MDEX Engine per virtual machine.



**Note:** VMware configurations of the MDEX Engine are not supported with the Agraph.

For additional information on VMware support and performance, see the *Endeca MDEX Engine Performance Tuning Guide*.

## UNIX utilities dependencies

This section describes the UNIX utilities required by the Endeca MDEX Engine installer.

The following UNIX utilities must be present in the `/bin` directory:

```
basename
cat
chgrp
chown
date
dd
df
mkdir
more
rm
sed
tar
true
```

The following UNIX utilities must be present in the `/usr/bin` directory:

```
awk
cksum
cut
dirname
```

```
expr  
gzip  
head  
id  
printf  
tail  
tr  
wc  
which
```

If these utilities are not in the specified locations, the installation fails with a message similar to the following:

```
Required dependency is not executable: /bin/df. Aborting.
```

## Disk space requirements on Windows

The installation process requires space on the system drive C.

Even if you are installing on the other drive than the system drive C, to avoid an "out of drive space" error during the installation process, you should have approximately 190MB of space available on the system drive before installing (you may need to clear this space on C if it is not available).

The Windows installation process unpacks its .msi installation file and other temporary and log files to a location on the system drive (typically C), regardless of which drive you choose for the installation, and regardless of the drive indicated by the TEMP and TMP environment variables.

When the installation process completes the installation, it frees the space it consumed.

The .msi file, and other temporary and log files written by the installation process temporarily add a total of approximately 190MB to the C drive. If the system drive does not have this much free space, the installation fails with a "There is not enough space on the disk" error.

## Required Endeca components

The MDEX Engine installation does not require any other Endeca components to be previously installed.

You can install the Endeca Platform Services, the Endeca Presentation API, and Endeca Workbench packages either before or after you install the MDEX Engine package.

To determine the compatibility of components in the Information Access Platform, see the *Endeca Compatibility Matrix* available on EDeN.

## Required reading

Before installing, Endeca recommends that you read the following documents for important information about the release.

### Getting Started Guide

The *Endeca Getting Started Guide* gives an overview of Endeca components and includes information about configuration scenarios. After installing all the components in your Endeca deployment, read this guide for information on verifying your installation. You can download the *Endeca Getting Started Guide* from the Downloads section of the Endeca Developer Network (EDeN) at <http://eden.endeca.com>.

## Release Notes

Refer to the Endeca release notes for information about new features, changed features, and bug fixes for this release. You can download the release notes (README.txt) from the Knowledge Base section of the Endeca Developer Network (EDeN) at <http://eden.endeca.com>. After installation, release notes are also available in the following location:

- Windows: MDEX\version\README.txt
- UNIX: MDEX/version/README.txt

## MDEX Engine Migration Guide

Refer to the *MDEX Engine Migration Guide* for information about migrating your implementation from a previous version of Endeca software. You can download the *MDEX Engine Migration Guide* from the Knowledge Base section of the Endeca Developer Network (EDeN) at <http://eden.endeca.com>.

## Installer file names

Endeca installation packages and executables are named according to a common convention.

The installer file names follow the format:

componentname\_version\_arch-OS

For example:

mdex\_614\_x86\_64pc-linux.sh

The *componentname* is the component identifier for the component being installed. In the example installer, mdex is the identifier for Endeca MDEX Engine.

The *version* is the release version, without periods. In the example installer, 614 identifies Endeca MDEX Engine version 6.1.4.

The *arch-OS* is the architecture and operating system identifier for the component being installed. In the example installer, x86\_64pc-linux identifies the file as an installer for the 64-bit Linux platform. The following table lists the *arch-OS* identifiers and their platforms:

arch-OS identifier	Installation platform
x86_64pc-linux	Linux running on 64-bit Intel processors
sparc_64-solaris	Solaris running on 64-bit Sparc processors
x86_64pc-win32	Windows running on 64-bit Intel processors
i86pc-win32	Windows running on 32-bit Intel processors
	 <b>Note:</b> The Endeca MDEX Engine and Endeca Workbench are only supported on 64-bit based hardware and operating systems. There are no Windows 32-bit installers for the MDEX Engine or Endeca Workbench.

# Installing the MDEX Engine

This section describes the installation procedure and the contents of the installation directory.

## About User Account Control in Windows Server 2008

User Account Control in Windows Server 2008 R2 limits which tasks Standard Users can run.

User Account Control divides users into two groups, Standard Users and Administrators:

- **Standard Users** have the least amount of privileges required to perform basic tasks. They cannot install or uninstall applications to or from %SYSTEMROOT%, change system settings, or perform other administrative tasks.
- **Administrators** have full permissions for adding, removing, or modifying programs and user accounts.

By default, users are created as Standard Users. Although User Account Control allows Standard Users to temporarily elevate permissions in order to perform administrative tasks, doing so requires administrative credentials.

For more information regarding User Access Control and the permissions granted to each user type, see the Microsoft documentation at

<http://technet.microsoft.com/en-us/library/cc731416%28WS.10%29.aspx>.

### Effects on MDEX Engine Installation

The MDEX Engine installation process has changed with the introduction of User Account Control in Windows Server 2008 R2. Because of the resulting security restrictions on tasks that run at elevated privilege, running a per-machine installation of the MDEX Engine now requires administrator permissions. A user may still install a per-user installation without these permissions, but this is not supported in a production environment.



**Note:** UAC behavior and installation steps may differ if installing on Windows 7 for development purposes. Consult the Microsoft documentation for details.

## Installing a per-user MDEX Engine installation on Windows

A per-user installation of the MDEX Engine may be used if administrator permissions are unavailable. This is primarily useful for training and for small-scale development environments.



**Note:** Installing a per-user installation of the MDEX Engine on Microsoft Server 2008 is only permitted when it has been configured as a managed application, or the DisableMSI registry key has been set to zero. Contact an administrator if you require a per-user installation under Windows Server 2008.

Before installing, make sure to uninstall any previous versions of the MDEX Engine using the **Uninstall a program** utility in the Control Panel.

If a per-machine installation of the MDEX Engine is already present, attempting to install a per-user installation fails and the installer instead attempts to uninstall the per-machine installation.



**Important:** If you are setting up your MDEX Engine for a production environment, you must use a per-machine installation. Additionally, if you are using a Platform Services installation, you must also use a per-machine MDEX Engine installation.

To install the Endeca MDEX Engine as a per-user installation:

1. In your local environment, locate the Endeca MDEX Engine software that you downloaded from the Endeca Developer Network (EDeN).
2. Double-click the installer file `mdex_<version>_x86_64pc-win32.exe` to start the wizard.

The wizard verifies the contents of the installation package and confirms that no previous version is installed.



**Note:** If the installer identifies that the previous version is still installed, cancel the installation and uninstall the previous version using the **Uninstall a program** utility in the Control Panel.

3. Click **Next** to begin the installation process.
4. In the **Copyright and Legal** screen, click **Next**.
5. In the **License Agreement** screen, select **I accept the terms in the license agreement**, then click **Next**.
6. In the **Select Program Folder** screen, do the following:
  - Accept the default value for **Program Folder**.
  - Select the **Only for me (current user)** button.

7. Select an installation location or accept the default installation  
`%USERPROFILE%\Endeca\MDEX\<version>` which creates the directory  
`%USERPROFILE%\Endeca\MDEX\<version>` .

You cannot install the MDEX Engine into a directory that contains content.

The wizard displays both the required and available disk space for the target directory chosen. The MDEX Engine requires approximately 500 MB of disk space. The installer requires approximately 190 MB of space on the system drive for temporary files. These files are cleared after the installation process completes.



**Note:** If you install to a non-default location, the installation does not create the sub-directory structure `MDEX\<version>` unless you specify this structure explicitly. Additionally, clicking the **Back** button in the installation wizard resets the installation path to the default directory.

8. Click **Finish**.  
 The wizard confirms that you have successfully completed the installation.

If you intend to run MDEX Engine applications or tools from the command line, without using the EAC or JCD and Control Interpreter, run the batch file `mdex_setup.bat` after you install the MDEX Engine. You must run this script from a Windows Command Prompt, not a PowerShell Console.

The MDEX Engine installer creates this batch file in the target directory. For example, if you installed to the default location, this file is located at `%USERPROFILE%\MDEX\<version>\mdex_setup.bat`.

The batch file sets up the environment variable `ENDECA_MDEX_ROOT` that the MDEX Engine uses and that points to `%USERPROFILE%\MDEX\<version>`. The script also adds the `utilities` directory and the MDEX Engine binaries to the search path.

The script is optional and provided as a convenience. Note that it only sets the variables for the current user in the current context. Optionally, you can manually set the environment variables as global environment variables.

## Related Links

### [Installing a machine-wide MDEX Engine installation on Windows](#) on page 18

If you are setting up your MDEX Engine for a production environment, you must use a machine-wide installation. Additionally, Endeca recommends this method of installation any time administrator permissions are available.

## Installing a machine-wide MDEX Engine installation on Windows

If you are setting up your MDEX Engine for a production environment, you must use a machine-wide installation. Additionally, Endeca recommends this method of installation any time administrator permissions are available.

Before installing, make sure to uninstall any previous versions of the MDEX Engine using the **Uninstall a program** utility in the Control Panel.

To install the Endeca MDEX Engine on Windows:

1. In your local environment, locate the Endeca MDEX Engine software that you downloaded from the Endeca Developer Network (EDeN).
2. Double-click the installer file `mdex_<version>_x86_64pc-win32.exe` to start the wizard.

The wizard verifies the contents of the installation package and confirms that no previous version is installed. When running an installation with administrator permissions, User Account Control will check the digital signature of the installer. Digital signatures provide system administrators with a higher level of confidence in the authenticity of the installation package.



**Note:** If the installer identifies that the previous version is still installed, cancel the installation and uninstall the previous version using the **Uninstall a program** utility in the Control Panel.

3. Click **Next** to begin the installation process.
4. In the **Copyright and Legal** screen, click **Next**.
5. In the **License Agreement** screen, select **I accept the terms in the license agreement**, then click **Next**.
6. In the **Select Program Folder** screen, do the following:
  - Accept the default value for **Program Folder**.
  - Select the **Anyone who uses this computer (all users)** button.
7. Select an installation location or accept the default installation `C:\Endeca\MDEX\<version>` which creates the directory `C:\Endeca\MDEX\<version>`.

You cannot install the MDEX Engine into a directory that contains content.

The wizard displays both the required and available disk space for the target directory chosen. The MDEX Engine requires approximately 500 MB of disk space. The installer requires approximately 190 MB of space on the system drive for temporary files. These files are cleared after the installation process completes.



**Note:** If you install to a non-default location, the installation does not create the sub-directory structure `MDEX\<version>` unless you specify this structure explicitly. Additionally, clicking the **Back** button in the installation wizard resets the installation path to the default directory.

8. Click **Finish**.

The wizard confirms that you have successfully completed the installation.

## Installing the MDEX Engine on UNIX

The Endeca software is distributed as a self-extracting tar file and install script. It can be installed to any location.



**Note:** The MDEX Engine unpacks to approximately 300 MB. Because multiple versions may eventually be stored, a destination in a large disk partition is recommended.

To install the Endeca MDEX Engine:

1. Determine where you will install the Endeca system. Verify that the target directory on which you plan to install has enough available disk space, and has write permissions (is not read-only). For example, in this procedure we assume that the target directory is `/usr/local/endeca` and that you have write permissions for it. If you do not set these permissions, the install script will not run.
2. Locate the MDEX Engine installation file. This procedure assumes the location is `/downloads/[ARCH_OS]`. The name of the installation file is `mdex_<version>_[ARCH_OS].sh`
3. Assuming the locations used in steps 1 and 2, run the Endeca installation script with the following command:

```
/downloads/[ARCH_OS]/mdex_<version>_[ARCH_OS].sh
--target /usr/local
```

4. The Endeca license agreement displays. Scroll to the end, then type `Y` to accept the agreement and continue with the installation.

After you enter `Y` to accept the agreement, the MDEX Installer informs you that it is planning to extract files in the specified directory. The installer also checks that the directory has enough available disk space, and that it can write to this directory.

If these conditions are met, the installer proceeds with the installation and completes it. (If they are not met, the installer issues an error and discontinues the installation.)

At the completion of the installation, the installer prompts you to run the `mdex_setup` script that sets the `ENDECA_MDEX_ROOT` environment variable.

After you install the MDEX Engine, depending on your shell, run the following script:

```
source endeca/MDEX/<version>/mdex_setup_sh.ini
```

or:

```
source endeca/MDEX/<version>/mdex_setup_csh.ini
```

The `mdex_setup` script sets up the environment variable `ENDECA_MDEX_ROOT` that the MDEX Engine uses and that points to the location `MDEX/<version>`. The script also adds the utilities directory and the MDEX Engine binaries to the search path. The script is optional and is provided as a convenience, although the variable is required and must be set (for example, it is required for the environment in which the JCD is run).

## Installing silently on Windows

Running the silent installer on Windows has different effects depending on whether or not the user has administrator permissions.

If the silent installer is run with administrator permissions, it creates a per-machine installation. Otherwise, it creates a per-user installation. Variables on the command line can be used to override this default behavior.

To install silently on Windows:

1. From a command prompt, navigate to the directory where you downloaded the installer.
2. Issue the following command:

```
start /wait mdex_<version>_arch-OS.exe /s  
TARGETDIR=C:\Endeca\MDEX\<version>
```

You can replace `C:\Endeca\MDEX\<version>` with the location to which you want to install. However, if you set the install location to a non-empty directory or to a drive that does not exist, the silent installation will fail with a non-zero status code.

Additionally, an administrator can override the default behavior and create a per-user installation by setting `ALLUSERS=FALSE`.

3. Optionally, use a file created by the installer to set up the `ENDECA_MDEX_ROOT` variable.

Run `C:\Endeca\MDEX\<version>\mdex_setup.bat`.



**Note:** If you changed the `TARGETDIR` location in step 2, `mdex_setup.bat` will be located in the directory you specified.

The files set up the environment variable `ENDECA_MDEX_ROOT` that the MDEX Engine uses and that points to `MDEX\<version>`. The script also adds the utilities directory and the MDEX Engine binaries to the search path. The `ENDECA_MDEX_ROOT` variable is required and must be set for the environment in which the JCD is run. The script itself is optional and provided as a convenience, although it only sets the variables for the current user in the current context. You can also choose to manually set the environment variables as global environment variables.

## Turning on logging for the Windows silent installer

When running the silent installer on Windows, you can turn on logging.

This can be useful, for example, if you need to debug a failed silent installation.

To turn on logging during a silent installation on Windows, add `/l=<path>`. An absolute path is required.

## Installing silently on UNIX

The silent installer is useful if you want to add the installation of the MDEX Engine to your own install script, or push out the installation on multiple machines.

The silent installer is not interactive.

To install silently on UNIX:

1. From a command prompt, navigate to the directory where you downloaded the installer.

2. Issue the following command:

```
echo Y | ./mdex_<version>_arch-OS.sh --silent --target /localdisk/username
```

if you enter any string other than Y, or N for the license agreement, the installer issues an error and exits.



**Note:** --target must be the last parameter specified.

Optionally, you can replace /localdisk/username with the location to which you want to install.

3. Optionally, use a file created by the installer to set up the ENDECA\_MDEX\_ROOT variable.

Run `source endeca/MDEX/<version>/mdex_setup_sh.ini` or `source endeca/MDEX/<version>/mdex_setup_csh.ini` depending on your shell.

The files set up the environment variable ENDECA\_MDEX\_ROOT that the MDEX Engine uses and that points to `MDEX/<version>`. The script also adds the utilities directory and the MDEX Engine binaries to the search path. The ENDECA\_MDEX\_ROOT variable is required and must be set for the environment in which the JCD is run. The script itself is optional and provided as a convenience, although it only sets the variables for the current user in the current context.

## Package contents and directory structure

This topic describes directories created in the MDEX Engine installation.

The `Endeca\MDEx\<version>` directory is the root directory for the MDEX Engine. The directory contains files and software modules for all of the MDEX Engine components:

Directory	Contents
root directory	The release notes (README.txt) and the <code>mdex_setup</code> script that you run after the installation, which sets the ENDECA_MDEX_ROOT variable to this location.
/bin	Executables for various components, such as Dgraph, Dgidx and Agraph, along with additional libraries.
/conf	Configuration, stemming, schema and DTD files.
/data	Utilities and data files.
/doc	The Endeca Licensing Guide.
/lib	Object file libraries and Aspell Character Data files.
/utilities	Executable files for various utilities, such as GZIP, touch, and grep (Windows only).
/lib64	64-bit libraries (UNIX only).
/xquery	Query Web service.
/lib/xquery	Endeca Web services XQuery API.

## After you install

This section describes optional post-installation procedures.

## Loading the correct resolver library

If, when running the Dgraph or the Agraph, you get the error `Couldn't resolve host host`, your system might be loading the wrong resolver library at run time.

This can happen if `ld.so.cache` contains an entry for a different version than the one you need first.

To load the correct resolver library:

- Set `LD_LIBRARY_PATH` as follows so that it will be searched before `ld.so.cache`.

- For csh and similar shells:

```
setenv LD_LIBRARY_PATH /lib:$\{LD_LIBRARY_PATH\}
```

- For bash:

```
export LD_LIBRARY_PATH=/lib:$\{LD_LIBRARY_PATH\}
```

## About the Endeca Language Pack

The Language Pack adds language support to your Endeca software. Separate license keys are required to use the Chinese, Japanese, and Korean functionality. Follow the instructions in this section to configure the required license keys for the language support software.

For more information about language support, see “Using Internationalized Data” in the *Endeca Advanced Development Guide*.

## Configuring license keys for language support

A license key is required for each language that you are licensed to enable. Follow the instructions in this topic to configure the license keys for language support.

To configure license keys for language support:

1. In your local environment, locate the appropriate compressed license key files that you downloaded from the Endeca Support Center.

If you have more than one license key to install, you can begin this step with any of the license key files.

2. Open the compressed file, which is:

Language	File name
Chinese	key<version>zh.zip
Japanese	key<version>ja.zip
Korean	key<version>ko.zip

3. Using your preferred file decompression utility, extract the file `rlp-license.xml` to the following directory:

Platform	Directory name
Windows	%ENDECA_MDEX_ROOT%\conf\basis
UNIX	\$ENDECA_MDEX_ROOT/conf/basis

If you have only one license key to install, then you are finished with this section. If you need to install additional keys, continue with the following steps.

4. Open the second compressed license key file.

This procedure assumes that Chinese was the first license key installed, and that Japanese will be the second.

5. Using your preferred file decompression utility, extract the `rlp-license.xml` file to a temporary directory.

6. Open the `rlp-license.xml` file you extracted to the temporary directory in a text editor. Except for the "UserName", "CompanyName", and "LicenseKey" portions, the file will look like this:

```
<?xml version='1.0' ?>
<!-- Basis Technology License -->
<BTLicense>
  <generator>UserName</generator>
  <customer>CompanyName</customer>
  <expiration>Perpetual</expiration>
  <license>
    <product>RLP</product><language>Japanese</language>
    <function>Tokenizer,Base Noun Phrase Detector,
    POS Tagger,Sentence Boundary Detector,Morphological Analyzer</function>

    <license_key>LicenseKey</license_key>
  </license>
</BTLicense>
```

7. Copy everything from the beginning of the `<license>` tag until the end of the `</license>` tag.

8. Open the `rlp-license.xml` stored in the following directory in a text editor:

Platform	Directory name
Windows	%ENDECA_MDEX_ROOT%\conf\basis
UNIX	\$ENDECA_MDEX_ROOT/conf/basis

9. Paste the copied text into this version of the `rlp-license.xml` file on a new line immediately after the tag.

The result should look like the following:

```
<?xml version='1.0' ?>
<!-- Basis Technology License -->
<BTLicense>
  <generator>UserName</generator><customer>CustomerName</customer>
  <expiration>Perpetual</expiration>
  <license>
    <product>RLP</product><language>Chinese</language>
    <function>Tokenizer,Base Noun Phrase Detector,POS Tagger,Sentence
Boundary Detector,
    Morphological Analyzer</function>
    <license_key>LicenseKey</license_key>
  </license>
  <license>
    <product>RLP</product>
    <language>Japanese</language>
    <function>Tokenizer,Base Noun Phrase Detector,POS Tagger,Sentence
Boundary Detector,
    Morphological Analyzer</function>
    <license_key>LicenseKey</license_key>
```

```
    </license>
</BTLicense>
```

10. Save and close the `rlp-license.xml` file.



## Chapter 2

# Uninstalling the MDEX Engine

This section contains the procedures for uninstalling the MDEX Engine.

## Uninstalling the MDEX Engine on Windows

Before you begin the uninstall process, back up files that you want to retain from the `Endeca` directory.

Make sure that you stop all Endeca processes (including the Dgraph and the Endeca HTTP service) before uninstalling the Endeca software.

To uninstall the MDEX Engine from a Windows machine:

1. From the Windows Control Panel, select **Add or Remove Programs**.
2. Select the **Endeca MDEX Engine** from the list of installed software.
3. Click **Remove**.
4. If you are uninstalling a single-user installation of the MDEX Engine, remove any empty directories left behind by the uninstall process.

## Uninstalling the MDEX Engine on UNIX

Before you begin the uninstall process, back up files that you want to retain from the MDEX Engine directory.

Make sure that you stop all Endeca processes (including the Dgraph and the Endeca HTTP service) before uninstalling the Endeca software.

To uninstall the MDEX Engine from your UNIX machine:

Issue an `rm` command as in this example:

```
rm -rf endeca/mdex/<version>
```





## Chapter 3

# Endeca Environment Variables and Port Usage

This section lists all the environment variables and ports used by the Endeca software. Depending on which components you have installed, not all of them may apply to your implementation.

## Endeca environment variables

The Endeca installation programs create several environment variables.

For each variable, the first value listed is the path if you accept the default installation path on Windows (under `C:\Endeca\product`) and use a per-machine installation. The default paths for a per-user installation will be rooted in the `%USERPROFILE%` directory.

The second value is the path within your installation directory on UNIX. For example, if you install Endeca to `/usr/local/`, the full path of `ENDECA_ROOT` would be `/usr/local/endeca/Platform-Services/version` in your environment.

In addition to creating the variables below, the installation may add Endeca directories to the `PATH` variable.



**Note:** For the MDEX Engine installation, environment and `PATH` variables are set by running the `mindex_setup` scripts provided by the installation. See the *MDEX Engine Installation Guide* for more information.

### MDEX Engine variables

The following variable is used by the MDEX Engine:

Variable	Description	Default value
<code>ENDECA_MDEX_ROOT</code>	Specifies the path of the MDEX Engine root directory.	<ul style="list-style-type: none"><li><code>C:\Endeca\MDEX\version</code></li><li><code>endeca/MDEX/version</code></li></ul>

### Platform Services variables

The following variables are used by the Platform Services:

Variable	Description	Default value
ENDECA_ROOT	Specifies the path of the Platform Services root directory.	<ul style="list-style-type: none"> <li>• C:\Endeca\PlatformServices\version</li> <li>• endeca/PlatformServices/version</li> </ul>
ENDECA_REFERENCE_DIR	Specifies the path of the directory that contains the Endeca reference implementations, such as the sample wine project and the JSP and .NET UI references.	<ul style="list-style-type: none"> <li>• C:\Endeca\PlatformServices\reference</li> <li>• endeca/PlatformServices/reference</li> </ul>
ENDECA_CONF	Specifies the path of the workspace directory for the Endeca HTTP service, which contains configuration files, logs, and temporary storage directories.	<ul style="list-style-type: none"> <li>• C:\Endeca\PlatformServices\workspace</li> <li>• endeca/PlatformServices/workspace</li> </ul>
PERLLIB	Specifies the path of the perl root directory and its directory of libraries.	<ul style="list-style-type: none"> <li>• %ENDECA_ROOT%\perl and %ENDECA_ROOT%\perl\5.8.3\lib</li> <li>• \$ENDECA_ROOT/lib/perl:\$ENDECA_ROOT/lib/perl/Control:\$ENDECA_ROOT/perl/lib:\$ENDECA_ROOT/perl/lib/site_perl</li> </ul>
PERL5LIB	Same as the PERLLIB variable.	Same as the PERLLIB variable.
UnixUtils	Specifies the path of the utilities directory, which contains Windows versions of some UNIX common utilities.	<ul style="list-style-type: none"> <li>• %ENDECA_ROOT%\utilities</li> <li>• not available on UNIX</li> </ul>

### Endeca Workbench variables

The following variables are used by the Endeca Workbench:

Variable	Description	Default value
ENDECA_TOOLS_ROOT	Specifies the path of the Endeca Workbench root directory.	<ul style="list-style-type: none"> <li>• C:\Endeca\Workbench\version</li> <li>• endeca/Workbench/version</li> </ul>
ENDECA_TOOLS_CONF	Specifies the path of the workspace directory for the Endeca Tools Service, which	<ul style="list-style-type: none"> <li>• C:\Endeca\Workbench\workspace</li> <li>• endeca/Workbench/workspace</li> </ul>

Variable	Description	Default value
	contains configuration files, logs, and temporary storage directories.	

### Other variables

Other variables used by Endeca include the following:

Variable	Description	Default value
ENDECA_PROJECT_DIR	Specifies the path of the deployed application. This variable is set and used by the Endeca Deployment Template.	Value is taken from user input at installation time.
ENDECA_PROJECT_NAME	Specifies the project name that is used, for example, as the JCD job prefix for jobs defined in the project's Job Control Daemon. This variable is set and used by the Endeca Deployment Template.	Value is taken from user input at installation time.

## Endeca ports

This topic describes the ports used by the Endeca packages and their default port numbers.

You can replace any of the default port numbers with numbers of your own, as long as they do not conflict with an existing port on your machine. Port numbers can be no larger than 32767.

### Service ports

Port	Default
Endeca Tools Service port	8006
Endeca Tools Service SSL port	8446
Endeca Tools Service shutdown port	8084
CAS Service port	8500
CAS Service shutdown port	8506
Endeca HTTP Service port	8888
Endeca HTTP Service SSL port	8443
Endeca HTTP Service shutdown port	8090
Endeca Control System JCD port	8088

Port	Default
 <b>Note:</b> The JCD is deprecated.	

### Deployment Template ports

These are the port numbers suggested by the Deployment Template installation, but you can specify any other port when you deploy your application.

Port	Default
Dgraph1 user query port	15000
Dgraph2 user query port	15001
Agraph1 user query port (Agraph deployments only)	14000
Agraph2 user query port (Agraph deployments only)	14001
Forge server (Agraph deployments with Parallel Forge only)	14099
Endeca Logging and Reporting Server port	15010
 <b>Note:</b> The Logging Server port number can be no larger than 32767.	

### Reference implementation ports

These port numbers are used in the configuration files that ship with the reference implementation (sample\_wine\_data).

Port	Default
Endeca MDEX Engine user query port	8000
Endeca Logging and Reporting Server port	8002
 <b>Note:</b> The Logging Server port number can be no larger than 32767. In the JSP reference implementation, the default Logging server port number is larger by 2 than the corresponding Dgraph port number. For example, for the Dgraph port 15000, the default port for the Logging Server in the reference implementation is 15002. For the Dgraph port 15001, the default port for the Logging Server in the reference implementation is 15003. (This assumes that the Logging Server is running on the same host as the MDEX Engine.)	

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