OpenESP
Admin Guide

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Introduction

What is OpenESP

OpenESP is an Open Enterprise Search Platform, built on the foundation of Apache Solr™, Apache Tomcat and other state of the art open source products. The goal is to help users getting quickly up to speed without the need to understand each single piece of technology in-depth. OpenESP has many best-practices and configurations built right in from the start.

To get involved in the project, head over to https://github.com/openesp/openesp

Document version

This document relates to OpenESP version 0.2, released 2013-02-06. Please visit the project website to look for older or newer versions.

OpenESP components

The product consists of the following parts:

- Apache Tomcat servlet container
- Apache Solr search server
- Windows installer (IzPack based)

System requirements

Hardware requirements

OpenESP runs well both in dedicated and virtualized environments. It can run on your laptop with 100Mb, but here we list adviced mimimum spec for production server. Observe that a search server may require extreme performance, so if you rely on shared resources you may not be able to predict the actual performance. In such cases be sure to run on dedicated hardware with dedicated I/O bandwidth.

CPU: Modern, multi-core CPU, 64-bit

RAM: From 8Gb and up. Most systems will benefit greatly from even more RAM, as fitting the whole (or most) of the index in RAM speeds up your search server many-fold.

DISK: For systems with an index size much larger than physical memory, disk performance may be critical, and require high performance disk system, such as multiple 15kRPM+ disks in RAID setup. For other systems, the whole index fits in RAM and disk becomes less important.

Warning: Do not put the index on NFS mounted shared disk. The performance is terrible and it will not work without extensive tweaking.

Final hardware requirements depends on the intended data and query volume. Contact a search specialist for tuning systems with multi-million documents.

Operating System requirements

OpenESP is based on Java technology, and thus in theory runs on any platform.

Java requirements

OpenESP runs best with Oracle's official 64-bit JVM. We require Java SE 6 Update 30 or later. If you use Java SE 7, then make sure to use Update 1 or later, as there is a serious bug in the first SE 7 release.

If you have multiple Java environments on the server, the installer will attempt to select the most appropriate one. If you install manually, make sure to set your JAVA_HOME system environment variable to point to the one you want to use for OpenESP.

License

OpenESP is licensed under the Apache Software License v2, see http://www.apache.org/licenses/LICENSE-2.0.html. See LICENSE.txt and NOTICE.txt inside the distribution package for details and information about licenses for included sub projects.

Support

Professional support subscriptions are available from commercial companies in the Open Enterprise Search Network (OpenESN). If you run OpenESP with a support contract from an OpenESN partner, the following restrictions apply unless otherwise agreed upon:

- Maximum number of documents per physical server is 5.000.000
- Maximum number of sustained queries per second is 10

These are the platforms which qualifies for OpenESN support contracts:

- Microsoft Windows™ server 2008 R2 SP2 64bit

Training

Classroom or on-site training is available from OpenESN partners. See www.solrtraining.com for more information and schedule.

Installation

OpenESP in packaged as one release, which can be installed on various platforms either through installer or as a manual install.

Prerequisites

Make sure your server has a supported Operating system.

Make sure you have installed a supported version of Java (JRE or JDK) from www.java.com

Download the latest version of OpenESP.

Read the release notes to see any known bugs and limitations.

General installation notes

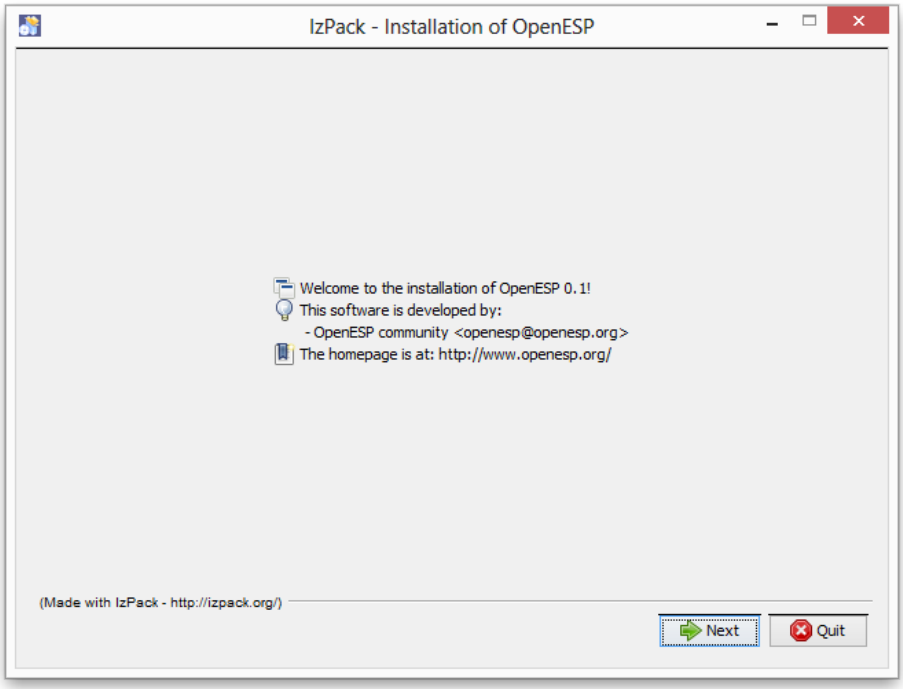
Memory allocation

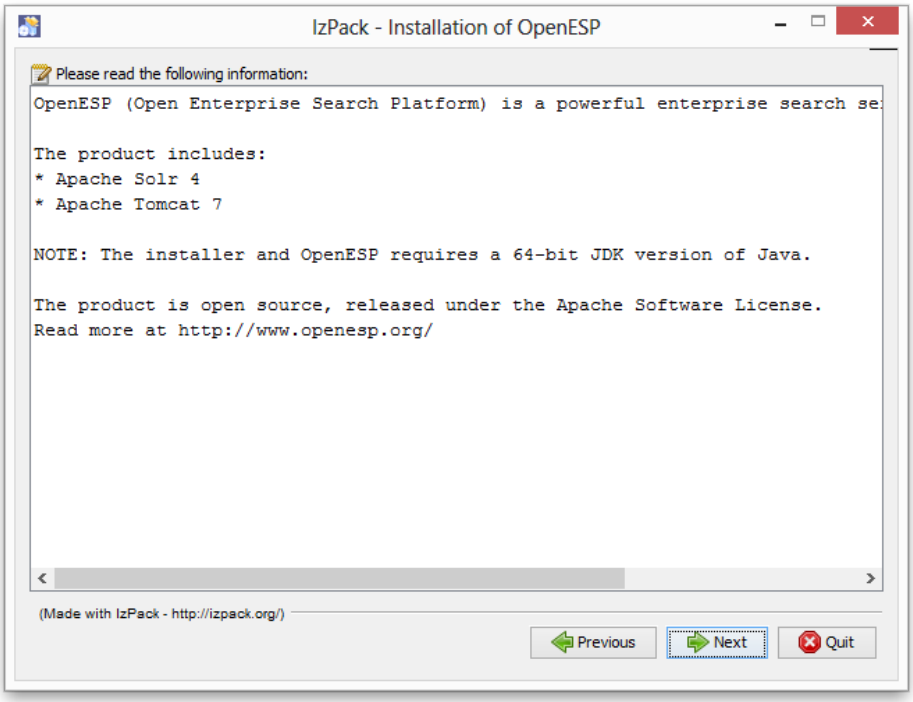
The default setting for JVM memory is 2Gb if you do not change it after install. The general rule of thumb is to allocate to the Java VM just enough memory for the application to run, and not more. The reason is that a search engine will benefit hugely from the Operating System's own built-in caching of the disk-based index. If you allocate too much memory to the JVM, the search may actually be slower. You could start with the default 2Gb setting, and increase it if you experience OutOfMemory exceptions.

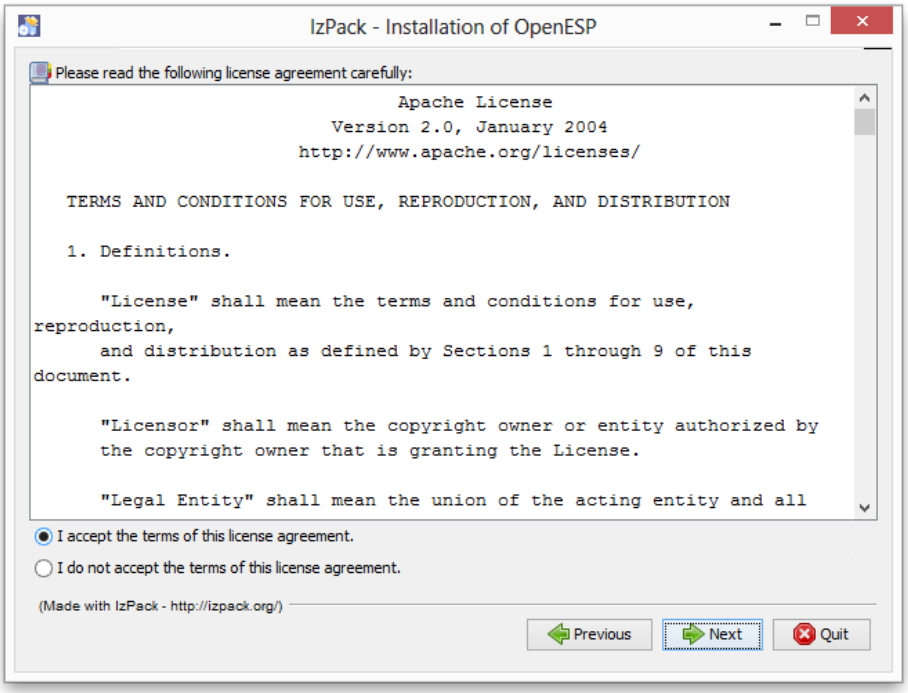
Installing using the installer

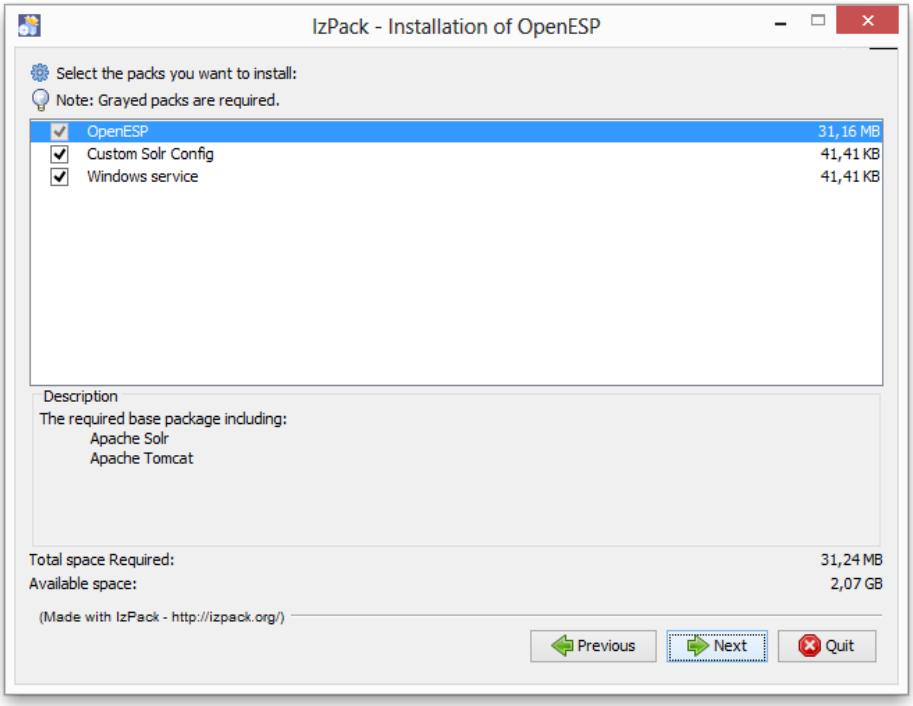
The installer is for Windows and Linux types operating systems. The installer will install OpenESP including custom configuration (if present) and a Windows service or Unix launch-script for automatic start.

Double click `OpenESP-Setup.exe` or run `java -jar openesp-install.jar` from command line, and walk through each page of the installer:

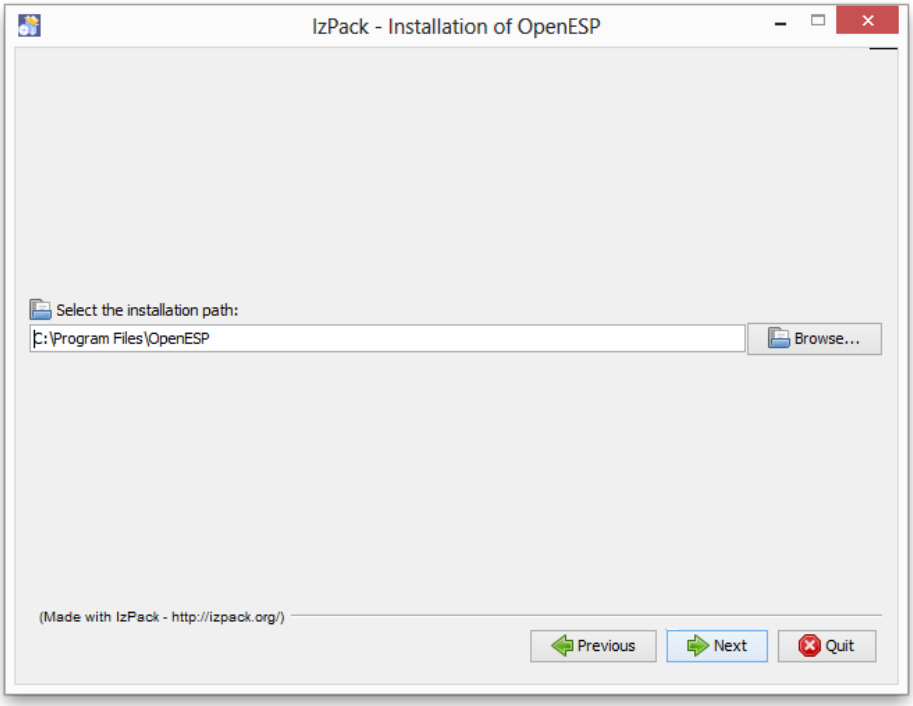

IzPack - Installation of OpenESP
Welcome to the installation of OpenESP 0.1!
This software is developed by:
- OpenESP community <openesp@openesp.org>
The homepage is at: http://www.openesp.org/
(Made with IzPack - http://izpack.org/)
Next
Quit

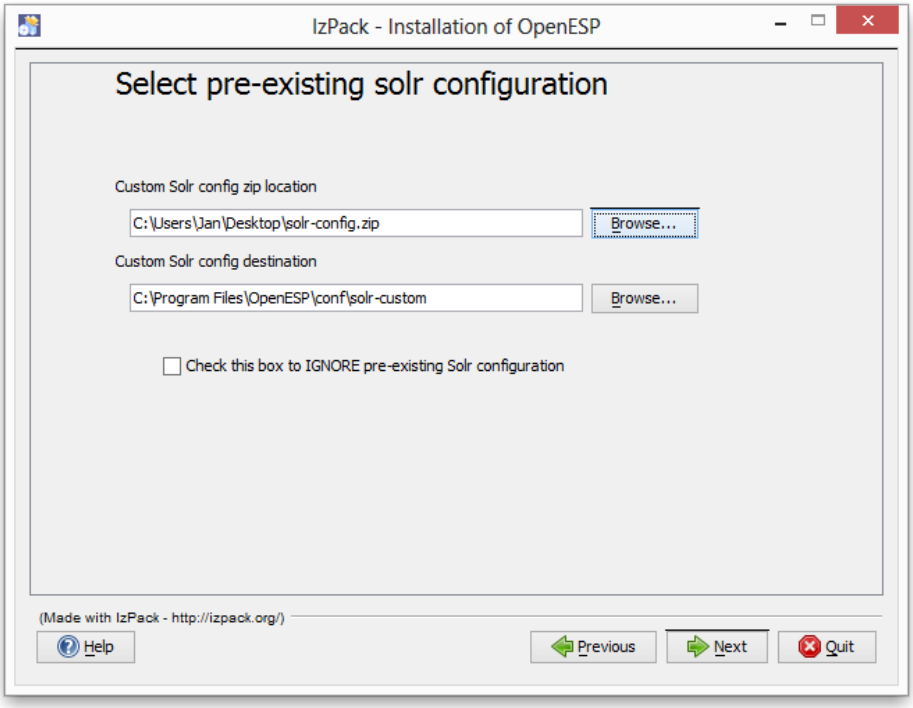

IzPack - Installation of OpenESP
Please read the following information:
OpenESP (Open Enterprise Search Platform) is a powerful enterprise search se
The product includes:
* Apache Solr 4
* Apache Tomcat 7
NOTE: The installer and OpenESP requires a 64-bit JDK version of Java.
The product is open source, released under the Apache Software License.
Read more at http://www.openesp.org/
(Made with IzPack - http://izpack.org/)
Previous
Next
Quit



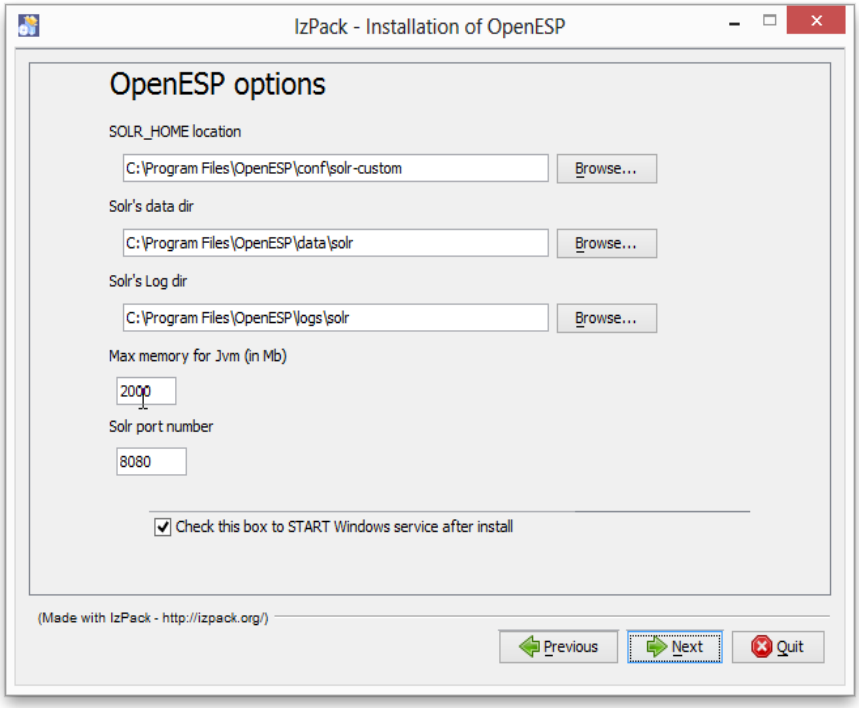


Choose what packages to install. If your installer comes bundled with a custom Solr configuration zip, the installer can unpack that zip file and use it as its configuration.



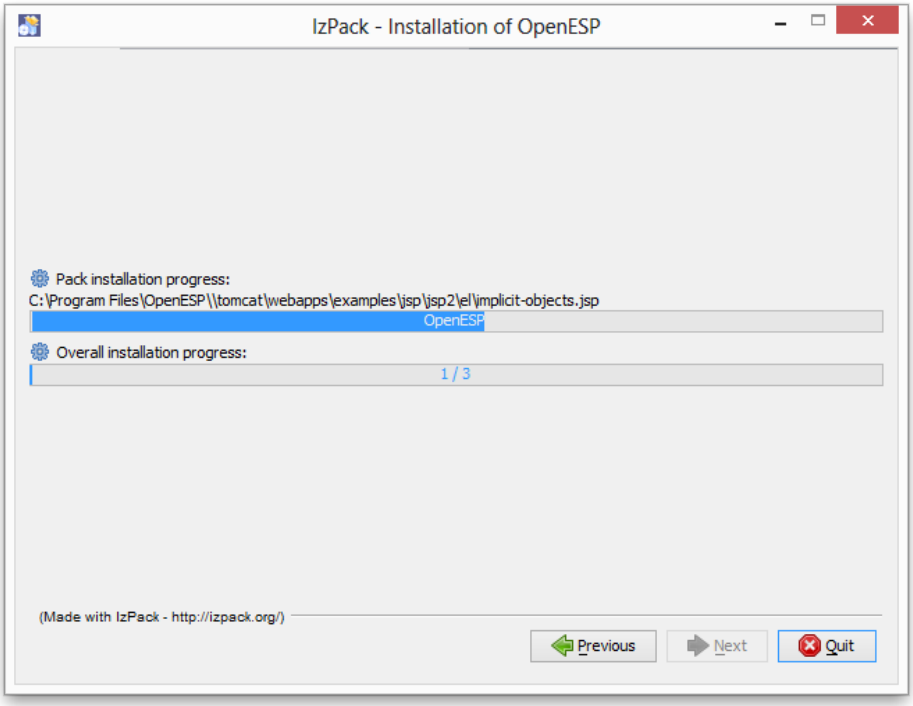


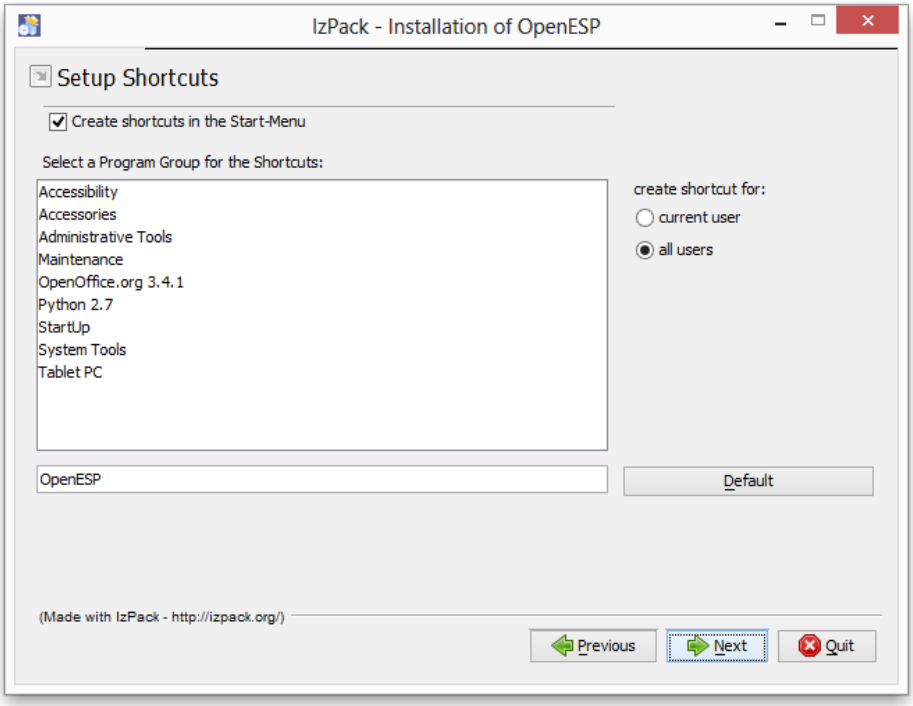
If you selected to install custom Solr configuration, choose where to find the zip file and where to unpack it.

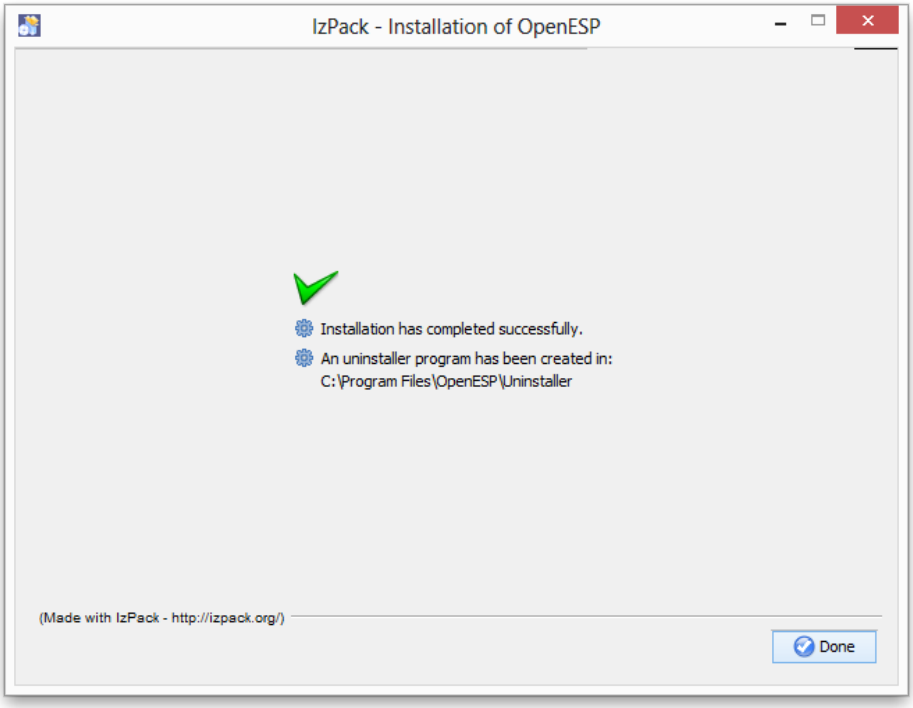


You may customize Solr HOME as well as where to put index and logs. The defaults should be good, but if your index is very large you may want to put it on a separate disk/partition.

Default port is 18080 and default memory is 2048Mb.







After successful installation, confirm the installation by opening http://localhost:18080/solr/ (replace localhost with your server's host name) in a browser.

Manual installation

If you want to to a manual install or automate the install using tools like Puppet (http://puppetlabs.com/) or Chef (http://www.opscode.com/chef/), follow this procedure.

The procedure is simple:

1. Obtain the ZIP deployment package (typically openesp-x.y.zip). After building openesp yourself from source, this resides in build/distributions/
2. Un-zip the deployment package `openesp-x.y.zip` into a location of choice. We call this location `OPENESP_HOME` for convenience
3. To start the server, CD to `$OPENESP_HOME/bin/` then run `./openesp.sh` or `openesp.cmd`
4. To use a custom Solr configuration, edit the start script and modify the `SOLR_HOME` environment variable to point to your `SOLR_HOME`
5. To change memory settings, edit the start script and modify `-Xms` and `-Xmx` settings accordingly.
6. To change port number, open `$OPENESP_HOME/tomcat/conf/server.xml` in an editor and change port number from `8080` to what you need.
7. After successful installation, confirm the installation by opening http://localhost:18080/solr/ (replace localhost with your server's host name) in a browser.

Configuration

This chapter lists some common configuration options after install of the product.

Tomcat (servlet container)

Port

OpenESP uses Apache Tomcat as the Java Servlet container. During install the port number is set in `$OPENESP_HOME/tomcat/conf/server.xml`. You may change that to have OpenESP listen on another port.

Windows service startup options

When run as a Windows service, startup options such as memory, SOLR_HOME, logging options, which user to run the service as etc are registered in the service daemon program. To view/change these settings, you double click %OPENESP_HOME%\bin\OpenESPw.exe, or:

1. Open a shell/command window with Administrator rights
   [Windows+R] enter “cmd.exe”, then hit [SHIFT+CTRL+ENTER] to start as admin
2. CD %OPENESP_HOME%\bin\
3. OpenESPw.exe
4. Do the needed changes

Securing the search server

Sometimes you want to secure the communication with Tomcat/Solr so that unauthorized people cannot access the search index. There are several ways to do that. The easiest is to block OpenESP/Tomcat's port (18080) in the server's firewall, so that traffic is only allowed from certain IP addresses or only from localhost.

Another way is to enable enctypted communication through SSL in Tomcat and only listen on the secure port using server certificates. OpenESP ships with SSL port enabled at port 18443, setup with client and server certificates, ready setup in Tomcat. You'll find the certificates in $OPENESP_HOME/tomcat/conf/ssl/ folder.

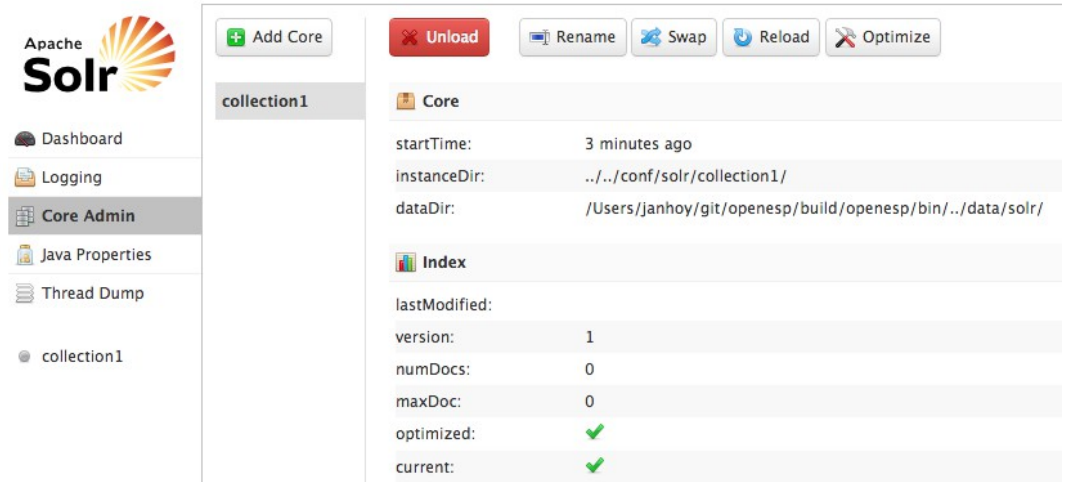
To access the secure port from a browser, you'll need to import the CA certificate ca.pem and the browser certificate browser-client.pfx into your browser.

To re-generate your own certificates, run the script gen-certs.sh

TIP: To block access to insecure port 18080, edit $OPENESP_HOME/tomcat/conf/server.xml

Solr

Solr's configuration resides in $OPENESP_HOME/config/solr. After changing, reload the core to pick up changes. This can be done in Solr's administration panel:



For Solr configuration options, plese refer to the Solr Wiki: http://wiki.apache.org/solr/