

figure Solr 6 on Ubuntu 16.04

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This tutorial exists for these OS versions

- **Ubuntu 16.04 (Xenial Xerus)**
- [Ubuntu 14.04 LTS \(Trusty Tahr\)](#)

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back end support for Apache Lucene. It can e.g. be used to search in multiple websites and can show recommendations for the searched content. Solr uses an XML (Extensible Markup Language) based query and result language. There are APIs (Applications program interfaces) available for Python, Ruby and JSON (Javascript Object Notation).

Some other features that Solr provides are:

- Full-Text Search.
- Snippet generation and highlighting.
- Custom Document ordering/ranking.
- Spell Suggestions.

This tutorial will show you how to install the latest Solr version on Ubuntu 16.04 LTS. The steps will most likely work with later Ubuntu versions as well.

Update your System

Use a non-root sudo user to login into your Ubuntu server. Through this user, you will have to perform all the steps and use the Solr later.

To update your system, execute the following command to update your system with latest patches and updates.

```
sudo apt-get update && apt-get upgrade -y
```

Setting up the Java Runtime Environment

Solr is a Java application, so the Java runtime environment needs to be installed first in order to set up Solr.

We have to install Python Software properties in order to install the latest Java 8. Run the following command to install the software.

```
root@server1:~# sudo apt-get install python-software-properties
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
libpython-stdlib libpython2.7-minimal libpython2.7-stdlib python python-apt
python-minimal python-pycurl python2.7 python2.7-minimal
Suggested packages:
python-doc python-tk python-apt-dbg python-apt-doc libcurl4-gnutls-dev
```

```
python-pycurl-dbg python-pycurl-doc python2.7-doc binutils binfmt-support
The following NEW packages will be installed:
libpython-stdlib libpython2.7-minimal libpython2.7-stdlib python python-apt
python-minimal python-pycurl python-software-properties python2.7
python2.7-minimal
0 upgraded, 10 newly installed, 0 to remove and 3 not upgraded.
Need to get 4,070 kB of archives.
After this operation, 17.3 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Press Y to continue.

After executing the command, add the webupd8team Java PPA repository in your system by running:

```
sudo add-apt-repository ppa:webupd8team/java
```

Press [ENTER] when requested. Now, you can easily install the latest version of Java 8 with apt.

First, update the package lists to fetch the available packages from the new PPA:

```
sudo apt-get update
```

Then install the latest version of Oracle Java 8 with this command:

```
sudo apt-get install oracle-java8-installer
```

```
root@server1:~# sudo apt-get install oracle-java8-installer
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  binutils gsfontr gsfontr-x11 java-common libfontenc1 libxfont1 x11-common xfontenc-encodings
  xfontenc-utils
Suggested packages:
  binutils-doc binfont-support visualvm ttf-baekmuk | ttf-unfontenc | ttf-unfontenc-core ttf-koch
  i-gothic | ttf-sazanami-gothic ttf-kochi-mincho | ttf-sazanami-mincho ttf-arphic-uming fire
  fox
  | firefox-2 | iceweasel | mozilla-firefox | iceape-browser | mozilla-browser | epiphany-ge
 cko | epiphany-webkit | epiphany-browser | galeon | midbrowser | moblin-web-browser | xulru
  nner
  | xulrunner-1.9 | konqueror | chromium-browser | midori | google-chrome
The following NEW packages will be installed:
  binutils gsfontr gsfontr-x11 java-common libfontenc1 libxfont1 oracle-java8-installer x11-
  common xfontenc-encodings xfontenc-utils
0 upgraded, 10 newly installed, 0 to remove and 3 not upgraded.
Need to get 6,498 kB of archives.
After this operation, 20.5 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Press Y to continue.

You MUST agree to the license available in <http://java.com/license> if you want to use Oracle JDK, clicking on the OK button.

The package installs a kind of meta-installer which then downloads the binaries directly from Oracle. After installation process, check the version of Java installed by running the following command

```
java -version
```

```
java version "1.8.0_91"  
Java(TM) SE Runtime Environment (build 1.8.0_91-b14)  
Java HotSpot(TM) 64-Bit Server VM (build 25.91-b14, mixed mode)
```

Now you have installed Java 8 and we will move to the next step.

Installing the Solr application

Solr can be installed on Ubuntu in different ways, in this article, I will show you how to install the latest package from the source.

We will begin by downloading the Solr distribution. First finding the latest version of the available package from their [web page](#), copy the link and download it using the wget command

For this setup, we will use <http://www.us.apache.org/dist/lucene/solr/6.0.1/>

```
cd /tmp
wget http://www.us.apache.org/dist/lucene/solr/6.0.1/solr-6.0.1.tgz
```

```
root@server1:/tmp# wget http://www.us.apache.org/dist/lucene/solr/6.0.1/solr-6.0.1.tgz
--2016-06-03 11:31:54-- http://www.us.apache.org/dist/lucene/solr/6.0.1/solr-6.0.1.tgz
Resolving www.us.apache.org (www.us.apache.org)... 140.211.11.105
Connecting to www.us.apache.org (www.us.apache.org)|140.211.11.105|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 137924507 (132M) [application/x-gzip]
Saving to: 'solr-6.0.1.tgz'
```

Now, run the given below command to extract the service installation file:

```
tar xzf solr-6.0.1.tgz solr-6.0.1/bin/install_solr_service.sh --strip-components=2
```

And install Solr as a service using the script:

```
sudo ./install_solr_service.sh solr-6.0.1.tgz
```

The output will be similar to this:

```
root@server1:/tmp# sudo ./install_solr_service.sh solr-6.0.1.tgz
id: 'solr': no such user
Creating new user: solr
Adding system user `solr' (UID 111) ...
Adding new group `solr' (GID 117) ...
Adding new user `solr' (UID 111) with group `solr' ...
Creating home directory `/var/solr' ...

Extracting solr-6.0.1.tgz to /opt

Installing symlink /opt/solr -> /opt/solr-6.0.1 ...

Installing /etc/init.d/solr script ...
```

```
Installing /etc/default/solr.in.sh ...
```

```
? solr.service - LSB: Controls Apache Solr as a Service
Loaded: loaded (/etc/init.d/solr; bad; vendor preset: enabled)
Active: active (exited) since Fri 2016-06-03 11:37:05 CEST; 5s ago
Docs: man:systemd-sysv-generator(8)
Process: 20929 ExecStart=/etc/init.d/solr start (code=exited, status=0/SUCCESS)

Jun 03 11:36:43 server1 systemd[1]: Starting LSB: Controls Apache Solr as a Service...
Jun 03 11:36:44 server1 su[20934]: Successful su for solr by root
Jun 03 11:36:44 server1 su[20934]: + ??? root:solr
Jun 03 11:36:44 server1 su[20934]: pam_unix(su:session): session opened for user solr by (u
id=0)
Jun 03 11:37:05 server1 solr[20929]: [313B blob data]
Jun 03 11:37:05 server1 solr[20929]: Started Solr server on port 8983 (pid=20989). Happy se
arching!
Jun 03 11:37:05 server1 solr[20929]: [14B blob data]
Jun 03 11:37:05 server1 systemd[1]: Started LSB: Controls Apache Solr as a Service.
Service solr installed.
```

Use this command to check the status of the service

```
service solr status
```

You should see an output that begins with this:

```
root@server1:/tmp# service solr status
? solr.service - LSB: Controls Apache Solr as a Service
Loaded: loaded (/etc/init.d/solr; bad; vendor preset: enabled)
Active: active (exited) since Fri 2016-06-03 11:37:05 CEST; 39s ago
Docs: man:systemd-sysv-generator(8)
Process: 20929 ExecStart=/etc/init.d/solr start (code=exited, status=0/SUCCESS)

Jun 03 11:36:43 server1 systemd[1]: Starting LSB: Controls Apache Solr as a Service...
Jun 03 11:36:44 server1 su[20934]: Successful su for solr by root
Jun 03 11:36:44 server1 su[20934]: + ??? root:solr
Jun 03 11:36:44 server1 su[20934]: pam_unix(su:session): session opened for user solr by (u
id=0)
Jun 03 11:37:05 server1 solr[20929]: [313B blob data]
Jun 03 11:37:05 server1 solr[20929]: Started Solr server on port 8983 (pid=20989). Happy se
arching!
Jun 03 11:37:05 server1 solr[20929]: [14B blob data]
Jun 03 11:37:05 server1 systemd[1]: Started LSB: Controls Apache Solr as a Service.
```

Creating a Solr search collection:

Using Solr, we can create multiple collections. Run the given command, mention the name of the collection (here gettingstarted) and specify its configurations.

```
sudo su - solr -c "/opt/solr/bin/solr create -c gettingstarted -n data_driven_schema_configs"
```

```
root@server1:/tmp# sudo su - solr -c "/opt/solr/bin/solr create -c gettingstarted -n data_driven_schema_configs"
```

Copying configuration to new core instance directory:

```
/var/solr/data/gettingstarted
```

Creating new core 'gettingstarted' using command:

```
http://localhost:8983/solr/admin/cores?action=CREATE&name=gettingstarted&instanceDir=gettingstarted
```

```
{
  "responseHeader":{
    "status":0,
    "QTime":4427},
  "core":"gettingstarted"}
```

The new core directory for our first collection has been created. To view the default schema file, go to:

```
/opt/solr/server/solr/configsets/data_driven_schema_configs/conf
```

Use the Solr Web Interface

The Apache Solr is now accessible on the default port, which is 8983. The admin UI should be accessible at [http://your server ip:8983/solr](http://your_server_ip:8983/solr). The port should be allowed by your firewall to run the links.

For example:

```
http://192.168.1.100:8983/solr/
```


To see the details of the first collection that we created earlier, select the "gettingstarted" collection in the left menu.

After you selected the "gettingstarted" collection, select **Documents** in the left menu. There you can enter real data in JSON format that will be searchable by Solr. To add more data, copy and paste the following example JSON onto Document field:

```
{
  "id": 1,
  "book_title": "My First Book",
  "published": 1985,
  "description": "All about Linux"
}
```

Click on the submit document button after adding the data.

Status: success

Response:

```
{
  "responseHeader": {
    "status": 0,
    "QTime": 189
  }
}
```

Now we can click on **Query** on the left side then click on **ExecuteQuery**,

We will see something like this:

```
{
  "responseHeader":{
    "status":0,
    "QTime":24,
    "params":{
      "q":"*:*",
      "indent":"on",
      "wt":"json",
      "_":"1464947017056"}},
  "response":{"numFound":1,"start":0,"docs":[
    {
      "id":"1",
      "book_title":["My First Book"],
      "published":[1985],
      "description":["All about Linux"],
      "_version_":1536108205792296960}]}
}}
```

Virtual machine image download of this tutorial

This tutorial is available as ready to use virtual machine image in ovf/ova format for Howtoforge Subscribers. The VM format is compatible with VMWare and Virtualbox. The virtual machine image uses the following login details:

SSH / Shell Login

Username: administrator
Password: howtoforge

This user has sudo rights.

Please change all the above passwords to secure the virtual machine.

Conclusion

After successfully installing the Solr Web Interface on Ubuntu, you can now insert the data or query the data with the Solr API and Web Interface.