

Pig Setup

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1. Overview

1.1. Requirements

Unix and Windows users need the following:

1. **Hadoop 20** - <http://hadoop.apache.org/core/>
2. **Java 1.6** - <http://java.sun.com/javase/downloads/index.jsp> Set JAVA_HOME to the root of your Java installation.
3. **Ant 1.7** - (optional, for builds) <http://ant.apache.org/>
4. **JUnit 4.5** - (optional, for unit tests) <http://junit.sourceforge.net/>

Windows users need to install Cygwin and the Perl package: <http://www.cygwin.com/>

1.2. Run Modes

Pig has two run modes or exectypes:

- Local Mode - To run Pig in local mode, you need access to a single machine.
- Mapreduce Mode - To run Pig in mapreduce mode, you need access to a Hadoop cluster and HDFS installation. Pig will automatically allocate and deallocate a 15-node cluster.

You can run the Grunt shell, Pig scripts, or embedded programs using either mode.

2. Beginning Pig

2.1. Download Pig

To get a Pig distribution, download a recent stable release from one of the Apache Download Mirrors (see [Pig Releases](#)).

Unpack the downloaded Pig distribution. The Pig script is located in the bin directory (/pig-n.n.n/bin/pig).

Add /pig-n.n.n/bin to your path. Use export (bash,sh,ksh) or setenv (tcsh,csh). For example:

```
$ export PATH=/<my-path-to-pig>/pig-n.n.n/bin:$PATH
```

Try the following command, to get a list of Pig commands:

```
$ pig -help
```

Try the following command, to start the Grunt shell:

```
$ pig
```

2.2. Grunt Shell

Use Pig's interactive shell, Grunt, to enter pig commands manually. See the [Sample Code](#) for instructions about the passwd file used in the example.

You can also run or execute script files from the Grunt shell. See the [run](#) and [exec](#) commands.

Local Mode

```
$ pig -x local
```

Mapreduce Mode

```
$ pig
or
$ pig -x mapreduce
```

For either mode, the Grunt shell is invoked and you can enter commands at the prompt. The results are displayed to your terminal screen (if DUMP is used) or to a file (if STORE is used).

```
grunt> A = load 'passwd' using PigStorage(':');
grunt> B = foreach A generate $0 as id;
grunt> dump B;
grunt> store B;
```

2.3. Script Files

Use script files to run Pig commands as batch jobs. See the [Sample Code](#) for instructions about the passwd file and the script file (id.pig) used in the example.

Local Mode

```
$ pig -x local id.pig
```

Mapreduce Mode

```
$ pig id.pig
or
$ pig -x mapreduce id.pig
```

For either mode, the Pig Latin statements are executed and the results are displayed to your terminal screen (if DUMP is used) or to a file (if STORE is used).

3. Advanced Pig

3.1. Build Pig

To build pig, do the following:

1. Check out the Pig code from SVN: *svn co http://svn.apache.org/repos/asf/hadoop/pig/trunk.*
2. Build the code from the top directory: *ant*. If the build is successful, you should see the *pig.jar* created in that directory.
3. Validate your *pig.jar* by running a unit test: *ant test*

3.2. Environment Variables and Properties

Refer to the [Download Pig](#) section.

The Pig environment variables are described in the Pig script file, located in the `/pig-n.n.n/bin` directory.

The Pig properties file, `pig.properties`, is located in the `/pig-n.n.n/conf` directory. You can specify an alternate location using the `PIG_CONF_DIR` environment variable.

3.3. Embedded Programs

Used the embedded option to embed Pig commands in a host language and run the program. See the [Sample Code](#) for instructions about the `passwd` file and java files (`idlocal.java`, `idmapreduce.java`) used in the examples.

Local Mode

From your current working directory, compile the program:

```
$ javac -cp pig.jar idlocal.java
```

Note: `idlocal.class` is written to your current working directory. Include “.” in the class path when you run the program.

From your current working directory, run the program:

```
Unix:    $ java -cp pig.jar:. idlocal
Cygwin:  $ java -cp `pwd`/pig.jar idlocal
```

To view the results, check the output file, `id.out`.

Mapreduce Mode

Point \$HADOOPDIR to the directory that contains the hadoop-site.xml file. Example:

```
$ export HADOOPDIR=/yourHADOOPsite/conf
```

From your current working directory, compile the program:

```
$ javac -cp pig.jar idmapreduce.java
```

Note: idmapreduce.class is written to your current working directory. Include “.” in the class path when you run the program.

From your current working directory, run the program:

```
Unix:    $ java -cp pig.jar:.$HADOOPDIR idmapreduce
Cygwin:  $ java -cp `.;pig.jar;$HADOOPDIR` idmapreduce
```

To view the results, check the idout directory on your Hadoop system.

4. Sample Code

The sample code is based on Pig Latin statements that extract all user IDs from the /etc/passwd file.

Copy the /etc/passwd file to your local working directory.

id.pig

For the Grunt Shell and script files.

```
A = load 'passwd' using PigStorage(':');
B = foreach A generate $0 as id;
dump B;
store B into 'id.out';
```

idlocal.java

For embedded programs.

```
import java.io.IOException;
import org.apache.pig.PigServer;
public class idlocal{
public static void main(String[] args) {
try {
PigServer pigServer = new PigServer("local");
runIdQuery(pigServer, "passwd");
}
catch(Exception e) {
}
}
}
public static void runIdQuery(PigServer pigServer, String inputFile) throws
```

```
IOException {
    pigServer.registerQuery("A = load '" + inputFile + "' using
PigStorage(':');");
    pigServer.registerQuery("B = foreach A generate $0 as id;");
    pigServer.store("B", "id.out");
}
}
```

idmapreduce.java

For embedded programs.

```
import java.io.IOException;
import org.apache.pig.PigServer;
public class idmapreduce{
    public static void main(String[] args) {
        try {
            PigServer pigServer = new PigServer("mapreduce");
            runIdQuery(pigServer, "passwd");
        }
        catch(Exception e) {
        }
    }
    public static void runIdQuery(PigServer pigServer, String inputFile) throws
IOException {
        pigServer.registerQuery("A = load '" + inputFile + "' using
PigStorage(':');")
        pigServer.registerQuery("B = foreach A generate $0 as id;");
        pigServer.store("B", "idout");
    }
}
```