Hadoop2.4.0 重新编译 64 位本地库

原创作者：大鹏鸟　　时间：2014-07-28
环境：虚拟机 VirtualBox，操作系统 64 位 CentOS 6.4
下载重新编译需要的软件包
apache-ant-1.9.4-bin.tar.gz
findbugs-3.0.0.tar.gz
protobuf-2.5.0.tar.gz
apache-maven-3.0.5-bin.tar.gz
下载 hadoop2.4.0 的源码包
hadoop-2.4.0-src.tar.gz

压解源码包
[grid@hadoopMaster01 ~]$ tar -zxvf hadoop-2.4.0-src.tar.gz

```
[grid@hadoopMaster01 ~]$ ls -lt
总用量 209436
-rwxr-xr-x   1 root root  15353709 7月   28 11:26 hadoop-2.4.0-src.tar.gz
-rwxr-xr-x   1 root root 138943699 7月   28 11:26 hadoop-2.4.0.tar.gz
-rwxr-xr-x   1 root root   5564593 7月   28 11:26 apache-ant-1.9.4-bin.tar.gz
-rwxr-xr-x   1 root root   8893609 7月   28 11:26 findbugs-3.0.0.tar.gz
-rwxr-xr-x   1 root root   2401901 7月   28 11:26 protobuf-2.5.0.tar.gz
-rwxr-xr-x   1 root root   5144659 7月   28 11:26 apache-maven-3.0.5-bin.tar.gz
drwxr-xr-x  16 grid grid      4096 7月   27 23:05 hadoop-1.2.1
-rwxr-xr-x   1 root root  38096663 7月   27 22:22 hadoop-1.2.1-bin.tar.gz
drwxr-xr-x.  2 grid grid      4096 7月   27 15:54 桌面
drwxr-xr-x.  2 grid grid      4096 7月   27 15:39 公共的
drwxr-xr-x.  2 grid grid      4096 7月   27 15:39 模板
drwxr-xr-x.  2 grid grid      4096 7月   27 15:39 视频
drwxr-xr-x.  2 grid grid      4096 7月   27 15:39 图片
drwxr-xr-x.  2 grid grid      4096 7月   27 15:39 文档
drwxr-xr-x.  2 grid grid      4096 7月   27 15:39 下载
drwxr-xr-x.  2 grid grid      4096 7月   27 15:39 音乐
drwxr-xr-x   9 grid grid      4096 3月   31 17:15 hadoop-2.4.0
drwxr-xr-x  15 grid grid      4096 3月   31 17:07 hadoop-2.4.0-src
[grid@hadoopMaster01 ~]$
```

安装编译所需软件

安装 MAVEN

压解 apache-maven-3.0.5-bin.tar.gz 到/opt/目录
[root@hadoopMaster01 grid]# tar -zxvf apache-maven-3.0.5-bin.tar.gz -C /opt/

```
[root@hadoopMaster01 grid]# cd /opt/
[root@hadoopMaster01 opt]# ls
apache-maven-3.0.5  rh  VBoxGuestAdditions-4.3.12
[root@hadoopMaster01 opt]# cd apache-maven-3.0.5/
[root@hadoopMaster01 apache-maven-3.0.5]# ls
bin  boot  conf  lib  LICENSE.txt  NOTICE.txt  README.txt
[root@hadoopMaster01 apache-maven-3.0.5]# pwd
/opt/apache-maven-3.0.5
```

修改/etc/profile 配置，增加 MAVEN 环境配置

```
HOSTNAME=`/bin/hostname 2>/dev/null`
HISTSIZE=1000
if [ "$HISTCONTROL" = "ignorespace" ] ; then
    export HISTCONTROL=ignoreboth
else
    export HISTCONTROL=ignoredups
fi

export PATH USER LOGNAME MAIL HOSTNAME HISTSIZE HISTCONTROL

export JAVA_HOME=/usr/java/jdk1.7.0_60
export CLASSPATH=.:$JAVA_HOME/lib:$JAVA_HOME/jre/lib:$JAVA_HOME/lib/tools.jar
export PATH=$JAVA_HOME/bin:$PATH

export MAVEN_HOME=/opt/apache-maven-3.0.5
export PATH=$PATH:$MAVEN_HOME/bin

# By default, we want umask to get set. This sets it for login shell
# Current threshold for system reserved uid/gids is 200
# You could check uidgid reservation validity in
# /usr/share/doc/setup-*/uidgid file
"/etc/profile" 85L, 2024C written
```

保存后使用 source /etc/profile 使修改配置即时生效

[root@hadoopMaster01 apache-maven-3.0.5]# source /etc/profile

使用 mvn -v 命令进行验证，如图所示表示安装配置成功

```
[root@hadoopMaster01 apache-maven-3.0.5]# mvn -v
Apache Maven 3.0.5 (r01de14724cdef164cd33c7c8c2fe155faf9602da; 2013-02-19 21:51:28+0800)
Maven home: /opt/apache-maven-3.0.5
Java version: 1.7.0_60, vendor: Oracle Corporation
Java home: /usr/java/jdk1.7.0_60/jre
Default locale: zh_CN, platform encoding: UTF-8
OS name: "linux", version: "2.6.32-358.el6.x86_64", arch: "amd64", family: "unix"
[root@hadoopMaster01 apache-maven-3.0.5]#
```

安装 ANT

压解 apache-ant-1.9.4-bin.tar.gz 到/opt/目录

[root@hadoopMaster01 grid]# tar -zxvf apache-ant-1.9.4-bin.tar.gz -C /opt/

```
[root@hadoopMaster01 grid]# cd /opt/
[root@hadoopMaster01 opt]# ls
apache-ant-1.9.4  apache-maven-3.0.5  rh  VBoxGuestAdditions-4.3.12
[root@hadoopMaster01 opt]# cd apache-ant-1.9.4/
[root@hadoopMaster01 apache-ant-1.9.4]# ls
bin  etc  fetch.xml  get-m2.xml  INSTALL  KEYS  lib  LICENSE  manual  NOTICE  README  WHATSNEW
[root@hadoopMaster01 apache-ant-1.9.4]# pwd
/opt/apache-ant-1.9.4
[root@hadoopMaster01 apache-ant-1.9.4]#
```

修改/etc/profile 配置，增加 ANT 环境配置

```
HOSTNAME=`/bin/hostname 2>/dev/null`
HISTSIZE=1000
if [ "$HISTCONTROL" = "ignorespace" ] ; then
    export HISTCONTROL=ignoreboth
else
    export HISTCONTROL=ignoredups
fi

export PATH USER LOGNAME MAIL HOSTNAME HISTSIZE HISTCONTROL

export JAVA_HOME=/usr/java/jdk1.7.0_60
export CLASSPATH=.:$JAVA_HOME/lib:$JAVA_HOME/jre/lib:$JAVA_HOME/lib/tools.jar
export PATH=$JAVA_HOME/bin:$PATH

export MAVEN_HOME=/opt/apache-maven-3.0.5
export PATH=$PATH:$MAVEN_HOME/bin

export ANT_HOME=/opt/apache-ant-1.9.4
export PATH=$PATH:$ANT_HOME/bin

# By default, we want umask to get set. This sets it for login shell
# Current threshold for system reserved uid/gids is 200
# You could check uidgid reservation validity in
# /usr/share/doc/setup-*/uidgid file
if [ $UID -gt 199 ] && [ "`id -gn`" = "`id -un`" ]; then
    umask 002
else
    umask 022
fi

for i in /etc/profile.d/*.sh ; do
    if [ -r "$i" ]; then
        if [ "${-#*i}" != "$-" ]; then
            . "$i"
        else
            . "$i" >/dev/null 2>&1
        fi
    fi
done

unset i
unset -f pathmunge
[root@hadoopMaster01 apache-ant-1.9.4]#
```

保存后使用 source /etc/profile 使修改配置即时生效

[root@hadoopMaster01 apache-ant-1.9.4]# source /etc/profile

使用 ant -version 命令进行验证，如图所示表示安装配置成功

```
[root@hadoopMaster01 apache-ant-1.9.4]# ant -version
Apache Ant(TM) version 1.9.4 compiled on April 29 2014
[root@hadoopMaster01 apache-ant-1.9.4]#
```

安装 FINDBUGS

压解 findbugs-3.0.0.tar.gz 到/opt/目录

[root@hadoopMaster01 grid]# tar -zxvf findbugs-3.0.0.tar.gz -C /opt/

```
[root@hadoopMaster01 grid]# cd /opt/
[root@hadoopMaster01 opt]# ls
apache-ant-1.9.4  apache-maven-3.0.5  findbugs-3.0.0  rh  VBoxGuestAdditions-4.3.12
[root@hadoopMaster01 opt]# cd findbugs-3.0.0/
[root@hadoopMaster01 findbugs-3.0.0]# ls
bin  doc  lib  optionalPlugin  plugin  README.txt  src
[root@hadoopMaster01 findbugs-3.0.0]# pwd
/opt/findbugs-3.0.0
[root@hadoopMaster01 findbugs-3.0.0]#
```

修改/etc/profile 配置，增加 FINDBUGS 环境配置

```
HOSTNAME=`/bin/hostname 2>/dev/null`
HISTSIZE=1000
if [ "$HISTCONTROL" = "ignorespace" ] ; then
    export HISTCONTROL=ignoreboth
else
    export HISTCONTROL=ignoredups
fi

export PATH USER LOGNAME MAIL HOSTNAME HISTSIZE HISTCONTROL

export JAVA_HOME=/usr/java/jdk1.7.0_60
export CLASSPATH=.:$JAVA_HOME/lib:$JAVA_HOME/jre/lib:$JAVA_HOME/lib/tools.jar
export PATH=$JAVA_HOME/bin:$PATH

export MAVEN_HOME=/opt/apache-maven-3.0.5
export PATH=$PATH:$MAVEN_HOME/bin

export ANT_HOME=/opt/apache-ant-1.9.4
export PATH=$PATH:$ANT_HOME/bin

export FINDBUGS_HOME=/opt/findbugs-3.0.0
export PATH=$PATH:$FINDBUGS_HOME/bin

# By default, we want umask to get set. This sets it for login shell
# Current threshold for system reserved uid/gids is 200
# You could check uidgid reservation validity in
# /usr/share/doc/setup-*/uidgid file
if [ $UID -gt 199 ] && [ "`id -gn`" = "`id -un`" ]; then
    umask 002
else
    umask 022
fi

for i in /etc/profile.d/*.sh ; do
    if [ -r "$i" ]; then
        if [ "${-#*i}" != "$-" ]; then
            . "$i"
        else
            . "$i" >/dev/null 2>&1
        fi
    fi
done
```

保存后使用 source /etc/profile 使修改配置即时生效

[root@hadoopMaster01 apache-ant-1.9.4]# source /etc/profile

使用 findbugs -version 命令进行验证，如图所示表示安装配置成功

```
[root@hadoopMaster01 ~]# findbugs -version
3.0.0
[root@hadoopMaster01 ~]#
```

安装 PROTOBUF

编译 Hadoop 2.4.0，需要 protobuf 的编译器 protoc，一定要是 protobuf 2.5.0 以上

直接压解 protobuf-2.5.0.tar.gz

[root@hadoopMaster01 grid]# tar -zxvf protobuf-2.5.0.tar.gz

```
[root@hadoopMaster01 grid]# cd protobuf-2.5.0
[root@hadoopMaster01 protobuf-2.5.0]# ls
aclocal.m4  config.guess  configure      COPYING.txt  examples                    install-sh  ltmain.sh    Makefile.in         protobuf.pc.in  src
autogen.sh  config.h.in   configure.ac   depcomp      generate_descriptor_proto.sh  INSTALL.txt  m4           missing             python          vsprojects
CHANGES.txt config.sub    CONTRIBUTORS.txt editors    gtest                       java        Makefile.am  protobuf-lite.pc.in  README.txt
[root@hadoopMaster01 protobuf-2.5.0]# pwd
/home/grid/protobuf-2.5.0
[root@hadoopMaster01 protobuf-2.5.0]#
```

安装 protobuf，依次执行如下命令

[root@hadoopMaster01 grid]# cd protobuf-2.5.0

[root@hadoopMaster01 protobuf-2.5.0]# ls

aclocal.m4 config.guess **configure** COPYING.txt examples install-sh ltmain.sh Makefile.in protobuf.pc.in src

autogen.sh config.h.in configure.ac depcomp generate_descriptor_proto.sh INSTALL.txt m4 missing python vsprojects CHANGES.txt config.sub CONTRIBUTORS.txt editors gtest java Makefile.am protobuf-lite.pc.in README.txt

[root@hadoopMaster01 protobuf-2.5.0]# ./configure

[root@hadoopMaster01 protobuf-2.5.0]# make

[root@hadoopMaster01 protobuf-2.5.0]# make check

[root@hadoopMaster01 protobuf-2.5.0]# make install

使用 protoc --version 命令进行验证，如图所示表示安装配置成功

```
[root@hadoopMaster01 protobuf-2.5.0]# protoc --version
libprotoc 2.5.0
[root@hadoopMaster01 protobuf-2.5.0]#
```

安装依赖包

安装 cmake,openssl-devel,ncurses-devel 依赖包(root 用户且能够连上互联网)

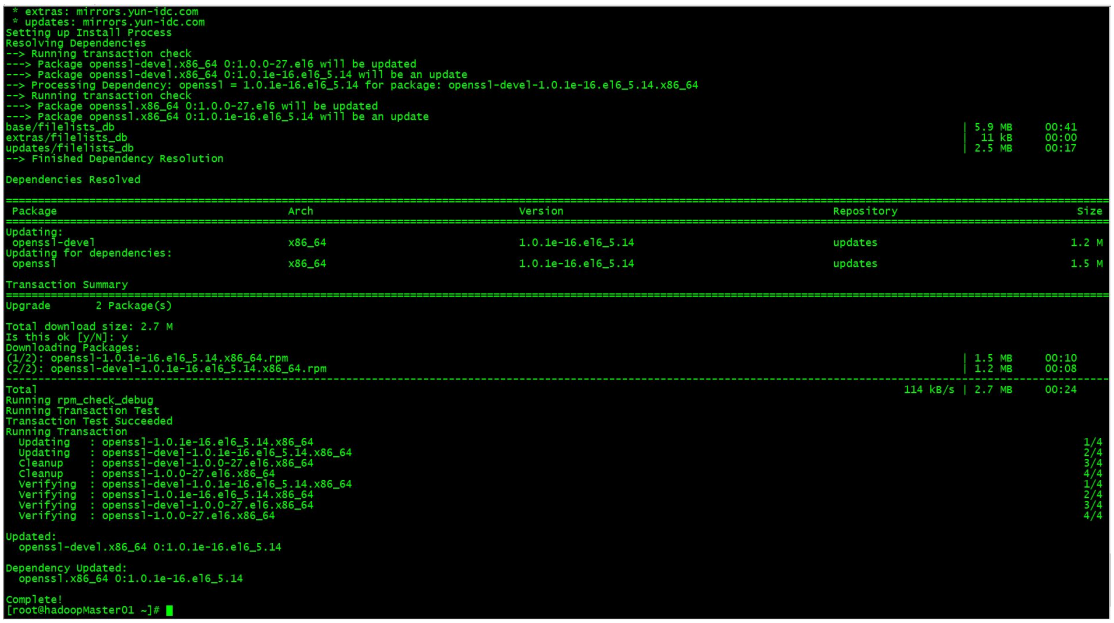
[root@hadoopMaster01 ~]# yum install cmake

如下图表示安装成功

```
[root@hadoopMaster01 ~]# yum install cmake
Loaded plugins: fastestmirror, refresh-packagekit, security
base                                                                      | 3.7 kB     00:00
base/primary_db                                                           | 4.4 MB     00:31
extras                                                                    | 3.4 kB     00:00
extras/primary_db                                                         |  19 kB     00:00
updates                                                                   | 3.4 kB     00:00
updates/primary_db                                                        | 4.2 MB     00:43
Setting up Install Process
Resolving Dependencies
--> Running transaction check
---> Package cmake.x86_64 0:2.6.4-5.el6 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================
 Package          Arch              Version                 Repository     Size
================================================================================
Installing:
 cmake            x86_64            2.6.4-5.el6             base          5.2 M

Transaction Summary
================================================================================
Install       1 Package(s)

Total download size: 5.2 M
Installed size: 18 M
Is this ok [y/N]: y
Downloading Packages:
cmake-2.6.4-5.el6.x86_64.rpm                                              | 5.2 MB     00:36
warning: rpmts_HdrFromFdno: Header V3 RSA/SHA256 Signature, key ID c105b9de: NOKEY
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
Importing GPG key 0xC105B9DE:
 Userid : CentOS-6 Key (CentOS 6 Official Signing Key) <centos-6-key@centos.org>
 Package: centos-release-6-4.el6.centos.10.x86_64 (@anaconda-CentOS-201303020151.x86_64/6.4)
 From   : /etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-6
Is this ok [y/N]: y
Running rpm_check_debug
Running Transaction Test
Transaction Test Succeeded
Running Transaction
Warning: RPMDB altered outside of yum.
  Installing : cmake-2.6.4-5.el6.x86_64                                    1/1
  Verifying  : cmake-2.6.4-5.el6.x86_64                                    1/1

Installed:
  cmake.x86_64 0:2.6.4-5.el6

Complete!
[root@hadoopMaster01 ~]#
```

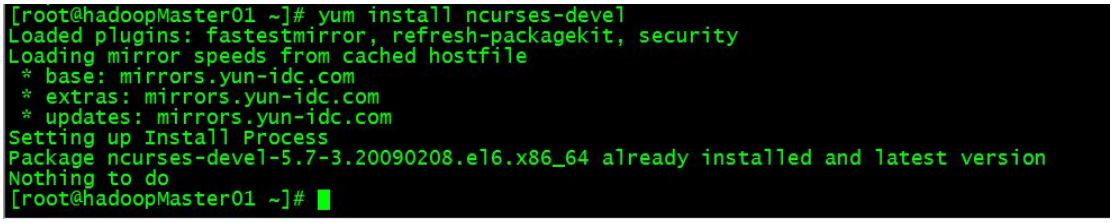
[root@hadoopMaster01 ~]# yum install openssl-devel

如下图表示安装成功



[root@hadoopMaster01 ~]# yum install ncurses-devel

如下图表示依赖包系统中已经安装并且为最新版本



编译 64 位本地库

进入已压解的 hadoop 源码目录

[grid@hadoopMaster01 ~]$ cd hadoop-2.4.0-src

[grid@hadoopMaster01 hadoop-2.4.0-src]$ pwd

/home/grid/hadoop-2.4.0-src

执行 **mvn clean install -DskipTests** 命令，等待完成(会自动联网下载很多东西)

[grid@hadoopMaster01 hadoop-2.4.0-src]$ mvn clean install -DskipTests

执行 **mvn package -Pdist,native -DskipTests -Dtar** 命令，开始编译，等待完成

grid@hadoopMaster01 hadoop-2.4.0-src]$ mvn package -Pdist,native -DskipTests -Dtar

出现如下信息

[INFO] --

[INFO] Reactor Summary:

[INFO]

[INFO] Apache Hadoop Main ..... SUCCESS [6.304s]

[INFO] Apache Hadoop Project POM ..... SUCCESS [26.555s]

[INFO] Apache Hadoop Annotations ..... SUCCESS [2.757s]

[INFO] Apache Hadoop Assemblies ..... SUCCESS [0.216s]

[INFO] Apache Hadoop Project Dist POM ..... SUCCESS [19.592s]

[INFO] Apache Hadoop Maven Plugins ..... SUCCESS [2.715s]
[INFO] Apache Hadoop MiniKDC ..... SUCCESS [2.360s]
[INFO] Apache Hadoop Auth ..... SUCCESS [2.950s]
[INFO] Apache Hadoop Auth Examples ..... SUCCESS [2.119s]
[INFO] Apache Hadoop Common ..... SUCCESS [1:22.302s]
[INFO] Apache Hadoop NFS ..... SUCCESS [5.095s]
[INFO] Apache Hadoop Common Project ..... SUCCESS [0.026s]
[INFO] Apache Hadoop HDFS ..... SUCCESS [2:06.178s]
[INFO] Apache Hadoop HttpFS ..... SUCCESS [1:09.142s]
[INFO] Apache Hadoop HDFS BookKeeper Journal ..... SUCCESS [14.457s]
[INFO] Apache Hadoop HDFS-NFS ..... SUCCESS [2.859s]
[INFO] Apache Hadoop HDFS Project ..... SUCCESS [0.030s]
[INFO] hadoop-yarn ..... SUCCESS [0.029s]
[INFO] hadoop-yarn-api ..... SUCCESS [59.010s]
[INFO] hadoop-yarn-common ..... SUCCESS [20.743s]
[INFO] hadoop-yarn-server ..... SUCCESS [0.026s]
[INFO] hadoop-yarn-server-common ..... SUCCESS [7.344s]
[INFO] hadoop-yarn-server-nodemanager ..... SUCCESS [11.726s]
[INFO] hadoop-yarn-server-web-proxy ..... SUCCESS [2.508s]
[INFO] hadoop-yarn-server-applicationhistoryservice ..... SUCCESS [4.041s]
[INFO] hadoop-yarn-server-resourcemanager ..... SUCCESS [10.370s]
[INFO] hadoop-yarn-server-tests ..... SUCCESS [0.374s]
[INFO] hadoop-yarn-client ..... SUCCESS [4.791s]
[INFO] hadoop-yarn-applications ..... SUCCESS [0.025s]
[INFO] hadoop-yarn-applications-distributedshell ..... SUCCESS [2.242s]
[INFO] hadoop-yarn-applications-unmanaged-am-launcher .... SUCCESS [1.553s]
[INFO] hadoop-yarn-site ..... SUCCESS [0.024s]
[INFO] hadoop-yarn-project ..... SUCCESS [3.261s]
[INFO] hadoop-mapreduce-client ..... SUCCESS [0.082s]
[INFO] hadoop-mapreduce-client-core ..... SUCCESS [18.549s]
[INFO] hadoop-mapreduce-client-common ..... SUCCESS [13.772s]
[INFO] hadoop-mapreduce-client-shuffle ..... SUCCESS [2.441s]
[INFO] hadoop-mapreduce-client-app ..... SUCCESS [6.866s]
[INFO] hadoop-mapreduce-client-hs ..... SUCCESS [6.280s]
[INFO] hadoop-mapreduce-client-jobclient ..... SUCCESS [3.510s]
[INFO] hadoop-mapreduce-client-hs-plugins ..... SUCCESS [1.725s]
[INFO] Apache Hadoop MapReduce Examples ..... SUCCESS [4.641s]
[INFO] hadoop-mapreduce ..... SUCCESS [3.002s]
[INFO] Apache Hadoop MapReduce Streaming ..... SUCCESS [3.497s]
[INFO] Apache Hadoop Distributed Copy ..... SUCCESS [5.847s]
[INFO] Apache Hadoop Archives ..... SUCCESS [1.791s]
[INFO] Apache Hadoop Rumen ..... SUCCESS [4.693s]
[INFO] Apache Hadoop Gridmix ..... SUCCESS [3.235s]
[INFO] Apache Hadoop Data Join ..... SUCCESS [2.349s]

[INFO] Apache Hadoop Extras ..... SUCCESS [2.488s]
[INFO] Apache Hadoop Pipes ..... SUCCESS [5.863s]
[INFO] Apache Hadoop OpenStack support ..... SUCCESS [3.776s]
[INFO] Apache Hadoop Client ..... SUCCESS [5.235s]
[INFO] Apache Hadoop Mini-Cluster ..... SUCCESS [0.070s]
[INFO] Apache Hadoop Scheduler Load Simulator ..... SUCCESS [3.935s]
[INFO] Apache Hadoop Tools Dist ..... SUCCESS [4.392s]
[INFO] Apache Hadoop Tools ..... SUCCESS [0.022s]
[INFO] Apache Hadoop Distribution ..... SUCCESS [21.274s]
[INFO] --
[INFO] BUILD SUCCESS
[INFO] --
[INFO] Total time: 10:25.147s
[INFO] Finished at: Mon Jul 28 16:09:56 CST 2014
[INFO] Final Memory: 75M/241M
[INFO] --

表示编译成功

进入/home/grid/hadoop-2.4.0-src/hadoop-dist/target/hadoop-2.4.0/lib/native 检查，使用 file *命令，如下图已经成功将编译 64 本地库

将 64 位的 native 文件夹替换原 32 位的文件夹即可