Chapter 1

Installation Manual

In this installation manual, we provided the installation of the softwares which are used to collect the log data and stores into Cassandra. We also provided the installation and configuration of the CALONE-NOM. The needed open source(Flume-ng, Cassandra, LDAP), contributed(Flow Isolation Server, CALONE-MON) software installations and configurations are given bellow.

- Apache Flume-NG
- Apache Cassandra
- Web server (CALONE-MON)
- LDAP server
- Flow Isolation Server

1.1 Prerequisites: System Requirements

- For a Web Server
  - Minimum prerequisites are 1 CPU core and 512MB RAM.
  - Recommends a minimum of 4GB RAM and 2 CPU cores.
- For an LDAP Server
  - Minimum prerequisites are 1 CPU core and 512MB RAM.

  - Recommends a minimum of 1GB RAM.

- For Cassandra
  - Minimum prerequisites are 1 CPU and 4GB RAM.
  - Recommends a minimum of 4GB RAM and 4 CPU cores.
- For other softwares
  - Minimum prerequisites are 1 CPU and 1GB RAM.
  - Recommends a minimum of 4GB RAM and 4 CPU cores.
- For a Client System
  - Any thin client which can have a web browser.

1.2 Flume-NG Installation

Flume-NG needs to be installed on every machine (physical or logical) where we want to collect the log data. We need to add a line that is ***.* @@local-host:3030** at the end of the file which is **/etc/rsyslog.con**, such that syslog daemon send the log messages to the port 3030. Then configure the flume sink to read the data from that port(3030). For more details go through the README file in the Extended-Flume-NG. In this downloads we are providing the binary file. We can download and run the flume agent. The syslog.conf is the configuration file. Replace the Cassandra server address and Flow-Isolation-Server address with the current server addresses.

- Download the the Extended-Flume-NG.
- Compiling Flume requires the following tools:
  - Oracle Java JDK 1.6
  - Apache Maven 3.x
- Set the following Maven options:

  export MAVEN_OPTS=”-Xms512m -Xmx1024m -XX:PermSize=256m -XX:MaxPermSize=512m”
- To compile Flume, **run ‘mvn compile‘**.

- To build a distribution, **run 'mvn install'**.
- The final Flume distribution artifacts will be in **$project/flume-ng-dist/target/**.

1.3 Cassandra Installation

- Download apache-cassandra-1.1.7.
- Requirements :
- Java >= 1.6
- The bellow given guide will walk you through getting a basic one node cluster up and running, and demonstrate some simple reads and writes.
  - tar -zxvf apache-cassandra-$VERSION.tar.gz
  - cd apache-cassandra-$VERSION
  - sudo mkdir -p /var/log/cassandra
  - sudo chown -R 'whoami' /var/log/cassandra
  - sudo mkdir -p /var/lib/cassandra
  - sudo chown -R 'whoami' /var/lib/cassandra
- To start Cassandra server
  /bin/cassandra -f
- To run a test client
  bin/cassandra-cli –host localhost/9160

1.4 Flow Isolation Server

This server Contains a input file. We need to replace the Cassandra server address with the current Cassandra server. Include the tenant ID and keyspace as specified in the input file

- Download the Flow Isolation Server.
- Requirements:

  - java.
  - JDK.

- Libraries:
  - cassandra-thrift-1.0.5.jar
  - commons-lang-2.4.jar
  - guava-14.0-rc1.jar
  - hector-core-1.1-4-SNAPSHOT.jar
  - junit-4.11.jar
  - libthrift-0.6.1.jar
  - log4j-1.2.16.jar
  - slf4j-api-1.6.1.jar
  - slf4j-log4j12-1.6.1.jar
  - uuid-3.2.0.jar

- To start the Flow Isolation Server
  javac FlowIsolation.java
  java FlowIsolation $< configuration_file >$

1.5 Web Application Installation and Configuration

The web server we are installing is Apache Tomcat which supports servlets and JSP. This is different from normal Apache web server which can deploy only HTTP pages.

1.5.1 Apache Tomcat Server Installation

- To install Apache Tomcat the prerequisites are
  - java
  - JDK

- Download Tomcat source package and uncompress it.
  tar xvfz apache-tomcat-7.0.41.tar.gz
- Copy the apache-tomcat-7.0.41 directory into a desirable directory and this path will become TOMCAT HOME directory.(Let us take that TOMCAT HOME directory is **/opt/apache-tomcat-7.0.41)**
- Setup the paths for catalina and others.
  CATALINA HOME=/opt/apache-tomcat-7.0.41
  CATALINA BASE=/opt/apache-tomcat-7.0.41
- Setup the JAVA and JDK paths to compile and run the JSP code (Let us assume that java 1.6 already exists in the system)
  JAVA HOME=/usr/lib/jvm/jre-1.6.0-openjdk
  JDK HOMe=/usr/lib/jvm/jre-1.6.0-openjdk
- Now start tomcat server.
  sh /opt/apache-tomcat-7.0.41/bin/startup.sh 43
- By default Apache Tomcat will be hosted on "localhost : 8080" port. So try to access the site with web browser.
- If you are redirected to apache tomcat server starting page, installation is successful. Otherwise check the 4 environment variables which are configured earlier are configured correctly or not.

1.5.2 Apache Tomcat Server Configuration

The two most important configuration files to get Tomcat up and running are called server.xml and web.xml. By default, these files are located at TOMCAT HOME/conf/server.xml and TOMCAT-HOME/conf/web.xml, respectively.

- Edit the **/opt/apache-tomcat-7.0.30/conf/server.xml** file in apache tomcat server to make 8080 port to default(80) port. Connector port=8080 to Connector port=80
- Edit the **/opt/apache-tomcat-7.0.30/conf/web.xml** to
  - Specify default welcome page(e.g. index.jsp).

- Change the default time for session expiry (default time is 30 min.)
- Deploy the CALONE-MON software into this Apache Tomcat server. This means copy the software into **/opt/apache-tomcat-7.0.30/webapps/ROOT/** location in Apache Tomcat Server.

1.6 LDAP Server Installation and Configuration

An open source software called OpenLDAP software is used to install LDAP Server. There are also many other LDAP Server softwares which are commercial.

1.6.1 OpenLDAP Installation

We can do the installation in two ways - using GUI or the command line.
Using GUI

- Go to Software Management in Yast2.
- Search for "yast2-ldap-server".
- Install the software with root privileges.
- After the installation, check for "LDAP Server" icon in "Yast2". If it exists, installation was successful.

Using command line

- Download the OpenLDAP software from openldap official site http://www.openldap.org/.
- Copy the package to a desirable directory and uncompress it.
  tar xvzf openldap-2.2.5.tgz
- Type ./configure command to build the software with default options. For customized installation type ./configure –help command to know the options. Watch the output to see if all went well. 46
- After configuring the software you can start building it. First build the dependencies, using the command: make depend.

- Build the server after that using the command: “make”.
- To ensure the correct build, we should run the test suite with the command:make test.
- Now install the binaries and man pages with supervisor privileges. su root -c ’make install’.

1.6.2 OpenLDAP Configuration

Once the OpenLDAP software has been built and installed, we are ready to configure it. The configuration has the following steps:

- Go to Yast2 and click on LDAP server icon to open the LDAP server.
- Start the LDAP server and open a port (the default port for LDAP is 389) in firewall to access the LDAP entries by the web application.
- Then enter the administrator common name and passwords.
- If all goes well, you will get a message that the server has started.

1.6.3 Checking the LDAP Server

To check whether the LDAP server is installed and configured correctly, we need to search an entry (any user entry) in the LDAP server from any other system which is in the same network.

1.6.4 Searching Users in LDAP Server

- Use ldapsearch command to search any user in the LDAP server.
- The syntax of ldapsearch is :

  ldapsearch -x -h LDAP-Server-IP -p 389 -b ou=logmonitoring,dc=dcis,dc=uohyd,dc=ernet,dc=kvdi,dc=com “(uid=username)”

  e.g. ldapsearch -x -h 10.5.0.94 -p 389 -b ou=logmonitoring,dc=dcis,dc=uohyd,dc=ernet,dc=kvdi,dc=com “(uid=ramya)”