Installation

## Objectives

At the end of this module, you will have covered

- High level architecture of Aerospike
- Install Aerospike tools
- Install Aerospike server
- Install Aerospike Management Console (AMC)*
- Start/Stop the server
- Conduct basic tests of database

*Use of the AMC will be covered in a later module

This module of the Aerospike training is for just the basics of installing the Aerospike server and Aerospike Management Console.

While this may seem like a small step, is is crucial to testing new environments and ensuring basic functionality.

You can often debug basic installation issues with the default configuration.
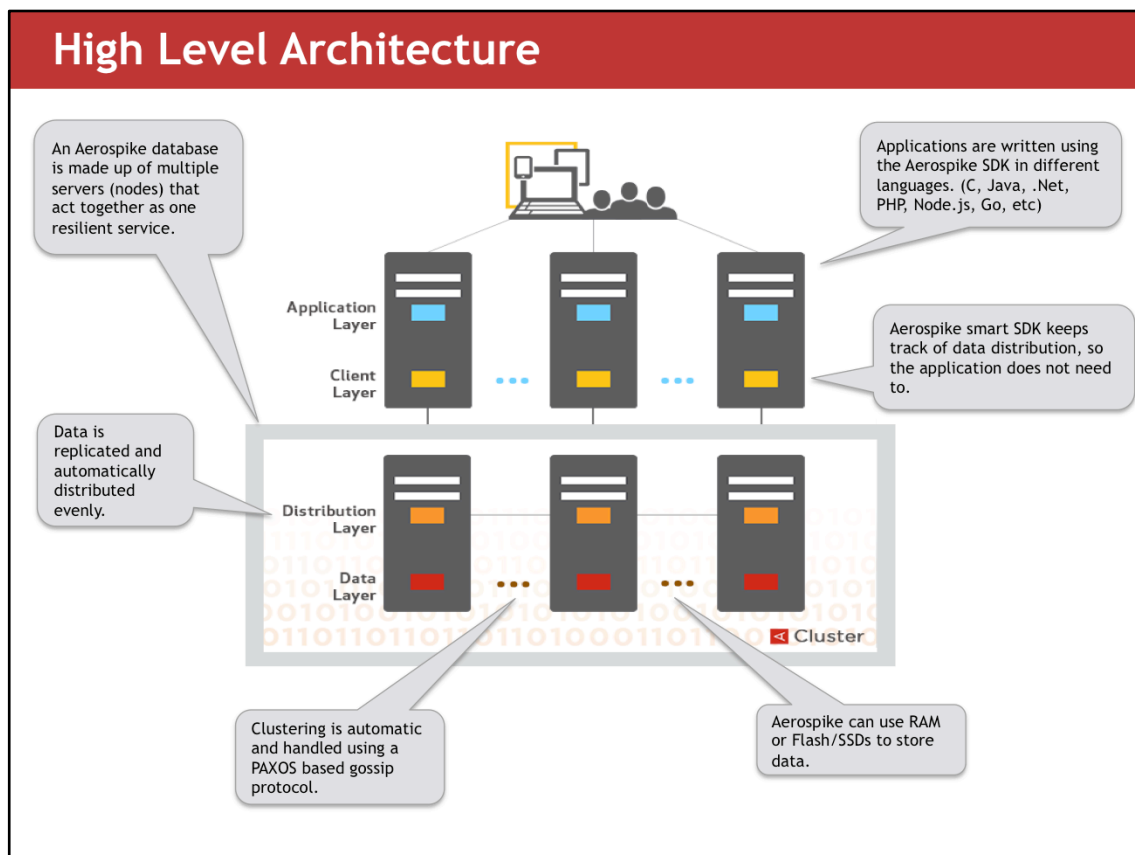
Aerospike was designed from the beginning as a distributed database.

The initial intent was to make a high throughput, low latency database that was capable of staying up 24 x 7 with no need to go down due to hardware failure or maintenance.

The client SDKs have been written in a number of different languages. Please go to http://www.aerospike.com/develop/ to see a full list of supported languages.

Installing Aerospike Server

For this class, Aerospike has prepared an Amazon EC2 instance for your use.

These instances have pre-loaded the following:
- Aerospike Java client
- Aerospike Python client
- Aerospike C client
- Aerospike data loader
- Oracle JDK 1.7
- maven
- lua
- git

We will be installing the server as a hands-on exercise.

You can find the AMI in the US-East Region by going to the AWS Marketplace with the name "aerotraining-admin-<VERSION>". You will need to make sure that the ports 3000-3004 and 8081 are open.

You may not need all of these, but they are there for your convenience.

Aerospike data loader is an open source project

How To Log Into The AWS Instance

Log into the server
- Mac/Linux
  - `ssh aerotraining@<ip_address>`
- Windows PC
  - You can use a tool such as putty to ssh login to the server:
  - http://www.chiark.greenend.org.uk/~sgtatham/putty/

The username/password is aerotraining/aerotraining.

The aerotraining user has sudo privileges, which is important for easiest installation with Aerospike.

You should open 2 different shells on the instance.

You each should have your own IP address to log into your own instance. You can use whichever tool you are comfortable with to log in. You will need basic Linux skills for this class.

Sudo/root is required for installing/starting the Aerospike database when using rpm or deb. You can also download and use the prebuilt any Linux binaries, which do not require those permissions. Settings for this are a little different and not covered in this module.

The any linux editions can be found here:

http://www.aerospike.com/docs/operations/install/linux/other/

Installing Aerospike Server and Aerospike Monitoring Console

To install the software you must have root/sudo privileges.
The links below are in the file ~aerotraining/README.md.

- Download the server software. (The "-O" is the capital letter and note that the letter before "6" is the lower case "L", not the numeral "1"). Each wget should be its own line.

```
wget -O aerospike-server.tgz \
     http://www.aerospike.com/download/server/latest/artifact/el6
```

- Download the Aerospike Monitoring software

```
wget -O aerospike-amc.rpm \
     http://www.aerospike.com/download/amc/latest/artifact/el6
```

- Install the server
  - tar xvf aerospike-server.tgz
  - cd aerospike-server-community-<version>
  - sudo ./asinstall
- Install the AMC
  - sudo rpm -ivh aerospike-amc.rpm

The URLs for the latest version remain static, so these URLs will get the latest version of the both the database and the Aerospike Management Console.

It is NOT required to install the AMC as the same node as the Aerospike Server, but it is useful to install it here for the class.

A   **Server Operation**

Starting And Stopping Aerospike Server

Controlling the server requires you to be root or have sudo privileges, which the aerotraining user has.

Start server

```
sudo service aerospike start
```

Check on server status

```
sudo service aerospike status
```

Stop server

```
sudo service aerospike stop
```

Restart server

```
sudo service aerospike restart
```

While it is possible to put this into the server startup scripts, Aerospike does not recommend you do this. There are cases where you want the Linux instance to come up, but not the Aerospike server.

This could be to allow specific actions prior to restarting the server. For example, if a server was down for a long time, then the data on the disks may be dated and reconciling this with the new data on the other nodes may take a long time. It may take much less time to rebalance the data from the other nodes already in the cluster. This involves deleting the data on disk and restarting the server.

Starting And Stopping The AMC Server

The Aerospike Management Console (AMC) is used to see how the server is doing.

Start server

```
sudo service amc start
```

Check on server status

```
sudo service amc status
```

Stop server

```
sudo service amc stop
```

Restart server

```
sudo service amc restart
```

The AMC is the fastest and easiest way to see how the cluster is doing.

Connect To The Server using AMC

The easiest way to see the status of the server is to use the AMC.
Open any standard browser (Chrome, Firefox, IE) and go to the URL:

    http://<ip_addr>:8081

Then enter in "localhost" to the host name.

You should connect to the AMC and be able to see the AMC dashboard. Note that when you log in, the actual IP address of the server is there rather than "localhost".

We will look deeper into the AMC in a later training module. But for now notice the empty state of the database.

If you are having problems connecting, make sure that:
- you have started the AMC
- you have started the Aerospike server
- port 8081 is open

The instance has been configured to allow connections from the Internet to the AMC. When installing the AMC, make sure that the appropriate port is opened.

Write Test

Let us now conduct a simple write test on the database. The default configuration of Aerospike has a simple RAM based namespace called "test". Let's try to write a record into a set called "testset".

From the command line of the server, run the aql command.
```
> aql
```

This will take you into the aql command line.

Try the following (type exactly on one line):

```
aql> INSERT INTO TEST.TESTSET (PK, company, age) \
       VALUES ('myname', 'mycompany', '26')
```

While not a sophisticated use of the server, using aql to run this test establishes connectivity to the database.

We will go into more of the use of the AQL in another module.

In this case we will try to write a record into the namespace "TEST" and set "TESTSET". This fails. Why?

Write Test

Literals in AQL such as "test" are case sensitive.

Command words like "INSERT" are not case sensitive.

```
aql> INSERT INTO test.testset (PK, company, age) \
      VALUES ('myname', 'mycompany', '26')
```

Now take a look at the AMC and notice that there is now a record in the database.

Because the last command used the upper case literal "TEST", it failed. Let's try again with the proper case.

Read Test

To read the data from the command line, you must be in the aql shell.

```
aql> SELECT * from test.testset where PK='myname'
```

This should give you back the values you wrote in the previous step.

Note very carefully that the key is not visible here. Aerospike does NOT store the key in the database by default.

If having the key itself is necessary for your application, you should make sure that it is stored as a value.

Delete Test

Finally, you should be able to delete the record. From the aql command line, run the following:

```
aql> DELETE FROM test.testset WHERE PK='myname'
```

Now take a look at the AMC and notice that the object count has decremented.

The AMC should update all metrics within seconds. A failure to do so implies a communication problem.

Logs

It is always helpful to be able to look at the logs of the server. You MUST have root/sudo privileges to see the logs in the default locations:

```
/var/log/aerospike/aerospike.log
```

It is often useful to keep a window open with a tail of the log:

```
sudo tail -f /var/log/aerospike/aerospike.log
```

Summary

What you have done to this point:

- Covered the high level architecture of Aerospike
- Installed the latest version of Aerospike DB and associated tools.
- Installed the latest version of the AMC.
- Learned how to start/stop/check the status of the DB and the AMC.
- Learned how to look at an overview of the health of the DB with the AMC.
- Learned how to write/read/delete a test object.