

Oracle® NoSQL Database

Quick Start to KV Lite



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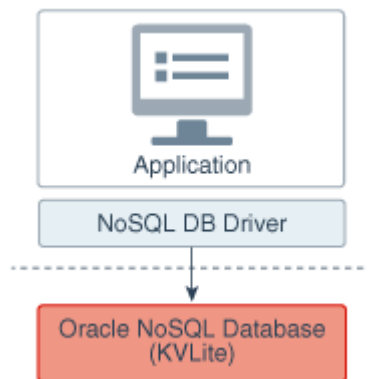
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Introduction

The Oracle NoSQL Database is a scalable, distributed NoSQL database, designed to provide highly reliable, flexible and available data management across a configurable set of storage nodes. It consists of two parts - a NoSQL DB Driver and a collection of storage nodes called the KVStore. The NoSQL DB Driver is an intelligent driver that transparently handles all the core operations of Oracle NoSQL Database, and the KVStore consists of storage nodes.

KVLite is a simplified version of the Oracle NoSQL Database. It provides a single storage node, single shard store, that is not replicated. It runs in a single process without requiring any administrative interface. You configure, start, and stop KVLite using a command line interface.



Note: KVLite is intended for use by application developers who want to develop and unit test their Oracle NoSQL Database applications. It can be used as a development platform for developers to get familiar with Oracle NoSQL APIs, and test different ways of interacting with these APIs. KVLite runs on a single system. It is not intended for production deployment, or for performance measurements.

Also, KVLite is secure by default. If you want to run KVLite in unsecure mode, you will have to explicitly provide parameters to disable security while installing KVLite as demonstrated in this guide.

This Quick Start guide demonstrates how to perform the following tasks:

1. [Install KVLite](#)
2. [Start KVLite](#)
3. [Verify your Installation](#)
4. [Stop and Restart KVLite](#)
5. [About the Oracle NoSQL Database Proxy](#)

Install KVLite

KVLite is bundled with the Oracle NoSQL Database software. To install KVLite, perform the following:

1. Download the tar.gz or .zip file from Oracle Technology Network.
2. Use `gunzip` and `tar` commands to extract the .tar.gz package (or use `unzip` command if you downloaded the .zip package). Oracle NoSQL Database version 24.1.11 Community Edition is used in this example. The actual package names and directory names will change, depending upon the release version you are using, and whether you are using Community Edition (CE) or Enterprise Edition (EE).

Be aware that the examples used in this document are part of a separate download and must be unpacked separately.

Also, make sure you meet the following requirements to run KVLite:

- Install Java version 17 in your machine.
- Maintain a minimum disk space of 5GB.

The examples download package (`kv-examples-24.1.11.tar.gz` in this tutorial) can be obtained from the same location as you obtained your server download package.

```
$ gunzip kv-ce-24.1.11.tar.gz
$ tar xvf kv-ce-24.1.11.tar

// To extract the examples package:
$ gunzip kv-examples-24.1.11.tar.gz
$ tar xvf kv-examples-24.1.11.tar
```

In this case, the contents of `kv-ce-24.1.11.tar.gz` is unpacked to a directory called `kv-24.1.11` and the contents of `kv-examples-24.1.11.tar.gz` is unpacked to a directory called `kv-24.1.11/examples`.

Start KVLite

Perform the following steps to start a KVLite instance:

To start KVLite in secure mode:

1. Open a terminal and `cd` into the `kv-24.1.11` directory to start the NoSQL Database server.

```
$ cd kv-24.1.11
$ java -Xmx64m -Xms64m -jar lib/kvstore.jar kvlite
    [-storagedirsizegb N]
```

The `storagedirsizegb` is an optional parameter. This parameter can be used to control the size of the storage directory for a new instance. The value of `N` is in GB and must be `>= 1`. By default the store created has a size of 10GB and this flag must be used to override that. The size cannot be changed after the instance has been created and use of the flag on an existing instance is ignored.

Expected Output:

```
Generated password for user admin: <password>
User login file: ./kvroot/security/user.security
Created new kvlite store with args:
-root ./kvroot -store kvstore -host localhost -port 5000
-storagedirsizegb 15 -secure-config enable
```

Where `kvstore` is the name of the store, `localhost` is the name of the local host, and `kvroot` is the directory where Oracle NoSQL Database data is placed. It takes about 10 - 60 seconds before this message is issued, depending on the speed of your system.

Note that you will not get the command line prompt back until you stop the KVLite.

2. In a second shell, `cd` into the `kv-24.1.11` directory and ping your KVLite instance to test that it is active. The details of the output will vary but you must see a running store.

```
$ cd kv-24.1.11
$ java -Xmx64m -Xms64m -jar lib/kvstore.jar ping -host localhost -port
5000 -security kvroot/security/user.security
```

Expected output:

```
Pinging components of store kvstore based upon topology sequence #14
10 partitions and 1 storage nodes
Time: 2024-04-05 06:15:34 UTC   Version: 24.1.11
Shard Status: healthy: 1 writable-degraded: 0 read-only: 0 offline: 0
total: 1
Admin Status: healthy
Zone [name=KVLite id=zn1 type=PRIMARY allowArbiters=false
masterAffinity=false]   RN Status: online: 1 read-only: 0 offline: 0
Storage Node [sn1] on phoenix126166: 5000   Zone: [name=KVLite id=zn1
type=PRIMARY allowArbiters=false masterAffinity=false]   Status:
RUNNING   Ver: 24.1.11 2024-04-05 01:31:46 UTC   Build id: 477e7f102ab4
Edition: Community   isMasterBalanced: true   serviceStartTime:
```

```
2024-04-05 06:13:24 UTC
  Admin [admin1]      Status: RUNNING,MASTER  serviceStartTime:
2024-04-05 06:13:29 UTC  stateChangeTime: 2024-04-05 06:13:29 UTC
availableStorageSize: 2 GB
  Rep Node [rg1-rn1]  Status: RUNNING,MASTER sequenceNumber: 322
haPort: 5003 availableStorageSize: 9 GB storageType: HD
serviceStartTime: 2024-04-05 06:13:32 UTC  stateChangeTime: 2024-04-05
06:13:32 UTC
```

The status indicates that the KVLite is up and running.

To start KVLite in unsecure mode:

1. Open a terminal and `cd` into the `kv-24.1.11` directory.

```
$ cd kv-24.1.11
```

2. Execute the `kvstore.jar` file using the `-enable-secure disable` flag to disable security and start KVLite in unsecure mode.

```
$ java -jar lib/kvstore.jar kvlite
[-storagedirsizegb N ] -secure-config disable
```

The `storagedirsizegb` is an optional parameter. This parameter can be used to control the size of the storage directory for a new instance. The value of `N` is in GB and must be `>= 1`. By default the store created has a size of 10GB and this flag must be used to override that. The size cannot be changed after the instance has been created and use of the flag on an existing instance is ignored.

3. In a second shell, `cd` into the `kv-24.1.11` directory and ping your KVLite instance to test that it is active. You must see a running store.

```
$ cd kv-24.1.11
$ java -jar lib/kvstore.jar ping -host localhost -port 5000
```

Expected output:

```
Pinging components of store kvstore based upon topology sequence #14
10 partitions and 1 storage nodes
Time: 2024-04-05 08:30:00 UTC  Version: 24.1.11
Shard Status: healthy: 1 writable-degraded: 0 read-only: 0 offline: 0
total: 1
Admin Status: healthy
Zone [name=KVLite id=zn1 type=PRIMARY allowArbiters=false
masterAffinity=false]  RN Status: online: 1 read-only: 0 offline: 0
Storage Node [sn1] on phoenix126166: 5000  Zone: [name=KVLite id=zn1
type=PRIMARY allowArbiters=false masterAffinity=false]  Status:
RUNNING  Ver: 24.1.11 2024-04-05 01:31:46 UTC  Build id: 477e7f102ab4
Edition: Community  isMasterBalanced: true  serviceStartTime:
2024-04-05 08:29:14 UTC
  Admin [admin1]      Status: RUNNING,MASTER  serviceStartTime:
2024-04-05 08:29:17 UTC  stateChangeTime: 2024-04-05 08:29:17 UTC
availableStorageSize: 2 GB
  Rep Node [rg1-rn1]  Status: RUNNING,MASTER sequenceNumber: 51
```

haPort: 5003 availableStorageSize: 9 GB storageType: HD
serviceStartTime: 2024-04-05 08:29:19 UTC stateChangeTime: 2024-04-05
08:29:19 UTC

The status indicates that the KVLite is up and running.

Verify your Installation

There are several ways to verify your installation and ensure that KVLite is running. Perform one of these steps to verify your installation:

- Start a new shell and run the following command:

```
$ jps -m
```

You must see a similar output showing KVLite (and possibly other things as well) running in your system:

```
2674 kvstore.jar kvlite
3118 Jps -m
```

- Or, cd into the kv-24.1.11 directory and ping your KVLite instance. The details of the output will vary but you must see a running store.

```
$ cd kv-24.1.11
$ java -Xmx64m -Xms64m -jar lib/kvstore.jar ping -host localhost -port
5000 -security kvroot/security/user.security
```

Expected output:

```
Pinging components of store kvstore based upon topology sequence #14
10 partitions and 1 storage nodes
Time: 2024-04-05 06:15:34 UTC   Version: 24.1.11
Shard Status: healthy: 1 writable-degraded: 0 read-only: 0 offline: 0
total: 1
Admin Status: healthy
Zone [name=KVLite id=zn1 type=PRIMARY allowArbiters=false
masterAffinity=false]   RN Status: online: 1 read-only: 0 offline: 0
Storage Node [sn1] on phoenix126166: 5000   Zone: [name=KVLite id=zn1
type=PRIMARY allowArbiters=false masterAffinity=false]   Status:
RUNNING   Ver: 24.1.11 2024-04-05 01:31:46 UTC   Build id: 477e7f102ab4
Edition: Community   isMasterBalanced: true   serviceStartTime:
2024-04-05 06:13:24 UTC
      Admin [admin1]   Status: RUNNING,MASTER   serviceStartTime:
2024-04-05 06:13:29 UTC   stateChangeTime: 2024-04-05 06:13:29 UTC
availableStorageSize: 2 GB
      Rep Node [rg1-rn1]   Status: RUNNING,MASTER sequenceNumber: 322
haPort: 5003 availableStorageSize: 9 GB storageType: HD
serviceStartTime: 2024-04-05 06:13:32 UTC   stateChangeTime: 2024-04-05
06:13:32 UTC
```

If you have started KVLite in an unsecured mode, ping the KVLite instance without using the `-security` parameter:

```
$ cd kv-24.1.11
$ java -Xmx64m -Xms64m -jar lib/kvstore.jar ping -host localhost -port 5000
```

-
- Or, run the `kvclient` test application using the following commands:

```
$ cd kv-24.1.11
$ java -Xmx64m -Xms64m -jar lib/kvclient.jar
```

This must write a similar release output to stdout:

```
24.1.11 2024-04-05 01:31:46 UTC Build id: 477e7f102ab4 Edition: Client
```

- Or, if you have not already, download the *examples* package and unpack it so that the `examples` directory is in **KVHOME**. In this tutorial, we have already downloaded and extracted the *examples* package.

1. Compile the *Hello* example program:

```
$ export KVHOME=<the directory where you have extracted the CE package>
$ javac -cp lib/kvclient.jar:examples examples/hello/
HelloBigDataWorld.java
```

2. Run the example using all default parameters:

```
$ cd $KVHOME
$ java -Xmx64m -Xms64m -Doracle.kv.security=./kvroot/security/
user.security \
  -cp lib/kvclient.jar:examples hello.HelloBigDataWorld \
  -port 5000 -store kvstore -host localhost
```

- **Note:** In case of an unsecured installation, do not specify the security parameter and run the example:

```
$ java -Xmx64m -Xms64m -cp lib/kvclient.jar:examples
hello.HelloBigDataWorld \
  -port 5000 -store kvstore -host localhost
```

Or, run it using non-default parameters, if you started KVLite using non-default values:

```
$ java -Xmx64m -Xms64m -cp lib/kvclient.jar:examples
hello.HelloBigDataWorld \
  -port <hostport> -store <kvstore name> -host <hostname>
```

Expected output:

```
Hello Big Data World!
```

Stop and Restart KVLite

To stop and restart KVLite, perform the following steps:

To stop KVLite, use `Ctrl C (^C)` from within the shell where KVLite is running.

To restart the process, run the KVLite utility without any command line options. Do this even if you provided non-standard options when you first started KVLite. This is because KVLite remembers information such as the port value and the store name in between run times. You cannot change these values by using the command line options.

```
$ java -Xmx64m -Xms64m -jar KVHOME/lib/kvstore.jar kvlite
```

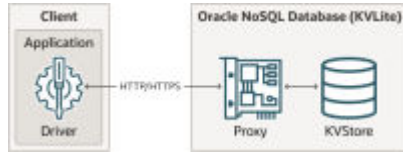
If you want to start over with different options than you initially specified, delete the `KVROOT` directory (`./kvroot`, by default), and then rerun the KVLite utility with whatever options you need. Refer to [Start KVLite](#).

Alternatively, specify the `-root` command line option, making sure to specify a location other than your original `KVROOT` directory, as well as any other command line options that you want to change.

Note: If you decide to start over, all your previous data will be lost.

About the Oracle NoSQL Database Proxy

The Oracle NoSQL Database Proxy is a middle-tier component that lets the Oracle NoSQL Database SDK communicate with the Oracle NoSQL Database (kvlite configuration).



The Oracle NoSQL Database drivers are available in various programming languages that are used in the client application. The Oracle NoSQL Database Proxy is a server that accepts requests from the client application and processes them using the Oracle NoSQL Database. The JAR file (`httpproxy.jar`) for the Oracle NoSQL Database Proxy is included in the Enterprise Edition distribution and the Community Edition distribution of Oracle NoSQL Database that you downloaded. You can download the JAR for the Oracle NoSQL Database Proxy from the Oracle Technology Network.

After you start KVLite, you must run the following command to start up the proxy.

- For a non-secure kvlite:

```
java -jar lib/httpproxy.jar \
-storeName <kvstore_name> \
-helperHosts <kvstore_helper_host> \
[-hostname <proxy_host>] \
[-httpPort <proxy_http_port>]
```

- For a secure kvlite:

```
java -jar lib/httpproxy.jar \
-storeName <kvstore_name> \
-helperHosts <kvstore_helper_host> \
[-hostname <proxy_host>] \
[-httpsPort <proxy_https_port>] \
-storeSecurityFile proxy/proxy.login \
-sslCertificate certificate.pem \
-sslPrivateKey key-pkcs8.pem \
-sslPrivateKeyPass <privatekey_password> \
[-verbose true]
```

For more information, see Oracle NoSQL Database Proxy.