

Oracle® NoSQL Database

Quick Start to KV Lite



Release 24.3
E87605-32
November 2024

The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

ORACLE®

Oracle NoSQL Database Quick Start to KVLite, Release 24.3

E87605-32

Copyright © 2011, 2024, Oracle and/or its affiliates.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software, software documentation, data (as defined in the Federal Acquisition Regulation), or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software," "commercial computer software documentation," or "limited rights data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle®, Java, MySQL, and NetSuite are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

Contents

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

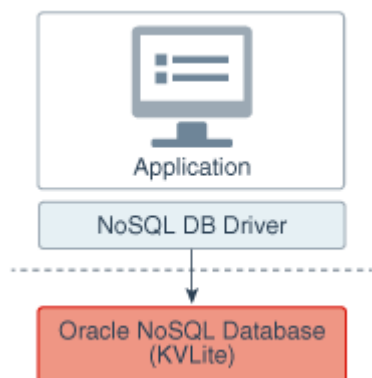
Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

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 data store. The NoSQL DB Driver is an intelligent driver that transparently handles all the core operations of Oracle NoSQL Database, and the data store 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.

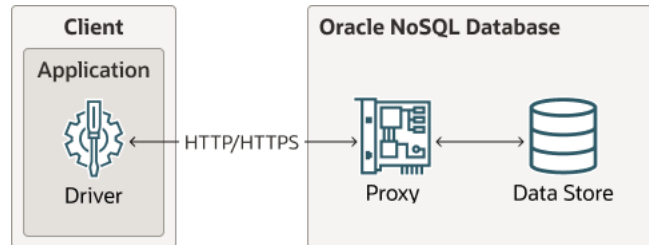
Also, KVLite is secure by default. If you want to run KVLite in non-secure mode, you will have to explicitly provide parameters to disable security while installing KVLite as demonstrated in this guide.

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

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

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.

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 (depending on your operating system) from Oracle Technology Network.
2. In a Linux operating system, 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).

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.

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

Start KVLite

Perform the following steps to start a KVLite instance:

You could start KVLite in secure mode (the default option) or non-secure mode. If the KVLite is started in a secure mode, you should also configure a secure proxy and start it. Similarly if the KVLite is started in a non-secure mode, a non-secure proxy needs to be configured and started.

The following environmental variables have to be set before invoking the script to start KVLite as these variables are used in the scripts.

Table Environment variables

Name of the variable	Description	Sample values
KV_HOST	Identifies a host name associated with the node on which the script to configure kvlite is run.	localhost or the name of the machine
KV_PROXY_PORT	The TCP/IP port on which proxy should be contacted.	Non-Secure proxy: Use 80 if root privilege is there, else 8080 Secure proxy: Use 443 if root privilege is there, else 8443
KV_HARANGE	A range of free ports that the Replication Nodes and Admins use to communicate among themselves. These ports should be sequential.	5010-5020
KV_SERVICERANGE	A range of ports that may be used for communication among administrative services running on a Storage Node and its managed services.	5021-5049
KV_PORT	The TCP/IP port on which Oracle NoSQL Database should be contacted. Sometimes referred to as the registry port.	5000
KV_ADMIN_PORT	The TCP/IP port on which the admin service should be started.	5999

Start KVLite in secure mode:

- Download and extract the zipped file (start_securekvlite.zip) into the directory where you extracted kvlite. This zipped file contains the scripts needed for starting KVLite in secure mode.
- Invoke the script (start_kvlite.sh) to start KVLite in secure mode.

```
$/bin/bash start_kvlite.sh
```

You get an output as shown below:

```
Waiting for kvstore to start...
Waiting for kvstore to start...
Generated password for user admin:*****
```

```
User login file: kvroot/security/user.security
Created new kvlite store with args:
-root kvroot -store kvstore -host localhost -port 5000 -admin-web-port
5999 -secure-config enable
```

- **Configure proxy for the secure kvlite:** You need to do the following to configure a secure proxy:
 - Create a user (`proxy_user`) as the proxy needs an identity to connect to the secure data store.
 - Create a new password file to store the credentials needed to login as the proxy user.
 - Create a login file `proxy.login` for the proxy user.
 - Create self-signed certificates that can be used to securely connect to the Oracle NoSQL Database Proxy.

Invoke the script (`setup-http-proxy-sec.sh`) to configure proxy in secure mode.

```
$ /bin/bash setup-http-proxy-sec.sh
```

You get an output as shown below:

```
Creating password
Creating USER proxy_user
Oct 01, 2024 6:48:23 AM org.jline.utils.Log logr
WARNING: Unable to create a system terminal, creating a dumb terminal
(enable debug logging for more information)
sql-> Statement completed successfully
sql-> Creating proxy secfiles
Created
Secret created
Creating certificate
Generating a RSA private key
.....
.....
.....++++
.....++++
writing new private key to 'kvroot/proxy/key.pem'
-----
Certificate was added to keystore
```

- **Use the script (`start_proxy.sh`) to start the proxy for a secure data store:**

```
/bin/bash start_proxy.sh
```

You get an output as shown below:

```
Starting Proxy
Proxy creating SSL channel
Proxy started:
async=false
helperHosts=localhost:5000
httpPort=0
httpsPort=8443
idleReadTimeout=0
```

```
kvConsistency=NONE_REQUIRED
kvDurability=COMMIT_NO_SYNC
kvRequestTimeout=-1
monitorStatsEnabled=false
numAcceptThreads=3
numRequestThreads=32
proxyType=KVPROXY
sslCertificate=kvroot/proxy/certificate.pem
sslPrivateKey=kvroot/proxy/key-pkcs8.pem
sslPrivateKeyPass=iT06aUCnh9XdsgkxFig=
sslProtocols=TLSv1.2,TLSv1.1,TLSv1
storeName=kvstore
storeSecurityFile=kvroot/proxy/proxy.login
verbose=true
proxyVersion=null
kvclientVersion=24.1.11
```

Start KVLite in non-secure mode:

- Download and extract the zipped file (start_nonsecurekvlite.zip) into the directory where you extracted kvlite. This zipped file contains the scripts needed for starting KVLite in non-secure mode.
- Invoke the script (start_nonsecure_kvlite.sh) to start KVLite in non-secure mode.

```
$/bin/bash start_nonsecure_kvlite.sh
```

You get an output as shown below:

```
Created new kvlite store with args: -root kvroot -store kvstore -host
localhost
-port 5000 -admin-web-port 5999 - secure-config disable
```

- Use the script (start_nonsecure_proxy.sh) to start the proxy for a non-secure data store:

```
$/bin/bash start_nonsecure_proxy.sh
```

You get an output as shown below:

```
Starting Proxy
Proxy started:
async=false
helperHosts=localhost:5000
httpPort=8080
httpsPort=0
idleReadTimeout=0
kvConsistency=NONE_REQUIRED
kvDurability=COMMIT_NO_SYNC
kvRequestTimeout=-1
monitorStatsEnabled=false
numAcceptThreads=3
numRequestThreads=32
proxyType=KVPROXY
sslProtocols=TLSv1.2,TLSv1.1,TLSv1
storeName=kvstore
```

```
verbose=true  
proxyVersion=null  
kvclientVersion=24.1.11
```

Verify your Installation

You can verify your installation and ensure that KVLite is running.

- Start a new shell and run the following command:

```
$ jps -m
```

Your list of processes running will include the kvlite(kvstore.jar) and the proxy that you configured and started. You get an output similar to the one shown below.

```
3523439 Jps -m
3500313 httpproxy.jar -helperHosts localhost:5000 -storeName kvstore -
httpPort 8080 -verbose true
3499946 kvstore.jar kvlite -secure-config disable -root kvroot -host
localhost -port 5000 -admin-web-port 5999 -harange 5010,5020 -servicerange
5021,5049 -storagedirsizegb 10
```

You can also ping your KVLite instance to see if the KVLite is configured and started successfully.

For secure KVLite:

```
java -Xmx64m -Xms64m -jar lib/kvstore.jar ping -host localhost \
-port 5000 -security kvroot/security/user.security
```

For non-secure KVLite:

```
java -Xmx64m -Xms64m -jar lib/kvstore.jar ping -host localhost -port 5000
```

You get an output similar to the one shown below:

```
Pinging components of store kvstore based upon topology sequence #14
10 partitions and 1 storage nodes
Time: 2024-10-21 05:23:45 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 localhost: 5000
Zone: [name=KVLite id=zn1 type=PRIMARY allowArbiters=false
masterAffinity=false]
Status: RUNNING Ver: 24.1.11 2024-10-21 05:24:19 UTC
Build id: e0c93clf1395 Edition: Enterprise isMasterBalanced: true
serviceStartTime: 2024-10-21 05:24:21 UTC
Admin [admin1] Status: RUNNING,MASTER serviceStartTime: 2024-10-21
05:24:23 UTC
stateChangeTime: 2024-10-21 05:25:04 UTC availableStorageSize: 2 GB
Rep Node [rg1-rn1] Status: RUNNING,MASTER sequenceNumber: 85 haPort: 5011
availableStorageSize: 9 GB storageType: HD serviceStartTime: 2024-10-21
```

05:24:05 UTC
stateChangeTime: 2024-10-21 05:24:07 UTC

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`), and then rerun the KVLite utility with the options you need. Refer to [Start KVLite](#).

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