

Einführung in Valkey

WAS?

Valkey ist ein im Arbeitsspeicher befindlicher Open Source-Datenstrukturspeicher, der sich als Datenbank, Cache, Message Broker und Streaming-Engine eignet. Valkey bietet einen sehr leistungsstarken, skalierbaren und vielseitigen im Arbeitsspeicher befindlichen Datenspeicher, der für die Beschleunigung von Anwendungen und die effiziente Verwaltung unterschiedlicher Datenanforderungen mit verbessertem Multithreading und Zuverlässigkeit von entscheidender Bedeutung ist.

WARUM?

Erfahren Sie, wie Sie Valkey installieren und konfigurieren.

AUFWAND

40 Minuten Lesedauer.

ZIEL

Einrichten von Valkey unter SUSE Linux Enterprise Server oder Migrieren von Redis zu Valkey.

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1 Über Valkey

Valkey ist ein Teil von Redis, Version 7.2.4. Es handelt sich um einen im Arbeitsspeicher befindlichen Open Source-Datenstrukturspeicher, der unter der BSD-Lizenz (Berkeley Software Distribution) lizenziert ist und als vielseitige Plattform für verschiedene Anwendungen dient. Es eignet sich hervorragend als Datenbank und bietet einen schnellen und flexiblen Datenspeicher, als Cache, wodurch die Anwendungsleistung erheblich verbessert wird, als Message Broker, der eine asynchrone Kommunikation ermöglicht, und sogar als Streaming-Engine für die Echtzeit-Datenverarbeitung. Valkey basiert auf der Grundlage von Redis OSS, integriert Multithreading für eine bessere Leistung und bietet eine robuste Lösung für Anwendungen, die Geschwindigkeit, Skalierbarkeit und vielfältige Datenverarbeitungsfunktionen erfordern.

Valkey hat viele Vorteile, einschließlich der folgenden:

- Bietet schnellen Zugriff mit geringer Latenz auf im Arbeitsspeicher gespeicherte Daten und eignet sich ideal für Caching, Echtzeitanalysen und Message Brokering.
- Unterstützt leistungsstarke und vielseitige Datenstrukturen wie Zeichenfolgen, Hashes, Listen, Sets, sortierte Sets, Streams und raumbezogene Indizes.
- Bietet RDB-Snapshots (Redis Database Backup, Datenbanksicherung von Redis) und Beibehaltung nur angefügter Dateien (Append-Only File, AOF) für die Wiederherstellung von Daten nach Neustarts.
- Ermöglicht die horizontale Skalierung durch Partitionierung von Daten über mehrere Knoten.
- Behält die Kompatibilität mit Redis 7.2 bei, wodurch die Migration vereinfacht wird, ohne vorhandene Client-Bibliotheken oder die Anwendungslogik zu ändern.
- Bietet integrierte Veröffentlichungs-/Abonnementfunktionen zum Erstellen ereignisgesteuerter oder Messaging-basierter Systeme.

Weitere Informationen zu Valkey finden Sie unter <https://valkey.io/docs/> .

2 Verwalten von Valkey

Erfahren Sie, wie Sie Valkey installieren, das Befehlszeilenwerkzeug verwenden und von Redis zu Valkey migrieren.

2.1 Einrichten einer Valkey-Dienstdatei

Valkey ist ein im Arbeitsspeicher befindlicher Open Source-Datenstrukturspeicher, der als Datenbank, Cache, Message Broker und Streaming-Engine verwendet werden kann.

VORGEHEN 1: ERSTELLEN EINER `systemd`-DIENSTDATEI FÜR VALKEY

1. Installieren Sie Valkey:

```
> sudo zypper -n in valkey
```

2. Erstellen Sie eine `systemd`-Dienstdatei für Valkey:

```
> sudo vi /etc/systemd/system/valkey.service
```

3. Fügen Sie der Datei Folgendes hinzu:

```
[Unit]
  Description=Valkey In-Memory Data Store
  After=network.target

[Service]
  User=valkey
  Group=valkey
  ExecStart=/usr/sbin/redis-server /etc/redis/valkey.conf
  LimitNOFILE=10240
  ExecStop=/usr/bin/valkey-cli shutdown
  Restart=always

[Install]
  WantedBy=multi-user.target
```

4. Kopieren Sie die Beispieldatei in die angegebene Konfigurationsdatei:

```
> sudo cp /etc/valkey/default.conf.example /etc/valkey/valkey.conf
```

5. Aktualisieren Sie die Dateiberechtigungen:

```
> sudo chown valkey:valkey /etc/valkey/valkey.conf
```

6. Starten und aktivieren Sie den Valkey-Dienst:

```
> sudo systemctl start valkey
```

```
> sudo systemctl enable valkey
```

7. Überprüfen Sie die Valkey-Einrichtung:

```
valkey-cli ping
```

Valkey wird auf Ihrem System ausgeführt, wenn Sie den Befehl zum Drucken von PONG erhalten.

2.2 Die Valkey-Befehlszeilenschnittstelle

Die Valkey-Befehlszeilenschnittstelle wird zum Verwalten, Debuggen und Testen von Valkey verwendet. Standardmäßig stellt der Befehl **valkey-cli** eine Verbindung mit dem Server unter der Adresse 127.0.0.1 mit dem Port 6379 her.

Einige der **valkey-cli**-Befehlsoptionen lauten:

-h

Server-Hostname mit der Standard-IP-Adresse 127.0.0.1.

-p

Serverport mit dem Standardwert 6379.

-t

Zeitüberschreitung der Serververbindung in Sekunden (Dezimalstellen zulässig). Die Standardzeitüberschreitung lautet 0, was bedeutet, dass es keine Begrenzung gibt und vom Betriebssystem abhängt.

-s

Der Server-Socket überschreibt den Hostnamen und den Port.

-a

Beim Herstellen der Verbindung mit dem Server zu verwendendes Passwort. Sie können auch die Umgebungsvariable `VALKEYCLI_AUTH` verwenden, um dieses Passwort sicherer zu übergeben. Dieses Argument hat Vorrang, wenn beide Optionen verwendet werden.

--user

Der Benutzername, der zum Senden des Zugriffssteuerungslisten-Stils (Access Control List, ACL) verwendet wird, der `AUTH username pass` lautet. Erfordert die Option -a.

--pass

Das Passwort, das ein Alias der Option -a zur Anpassung an die neue Option --user ist.

--askpass

Erzwingt die Eingabe des Passworts über STDIN mit Maskierung. Wenn dieses Argument verwendet wird, dann werden die Umgebungsvariablen -a und die `VALKEYCLI_AUTH` ignoriert.

-u

Server-URI im Format `valkey://user:password@host:port/dbnum`. Benutzer, Passwort und dbnum sind optional. Verwenden Sie für die Authentifizierung ohne Benutzernamen den Benutzernamen `default`. Verwenden Sie für TLS das Schema `valkeys`.

--help

Geben Sie die Hilfe aus und beenden Sie das Programm.

--version

Geben Sie die Version aus und beenden Sie das Programm.

--cluster help

Listet alle verfügbaren Cluster-Manager-Befehle auf.

BEISPIEL 1: ZU DEN GRUNDLEGENDEN `valkey-cli`-BEFEHLSBEISPIELEN GEHÖRT FOLGENDES:

- SET: Legt ein Schlüssel-Wert-Paar fest.

```
> valkey-cli SET KEY_NAME "Hello Valkey"
```

Beispiel:

```
> valkey-cli SET TESTKEY "Hello Valkey"
```

- GET: Ruft den Wert ab, der einem Schlüssel zugeordnet ist.

```
> valkey-cli GET TESTKEY
"Hello Valkey"
```

- DEL: Löscht einen Schlüssel.

```
> valkey-cli DEL TESTKEY
(integer) 1
```

1, wenn gelöscht, und 0, wenn nicht gefunden.

- INFO: Zeigt Informationen und Statistiken zum Valkey-Server an.

```
> valkey-cli INFO
Server
redis_version:7.2.4
server_name:valkey
valkey_version:8.0.2
redis_git_sha1:00000000
redis_git_dirty:0
redis_build_id:e0cc1d08b1f9571a
server_mode:standalone
os:Linux 6.12.0-160000.9-default x86_64
arch_bits:64
monotonic_clock:POSIX clock_gettime
multiplexing_api:epoll
gcc_version:13.3.1
process_id:974
process_supervised:no
run_id:32864c141804bcb17cae98145beee86ca251afd7
tcp_port:6379
server_time_usec:1750760734442451
uptime_in_seconds:2780
uptime_in_days:0
hz:10
configured_hz:10
lru_clock:5930270
executable:/usr/sbin/redis-server
config_file:/etc/valkey/valkey.conf
io_threads_active:0
availability_zone:

[...]
```

- MONITOR: Streamt alle Befehle, die vom Valkey-Server verarbeitet werden, in Echtzeit.

```
> valkey-cli MONITOR
OK
```

- **KEYS:** Sucht alle Schlüssel, die mit einem Muster übereinstimmen.

```
> valkey-cli KEYS "*" # All keys
"TESTKEY"
"TESTKEY1"
```

2.3 Migrieren von Redis zu Valkey

Valkey ist als nahtloser Ersatz konzipiert und bietet Kompatibilität mit der Redis-API, dem Protokoll, den Beibehaltungsdaten, den Ports und den Konfigurationsdateien. Der Wechsel von Redis zu Valkey ist bei vielen grundlegenden Einrichtungen ganz einfach. Beim folgenden Verfahren wird davon ausgegangen, dass Redis installiert ist, ausgeführt wird und mit Daten geladen ist.

VORGEHEN 2: MIGRIEREN VON REDIS ZU VALKEY

1. Überprüfen Sie die aktuelle Version des Redis-Servers:

```
> redis-cli info server
# Server
redis_version:7.2.4
redis_git_sha1:00000000
redis_git_dirty:0
redis_build_id:8c22b097984bd350
redis_mode:standalone
[...]
```

2. Installieren Sie das `valkey-compat-redis`-Paket mit der Option `--force-resolution`:

```
> sudo # zypper in --force-resolution valkey-compat-redis
Refreshing service 'NVIDIA'.
Refreshing service 'openSUSE'.
Loading repository data...
Reading installed packages...
Resolving package dependencies...

The following 2 NEW packages are going to be installed:
  valkey valkey-compat-redis
```

```
The following package is going to be REMOVED:
redis

2 new packages to install, 1 to remove.

Package download size:      1.3 MiB

Package install size change:
|          5.2 MiB required by packages that will be installed
-245.2 KiB | -    5.4 MiB released by packages that will be removed

Backend: classic_rpmtrans
Continue? [y/n/p/...? shows all options] (y):
```

Das Paket verwendet Ihre vorhandenen Konfigurationsdateien und Beibehaltungsdaten und verschiebt sie ohne zusätzliche Schritte zu Valkey. Diese Migration ist möglich, da Valkey vollständig mit der Redis-API, dem Protokoll, den Beibehaltungsdaten, den Ports und den Konfigurationsdateien kompatibel ist.

3. Starten und aktivieren Sie Valkey:

```
> sudo systemctl start valkey
```

```
> sudo systemctl enable valkey
```

4. Überprüfen Sie die Serverinformationen:

```
> redis-cli info server
# Server
redis_version:7.2.4
server_name:valkey
valkey_version:7.2.5
redis_git_sha1:00000000
redis_git_dirty:0
redis_build_id:b0d9f188ef999bd3
redis_mode:standalone
[...]
```

Valkey reagiert auf redis_version:7.2.4 und valkey_version:7.2.5. Durch das Beibehalten der redis_version wird maximale Kompatibilität bei gleichzeitiger Identifizierung des Servers mit valkey_version sichergestellt. Valkey hat eine Binärdatei mit dem Namen valkey-cli, ist aber symbolisch mit redis-cli verknüpft. Beide CLIs verfügen über dieselbe Funktionalität.

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If you have Invariant Sections without Cover Texts, or some other combination of the three, merge those two alternatives to suit the situation.

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