

Présentation de Valkey

CONTENU

Valkey est un magasin de structures de données en mémoire Open Source qui excelle en tant que base de données, cache, courtier de messages et moteur de streaming. Valkey fournit un magasin de données en mémoire très performant, évolutif et polyvalent, essentiel pour rendre les applications plus rapides et gérer efficacement les divers besoins en données avec un multithreading et une fiabilité accrus.

MOTIF

Découvrez comment installer et configurer Valkey.

EFFORT

La lecture de cet article vous prendra 40 minutes.

OBJECTIF

Configuration de Valkey sous SUSE Linux Enterprise Server ou migration de Redis vers Valkey.

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1 À propos de Valkey

Valkey est un dérivé de Redis version 7.2.4. Il s'agit d'un magasin de structures de données en mémoire Open Source, concédé sous licence BSD (Berkeley Software Distribution), qui sert de plate-forme polyvalente pour diverses applications. Il excelle en tant que base de données, en assurant un stockage rapide et flexible des données ; en tant que cache, en améliorant de manière significative les performances des applications ; en tant que courtier de messages, en permettant une communication asynchrone ; et même en tant que moteur de streaming pour le traitement des données en temps réel. Valkey s'appuie sur la base de Redis OSS, intègre le multithreading pour améliorer les performances et offre une solution robuste pour les applications exigeant vitesse, évolutivité et diverses fonctionnalités de traitement des données.

Valkey présente de nombreux avantages, dont les suivants :

- Accès rapide et à faible latence aux données stockées en mémoire, idéal pour la mise en cache, l'analyse en temps réel et le courtage de messages.
- Prise en charge de structures de données puissantes et polyvalentes telles que les chaînes, les hachages, les listes, les ensembles, les ensembles triés, les flux et les index géospatiaux.
- Fonctionnalités de persistance par le biais d'instantanés RDB (Redis Database Backup) et de fichiers AOF (Append-Only File) pour récupérer les données après les redémarrages.
- Évolutivité horizontale grâce au partitionnement des données sur plusieurs noeuds.
- Maintien de la compatibilité avec Redis 7.2, ce qui permet de migrer facilement sans modifier les bibliothèques client existantes ni la logique applicative.
- Fonctionnalités intégrées de publication/d'abonnement pour la création de systèmes basés sur des événements ou des messages.

Pour plus d'informations sur Valkey, reportez-vous à la page <https://valkey.io/docs/>.

2 Gestion de Valkey

Apprenez à installer Valkey, à utiliser l'outil de ligne de commande et à migrer de Redis vers Valkey.

2.1 Configuration d'un fichier de service Valkey

Valkey est un magasin de données en mémoire Open Source qui fait office de base de données, de cache, de courtier de messages et de moteur de streaming.

PROCÉDURE 1 : CRÉATION D'UN FICHIER DE SERVICE systemd VALKEY

1. Installez Valkey :

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

2. Créez un fichier de service `systemd` Valkey :

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

3. Ajoutez ce qui suit au fichier :

```
[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. Copiez le fichier d'exemple dans le fichier de configuration spécifié :

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

5. Mettez à jour les autorisations du fichier :

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

6. Démarrez et activez le service Valkey :

```
> sudo systemctl start valkey
```

```
> sudo systemctl enable valkey
```

7. Vérifiez la configuration Valkey :

```
valkey-cli ping
```

Valkey est en cours d'exécution sur votre système lorsque votre commande ping renvoie la réponse PONG.

2.2 Interface de ligne de commande Valkey

L'interface de ligne de commande Valkey est utilisée pour gérer, déboguer et tester Valkey. Par défaut, la commande **valkey-cli** se connecte au serveur à l'adresse 127.0.0.1 avec le port 6379.

Voici quelques-unes des options de la commande **valkey-cli** :

-h

Nom d'hôte du serveur avec l'adresse IP par défaut 127.0.0.1.

-p

Port du serveur avec une valeur par défaut de 6379.

-t

Timeout de connexion au serveur en secondes (décimales autorisées). Le timeout par défaut est de 0, ce qui signifie qu'il n'y a pas de limite, et dépend du système d'exploitation.

-s

Le socket du serveur remplace le nom d'hôte et le port.

-a

Mot de passe à utiliser lors de la connexion au serveur. Vous pouvez également utiliser la variable d'environnement `VALKEYCLI_AUTH` pour transmettre ce mot de passe de manière plus sûre. Cet argument est prioritaire lorsque les deux options sont utilisées.

--user

Nom d'utilisateur employé pour envoyer le style ACL (Access Control List), qui est `AUTH username pass`. Option -a requise.

--pass

Mot de passe qui est un alias de l'option -a pour s'aligner sur la nouvelle option --user.

--askpass

Force la saisie du mot de passe via STDIN avec masquage. Si cet argument est utilisé, l'option -a et la variable d'environnement `VALKEYCLI_AUTH` sont ignorées.

-u

URI du serveur au format `valkey://user:password@host:port/dbnum`. Les valeur "user", "password" et "dbnum" sont facultatives. Pour l'authentification sans nom d'utilisateur, utilisez le nom d'utilisateur `default`. Pour TLS, utilisez le schéma `valkeys`.

--help

Permet d'afficher l'aide et de quitter.

--version

Permet d'afficher la version et de quitter.

--cluster help

Liste toutes les commandes disponibles pour le gestionnaire de grappes.

EXEMPLE 1 : VOICI QUELQUES EXEMPLES DE COMMANDES `valkey-cli` DE BASE :

- SET : définit une paire clé-valeur.

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

Par exemple :

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

- GET : récupère la valeur associée à une clé.

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

- DEL : supprime une clé.

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

1 si supprimée et 0 si introuvable.

- INFO : affiche des informations et des statistiques sur le serveur Valkey.

```
> 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 : diffuse en temps réel toutes les commandes traitées par le serveur Valkey.

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

- KEYS : recherche toutes les clés correspondant à un modèle.

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

2.3 Migration de Redis vers Valkey

Valkey est conçu pour permettre un remplacement fluide, en maintenant la compatibilité avec l'API Redis, le protocole, les données de persistance, les ports et les fichiers de configuration. La transition de Redis vers Valkey est facile pour de nombreuses configurations de base. La procédure suivante suppose que Redis est installé, qu'il est en cours d'exécution et qu'il est chargé avec les données.

PROCÉDURE 2 : PROCÉDURE DE MIGRATION DE REDIS VERS VALKEY

1. Vérifiez la version actuelle du serveur Redis :

```
> 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. Installez le paquet `valkey-compat-redis` avec l'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):
```

Le paquet prend vos fichiers de configuration et vos données de persistance existants et les transfère dans Valkey sans nécessiter aucune étape supplémentaire. Cette migration est possible, car Valkey est entièrement compatible avec l'API, le protocole, les données de persistance, les ports et les fichiers de configuration de Redis.

3. Démarrez et activez Valkey :

```
> sudo systemctl start valkey
```

```
> sudo systemctl enable valkey
```

4. Vérifiez les informations sur le serveur :

```
> 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 répond à la fois à `redis_version:7.2.4` et à `valkey_version:7.2.5`. Le maintien de `redis_version` assure une compatibilité maximale, tout en permettant d'identifier le serveur avec `valkey_version`. Valkey comporte un fichier binaire nommé `valkey-cli`, mais lie symboliquement `redis-cli`. Les deux interfaces de ligne de commande ont les mêmes fonctionnalités.

3 Mentions légales

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