

Introducción a Valkey

DESCRIPCIÓN

Valkey es un almacén estructurado de datos en memoria de código abierto que destaca como sistema de base de datos, almacenamiento en caché, intermediario de mensajería y motor de transmisión. Valkey proporciona un almacén de datos en memoria de alto rendimiento, escalable y versátil, crucial para acelerar las aplicaciones y gestionar de manera eficiente necesidades relacionadas con datos diversos, y con capacidad de administrar múltiples subprocesos y confiabilidad mejoradas.

INTENCIÓN

Aprender a instalar y configurar Valkey.

ESFUERZO

40 minutos de lectura.

OBJETIVO

Configurar Valkey en SUSE Linux Enterprise Server for SAP applications o migrar de Redis a Valkey.

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1 Acerca de Valkey

Valkey es una bifurcación de la versión 7.2.4 de Redis. Es un almacén estructurado de datos en memoria de código abierto, con licencia BSD (Berkeley Software Distribution), que sirve como una plataforma versátil para diversas funciones. Sobresale como base de datos, proporcionando un almacenamiento de datos rápido y flexible; como almacenamiento en caché, mejorado significativamente el rendimiento de la aplicación; como intermediario de mensajería, que permite la comunicación asíncrona; e incluso como motor de transmisión para el procesamiento de datos en tiempo real. Valkey se basa en Redis OSS e incorpora subprocesos múltiples para mejorar el rendimiento. Ofrece una solución sólida para aplicaciones que exigen velocidad, escalabilidad y capacidades de gestión de datos diversos.

Valkey tiene muchas ventajas, como las siguientes:

- Ofrece un acceso rápido y de baja latencia a los datos almacenados en la memoria, lo que resulta ideal para el almacenamiento en caché, el análisis en tiempo real y la intermediación de mensajes.
- Admite estructuras de datos potentes y versátiles como cadenas, hashes, listas, conjuntos, conjuntos ordenados, transmisiones e índices geoespaciales.
- Ofrece instantáneas RDB (Redis Database Backup) y persistencia de AOF (Append Only File) para recuperar datos después de los reinicios.
- Permite el escalado horizontal mediante la partición de datos en varios nodos.
- Mantiene la compatibilidad con Redis 7.2, lo que facilita la migración sin cambiar las bibliotecas de cliente existentes o la lógica de la aplicación.
- Proporciona capacidades integradas de publicación/suscripción para crear sistemas basados en eventos o mensajería.

Para obtener más información acerca de Valkey, consulte <https://valkey.io/docs/>.

2 Gestión de Valkey

En esta sección aprenderá a instalar Valkey, usar la herramienta de línea de comandos y migrar de Redis a Valkey.

2.1 Configuración de un archivo de servicio de Valkey

Valkey es un almacén estructurado de datos en memoria de código abierto que destaca como base de datos, almacenamiento en caché, intermediario de mensajería y motor de transmisión.

PROCEDIMIENTO 1: CREACIÓN DE UN ARCHIVO DE SERVICIO `systemd` DE VALKEY

1. Instale Valkey:

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

2. Cree un archivo de servicio `systemd` de Valkey:

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

3. Añada lo siguiente al archivo:

```
[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. Copie el archivo de ejemplo en el archivo de configuración especificado:

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

5. Actualice los permisos de archivos:

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

6. Inicie y habilite el servicio de Valkey:

```
> sudo systemctl start valkey
```

```
> sudo systemctl enable valkey
```

7. Verifique la configuración de Valkey:

```
valkey-cli ping
```

Si recibe el PONG del comando, Valkey se está ejecutando en el sistema.

2.2 Interfaz de línea de comandos de Valkey

La interfaz de línea de comandos de Valkey se usa para gestionar, depurar y probar Valkey. De forma predeterminada, el comando **valkey-cli** conecta con el servidor en la dirección 127.0.0.1 con el puerto 6379.

Estas son algunas de las opciones del comando **valkey-cli**:

-h

Nombre de host del servidor. La IP por defecto es 127.0.0.1.

-p

Puerto del servidor. El puerto por defecto es 6379.

-t

Tiempo límite de conexión del servidor en segundos (se admiten decimales). El tiempo límite por defecto es 0, lo que significa que no hay límite y depende del sistema operativo.

-s

El socket del servidor anula el nombre de host y el puerto.

-a

Contraseña que se debe usar para conectarse al servidor. También puede usar la variable de entorno `VALKEYCLI_AUTH` para pasar esta contraseña de forma más segura. Este argumento tiene prioridad cuando se usan ambas opciones.

--user

Nombre de usuario que se usa para enviar el estilo de ACL (Lista de control de acceso), que es `AUTH username pass`. Necesita la opción `-a`.

--pass

Una contraseña que es un alias de la opción `-a` para alinearse con la opción `--user` nueva.

--askpass

Fuerza la entrada de contraseña a través de STDIN con enmascaramiento. Si se usa este argumento, la opción `-a` y la variable de entorno `VALKEYCLI_AUTH` se ignoran.

-u

URI del servidor en formato `valkey://user:password@host:port/dbnum`. El usuario, la contraseña y `dbnum` son opcionales. Para la autenticación sin nombre de usuario, use el nombre de usuario `default`. Para TLS, use el esquema `valkeys`.

--help

Muestra la ayuda y sale.

--version

Muestra la versión y sale.

--cluster help

Muestra todos los comandos disponibles del gestor de clústeres.

EJEMPLO 1: EJEMPLOS BÁSICOS DEL COMANDO `valkey-cli`:

- SET: define un par de clave y valor.

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

Por ejemplo:

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

- GET: recupera el valor asociado a una clave.

```
> valkey-cli GET TESTKEY
```

```
"Hello Valkey"
```

- DEL: suprime una clave.

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

1 si se ha suprimido y 0 si no se encuentra.

- INFO: muestra información y estadísticas sobre el servidor de 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: transmite todos los comandos procesados por el servidor de Valkey en tiempo real.

```
> valkey-cli MONITOR
```

OK

- KEYS: busca todas las claves que coincidan con un patrón.

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

2.3 Migración de Redis a Valkey

Valkey se ha diseñado para sustituir a Redis sin interrupciones, manteniendo la compatibilidad con la API, el protocolo, los datos de persistencia, los puertos y los archivos de configuración de Redis. La transición de Redis a Valkey es fácil para muchas configuraciones básicas. En el siguiente procedimiento se presupone que Redis está instalado, en ejecución y cargado con datos.

PROCEDIMIENTO 2: CÓMO MIGRAR DE REDIS A VALKEY

1. Compruebe la versión actual del servidor de 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. Instale el paquete valkey-compat-redis con la opción --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):
```

El paquete toma los archivos de configuración y los datos de persistencia existentes y los mueve a Valkey sin necesidad de pasos adicionales. Esta migración es posible porque Valkey es totalmente compatible con la API, el protocolo, los datos de persistencia, los puertos y los archivos de configuración de Redis.

3. Inicie y habilite Valkey:

```
> sudo systemctl start valkey
```

```
> sudo systemctl enable valkey
```

4. Compruebe la información del servidor:


```
> 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 responde a `redis_version:7.2.4` y a `valkey_version:7.2.5`. Conservar `redis_version` garantiza la máxima compatibilidad sin dejar de identificar el servidor con `valkey_version`. Valkey tiene un binario llamado `valkey-cli` pero que se vincula simbólicamente a `redis-cli`. Ambas interfaces de línea de comandos tienen la misma funcionalidad.

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