KEY POINTS RECOMMENDATION FOR PRODUCTION

Đơn vị: Công ty CP Giáo dục và Công nghệ QNET

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Quality Network for Education and Technology

HARDWARE

Memory

- Kafka writes data into pagecache before it's dumped to disk by OS
- Kafka does not require setting heap sizes more than 6GB
  - This will result in a filesystem cache of up to 28-30GB on a 32 GB machine
- Requires sufficient memory to buffer active readers and writers
  - For example: want to be able to buffer 30 seconds => memory = write_throughtput *30
- Recommend 64GB RAM

HARDWARE

CPU

- Should use multiple drives to maximize throughput
- Do not share the same drives used for Kafka with applications logs or other OS filesystem activity to ensure good latency
- Should avoid network-attached storage (NAS). NAS is often slower, displays larger latencies with a wider deviation in average latency and is a single point of failure
- If you configure multiple data directories
    - Better available disk space
    - If data is not well balanced among partitions, this can lead to load imbalance among disks
- If you use RAID
    - Do better at balancing load between disks
    - Reduces the available disk space.
    - Increase downtime for rebuilding the array when a disk fails
    - RAID 10 is recommended as the best option for most use cases

HARDWARE

Network

- Fast and reliable network is an essential performance component in a distributed system
- Modern data-center networking (1 GbE, 10GbE) is sufficient for the vast majority of clusters

HARDWARE

FileSystem

- XFS
- EXT4

General Considerations

For medium-to-large machines cluster

- Avoid small machines because you don't want to manage a cluster with a thoudsand nodes and the overhead of running Kafka is more apparent on such small boxes
- Avoid the large machines because they often lead to imbalanced resource usage.
    - For example, all memory is used but none of the CP

JVM

- Java 17 is the recommended. Java 11 and Java 8 are also supported
- From a security perspective, recommend the latest released patch version
- Java 9 and 10 is not recommended because those are short-terms rapid release versions
- OpenJDK, ZuluOpenJDK, Oracle JDK are supported
- Recommend to use G1GB for GC tuning
- Example setting of Linkedin's busiest clusters:
  - -Xms6g -Xmx6g -XX:MetaspaceSize=96m -XX:+UseG1GC -XX:MaxGCPauseMillis=20
  - -XX:InitiatingHeapOccupancyPercent=35 -XX:G1HeapRegionSize=16M
  - -XX:MinMetaspaceFreeRatio=50 -XX:MaxMetaspaceFreeRatio=80

File Descriptors and mmap

- Kafka uses a very large number of files and a large number of sockets to communicate with the clients. All of this requires a relatively high number of available file descriptors.
- Recommendation for file descriptor is least 100000.

Security

- Enable authentication and authorization for your Kafka Cluster
- Using end-to-end encryption to protect your sensitive data

Monitoring

Collect metrics

- Server metrics
  - Broker metrics
  - Zookeeper metrics
- Producer metrics
  - Global request metrics
  - Global connection metrics
  - Per-broker metrics
  - Per-topic metrics

Monitoring

Collect metrics

- Audit metrics
- Authorizer metrics
- RBAC and LDAP health metrics
- Consumer metrics:
    - Fetch metrics
    - Topic-level fetch metrics
    - Partition-level fetch metrics
    - Consumer Group metrics
    - Global Connection metrics
    - Per-broker metrics
    -

DISASTER RECOVERY

- Consider to build DR site for disaster protection
- Use MirrorMaker for replicating data between cluster

Discussion

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