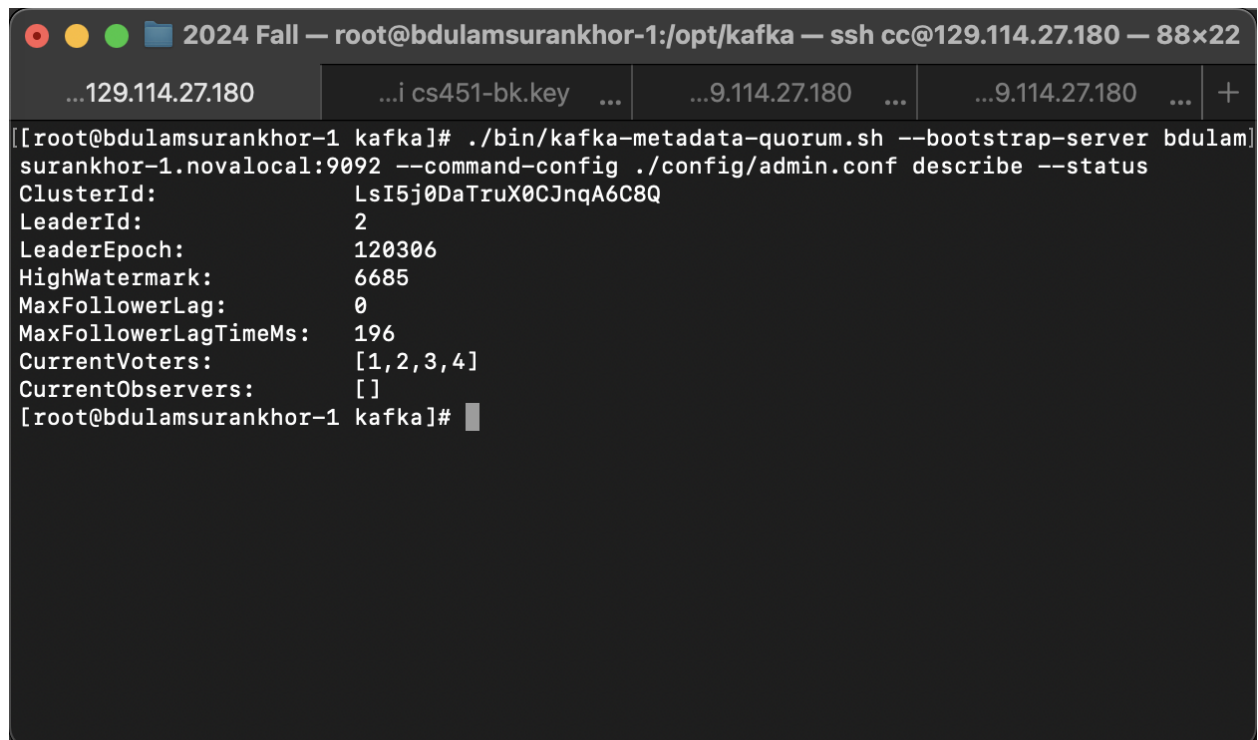


CS451 Introduction to Parallel and Distributed Computing - Assignment 3

Batkhishig Dulamsurankhor - A20543498

October 5, 2024

1. Screen shots of your working cluster by taking screen shots at 16,17 and 20. If your cluster isn't working, those commands will fail

A terminal window titled "2024 Fall — root@bdulamsurankhor-1:/opt/kafka — ssh cc@129.114.27.180 — 88x22". The terminal shows the execution of the command `./bin/kafka-metadata-quorum.sh --bootstrap-server bdulamsurankhor-1.novalocal:9092 --command-config ./config/admin.conf describe --status`. The output displays the following Kafka cluster information:

```
ClusterId:      LsI5j0DaTruX0CJnqA6C8Q
LeaderId:       2
LeaderEpoch:   120306
HighWatermark:  6685
MaxFollowerLag: 0
MaxFollowerLagTimeMs: 196
CurrentVoters:  [1,2,3,4]
CurrentObservers: []
```

The prompt `[root@bdulamsurankhor-1 kafka]#` is visible at the bottom.

Figure 1: Screenshot at 16.

```

2024 Fall — root@bdulamsurankhor-1:/opt/kafka — ssh cc@129.114.27.180 — 95x22
...@129.114.27.180 ...-i cs451-bk.key ... ..129.114.27.180 ... ..129.114.27.180 ... +
[root@bdulamsurankhor-1 kafka]# ./bin/kafka-topics.sh --bootstrap-server bdulamsurankhor-1.novalocal:9092 --command-config ./config/admin.conf --describe
Topic: Topic_Four      TopicId: uu2c7yskRhGJrYh5vHDBJQ PartitionCount: 4      ReplicationFactor: 3      Configs: min.insync.replicas=2,flush.ms=1000,segment.bytes=1073741824,retention.ms=3600000,flush.messages=10000
    Topic: Topic_Four      Partition: 0      Leader: 3      Replicas: 3,4,1 Isr: 3,4,1
    Topic: Topic_Four      Partition: 1      Leader: 4      Replicas: 4,1,2 Isr: 4,1,2
    Topic: Topic_Four      Partition: 2      Leader: 1      Replicas: 1,2,3 Isr: 1,2,3
    Topic: Topic_Four      Partition: 3      Leader: 2      Replicas: 2,3,4 Isr: 2,3,4
Topic: Topic_Three      TopicId: NkeqbinJTWw-MAE7NxEelw PartitionCount: 3      ReplicationFactor: 2      Configs: min.insync.replicas=2,flush.ms=1000,segment.bytes=1073741824,retention.ms=3600000,flush.messages=10000
    Topic: Topic_Three      Partition: 0      Leader: 4      Replicas: 4,1 Isr: 4,1
    Topic: Topic_Three      Partition: 1      Leader: 1      Replicas: 1,2 Isr: 1,2
    Topic: Topic_Three      Partition: 2      Leader: 2      Replicas: 2,3 Isr: 2,3
Topic: Topic_One        TopicId: D6v1PJKIT3-g6P32m9TeCQ PartitionCount: 1      ReplicationFactor: 2      Configs: min.insync.replicas=2,flush.ms=1000,segment.bytes=1073741824,retention.ms=3600000,flush.messages=10000
    Topic: Topic_One        Partition: 0      Leader: 1      Replicas: 1,2 Isr: 1,2
[root@bdulamsurankhor-1 kafka]#

```

Figure 2: Screenshot at 17.

```

2024 Fall — root@bdulamsurankhor-1:/opt/kafka — ssh cc@129.114.27.180 — 104x27
...cc@129.114.27.180 ...80 -i cs451-bk.key ... ..@129.114.27.180 ... ..@129.114.27.180 ... +
[root@bdulamsurankhor-1 kafka]# ./bin/kafka-acls.sh --bootstrap-server bdulamsurankhor-1.novalocal:9092 --command-config ./config/admin.conf --list
Current ACLs for resource `ResourcePattern(resourceType=TOPIC, name=Topic_Three, patternType=LITERAL)`:
    (principal=User:usercc, host=*, operation=DESCRIBE, permissionType=ALLOW)
    (principal=User:usercc, host=*, operation=WRITE, permissionType=ALLOW)
    (principal=User:usercc, host=*, operation=READ, permissionType=ALLOW)
    (principal=User:usercc, host=*, operation=CREATE, permissionType=ALLOW)

Current ACLs for resource `ResourcePattern(resourceType=TOPIC, name=Topic_One, patternType=LITERAL)`:
    (principal=User:usercc, host=*, operation=DESCRIBE, permissionType=ALLOW)
    (principal=User:usercc, host=*, operation=CREATE, permissionType=ALLOW)
    (principal=User:usercc, host=*, operation=WRITE, permissionType=ALLOW)
    (principal=User:usercc, host=*, operation=READ, permissionType=ALLOW)

Current ACLs for resource `ResourcePattern(resourceType=GROUP, name=*, patternType=LITERAL)`:
    (principal=User:usercc, host=*, operation=READ, permissionType=ALLOW)

Current ACLs for resource `ResourcePattern(resourceType=TOPIC, name=Topic_Four, patternType=LITERAL)`:
    (principal=User:usercc, host=*, operation=WRITE, permissionType=ALLOW)
    (principal=User:usercc, host=*, operation=READ, permissionType=ALLOW)
    (principal=User:usercc, host=*, operation=DESCRIBE, permissionType=ALLOW)
    (principal=User:usercc, host=*, operation=CREATE, permissionType=ALLOW)

[root@bdulamsurankhor-1 kafka]#

```

Figure 3: Screenshot at 20.

2. Explain the write process when the producer wrote a message

3. Why did we enable SSL?
4. Who and what is the principle?
5. Shutdown 1 of the 4 nodes, try reading and writing messages like in part 2. What happened to which topic? (sudo systemctl stop kafka)
6. Shutdown 2 of the 4 nodes, try reading and writing messages like in part 2. What happened to which topic? (sudo systemctl stop kafka)
7. Start the two back up (sudo systemctl start kafka) on both
8. Rerun 17.d, are the partitions insync? Take a screenshot
9. Why is kafka running as the user kafka and not root?