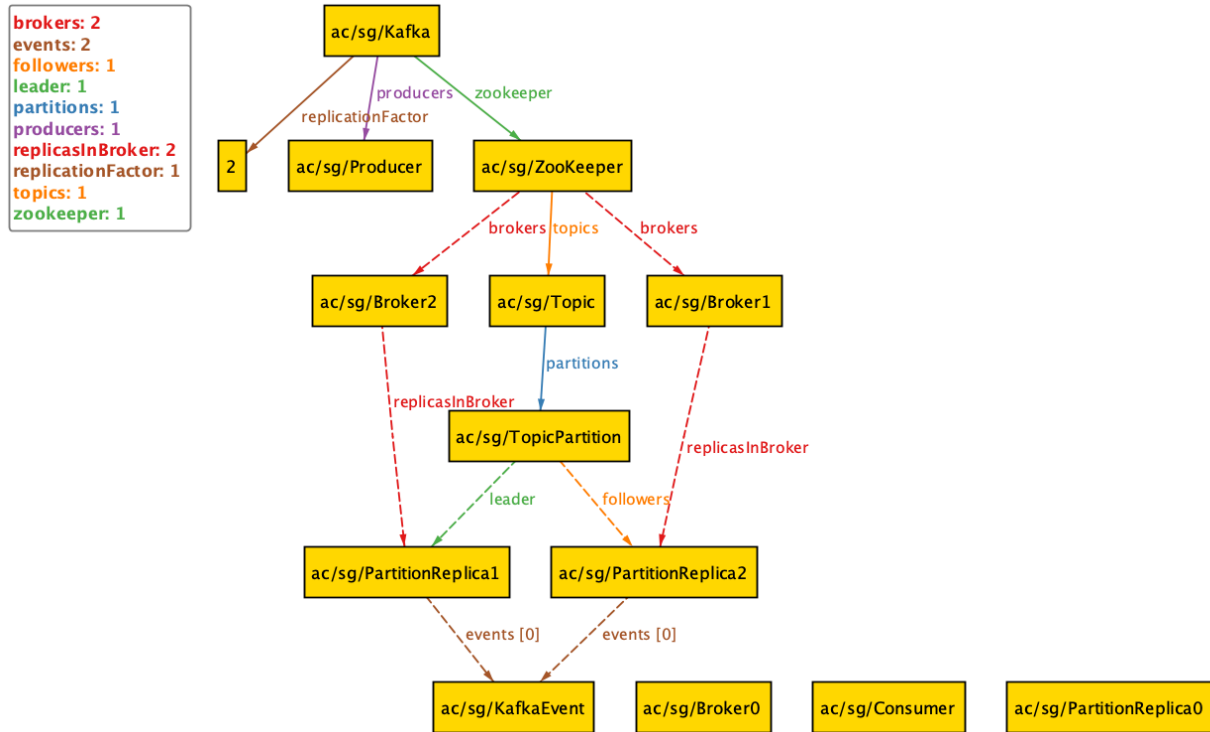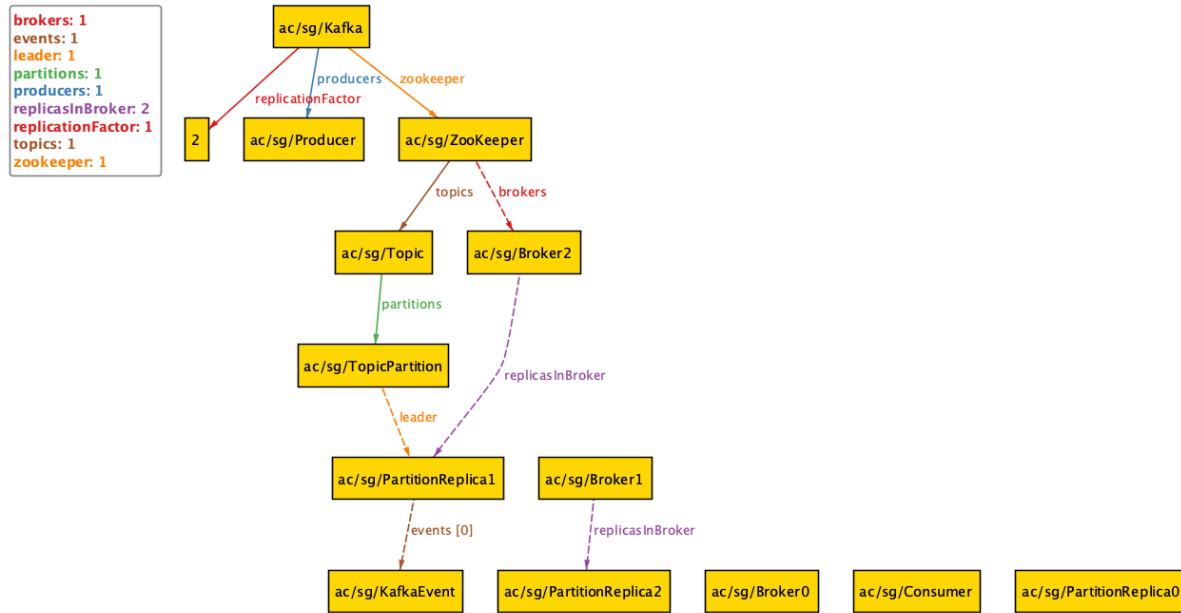# Counterexample raised by assertion
## *FaultTolerantKafkaWithTwoReplicasPreservesInvariantsAfterCrash*

Fig 1: Initial State: S0, 2 replicas of TopicPartition – PartitionReplica1 and PartitionReplica2 are stored in Broker2 and Broker1 respectively

Fig 2: State S1, Broker1 crashes, only one replica of TopicPartition – PartitionReplica1 now exists in the cluster, which violates the replication factor = 2 requirement
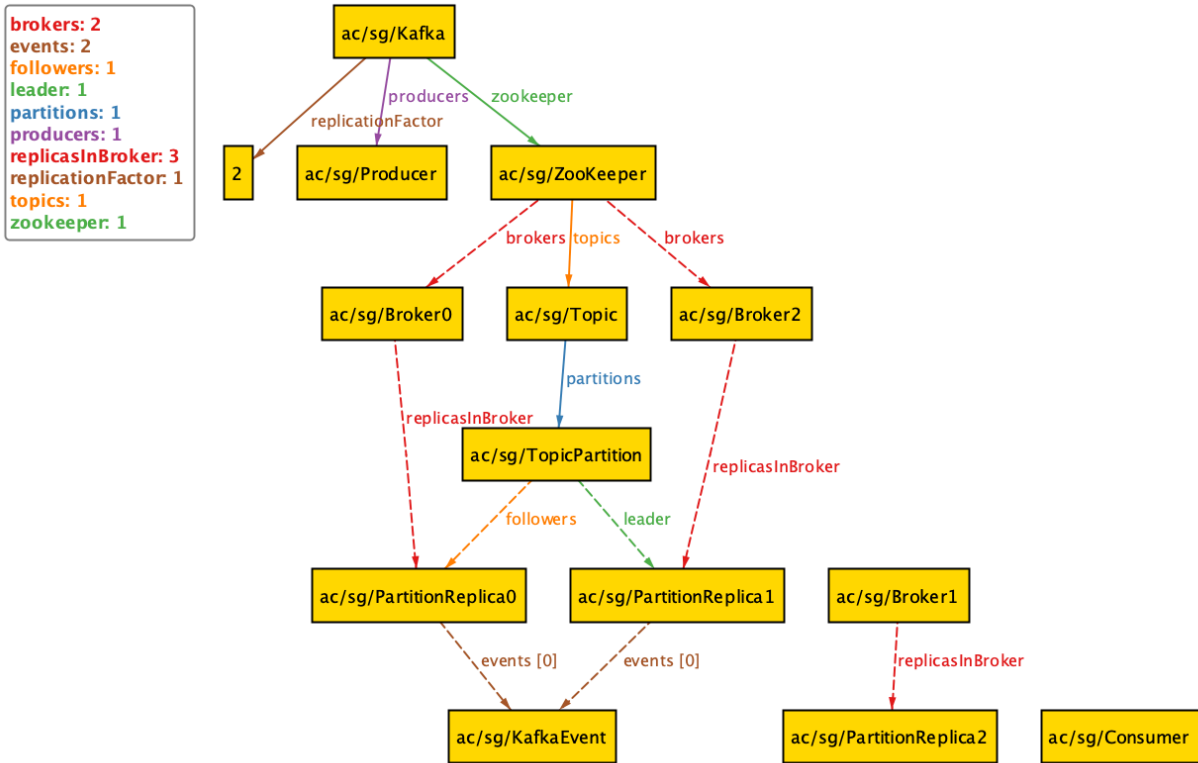
Fig 3: State S2, Broker0 joins the cluster, and a new replica of TopicPartition, PartitionReplica0 is created and stored in Broker0, restoring replication factor = 2