Topic   Partition =1   Paritions = 3

Partition 0   Partition 0   Paritions 1   Partition 2

0
1
2
3
4
5
6
7
8
9
10
11
12
13

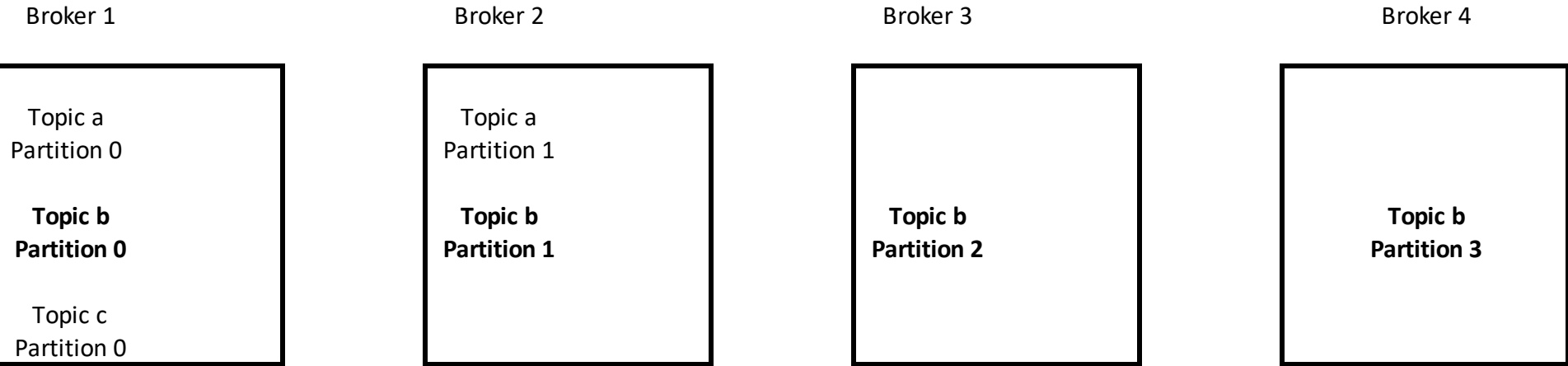| Partition 0	Paritions 1	Partition 2
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10		10
11		11
12		12
		13

Topic   - Specify No. of Partitions or not

Producer   Specified   Not Specfied
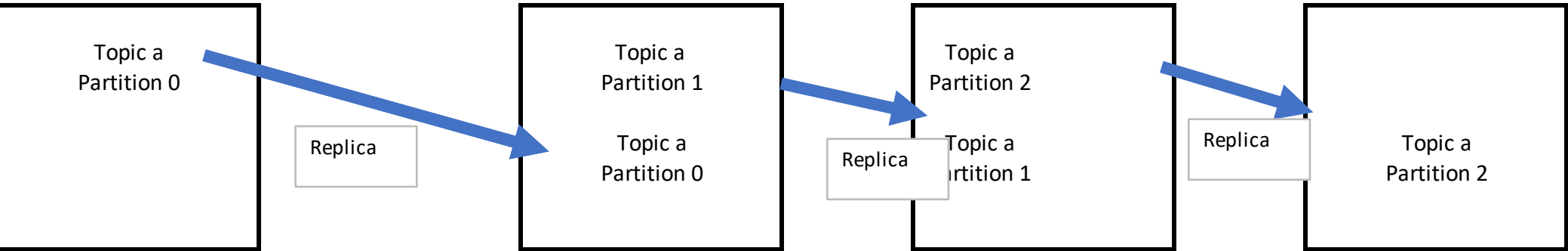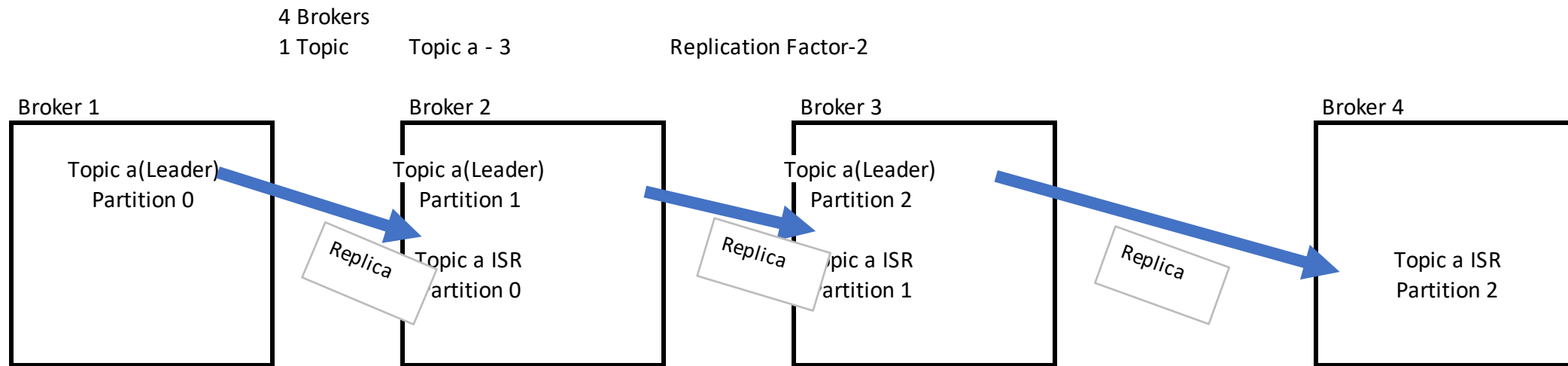   3   1

p0   p1   p2

4 Brokers

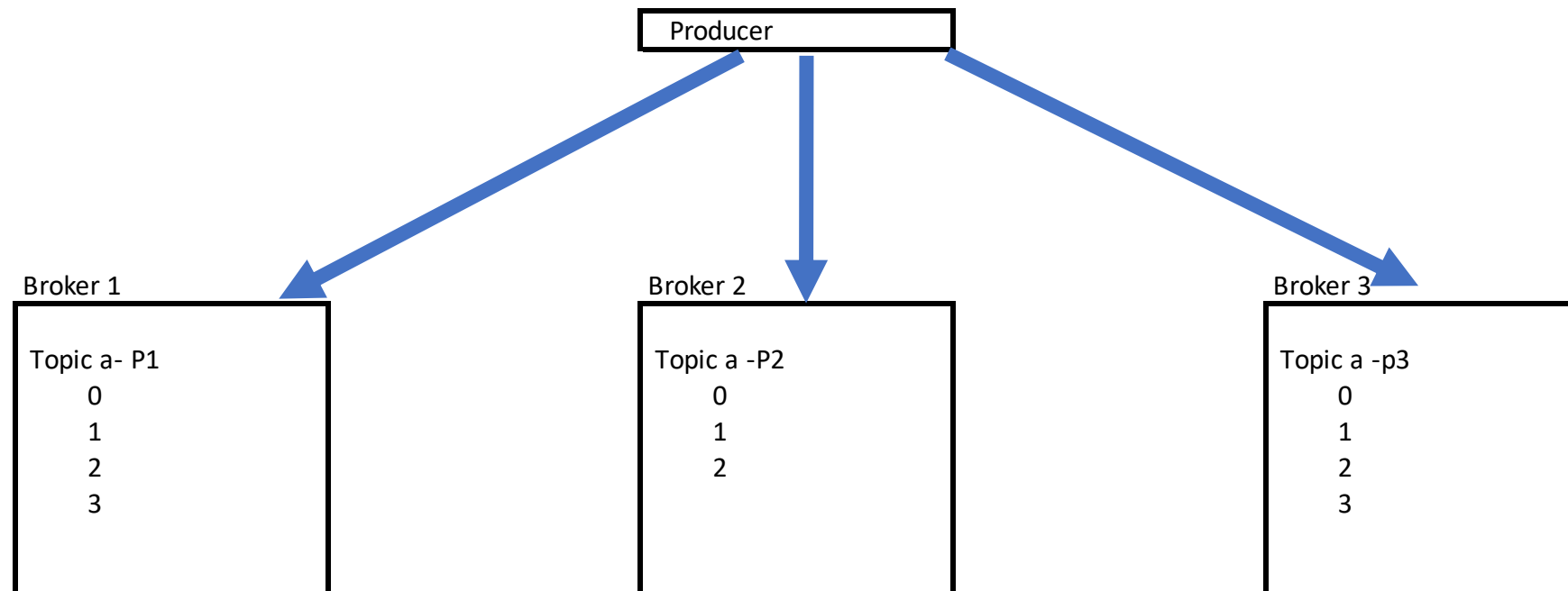3 Topics   Topic a - 2   **Topic b - 4**   Topic c - 1

Broker 1	Broker 2	Broker 3	Broker 4
Topic a Partition 0 **Topic b Partition 0** Topic c Partition 0	Topic a Partition 1 **Topic b Partition 1**	**Topic b Partition 2**	**Topic b Partition 3**

4 Brokers

1 Topic   Topic a - 3   Replication Factor-2

Broker 1	Broker 2	Broker 3	Broker 4
Topic a Partition 0	Topic a Partition 1 Topic a Partition 0	Topic a Partition 2 Topic a Partition 1	Topic a Partition 2

Replica   Replica   Replica

Leader

Followers   ISR (In Sync Replicas)

4 Brokers

1 Topic   Topic a - 3   Replication Factor-2

Broker 1   Broker 2   Broker 3   Broker 4

Topic a(Leader)   Topic a(Leader)   Topic a(Leader)
Partition 0   Partition 1   Partition 2

                            Replica   Replica   Replica
                    Topic a ISR   Topic a ISR   Topic a ISR
                    Partition 0   Partition 1   Partition 2

Sending data without keys

3 Brokers

1 Topic   Topic a - 3

                                        Producer

Broker 1   Broker 2   Broker 3

Topic a- P1   Topic a -P2   Topic a -p3
    0   0   0
    1   1   1
    2   2   2
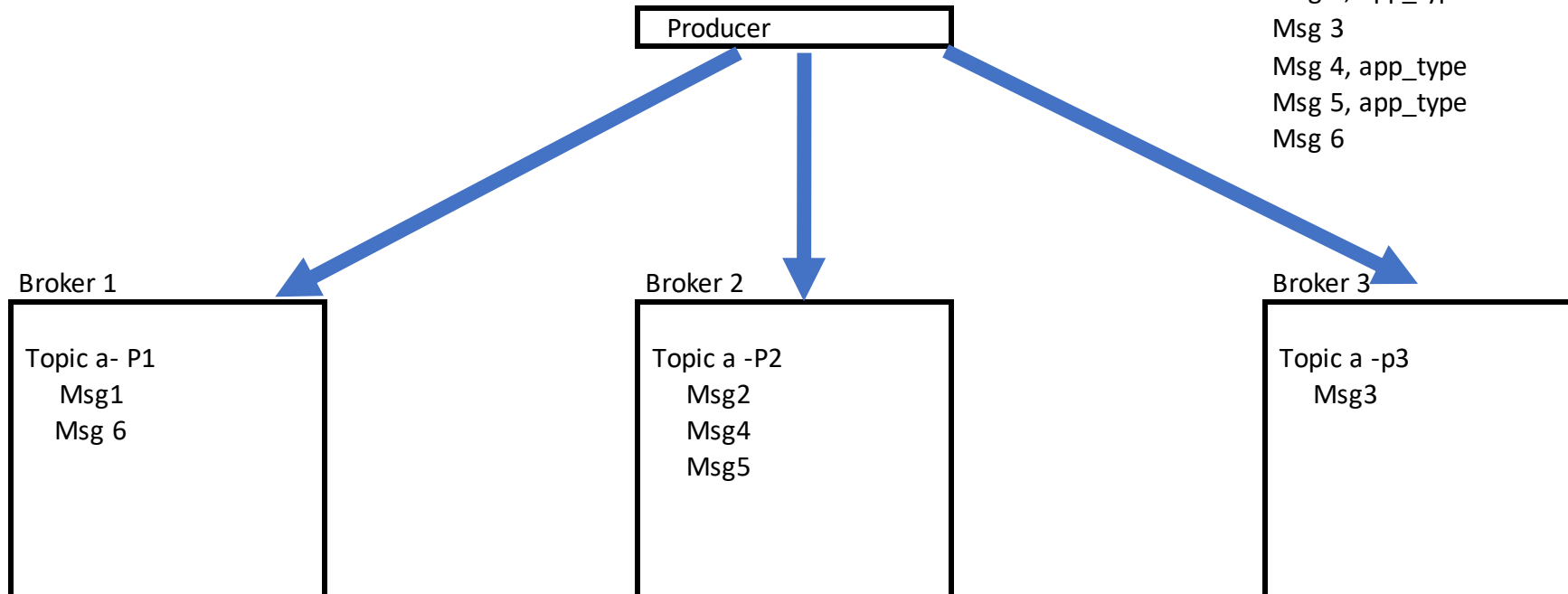   3   3

Sending data with keys

3 Brokers
1 Topic   Topic a - 3
               app_type

Producer

Msg 1
Msg 2, app_type
Msg 3
Msg 4, app_type
Msg 5, app_type
Msg 6

Broker 1

Topic a- P1
    Msg1
    Msg 6

Broker 2

Topic a -P2
    Msg2
    Msg4
    Msg5

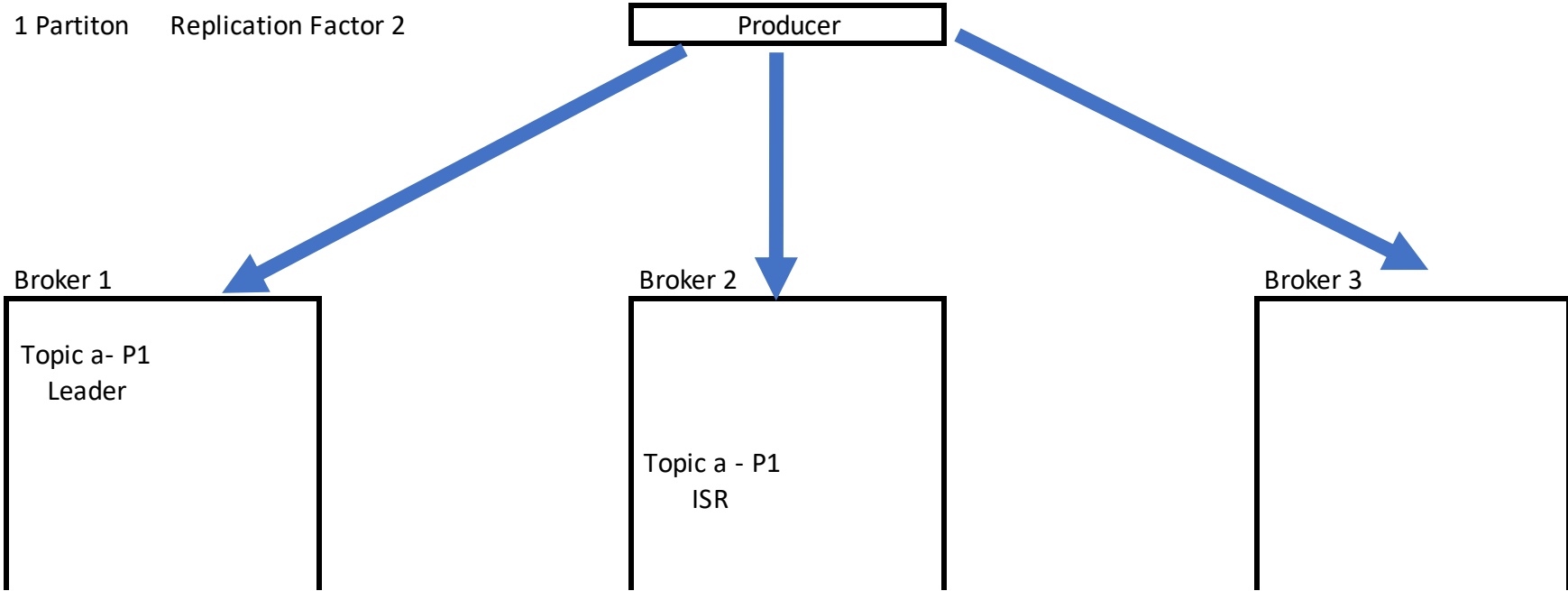Broker 3

Topic a -p3
    Msg3

Acknowledgment
        acks = 0   No acknowledgement
        acks = 1   Acknowledgment from Leader
        acks = all   Acknowledgment from Leader and its Followers

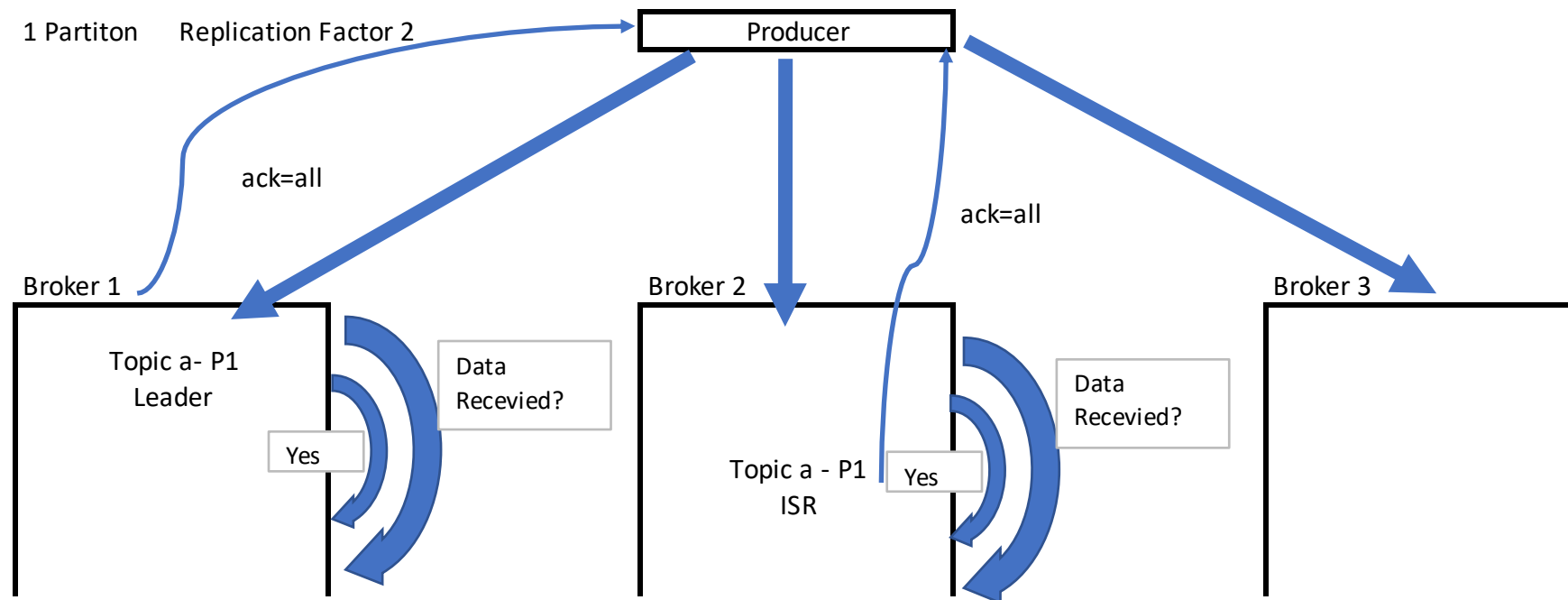Case 1
acks=0
        3 Brokers
        1 Topic   1 Partiton   Replication Factor 2

Producer

Broker 1

Topic a- P1
   Leader

Broker 2

Topic a - P1
   ISR

Broker 3

Case 2
acks=1

3 Brokers
1 Topic   1 Partiton   Replication Factor 2   Producer

ack=1

Broker 1   Broker 2   Broker 3

Topic a- P1   Data
Leader   Recevied?

Yes   Topic a - P1
ISR
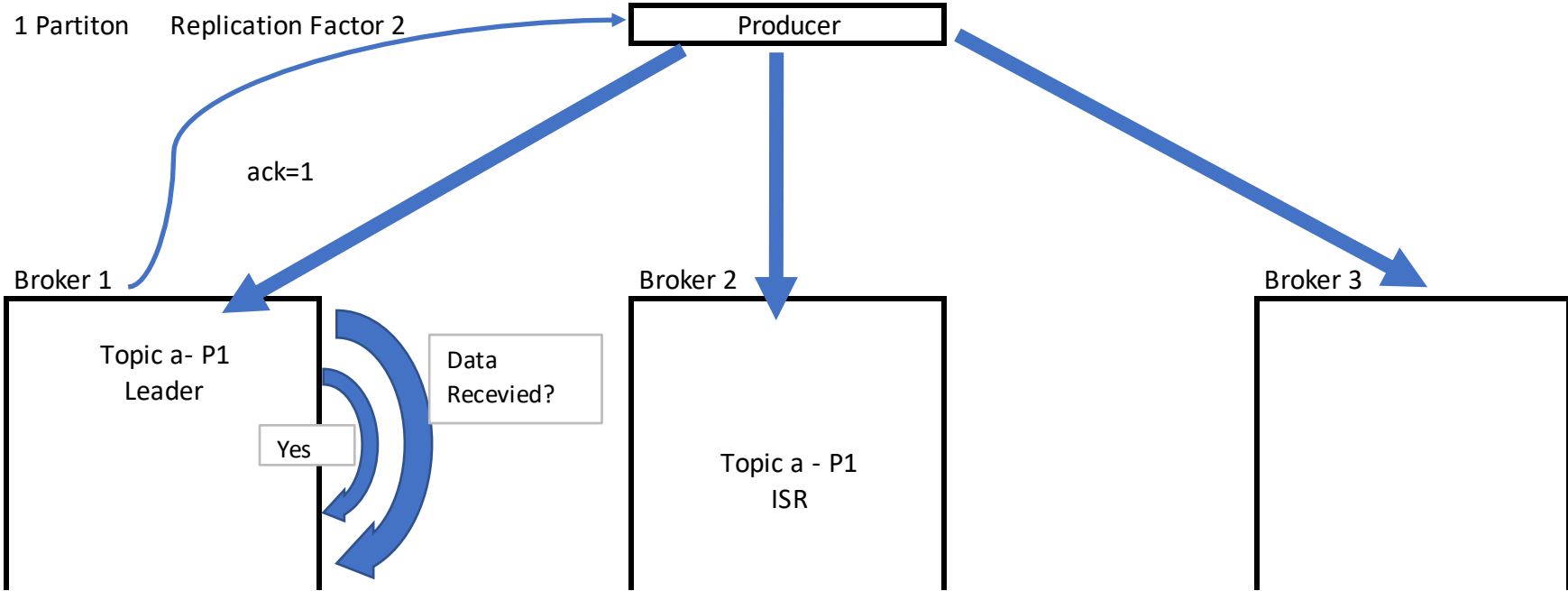
Case 3
acks=all

3 Brokers
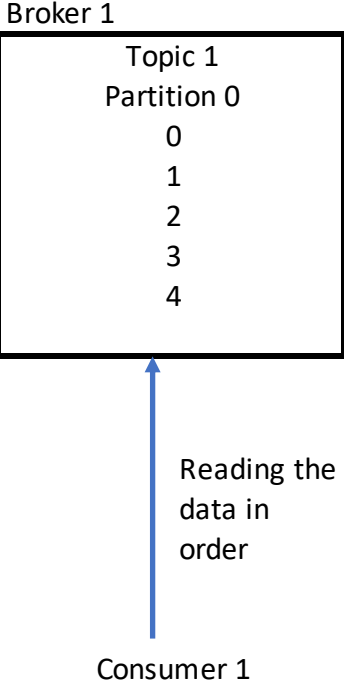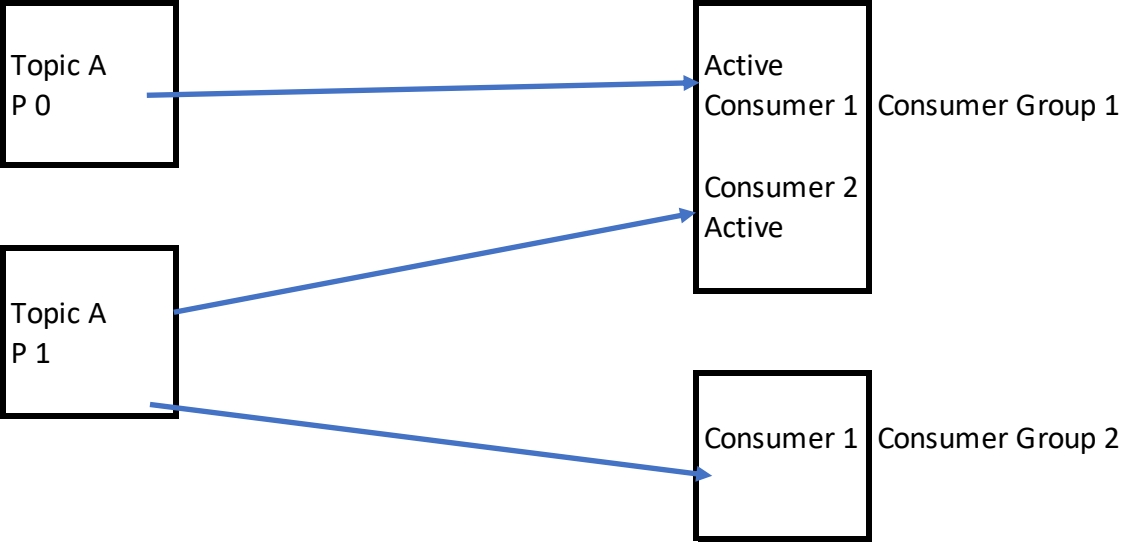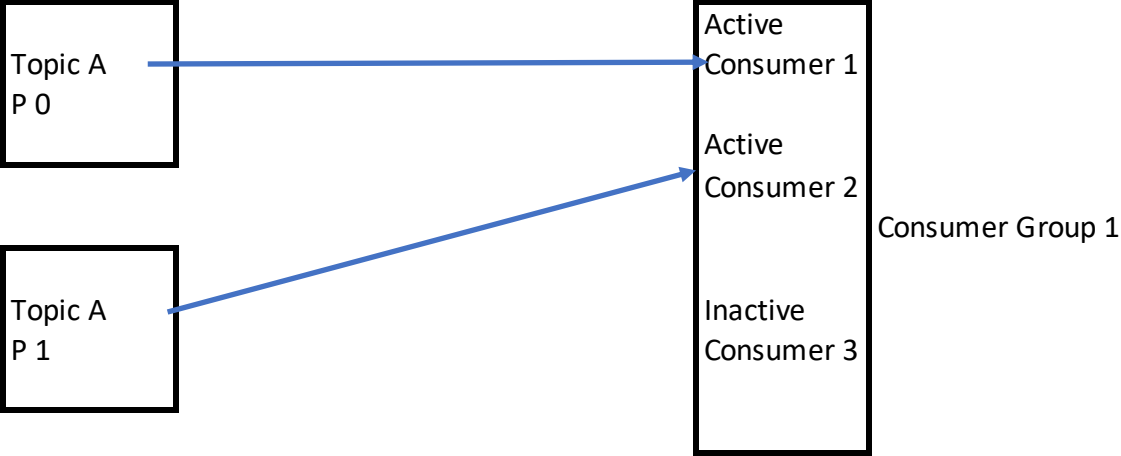1 Topic   1 Partiton   Replication Factor 2

Producer

ack=all

ack=all

Broker 1

Topic a- P1
Leader

Yes

Data
Recevied?

Broker 2

Topic a - P1
ISR

Yes

Data
Recevied?

Broker 3

Consumers

Broker 1

```
Topic 1
Partition 0
0
1
2
3
4
```

Reading the
data in
order

Consumer 1

Broker 1

```
Topic 1
Partition 0
0
1
2
3
4
```

Read the
data
simunltane
ously in
order

Broker 2

```
Topic 1
Partition 2
0
1
2
```
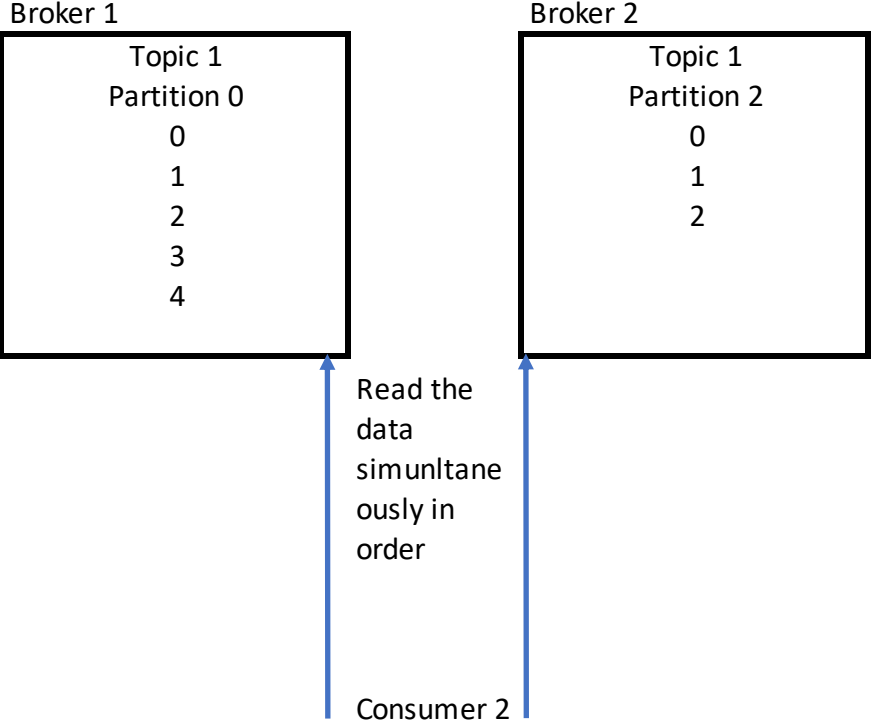
Consumer 2

Consumer Groups

Example 1

Topic A
P 0

Active
Consumer 1 | Consumer Group 1

Consumer 2
Active

Topic A
P 1

Consumer 1 | Consumer Group 2

Example 2

Topic A
P 0

Active
Consumer 1

Active
Consumer 2

Consumer Group 1

Topic A
P 1

Inactive
Consumer 3

Apache Kafka Ecosystem

Kafka Cluster

Broker 1
Topic - x
P 0

Broker 2
Topic - x
P 1

Zookeeper

Producer — Write message →

Consumer ← Consume Message
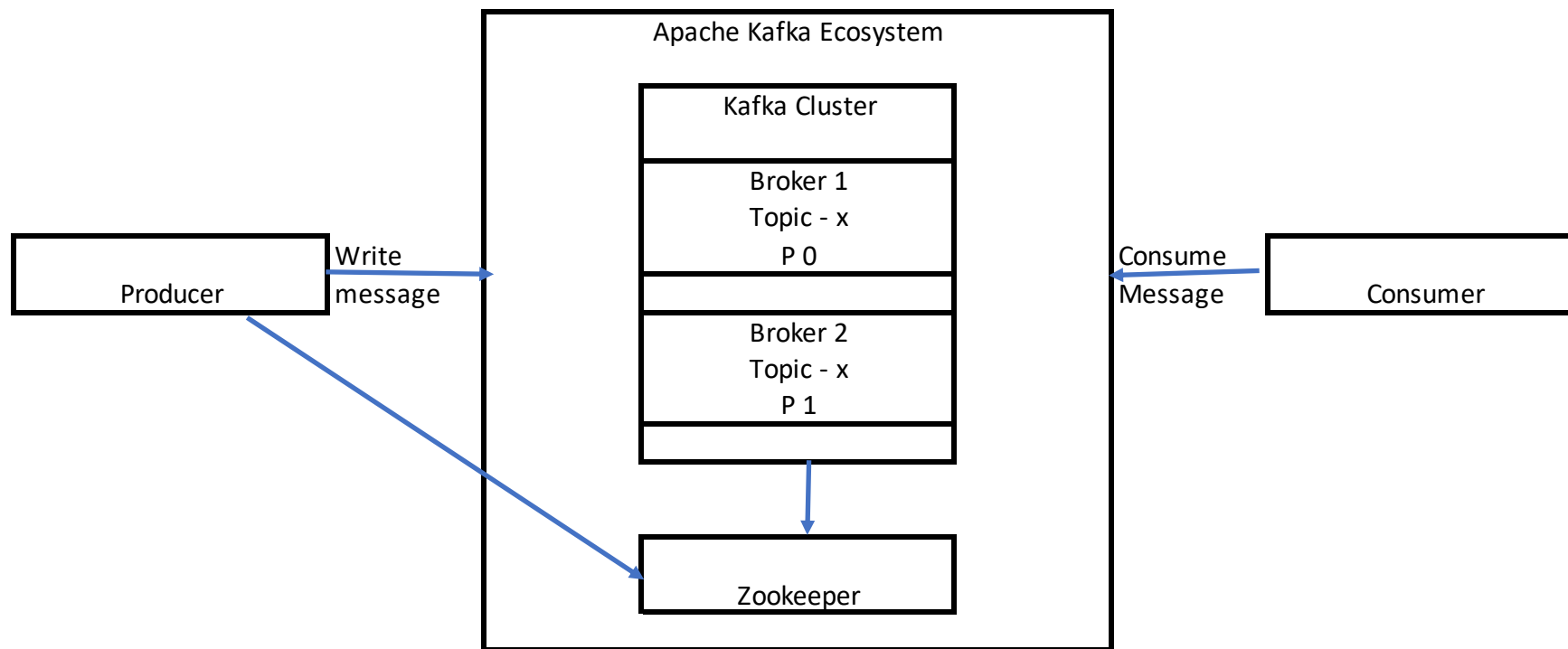
Apache Kafka Architecture