[ZooKeeper-512](https://www.google.com/url?q=https://issues.apache.org/jira/browse/ZOOKEEPER-512&sa=D&source=editors&ust=1751358803576481&usg=AOvVaw0QU6o9ziI8cwbB3F8qz7zK)

FLE election fails to elect leader

**(1)  Log information**

**(1.1) Roles in this case**

5 zk servers

**(1.2) Symptoms**

Environment:

There are 5 zk servers in the cluster.

“I was doing fault injection testing using aspectj and noticed that after some time (after 16:23:50,525) no quorum is formed.

The faults are injected into socketchannel read/write, I throw exceptions randomly at a 1/200 ratio (rand.nextFloat() <= .005 => throw IOException

You can see when a fault is injected in the log via:

2009-08-19 16:57:09,568 - INFO [Thread-74:ReadRequestFailsIntermittently@38] - READPACKET FORCED FAIL”

2009-08-19 16:05:25,447 - INFO [SyncThread:1:ReadRequestFailsIntermittently@41] - READPACKET OK

2009-08-19 16:05:25,447 - INFO [SyncThread:1:ReadRequestFailsIntermittently@38] - READPACKET FORCED FAIL

2009-08-19 16:05:25,448 - WARN [SyncThread:1:SendAckRequestProcessor@46] - Closing connection to leader, exception during packet send

java.io.IOException: aspect failed

at org.apache.zookeeper.server.quorum.ReadRequestFailsIntermittently.ajc$before$org\_apache\_zookeeper\_server\_quorum\_ReadRequestFailsIntermittently$1$61870ae2(ReadRequestFailsIntermittently.aj:39)

at org.apache.zookeeper.server.quorum.Follower.writePacket(Follower.java:97)

at org.apache.zookeeper.server.quorum.SendAckRequestProcessor.processRequest(SendAckRequestProcessor.java:44)

at org.apache.zookeeper.server.SyncRequestProcessor.flush(SyncRequestProcessor.java:144)

at org.apache.zookeeper.server.SyncRequestProcessor.run(SyncRequestProcessor.java:92)

2009-08-19 16:05:25,449 - INFO [SyncThread:1:ReadRequestFailsIntermittently@41] - READPACKET OK

2009-08-19 16:05:25,449 - INFO [SyncThread:1:ReadRequestFailsIntermittently@41] - READPACKET OK

2009-08-19 16:05:25,450 - WARN [SyncThread:1:SendAckRequestProcessor@63] - Closing connection to leader, exception during packet send

java.net.SocketException: Socket closed

at java.net.SocketOutputStream.socketWrite(SocketOutputStream.java:99)

at java.net.SocketOutputStream.write(SocketOutputStream.java:136)

at java.io.BufferedOutputStream.flushBuffer(BufferedOutputStream.java:65)

at java.io.BufferedOutputStream.flush(BufferedOutputStream.java:123)

at org.apache.zookeeper.server.quorum.Follower.writePacket(Follower.java:100)

at org.apache.zookeeper.server.quorum.SendAckRequestProcessor.flush(SendAckRequestProcessor.java:61)

at org.apache.zookeeper.server.SyncRequestProcessor.flush(SyncRequestProcessor.java:147)

at org.apache.zookeeper.server.SyncRequestProcessor.run(SyncRequestProcessor.java:92)

2009-08-19 16:05:25,456 - WARN [QuorumPeer:/0:0:0:0:0:0:0:0:2181:Follower@309] - Exception when following the leader

java.net.SocketException: Socket closed

at java.net.SocketInputStream.read(SocketInputStream.java:162)

at java.io.BufferedInputStream.fill(BufferedInputStream.java:218)

at java.io.BufferedInputStream.read(BufferedInputStream.java:237)

at java.io.DataInputStream.readInt(DataInputStream.java:370)

at org.apache.jute.BinaryInputArchive.readInt(BinaryInputArchive.java:63)

at org.apache.zookeeper.server.quorum.QuorumPacket.deserialize(QuorumPacket.java:66)

at org.apache.jute.BinaryInputArchive.readRecord(BinaryInputArchive.java:108)

at org.apache.zookeeper.server.quorum.Follower.readPacket(Follower.java:114)

at org.apache.zookeeper.server.quorum.Follower.followLeader(Follower.java:243)

at org.apache.zookeeper.server.quorum.QuorumPeer.run(QuorumPeer.java:498)

2009-08-19 16:05:25,457 - INFO [QuorumPeer:/0:0:0:0:0:0:0:0:2181:NIOServerCnxn@833] - closing session:0x12334e7ba770000 NIOServerCnxn: java.nio.channels.SocketChannel[connected local=/127.0.0.1:2181 remote=/127.0.0.1:33152]

2009-08-19 16:05:25,479 - INFO [QuorumPeer:/0:0:0:0:0:0:0:0:2181:NIOServerCnxn@833] - closing session:0x12334e7226f0000 NIOServerCnxn: java.nio.channels.SocketChannel[connected local=/127.0.0.1:2181 remote=/127.0.0.1:33116]

2009-08-19 16:05:25,546 - INFO [Thread-3:ReadRequestFailsIntermittently@41] - READPACKET OK

2009-08-19 16:05:25,546 - INFO [Thread-3:ReadRequestFailsIntermittently@38] - READPACKET FORCED FAIL

2009-08-19 16:05:25,546 - WARN [Thread-3:QuorumCnxManager$RecvWorker@621] - Connection broken:

java.io.IOException: aspect failed

at org.apache.zookeeper.server.quorum.ReadRequestFailsIntermittently.ajc$before$org\_apache\_zookeeper\_server\_quorum\_ReadRequestFailsIntermittently$1$61870ae2(ReadRequestFailsIntermittently.aj:39)

at org.apache.zookeeper.server.quorum.QuorumCnxManager$RecvWorker.run(QuorumCnxManager.java:594)

2009-08-19 16:05:51,057 - INFO [Thread-8:ReadRequestFailsIntermittently@41] - READPACKET OK

2009-08-19 16:05:51,059 - INFO [QuorumPeer:/0:0:0:0:0:0:0:0:2181:FastLeaderElection@618] - Notification: 1, 4294967500, 2, 1, LOOKING, LOOKING, 1

2009-08-19 16:05:51,059 - INFO [QuorumPeer:/0:0:0:0:0:0:0:0:2181:FastLeaderElection@642] - Adding vote

2009-08-19 16:05:51,060 - INFO [Thread-2:ReadRequestFailsIntermittently@38] - READPACKET FORCED FAIL

2009-08-19 16:05:51,060 - WARN [Thread-2:QuorumCnxManager$SendWorker@550] - Exception when using channel: 2

java.io.IOException: aspect failed

at org.apache.zookeeper.server.quorum.ReadRequestFailsIntermittently.ajc$before$org\_apache\_zookeeper\_server\_quorum\_ReadRequestFailsIntermittently$1$61870ae2(ReadRequestFailsIntermittently.aj:39)

at org.apache.zookeeper.server.quorum.QuorumCnxManager$SendWorker.send(QuorumCnxManager.java:512)

at org.apache.zookeeper.server.quorum.QuorumCnxManager$SendWorker.run(QuorumCnxManager.java:548)

2009-08-19 16:05:51,061 - WARN [Thread-2:QuorumCnxManager$SendWorker@554] - Send worker leaving thread

The jstack trace is for one of the servers. Notice that #RecvWorker != #SendWorker

2009-08-19 16:59:45  Full thread dump Java HotSpot(TM) Client VM (14.0-b16 mixed mode, sharing):

"Thread-182" prio=10 tid=0x08a81c00 nid=0x6fa9 runnable [0xb48ff000]

   java.lang.Thread.State: RUNNABLE

       ...

       at org.apache.zookeeper.server.quorum.QuorumCnxManager$RecvWorker.run(QuorumCnxManager.java:594)

"Thread-181" prio=10 tid=0x08b32800 nid=0x6fa7 waiting on condition [0xb4476000]

   java.lang.Thread.State: WAITING (parking)

       ...

       at org.apache.zookeeper.server.quorum.QuorumCnxManager$SendWorker.run(QuorumCnxManager.java:533)

       ...

"Thread-180" prio=10 tid=0x08af4000 nid=0x6edd runnable [0xb4569000]

   java.lang.Thread.State: RUNNABLE

       ...

       at org.apache.zookeeper.server.quorum.QuorumCnxManager$RecvWorker.run(QuorumCnxManager.java:594)

"Thread-179" prio=10 tid=0x08a87800 nid=0x6edb waiting on condition [0xb4b87000]

   java.lang.Thread.State: WAITING (parking)

       ...

       at org.apache.zookeeper.server.quorum.QuorumCnxManager$SendWorker.run(QuorumCnxManager.java:533)

"Thread-131" prio=10 tid=0x08a0d400 nid=0x5fc3 waiting on condition [0xb4bd8000]

   java.lang.Thread.State: WAITING (parking)

       ...

       at org.apache.zookeeper.server.quorum.QuorumCnxManager$SendWorker.run(QuorumCnxManager.java:533)

       ...

"Thread-2" prio=10 tid=0x08aee400 nid=0x58e8 waiting on condition [0xb4c29000]

   java.lang.Thread.State: WAITING (parking)

       ...

       at org.apache.zookeeper.server.quorum.QuorumCnxManager$SendWorker.run(QuorumCnxManager.java:533)

2009-08-25 10:51:04,617 - FATAL [SyncThread:2:SyncRequestProcessor@131] - Severe unrecoverable error, exiting

java.net.SocketException: Socket closed

at java.net.SocketOutputStream.socketWrite(SocketOutputStream.java:99)

at java.net.SocketOutputStream.write(SocketOutputStream.java:136)

at java.io.BufferedOutputStream.flushBuffer(BufferedOutputStream.java:65)

at java.io.BufferedOutputStream.flush(BufferedOutputStream.java:123)

at org.apache.zookeeper.server.quorum.Follower.writePacket(Follower.java:100)

at org.apache.zookeeper.server.quorum.SendAckRequestProcessor.flush(SendAckRequestProcessor.java:52)

at org.apache.zookeeper.server.SyncRequestProcessor.flush(SyncRequestProcessor.java:147)

at org.apache.zookeeper.server.SyncRequestProcessor.run(SyncRequestProcessor.java:92)

From the thread dump, 2 RecvWorker, 4 SendWorker (#RecvWorker != #SendWorker), which is abnormal, since the RecvWorker and sendWorker come in pairs.