

Here is what i would like to discuss - [https://vitalik.ca/general/2018/08/07/99\\_fault\\_tolerant.html](https://vitalik.ca/general/2018/08/07/99_fault_tolerant.html).

Vitalik proposed (or better - described the tradeoff between the latency and fault tolerance) what is called the latency-dependent consensus

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As far as i understood:

1. We have a PBFT consensus that has a 50% (or even 33%) "fault tolerance".
2. The goal of the consensus is this: all nodes should get the same list of proposals. For example, node 1 should get {a,b,c} list and node 2 should get {c,a,b} list. After each node selects the proposal with the lowest hash, for example b, so it is selected and consensus is reached.

So we would like to avoid situations when node1 gets {a,c} and node2 gets a {b,a}.

1. To improve the situation described above we can add Observers - nodes that can only watch and retransmit messages.
2. But adding Observers without increasing the consensus time frame is not enough. So we increase the time frame. For example, before we required all msgs to settle in 5 seconds, now we increased this to 15 seconds.
3. And Vitalik states that adding more Observers (plus increasing the time frame) - CAN increase the fault tolerance up to 99+%.

Questions:

1. Is everything correct above?
2. So am i right that in order to increase the fault tolerance Vitalik proposed to add more Observers AND increase the consensus time frame?
3. And that will slow down the consensus
4. And that will decrease the max number of nodes that can work in such system (because even the number of messages are the same, we highly increased the time for consensus to be reached).

We can't have both: "fault tolerance" AND "fast consensus", right? That article shows that such a tradeoff exists and can be exploited. So 50% (33%) fault tolerance can be manually changed (increased/decreased) at will.

Am i right?

Thx