Kyle Shyffer, Zach English

1. We use only bidirectional links because otherwise, we could send packets to nodes which have no means of ever responding, i.e. there is a path from X to Y but no path exists from Y to X. In a system using ACKs thoroughly, this means no ACK could ever be delivered, which poses problems that I hope are self-explanatory.
2. Yes, the algorithm does produce symmetric routes. This is because all of the links in our network are bidirectional, so the shortest path is still the shortest, regardless of which direction it is travelled in. [Possible edge cases for paths of equal length? Test/consider.]
3. A node which advertised itself as having neighbors but refused to forward packets would be a serious trap, as any packets routed through it would be guaranteed not to reach their destinations. A hypothetical solution would be to use ACKs to keep track of which packets are or are not delivered, and use a system similar to the one we use for removing dead neighbors in order to declare a path invalid if enough packets sent along it are dropped. The immediate neighbors of the node could then effectively drop it as a neighbor and route around it.
4. The short answer is that the algorithm does not function properly. Whatever information they carried would be lost, and the nodes those packets were destined for would likely end up routing to a longer/less-optimal path, or even potentially left believing some nodes are unreachable, even though they could be reached through the path those LinkState packets were advertising.
5. This would prevent the LinkState system from ever converging, as every change in neighbor advertisement would change the neighbor tables, which prompts a re-route. It effectively freezes the entire network. However, if this were happening on a millisecond scale, it’s possible that our current implementation could withstand it, as neighbors must be gone for a significant amount of time in order to be dropped and therefore to trigger a reroute. In general, a system which requires a status change to persist for a non-trivial amount of time before it is recorded and action is taken would have a better chance of dealing with this type of disruption.