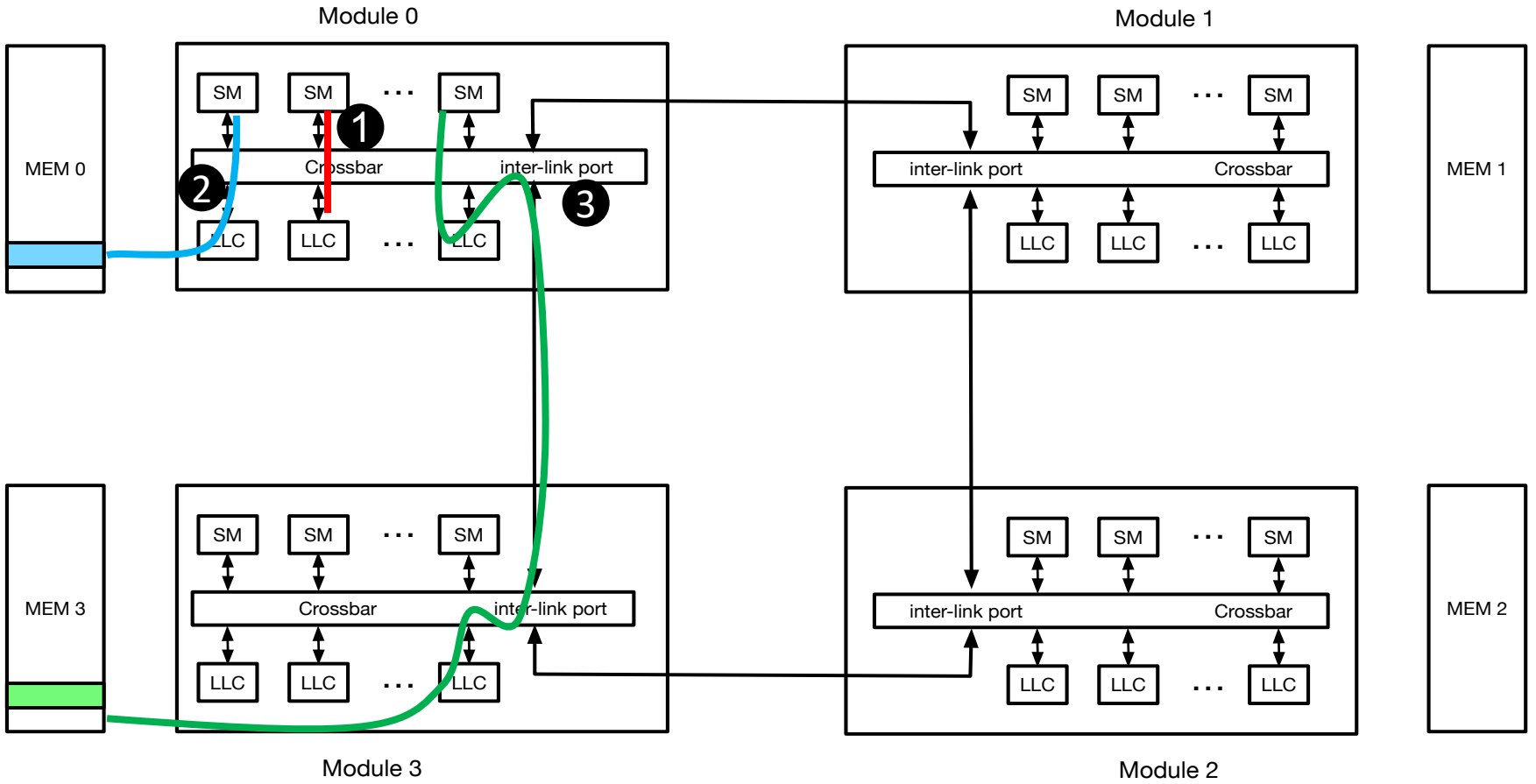
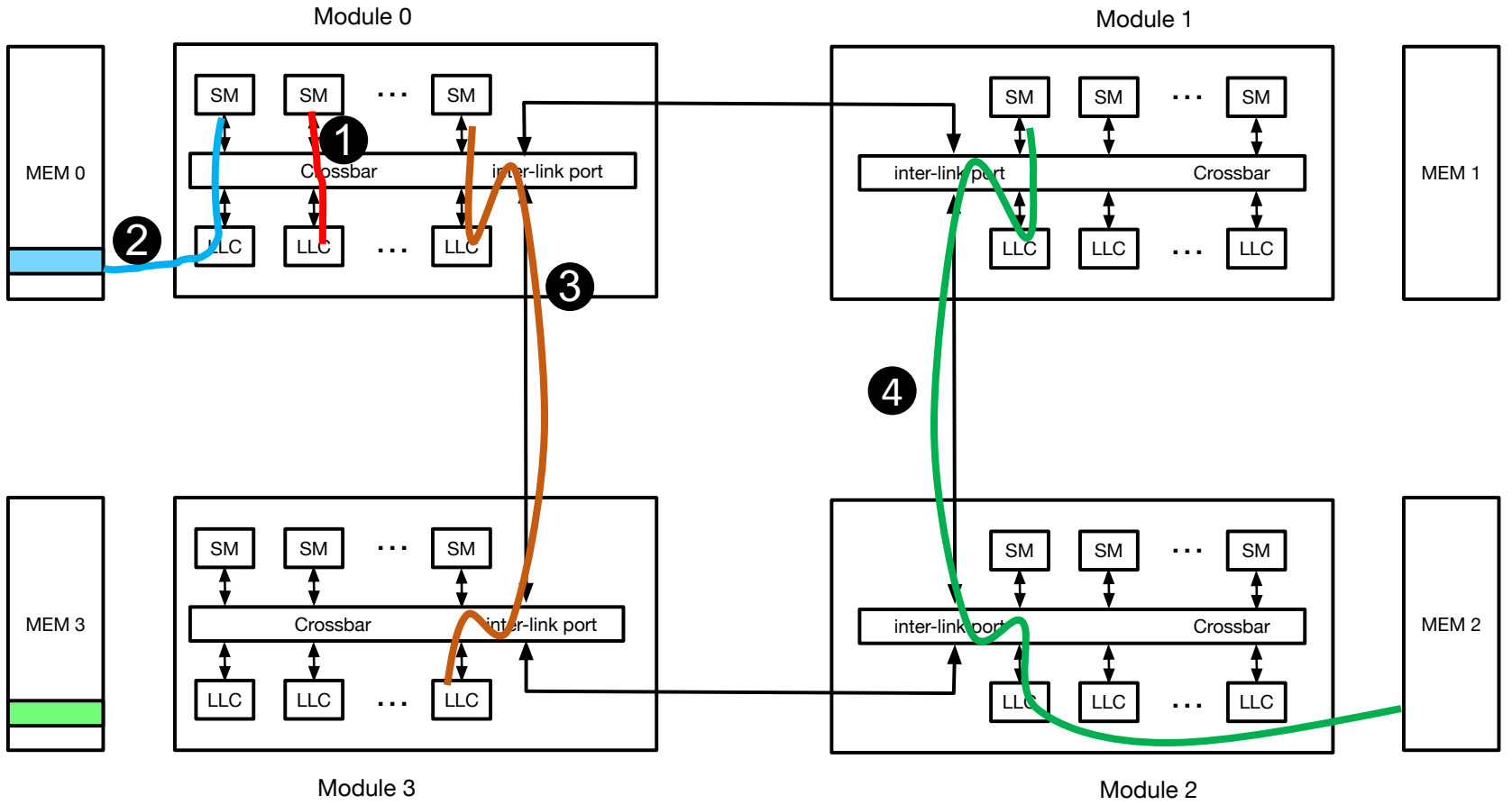


SM-side-LLC (shared)

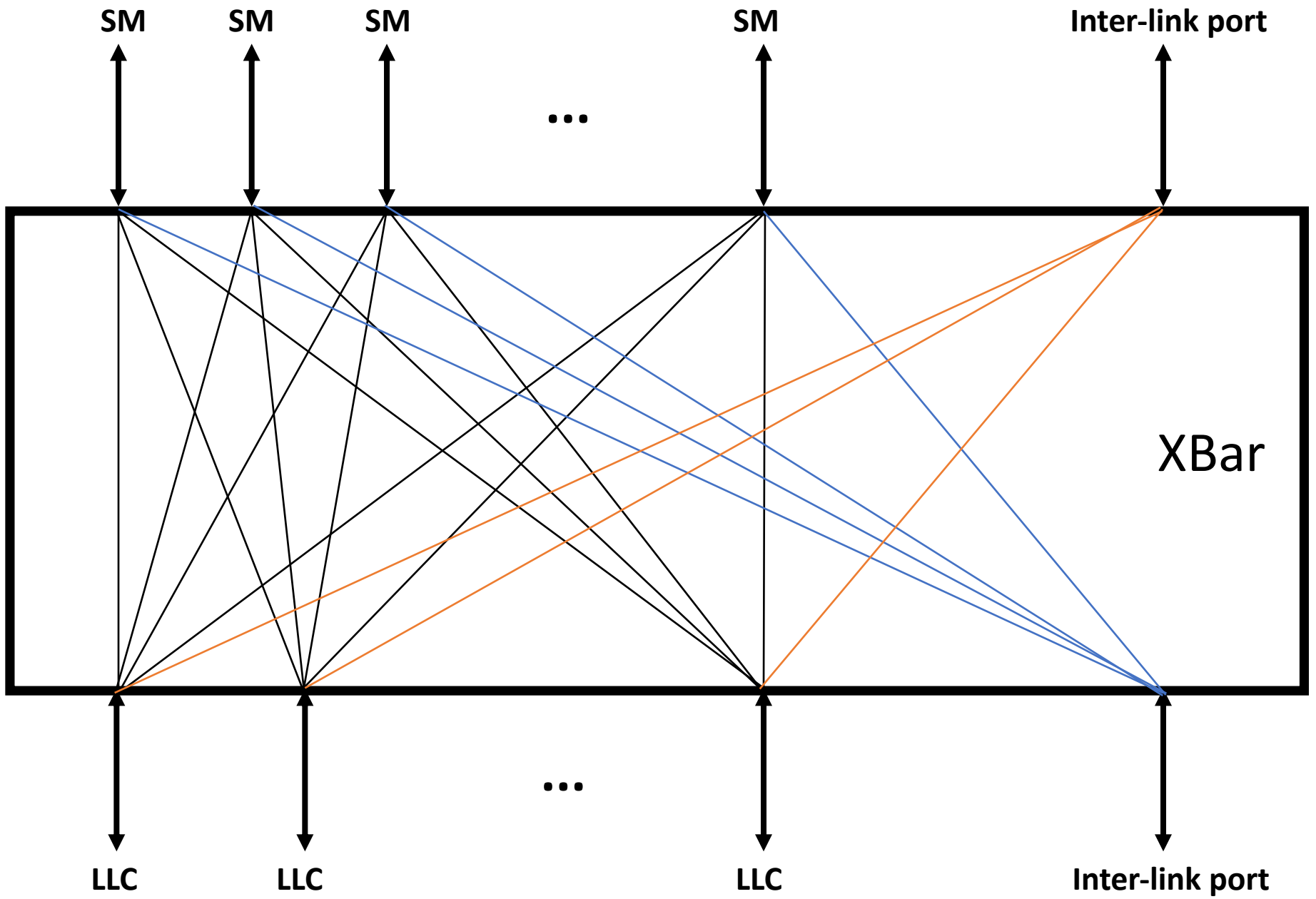
1. **Local LLC hit:** Upon L1 cache miss, the request routes to the LLC according to its bank ID through intra-module link and if it is a hit, the reply returns through the original route.
2. **Local memory hit:** If the request misses in the local LLC, determine the memory bank by the address. If it belongs to the local memory bank, the request routes to the memory module and then the reply returns through the original route.
3. **Remote memory hit:** If the request misses in the local LLC and the memory address belongs to a remote module, the request gets through the inter-module port and routes to the remote module. Upon receiving the remote module, the request is then forwarded to the LLC and memory module through intra-module link and finally the reply is returned through the original path.



MEM-side-LLC (shared)

Unlike SM-side-LLC, here we have local and remote LLC access as well as local and remote memory access. With the memory address, it is possible to distinguish the local and remote accesses. Therefore the following four cases are possible upon an L1 miss:

1. **Local LLC hit:** The request enters the local LLC through intra-module link and if it hits, the reply returns through the original route.
2. **Local memory hit:** If the access misses in local LLC, the request routes to the local memory and the reply returns on the same path.
3. **Remote LLC hit:** The request enters the inter-module link in the Xbar of the SM that needs that data and then it is routed to the remote module. In the remote module, the requests routes from inter-module port to the remote LLC and the reply returns on the same path.
4. **Remote memory hit:** If the request misses in the remote LLC misses, it is forwarded to the remote memory slice on the intra-module link and the reply returns on the original path.


SM
SM
SM
SM
Inter-link port
XBar
LLC
LLC
LLC
Inter-link port