🫀 Types of Heartbeats in Oracle RAC  
**1. Network Heartbeat (via Interconnect)**  
Purpose: Checks connectivity and communication between cluster nodes over the private interconnect.  
Layer: Uses UDP/IP or RDS (Reliable Datagram Sockets) over the private network.  
Component Involved: Oracle Clusterware (ocssd, crsd, etc.)  
  
📌 Use Case:  
If Node A stops responding to Node B over the interconnect (e.g., due to network failure), the node is suspected to be hung or down. This might trigger a node eviction (reboot) via I/O fencing to protect data integrity.  
  
✅ Example:  
If RAC Node 2 is not sending a heartbeat over the interconnect for a few seconds (e.g., 30s timeout), then Node 1 may evict Node 2 to prevent data corruption.  
  
**2. Disk Heartbeat (via Voting Disks)**  
Purpose: Verifies node liveness via read/write I/O to voting disks (a shared disk resource).  
  
Mechanism: Each node writes a heartbeat (a timestamp or status) to the voting disk at regular intervals and reads heartbeats from other nodes.  
  
Frequency: Usually every 1 second.  
  
📌 Use Case:  
If a node loses access to the voting disk, it may be declared as not healthy and get evicted.  
  
✅ Example:  
Suppose Node 3 loses access to all voting disks due to a SAN issue. Even if its interconnect is fine, Clusterware may evict Node 3 to maintain quorum.