Chapter 15: Block servers

In a distributed file system, block servers (or block storage servers) often play a key role in reconstructing a file. Here's how it typically works:

1. **File Splitting**: Files are broken down into smaller chunks or blocks and stored across multiple block servers. Each server is responsible for managing, storing, and serving specific blocks.
2. **Redundancy and Replication**: To ensure data reliability and fault tolerance, blocks are often replicated across multiple servers. Some systems may also use erasure coding to allow reconstruction of files even if some blocks are missing.
3. **Reconstruction Process**:
    - When a client requests a file, the system locates the servers that hold the required blocks.
    - The client or a coordinating server gathers these blocks from the different block servers.
    - Blocks are reassembled in the correct sequence to reconstruct the complete file.

In most cases, block servers are optimized to retrieve and send blocks efficiently rather than handling the entire reconstruction process themselves. The client or a dedicated controller node usually initiates and manages the reconstruction based on block metadata, which keeps track of where each file block resides across the servers.