

Dropbox is a Repository architecture; Dropbox is a centralized online location for storing files, photos, and other data. The user's device communicates with the central servers to store, retrieve, and synchronize files. Dropbox spreads files across multiple servers. Reason Dropbox is a Repository architecture is that it uses a centralized cloud-based storage system, which is easy to access with an internet connection.

Gmail is a Client-server architecture; the user requests the client (Gmail), the client sends requests to Google's email servers, Google's email servers store, manage, and process users' emails, and the client receives necessary data from Google's email servers to display to the user. Reason why Gmail is a Client-server architecture: Gmail is a web application; it needs a network connection to use, it needs to request data from a server, and most of the information is processed through a server that is then displayed to the user.

YouTube is a Pipe and filter architecture; when uploading a video to YouTube, the video file goes through pipes that have filters, such as encoders to convert the video into different formats, transcoders to adjust for various video qualities, devices, and internet speeds, and compressors to reduce file size. The reason YouTube uses the pipe and filter architecture is that the processing stages can be made and adjusted independently, the filters can be reused across many parts of the system, the system can scale individual components in the pipeline to handle different loads, and the pipe and filter architecture is very efficient for video processing.

Discord uses Client-server architecture, Microservices architecture, and Cloud infrastructure. The Client-server architecture provides an easy model for most interactions, but is limited for larger group chats. The Microservices architecture is where different functionalities are broken into smaller services that can be developed and deployed separately. This provides an easy way to upgrade and update these smaller services. I can't really think of a disadvantage. The Cloud infrastructure provides access around the world, as long as you have an internet connection.

CapCut uses a Client-server architecture, Pipe and filter architecture, and a cloud-based infrastructure. The user's device using CapCut acts as the client, sending information to the server. This provides easy access with a network connection, the drawbacks being that if one point fails, the server can crash, and it's vulnerable to Denial of Service (DoS) attacks.

The pipe and filter architecture is used when the user edits a video file; the file goes through many filters, such as encoders, transcoders, and compressors. The downsides are possible performance issues from data format conversion, and potential data corruption or loss of data.