Suppose you are the CTO of a video gaming company, what technical challenges you might have for the networking part of the game and what solutions or possible technical directions you will suggest?

In terms of technical challenges, the most obvious one is having to choose between peer to peer connections, or client to server connections.

Peer to peer can alleviate the need for server costs, as players would become the hosts themselves, and other players could connect to them. However, in order to make this possible, Players would need to know how to allow inward bound connections go through their firewall at specific port ranges, which most people would not know how to do, or depending on their provider, would be unable to do.

Client to server connections would be better suited, as Players would not need to know how to host their own servers, and could simply connect to a pre-made server. The downside to this is server costs and server load. If a game becomes very popular, more servers would have to be purchased to meet the demand of Players, and overloading a server with too many connections can potentially cause server issues and downtime.

With both options in mind, going with Client to Server would be the better choice, as it would make it more difficult for any potential bad actors to cheat or affect the game negatively, and all updates can be done server side and shared with the Client. We can also implement necessary Server protections to prevent bad actors from sending bad data.

The next problem that comes up is making sure that all Players are properly synced up.  
If any Player has syncing issues, it can cause big problems, since they may die to an Enemy that was considered dead to other Players, or they may miss out on an item that other Players can easily access.

In order to attempt to fix this issue, we can have the main server deal with all properties of the game, such as making sure that all existing entities are on the right animation frame, and updating the positions of all entities in the game world. Each client can then update the server with any relevant game world information so it can update to other Players appropriately.

In terms of UDP vs TCP, most games are built around the UDP, best effort communication, protocol. Compared to TCP, UDP suffers less from latency and is appropriate in situations where lost packets are not critical. UDP is a connection less protocol, so unlike TCP there is no guarantee of data-delivery. The most common use of UDP in games is to inform each client on positions of each player where due to the high number of updates missing an update is not critical.