1. As a cloud service provider offering cloud-based storage services to customers, you recently need to upgrade/enhance your cloud infrastructure in order to cope with increasing storage demand. Nonetheless, your system administrator has discovered that more than 50% of the files in the storage are duplicated files (e.g., your customers save a number of copies as a backup). To efficiently utilize the existing storage system, which cloud architecture should be deployed hence unnecessary storage upgrades or enhancements are avoided? Also draw its general architecture to support your answer.
2. Cloud storage sometimes cannot handle increasing performance requirements (IOPS), and needs to scale-up. However, implementing a vertical scaling may be inefficient and time-consuming. Additionally, storage resources may be wasteful when not needed (unless automatic scaling down is there). Horizontal scaling may also be very inefficient since CAPEX and OPEX still exist although storage requirements have decreased. It has been found out that your storage system comprises different storage devices (e.g., SSD, HDD, Tape, etc.). Which architecture is the most appropriate solution to implementation when you can move cloud consumers’ data to a higher performance storage when needed and move back when not needed.
3. You are about to upgrade your cloud infrastructure and aim to achieve high reliability and availability. Pick a combination of two cloud architectures that you think they help to achieve the following goals:
   1. No downtime during maintenance
   2. No downtime when physical links fail