

EE4217 Test (25 marks)

- 1.a) Nowadays, networks and computer architectures are built with a high availability feature. The architecture will provide a fail tolerant to the operations. However, sometime single point of failure does occur. What is meant by single point of failure? Identify components which will create single point of failure in a storage system?

[5 marks]

Ans:

- Single point of failure is a part of a system which, if it fails, will stop the entire system from working

[2/5 marks]

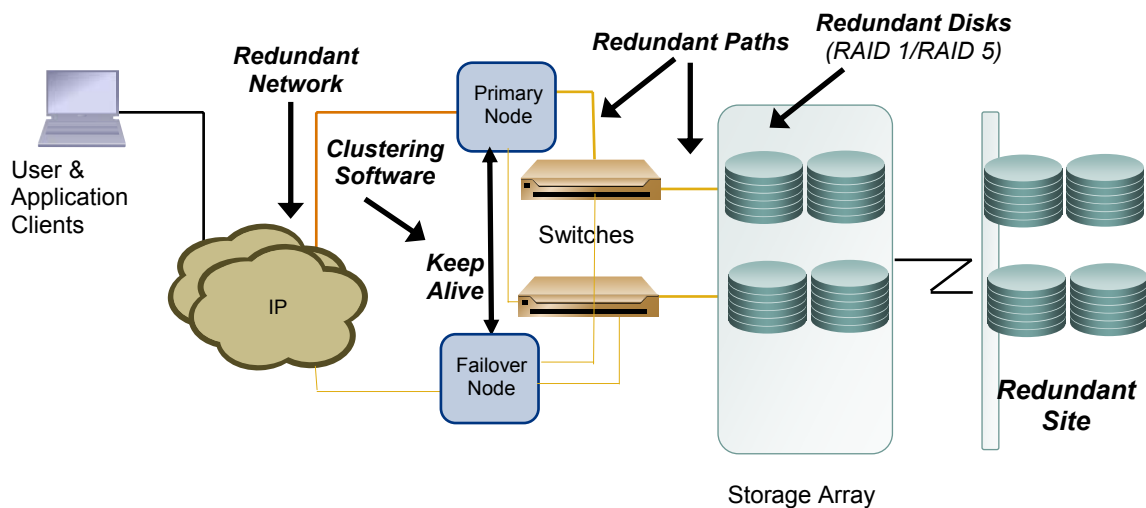
- Single Network
- Single switch
- Single disk

[1 each total 3/5 marks]

- 1.b) Propose architecture to overcome this problem.

[6 marks]

Ans:



- Provide redundancy network
- Provide redundant switches
- Provide redundancy disks

OR

- Provide redundancy site

[2 each total 6 marks]

[bonus 2 marks]

- 1.c) Replication is the process of sharing information so as to ensure consistency between redundant resources, such as software or hardware components, to improve reliability, fault-tolerance, or accessibility. It could be data replication if the same data is stored on multiple storage devices, or computation replication if the same computing task is executed many times. One of the techniques used is called remote replication. Explain the concept of remote replication.

[6 marks]

Ans:

- Data from the production devices is copied over to a set of target (replica) devices on a different array at some distance away
- Target devices can be kept continuously synchronize, asynchronous or synchronous, with the production devices
- In the event of a failure of the production devices, applications can continue to run from the target devices

- 1.d) Give one commercial solution that can provide this remote replication function.

[8 marks]

Ans:

Solution 1:

- EMC Symmetrix Arrays
 - EMC SRDF/Synchronous
 - EMC SRDF/Asynchronous
 - EMC SRDF/Automated Replication

[2 each total 8 marks]

Solution 2:

- EMC CLARiiON Arrays
 - EMC MirrorView/Synchronous
 - EMC MirrorView/Asynchronous
 - NO automated replication

[2 each total 8 marks]