REPLICATION

Network Distributed Systems
Dr. Christina Thorpe

REPLICATION

Benefits of replication:

– High Availability.
– High Performance.

- Costs of replication:

– Synchronization.

- Requirements from a generic solution:

– Strict consistency

– one copy serializability.

– Sometimes too expensive so requirements are tailored to applications.

REPLICATION METHODS

- Two phase commit, three phase commit

- Primary and backups

- Weak consistency (weaker update semantics)

- Primary component.

  - What happens when there is no primary component?

- Congruity: Virtual Synchrony based replication.

- Paxos

WEAK CONSISTENCY

- State kept by the replication servers can be weakly consistent. i.e. copies are allowed to diverge temporarily. They will eventually come to agreement.

- From time to time, a server picks another server and these two servers exchange updates and converge to the same state.

- Total ordering is obtained after getting one message from every server (directly).

- Lamport timestamps are used to order messages.