REG NO: SEU_IS_15_ICT_036

CIS22012 Distributed and Cloud Computing

CLOCK SYNCHRONIZATION

Academic Year 2017/2018, Semester II

1. Compare the given algorithms in the following aspects and tabulate your answer.
   I. Cristian's Algorithm
   II. Berkeley's Algorithm
   III. Network Time Protocol

Algorithms	Type of Algorithms	Approach (External/Internal)	Scalability	Fault tolerance(Y/N)	Limitations
Cristian's Algorithm	Centralized Algorithm	**External Approach**(Passive time server and based on External synchronization approach)	Poor	No	• Single time server might be fail • Faulty time server cause server with incorrect time • Time must never run backward
Berkeley's Algorithm	Centralized Algorithm	**Internal Approach**(Active time server based on Internal clock synchronization approach)	Poor	No	• Server becomes bottleneck • Due to centralized system single point of failure may occur. • A single time-server may not be capable of serving all time requests from scalability point of view.
Network Time Protocol	Distributed	**External clock** is used as reference time server. Based on multiple time server arranged in levels.	Highly scalable	Yes	• NTP supports UNIX operating systems only. • For windows there are problems with time resolution, reference clock drives, authentication and name resolution.