

Monitor for Distributed Applications

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Outline

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Key Goals

- Implement Process Model of a Distributed System
- Implement Theoretical Concepts:
 - Vector Clocks
 - Asynchronous LCR
- Framework for a Monitoring System
- Visualization of Monitor Output

Key Assumptions

- Unidirectional Ring
- No Link Failures
- FIFO Message Ordering
- Monitor has no entry in the Vector Clock
- Number of processes known to all

System Components

- Process Node
- Multiple Worker Threads in Process Nodes
- Process Links
- Vector Clock
- Message Hierarchy
 - LCR Messages
 - Leader Chosen Messages
 - Monitor Log Messages
- Monitor Node
- Config Files

Demo

- 4 Nodes in a Ring - LCR
- LCR with minimum number of messages
- LCR with most number of messages
- Send messages are lost
- Erroneous receive messages logged

Issues, Design Decisions

- Multi-threading, Buffering : Blocking, Fairness
- Incrementing Vector Clock
- Vector Clock Data Structure
- Buffering Monitor Log Messages
- Correlation of Send and Receive Messages in the Monitor

Future Work..

- Improved Model of Link Failures
- Better Visualization of Monitor Output
- Global Predicates and Consistent Cuts