

**Distributed Systems:
Distributed Process Management –
Process Migration**

Process Migration

- What
 - The movement of an active process from one machine to another
- How
 - Transfer of sufficient amount of the state of a process from one machine to another
 - The process continues execution on the target machine

Notes:

- Process migration assumes preemption, i.e., transferring a partially executed process
- A simpler function is a non-preemptive process transfer, i.e., transferring a process that has not begun execution
- Non-preemptive process transfers can be useful in load balancing, but do not react well to changes in load distribution

Motivation

- Load sharing
 - Move processes from heavily loaded to lightly loaded systems
 - Load can be balanced to improve overall performance
 - Benefits of balancing the load must offset the overhead for communication necessary to perform balancing
- Communications performance
 - Processes that interact intensively can be moved to the same node to reduce communications cost
 - Processes that require large amount of remote data can be moved to the location of data
- Availability
 - Long-running process can move
 - In the case of scheduled downtime
 - When faults develop on the node they are running
- Utilizing special capabilities
 - Process can take advantage of unique hardware or software capabilities on a remote node