CASE STUDY NO : 12

Case Study on :- Study of Amoeba as with process management and Memory management.

The Amoeba System Architecture. -

1) Assumes that a large number of CPU are available and that each CPU has 10s of Mb of memory.

2) CPUs are organised into processor pools.

3) CPUs do not need to be of the same architecture (can mix SPARC Motorola power PC, 680x0, Intel, pentium, etc.).

4) When a user types a command, system determines which CPUs to execute it on CPUs can be time shared.

5) Terminals are X-terminals or PCs running x emulators. यंत्रो आ ज्योतिर्विज्ञ

6) The processor pool doesn't have to be composed of CPU boards enclosed in a cabinet, they can be an PCs, etc., in different rooms, countries.

7) Some servers (e.g., file servers) run on dedicated processors, because they need to be available all the time.

The Amoeba Microkernel -

• The Amoeba micromarket is used on all terminals (with an on-board processor) processors and server

- The microkernel manages processes and threads provides low-level memory supports management support
Supports interprocess communication (point-to-point and group) handles low-level I/o for the devices attached to the machine.

Process Management -

- All processes are objects protocled by capabilities
- Processes are managed at 3 levels by process servers, part of the microkernel.
- By library produres which act as interfaces.
By the run server, which decides where to run the processes.
- Process management uses process descriptors. contains : Platform description
  process' owner's capability etc.

Memory Management -

- Designed with performance, simplicity and economics in mind.
- Process occupies contiguous segments in memory.
- All of a process is constantly in memory.
- Process is never swapped out or paged.

Amoeba has an extremely simple memory model. A process can have any number of segments it wants to have, and they can be located whenever it wants in the process 'virtual' address space. Segments are not swapped or paged. So a process must be entirely memory resident to run furthermore, although the hardware MMU is used, each segment is stored contiguously in memory.