Chapter 4
Naming
Home-Based Approaches

1. Send packet to host at its home
2. Return address of current location
3. Tunnel packet to current location
4. Send successive packets to current location

The principle of Mobile IP.
Hierarchical Approaches (1)

Hierarchical organization of a location service into domains, each having an associated directory node.
Hierarchical Approaches (2)

An example of storing information of an entity having two addresses in different leaf domains.
Hierarchical Approaches (3)

Looking up a location in a hierarchically organized location service.
Hierarchical Approaches (4)

a) An insert request is forwarded to the first node that knows about entity $E$.

b) A chain of forwarding pointers to the leaf node is created.
Caching a reference to a directory node of the lowest-level domain in which an entity will reside most of the time.
A cache entry that needs to be invalidated because it returns a nonlocal address, while such an address is available.
Scalability Issues

The scalability issues related to uniformly placing subnodes of a partitioned root node across the network covered by a location service.
The Problem of Unreferenced Objects

An example of a graph representing objects containing references to each other.
The problem of maintaining a proper reference count in the presence of unreliable communication.
Reference Counting (2)

a) Copying a reference to another process and incrementing the counter too late

b) A solution.
Advanced Referencing Counting (1)

a) The initial assignment of weights in weighted reference counting

b) Weight assignment when creating a new reference.
Advanced Referencing Counting (2)

c) Weight assignment when copying a reference.
Advanced Referencing Counting (3)

Creating an indirection when the partial weight of a reference has reached 1.
Creating and copying a remote reference in generation reference counting.
Initial marking of skeletons.
Tracing in Groups (2)

After local propagation in each process.
Tracing in Groups (3)

(c)

Final marking.