Mobility, Portability, Replication and Clustering

Lesson 05

MulticlusterArchitecture

Cluster

- A cluster is a network of transceivers with routing capability
- A cluster consists of a number of routing nodes within a cluster boundary
- A mobile device within a cluster boundary communicates wirelessly to the nearest routing node (access point cum router).

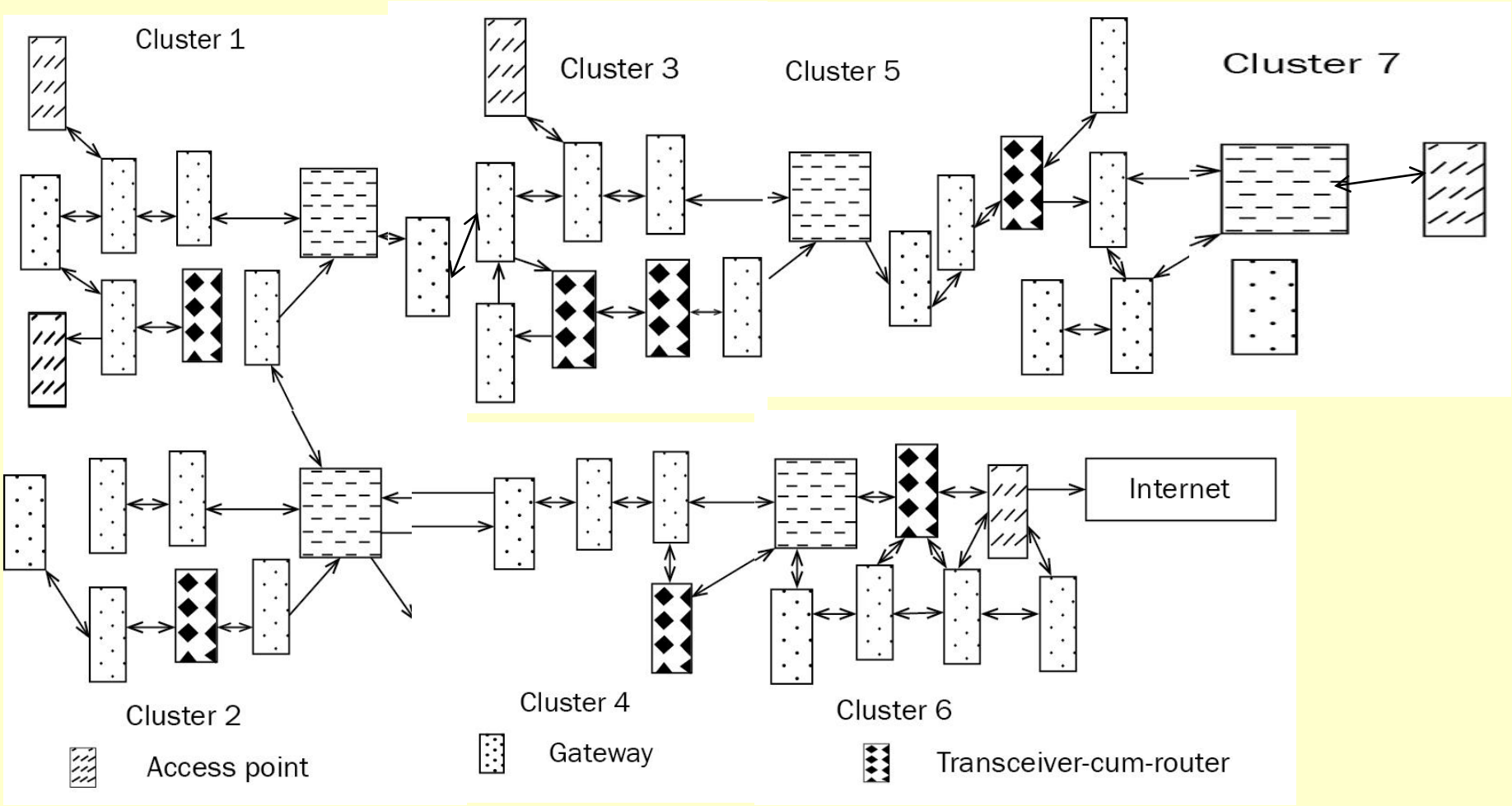
Clustering

- Clustering ensures full connectivity to data
- When a routing link not available, a routing algorithm executed at a cluster node enables the alternate link
- Energy-efficient transmission and reception require more number of nodes, (higher *n).*

Optimizing total energy and total delay

- When the number of nodes is more, it means the cluster has a more complex arrangement of nodes
- Maximum routing delay = n times hop
- An optimization is required for designing a cluster, so that total energy for multiple hops within each cluster and total delay optimize.

Multi-Cluster Architecture



CLUSTER GATEWAY SWITCH ROUTING (CGSR) PROTOCOL

- Forms a cluster structure
- The nodes aggregate into clusters using an appropriate algorithm
- The different clusters assigned to a different band of frequencies in frequency division multiple access (FDMA) or different spreading CDMA codes

The algorithm for specifying cluster head

- Cluster head– Node used for connection to other clusters
- Defines a gateway node, which provides switching (communication) between two or more cluster heads.

NECESSITIES OF A MULTI-CLUSTER ENVIRONMENT

- Optimum cluster selection and maintenance of clusters

Summary

- Multi-Cluster Architecture
- CGSR protocol
- Total energy for multiple hops within each cluster and total delay optimization

End of Lesson 05
MulticlusterArchitecture