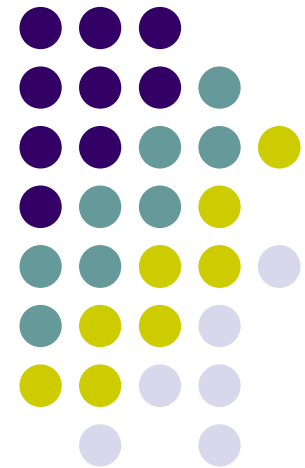# Hierarchical OLSR

Proposal for an Extension to OLSRv2

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Rationale

- Designed for heterogeneous networks
- Takes advantage of node's distinct communication capabilities
- Can take into account radio capacities, energy availability, processing requirements
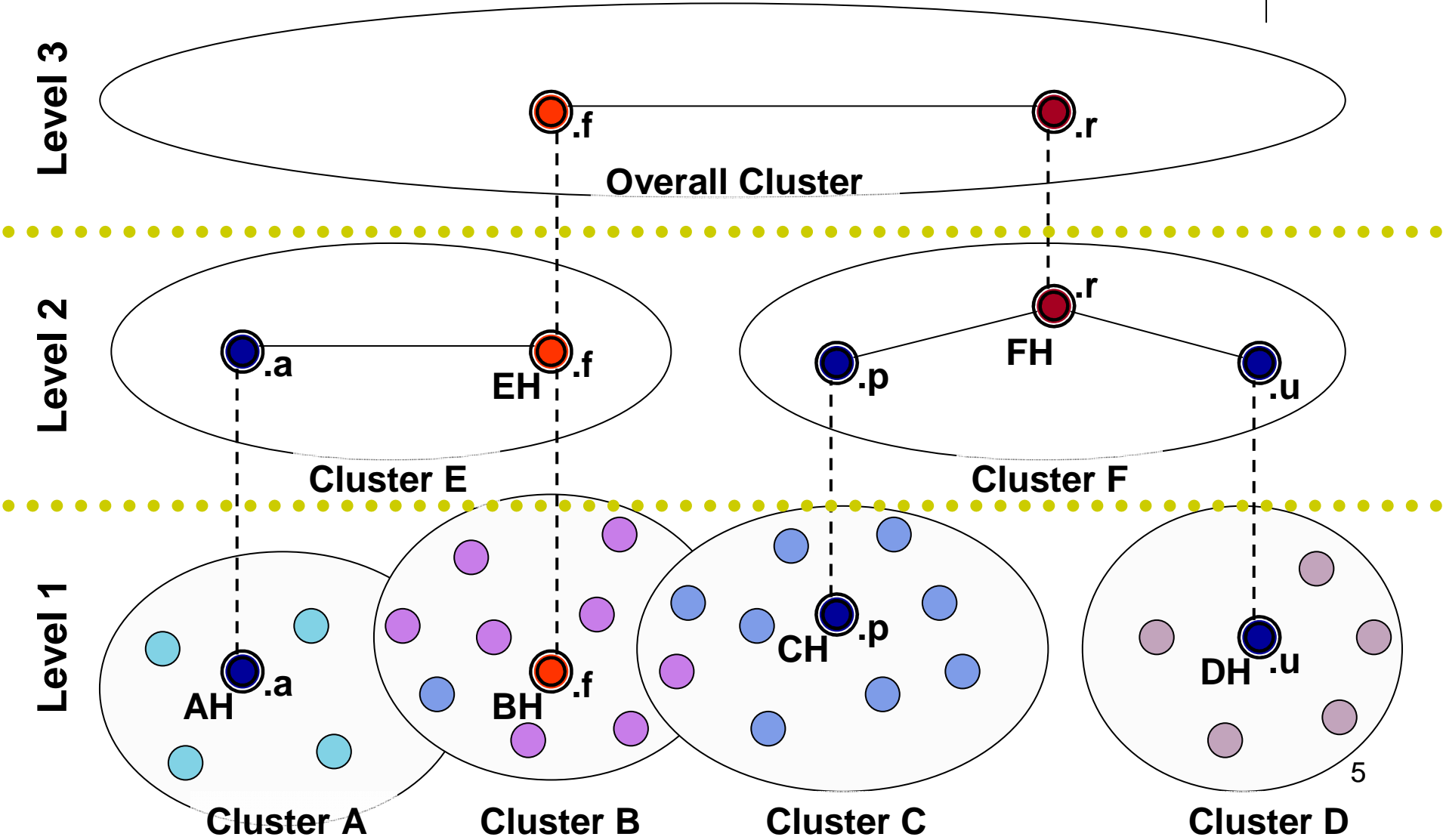- Increased scalability

Overview

- Hierarchy building:
  - Nodes are organized into hierarchical levels based on their capabilities (radio, energy, processing, user-defined criteria),
  - and are dynamically grouped into clusters at each level.
- Hierarchy routing:
  - Topology changes within clusters are communicated to higher levels using cluster heads.

A bit more on Clusters

- Every cluster runs OLSR(v2) protocol
- TCs generated within a cluster are bounded by this cluster.
- *Hierarchical* TCs (HTC) are generated by the cluster heads to propagate their topology info to the network
- Cluster ID Announcements (CIA) are generated by cluster heads into their own cluster to declare leadership
- Special case - intersecting clusters:
  - Nodes in the intersection pertaining to different clusters can communicate directly without using their respective cluster heads

Basic '3-level' Example

Level 3

Overall Cluster

.f ——— .r

Level 2

Cluster E

.a ——— EH .f

Cluster F

.r FH

.p .u

Level 1

Cluster A

AH .a

Cluster B

BH .f

Cluster C

CH .p

Cluster D

DH .u

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Implementation - Future Plans

- Existing implementation for OLSR(v1) in CRC labs tested with UHF and VHF radios.

- Next step:

    - Implement the *Hierarchical* extension to OLSRv2

    - Define the specifications of *H*OLSRv2 into an I-D