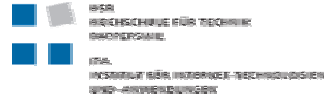


## Convergence



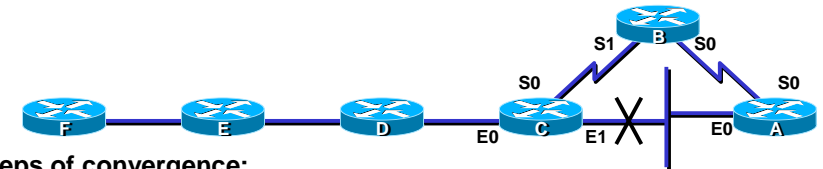
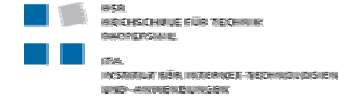
• Convergence time is the time it takes for all routers to agree on the network topology after a change such as:

- New routes being added
- Existing routes changing state

• Convergence time is affected by:

- Update mechanism (hold-down timers)
- Size of the topology table
- Route calculation algorithm
- Media type

## RIP Convergence

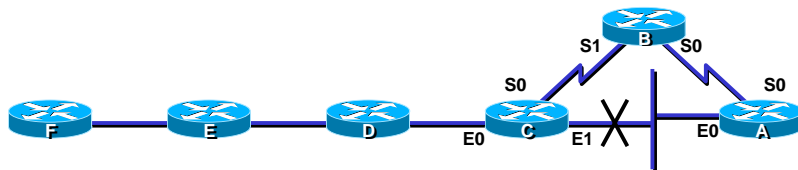
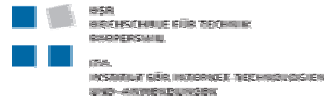


Steps of convergence:

1. C detects link failure; sends Triggered update, goes to D and B
  - Route is poisoned to B and D; removed from C's routing table
2. C sends a request to neighbors for alternate path
  - Broadcast for RIP v1, multicast for v2
3. D reports no alternate path; B reports route with weaker metric
  - Route via B immediately placed in routing table
4. C advertises route via B in periodic update to D
  - No change to table because route is in hold-down
5. In D, E, and F, as hold-down timer expires, route is added to table
  - New route propagated in periodic update

Convergence time at F: hold-down time plus two or three update intervals

## EIGRP Convergence

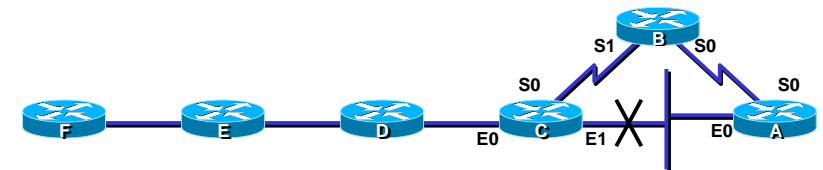
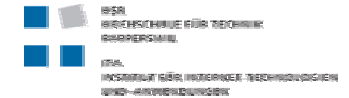


Steps of convergence:

1. C detects link failure; has no FS, goes into active convergence
  - No successor candidates present in topology database
2. C sends query to B and D to get logical successor
  - Because no route with a lower feasible distance available
3. D's response indicates no logical successor
4. B's response indicates FS with higher feasible distance
5. C accepts new path and distance, adds route via B to table
6. Sends Flash update about higher metric, goes to D and B
  - Only higher metric propagated in triggered update

Convergence time to F: approximately 2 seconds

## OSPF Convergence



Steps of convergence:

1. C detects link failure; sends link-state advertisement, goes to D and B
  - Topology change is detected, traffic forwarding suspended
2. All routers update topology database; copy LSA and flood to neighbors
  - All devices have topological awareness
3. All routers run Dijkstra algorithm, generate new routing table
  - Route via B in routing tables, traffic forwarding resumed

Convergence time to F: approximately 6 seconds