# Line-Speed Publish/Subscribe Inter-Networking

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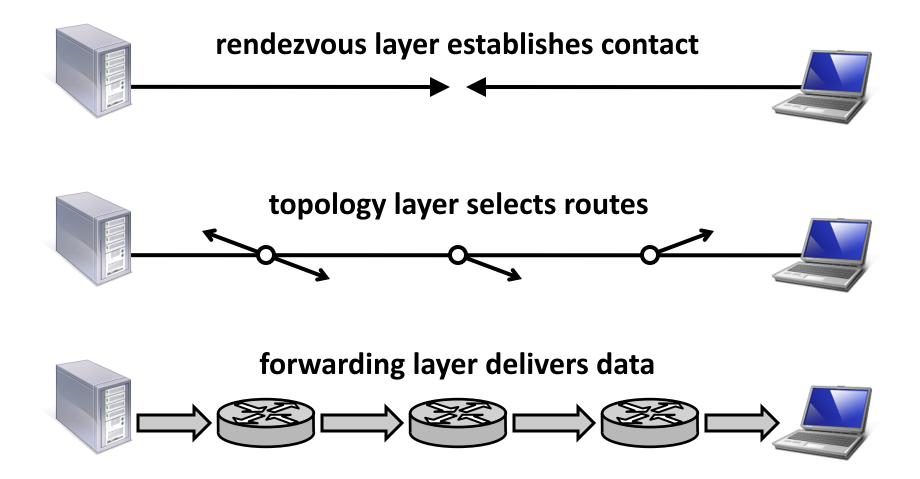
### Improving Support For Publish/Subscribe

- many applications do publish/subscribe
  - decouple data creation and consumption
  - multiple consumers simultaneously
- no optimal support in classic Internet
  - data-oriented naming
  - in-network caching
  - efficient and scalable multicast

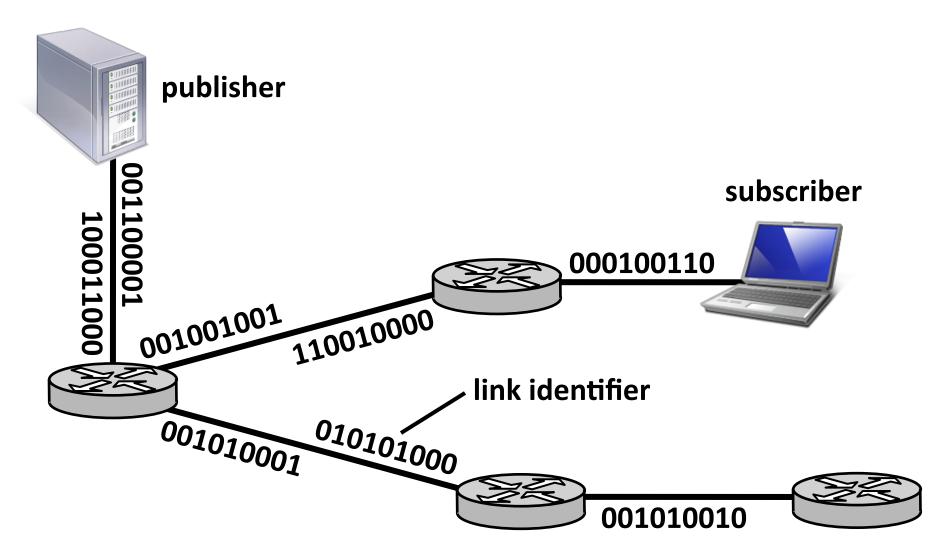
focus here on efficient and scalable multicast



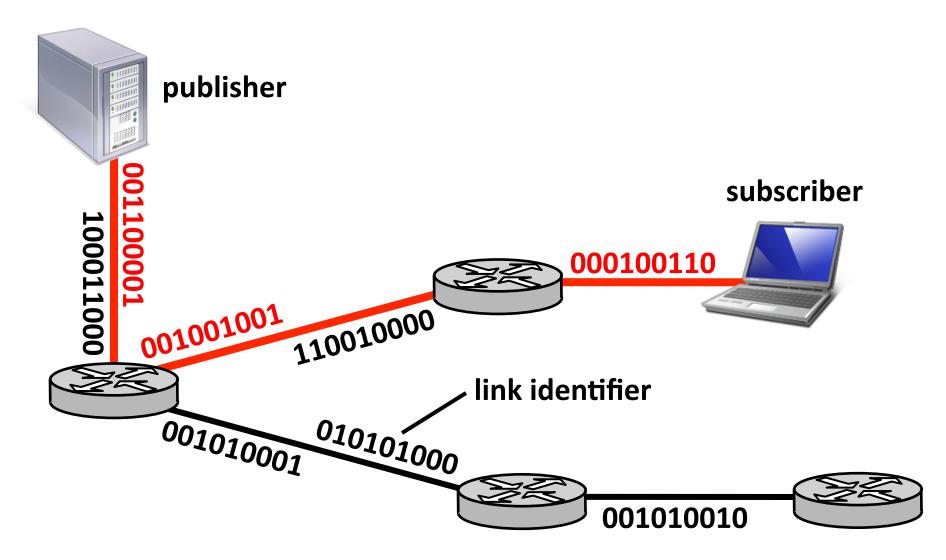
# Publish/Subscribe Architecture: 3 Layers



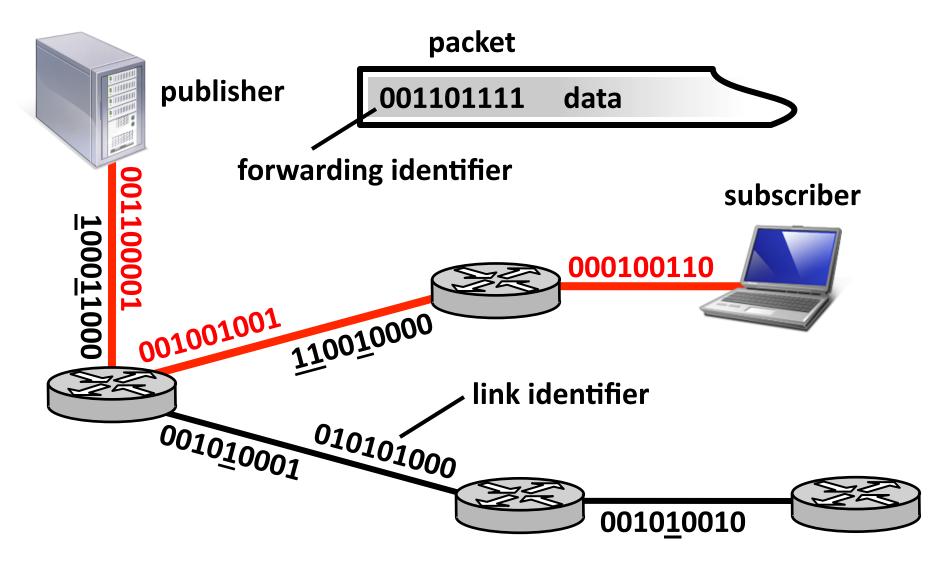
#### **Topology Creation and Forwarding**



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#### Traffic Efficiency Optimizations

- virtual links
  - tunneling with tree/forest support
  - created by topology layer when useful
- alternative link identifiers
  - multiple identifier sets to choose from
  - pick set with least false positives
- do-not-forward link identifiers
  - included in forwarding identifiers
  - requested downstream, created upstream

#### Conclusion

- efficient and scalable multicast
  - using link identifiers
  - using Bloom-filter-based forwarding
- several components not presented
  - rendezvous
  - loop prevention
  - failure recovery
- could be used today, similar to MPLS

