Multicast Issues in Networks Using NVO3

Anoop Ghanwani
Dell

IETF 86
Orlando, FL
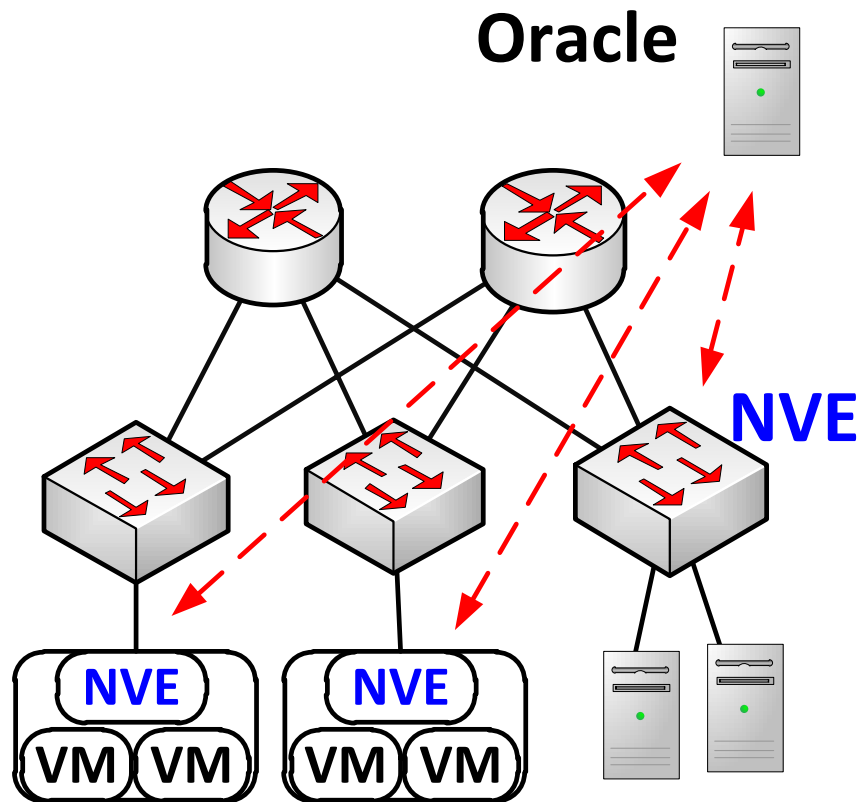
Motivation

- Document various multicast mechanisms in NVO3 networks
- Highlight issues and considerations of each mechanism

Mechanisms for Multicast in NVO3

- No multicast
- Replication at the source NVE
- Replication at a multicast service node
- IP multicast

No Multicast

Oracle

NVE

NVE

NVE VM VM

NVE VM VM

- Use an oracle to obtain end station information
  - No ARP/ND
- No support for multicast applications

- Network does not need to be multicast capable
- No good way register non-virtualized hosts

Replication at the Source NVE

NVE
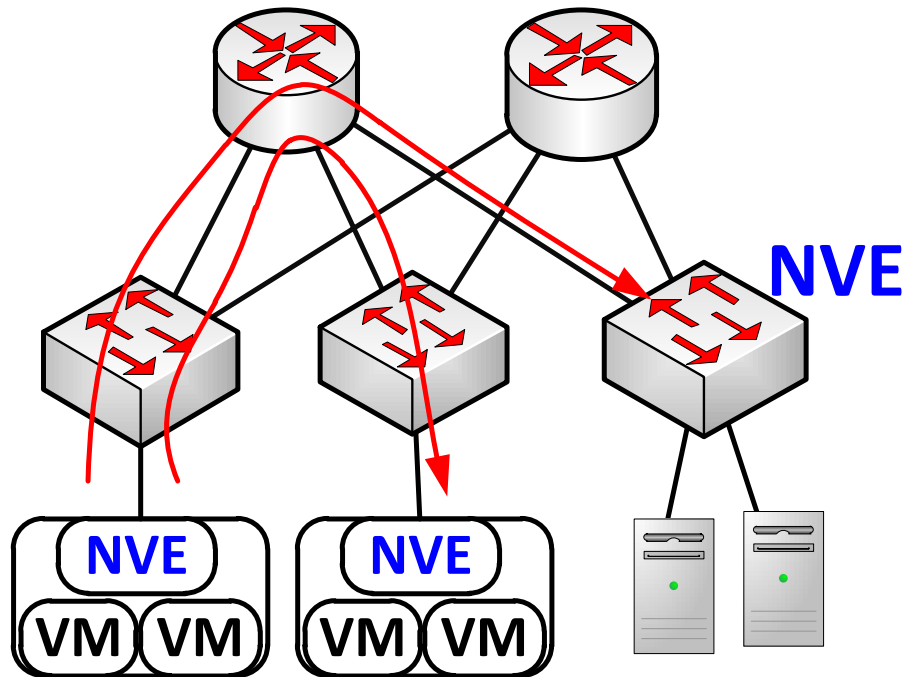
- Source NVE creates copies for all destination NVEs

- Copies are delivered by unicast

- Network does not need to be multicast capable

- Scalability concerns
  - Forwarding performance of NVE
 - Redundant copies on shared links

NVE **VM** **VM**

NVE **VM** **VM**

Replication at a Multicast Service Node

Multicast Replication Node

NVE

NVE   **NVE**

VM **VM**   **VM** **VM**
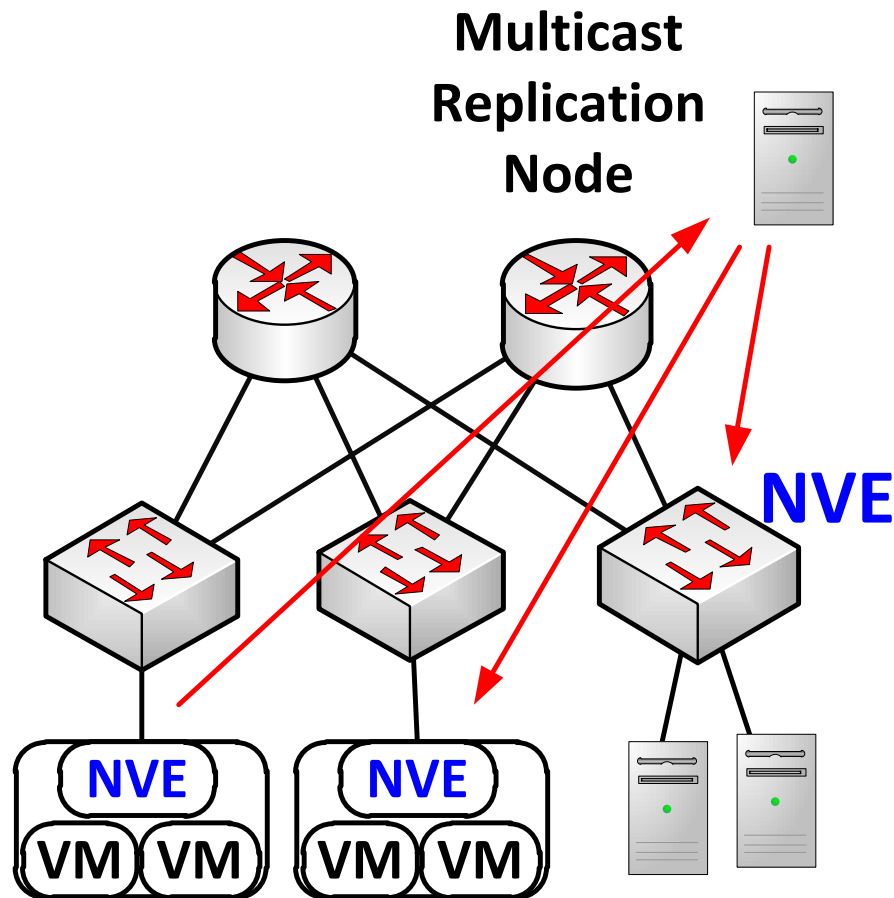
- Multicast packets are unicast to replication node

- Replication node creates copies and unicasts them to destination NVEs

- Network does not need to be multicast capable

- Scalability concerns
  – Forwarding performance of replication node
  – Redundant copies on shared links from replication node

- RPF / MAC address learning

IP Multicast

NVE
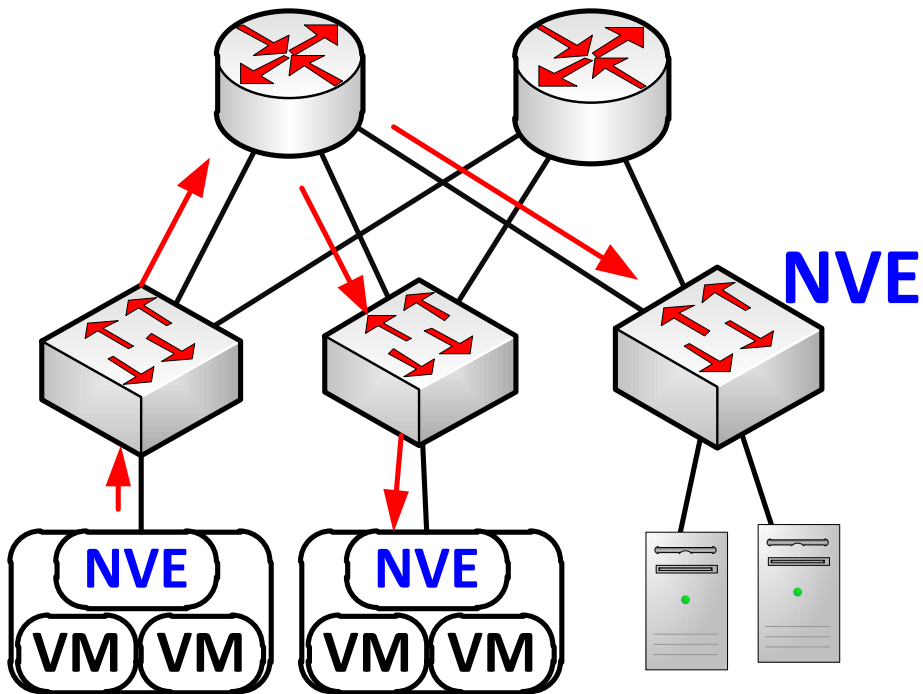
- IP multicast is used in the underlay
  - PIM-SM
  - BIDIR PIM
  - IGMP/MLD Snooping

- Ensures optimal delivery
- Scalability concerns
  - Must use a different "outer" multicast address for each tenant multicast address

Summary & Next Steps

- Multiple mechanisms for multicast in NVO3
  - Multicast in underlay is not always available

- Explore issues of interoperability
- Coexistence may be desirable
  - Use the mechanism that makes most sense for a given scenario

THANK YOU