IP Integrated Services over Ethernet-style Networks

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URL: ftp://playground.sun.com/pub/issll-ethernet/IEEETalk.ps.gz

Outline

- Review of IETF efforts in Integrated Services and ISSLL.
- Overview of proposed Subnet Bandwidth Manager (SBM).
- Discussion of areas of collaboration between 801.1p and IETF ISSLL WG.

Integrated Services

- Distinguish service model policies from protocols/mechanisms
- Three active WGs within IETF working on network QoS issues:
  - Integrated Services WG
    - Chairs: C. Partridge, D. Clark, J. Wroclawski
    - URL: **ftp://ftp.isi.edu/ietf/intserv**
  - RSVP WG
    - Chair: Bob Braden, Lixia Zhang
    - URL: **http://www.isi.edu/div7/rsvp/rsvp.html**
  - RSVP WG
    - Chair: Eric Crawley, John Wroclawski
    - URL: **ftp://ftp.isi.edu/ietf/issll**

Integrated Services

- Service models to support MM being defined in Integrated Services WG (IntSvc)
    - Guaranteed Service (peak-rate allocation).
    - Controlled Load (admission control only).

Integrated Services over Specific Lower Layers (ISSLL) WG

- "The ISSLL Working Group defines specifications and techniques needed to implement Internet Integrated Services capabilities within specific network technologies." [from ISSLL Charter]
- Subtask groups

    ATM

    Low-Speed Serial

    Ethernet

    Token Ring

    Frame Relay

    Cable Modems

ISSLL Ethernet Task Group

- Coordinators: Raj Yavatkar (yavatkar@ibeam.intel.com), Don Hoffman (hoffman@eng.sun.com)
- Proposed work items:

  RSVP-based admission control for Ethernet bandwidth management.

  Overview of mechanisms needed to map integrated-services over Ethernet (in conjunction with proposals in IEEE 801.P?).

  Mapping Controlled Load and Guaranteed Services over Ethernet.

  Overview of adaptation techniques based on traffic measurements and admission control to support int-serv on existing hubs/switches [Needs further investigation]

ISSLL Token Ring Task Group

- Coordinator: Wayne Pace <pacew@raleigh.ibm.com>
- Proposed work items:

  Integrated Services over token ring networks (switched and shared with sections on source route bridging, token priority, filtering, etc).

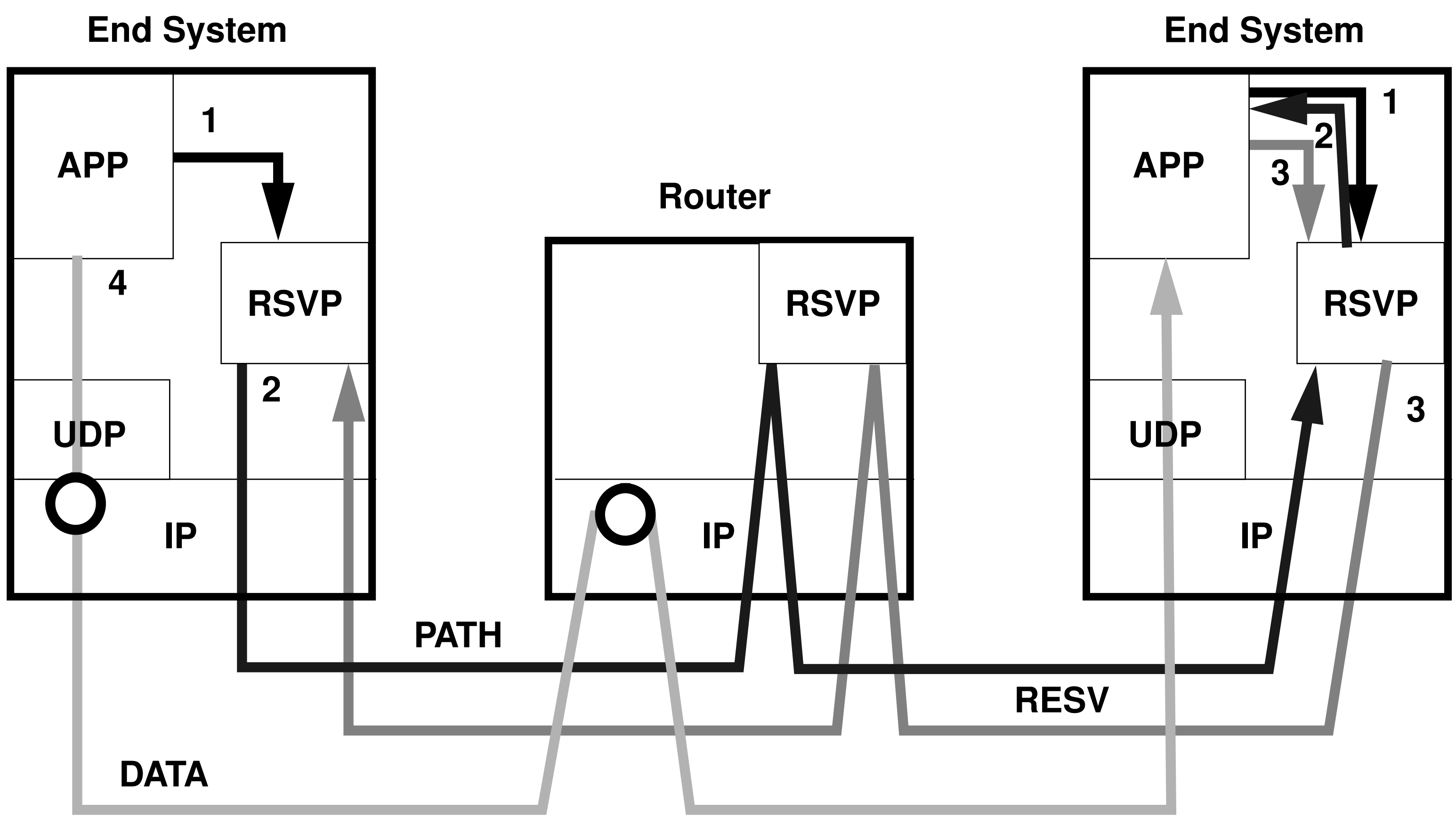
  Controlled Load Service over token ring networks (switched and shared.

  Guaranteed Service over token ring [Needs further investigation].

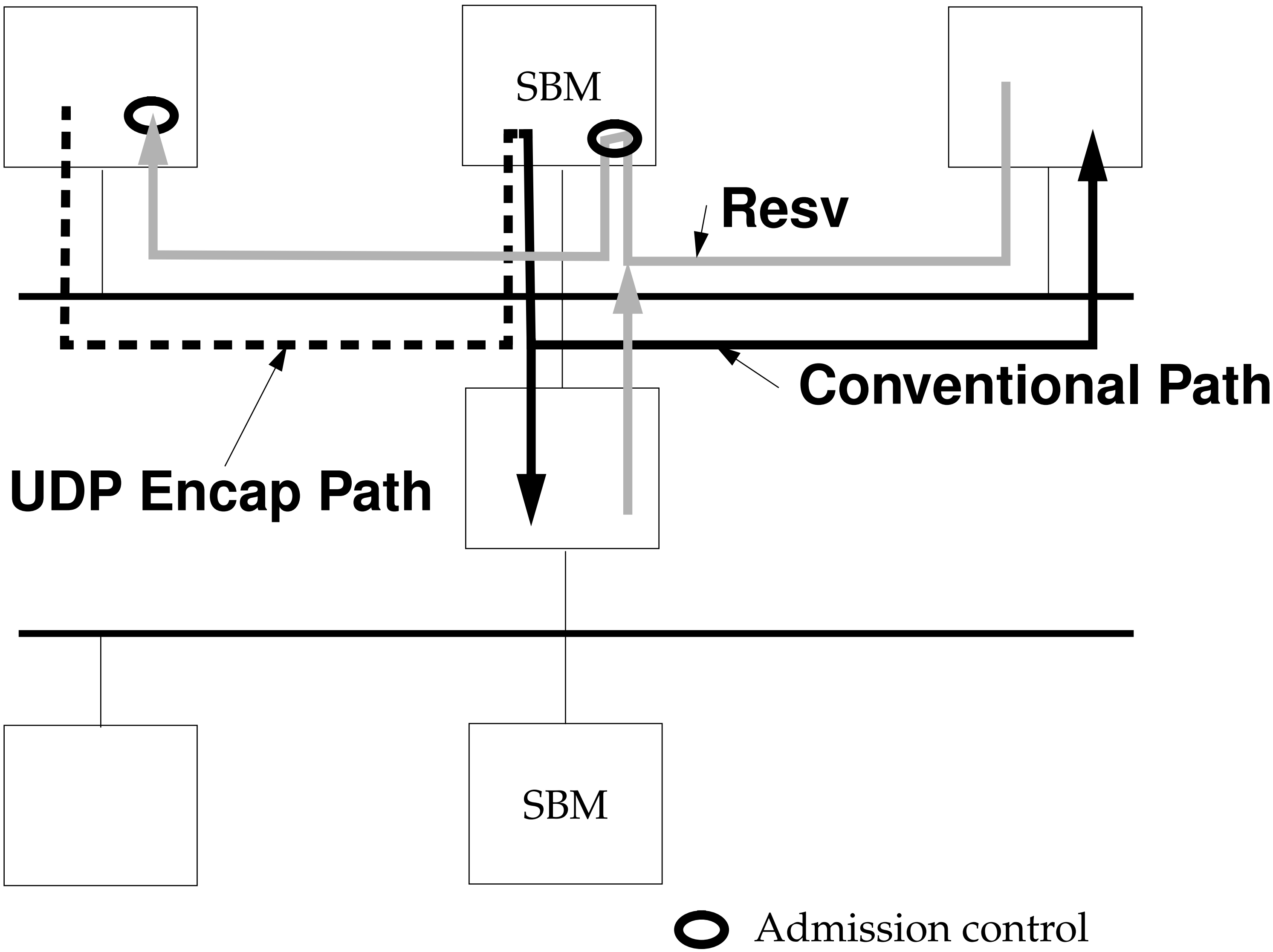
Subnet Bandwidth Manager

- URL: ftp://playground.sun.com/issll-ethernet/sbm.ps.gz
- Stand-alone service on network that performs admission control on 802.3-style subnets.
- RSVP daemon does admission control on both outgoing interface, and by approval from SBM on the attached subnet.
- Features:
    - RSVP used for host/router to SBM communications.
    - Soft state with refresh ala RSVP.
    - Dynamic binding between RSVPD and SBM. Multicast-based signalling.
    - Recovers from RSVPD or SBM restart.
    - Admission control only. Traffic flow separation the subject of other TBD mechanisms (in conjunction with 802.1p?).

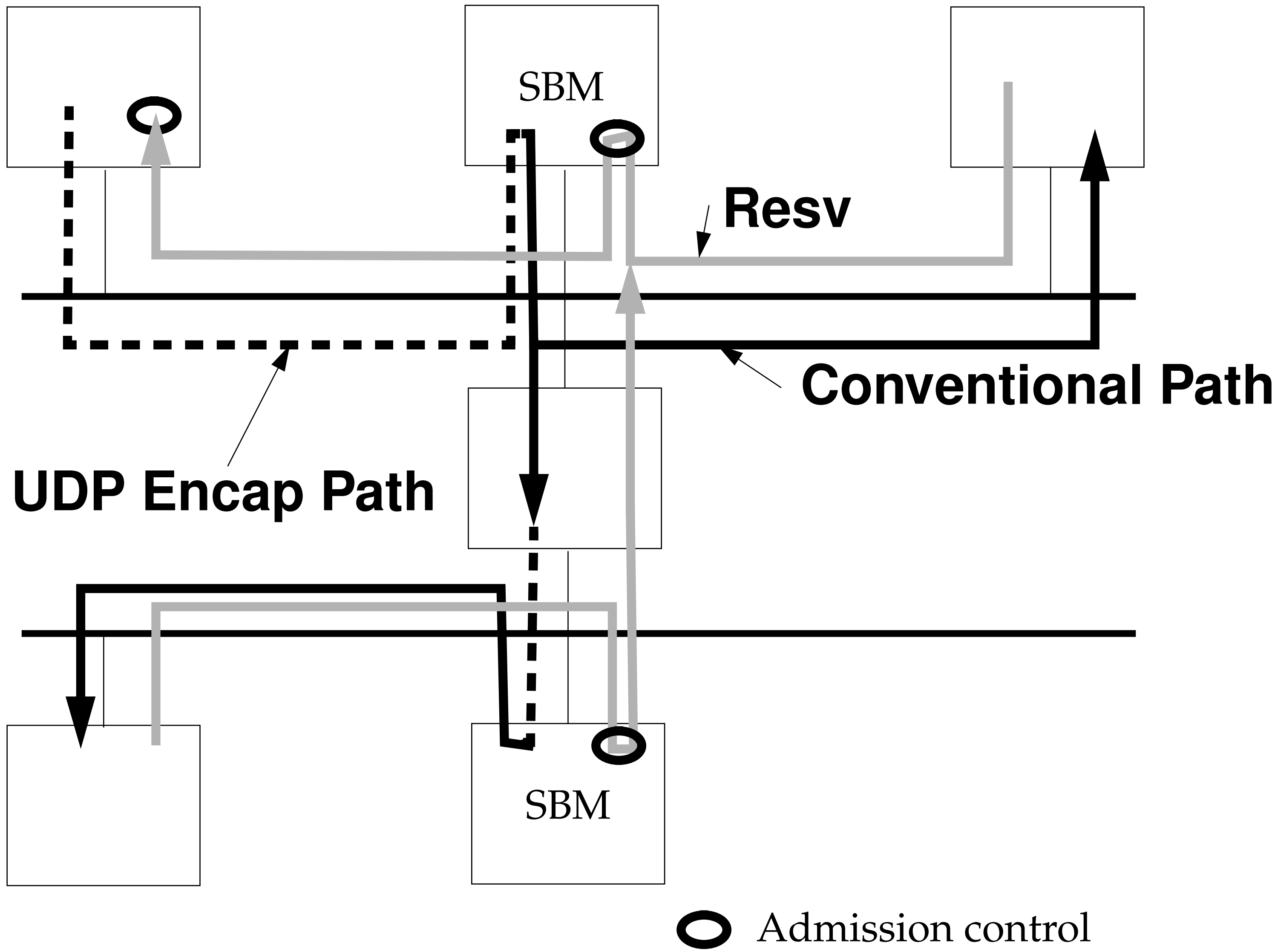
Conventional RSVP Operation



RSVP/SBM signalling (within subnet)



RSVP/SBM signalling (multiple subnets)



Other supporting protocols:

- SBM election.
  - Multiple SBM's possible on single VLAN (for fault tolerance).
  - Single SBM is master at any one time.
- Topology discovery.
  - In switched VLAN, admission control decision requires knowledge of link capacity and routing.
  - SBM knows endpoints. Needs to ask network for other info. Static config possible, but deemed undesirable.

Areas for Discussion

- General feedback on SBM approach.
- Interfaces for topology discovery in VLAN environments.
- Interfaces/mechanisms for traffic flow separations.