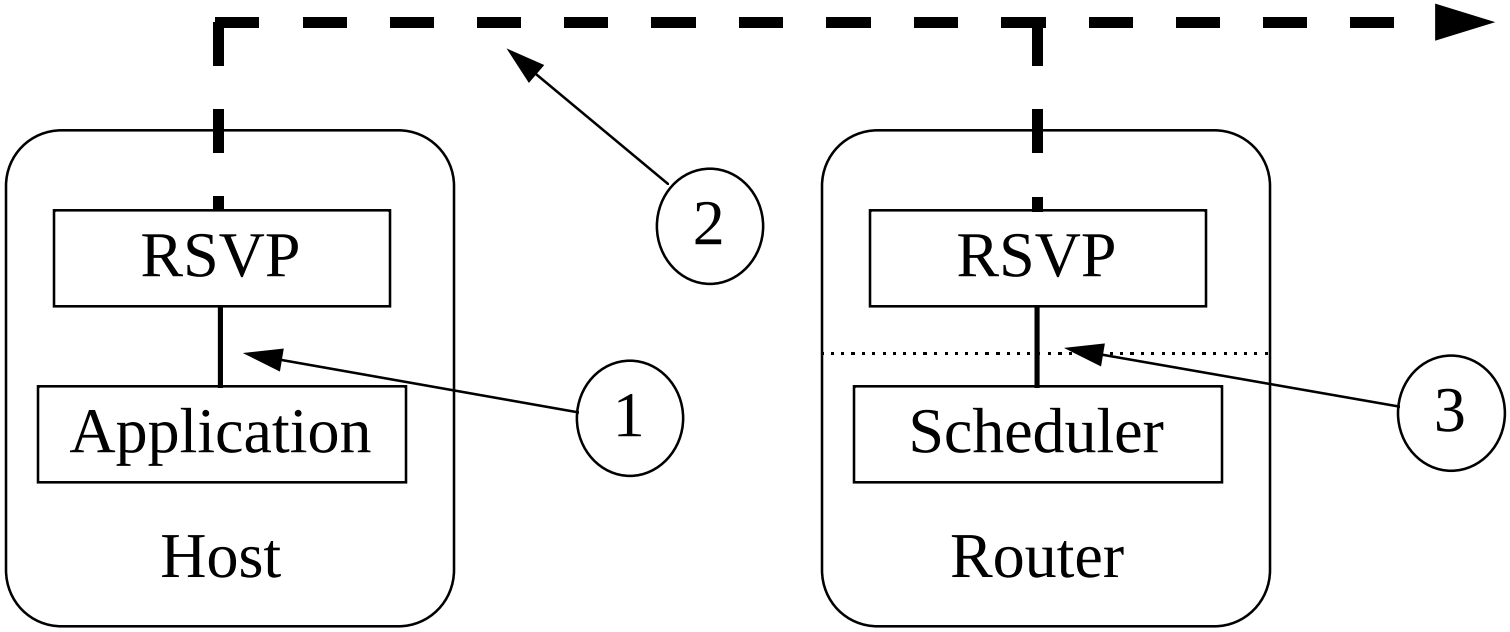
Filter Specifications

Filters are used to select the packets which are covered by a resource reservation

Where - do filter specs live?



1 - Application - RSVP Interface (API)

2 - Wire Format (standardized)

3 - RSVP - Classifier/Scheduler Interface

What - is important?

- **Descriptive capability**
  - **How general is the format? What level of application semantics can it represent?**
- **Flexibility**
  - **Can the format easily deal with variable length packets? Fragmentation?**
  - **Can the format drive a variety of classifiers?**
- **Compactness**

Current Document

- **RSVP session definition**
  - **Receiver: (single) dest IP addr, “other stuff”**
  - **Sender: (single) source IP addr, “other stuff”**
- **Filter Spec**
  - **Explicit Dest IP address**
  - **Explicit Source IP address**
  - **Single mask - value pair for “other stuff”**

Questions/Problems

- **Doesn’t handle options, fragmentation**
  - **Important? (IPv4: no...? IPv6: yes...?)**
- **Format is too general**
  - **Is full mask-value generality needed?**
- **Format is not general enough**
  - **Can’t do something like (port 3 or port 4)**
- **Poor input for some classifiers**
  - **No higher level semantics**

How much semantics?

- **Should the filter spec "know" about upper level protocols?**
- **Pros:**
  - **Better match to classifier requirements**
  - **Simpler handling of options, etc.**
  - **Possibly more compact**
- **Cons:**
  - **Obvious loss of generality, evolvability**

Single Level Flows

- **Flows with no internal structuring visible to the routers**
- **RSVP "generalized ports" probably just transport-level ports**
- **Leads to simple filter spec:**
  - **Source, dest IP address**
  - **Transport protocol in use**
  - **Transport protocol ports**
  - **(TOS bits?)**

Multipart Flows

- **Flows w/ internal structure visible to net**
  - **hierarchical coding, etc**
- **Does RSVP maintain separate "session" for each part? (Right now, yes)**
  - **If yes, no obvious way to cart around state for entire flow - no notion that sessions are related**
  - **If no, several things are currently broken**
    - **e.g. more than one mcast address per flow**

Multipart flows and filters

- **Separate session model**
  - **– “Flow” is handled by RSVP as many unrelated sessions.**
  - **– No additional requirements for filters**
- **Single session model**
  - **– More than one dest address (multicast)**
  - **– “Generalized port” more complex (unicast)**

Action

- **Abandon mask-value format**
- **Replace with protocol-aware format:**
  - **for IP, source/dest addr + transport ports**
  - **hook for other network-level protocols**

-or-

- **Replace with procedural language:**
  - **complexity depends on need to handle options, variable length transport headers, etc.**
  - **clear rules for use required to support range of classifiers.**