

Multicast Source Notification of Interest Protocol (MSNIP)

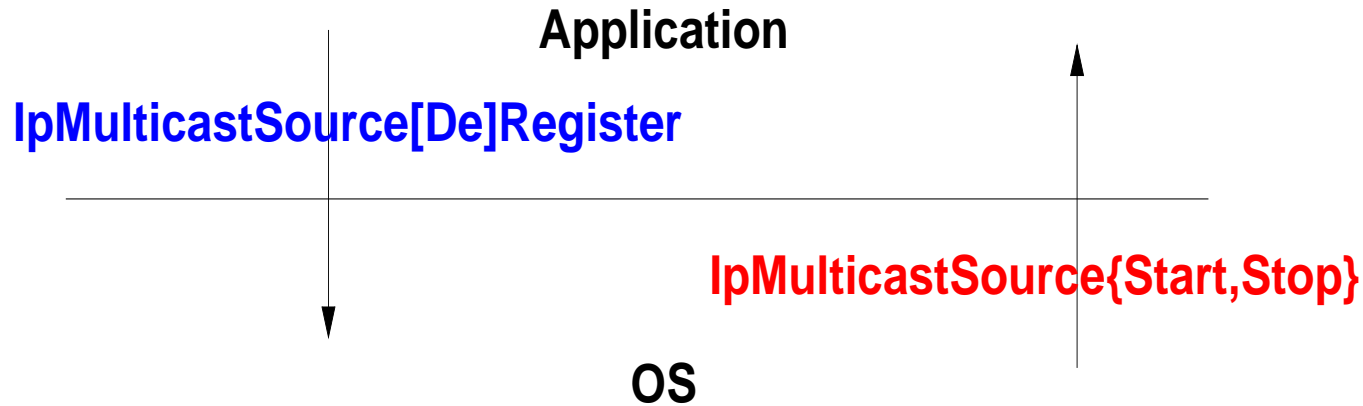
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Bill Fenner
Hugh Holbrook
Isidor Kouvelas

MSNIP overview

- ◆ Signal application when first receiver joins and last receiver leaves (prevent sources from sending when no receivers present)
- ◆ Design goals:
 - ▶ Need to support servers with a large pool of potential sessions but only a few active ones (e.g. video server)
 - ▶ Maintain full compatibility with existing hosts and routers
- ◆ MSNIP is an extension to IGMPv3 (between source and first-hop router)
- ◆ Works with SSM (ASM is not supported)

Client API



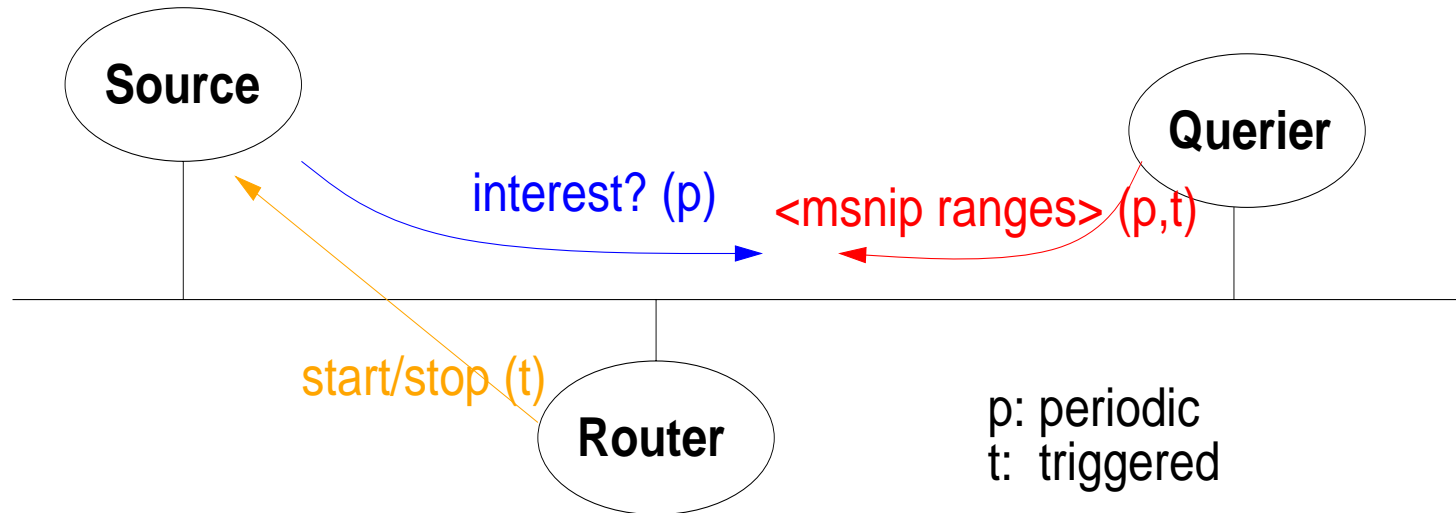
- ◆ **IPMulticastSourceRegister** (socket, interface, mcast-addr)
- ◆ **IPMulticastSourceDeregister** (socket, interface, mcast-addr)
- ◆ **IPMulticastSourceStart** (socket, interface, mcast-addr)
- ◆ **IPMulticastSourceStop** (socket, interface, mcast-addr)

Design choices

- ◆ Flood and prune
 - ▶ Can support ASM
 - ▶ Does not serve application purpose
 - ▶ Wasted resources on source systems
 - ▶ Creates state for every potential (S,G) on first-hop routers

- ◆ Explicit start
 - ▶ Only supports SSM
 - ▶ Better fits applications

Protocol description



- ◆ **Interest Solicitation** Multicast by potential sources to request receiver membership notification
- ◆ **Group Map** Multicast by the IGMP querier to advertise MSNIP managed address space
- ◆ **Receiver Membership Report** Unicast by first-hop router towards a source to instruct it to start or stop transmitting.

IP system behaviour in MSNIP managed address space

- ◆ Notification:
 - ▶ In MSNIP range, OS notifies
 - start when first receiver joins
 - stop when last receiver leaves
 - ▶ Outside MSNIP range, registering apps are immediately notified to start

- ◆ Filtering:
 - ▶ OS filters application data to source / group addresses in MSNIP space for which there is no interest (works with old apps)
 - ▶ OS never filters outside MSNIP space (application is immediately notified to send)

No changes required to receiving hosts

- ◆ PIM DR sends MSNIP reports on behalf of local (on-link) receivers discovered via IGMP
- ◆ Source IP system defaults to flooding if MSNIP router is not present

Extending MSNIP to a world without routers (Dave's slide)

- ◆ MSNIP source runs the IGMPv3 and MSNIP router side of the protocol
- ◆ IGMP querier sends MSNIP reports on behalf of local members
- ◆ Not in the current protocol spec
 - ▶ should we add it?
 - ▶ allow it?
 - ▶ mandate it?