

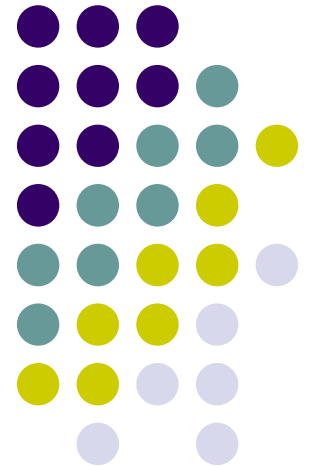
Requirements for discovery of dynamic SSM sources

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Background



- SSM applications need to know the source addresses
- For multi-party applications like conferencing this may be difficult
 - It may not be known ahead of time who will participate
 - Session might be announced publicly where people should be free to join at any time
 - Participants may come and go
- There may be other multi-source applications that have dynamic sources
 - By dynamic we mean sources that come and go
 - Different sources may come and go at different times and in indeterminate patterns
- Restricting our self to SSM
 - E.g. embedded-RP might be an alternative if not SSM
- We need sort of application level Rendezvous Point functionality

Reasons for a standardized source discovery mechanism



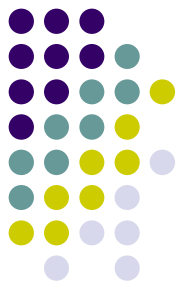
- Clients from different origins/vendors may participate in the same session
 - Without a standardized solution application writers will have to solve this on their own in possibly non-compatible ways
- A well standardized solution makes it easier to manage and monitor
 - Administrators can understand how it works and management/monitoring solutions can be developed
- This may also allow "application RP" mechanism to be decoupled from particular applications, and might serve multiple applications

General requirements



- **Solution must provide discovery of dynamic SSM sources during the session, offering a comparable level of performance to the current ASM architecture**
- **Solution shouldn't introduce additional requirements on the network (in addition to SSM support)**
- Solution must work in SSM address space
- Solution should be easily manageable and provide good security and control properties
- Solution should allow co-existence with other source discovery mechanisms
- Gradual deployment must be possible without affecting the operation of other SSM hosts
- Adding AAA and related functionalities (e.g. source access control) must be possible

Host requirements



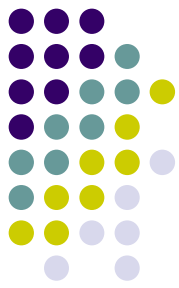
- Source discovery functionality must have at least three different separable elements; source, receiver and rendezvous elements.
 - Sources are required to register themselves to discovery process
 - Receivers are required to understand source discovery signalling
 - Rendezvous function is needed between sources and receivers for matchmaking and control purposes, a common point source discovery signalling
- **Multiple applications and users on the same host must be able to use the source discovery functionality**
- **A group of users must be able to set up their own rendezvous function**
- Rendezvous functionality must be able to work in routers and/or in specific hosts if needed for redundancy, availability and control purposes
- **Rendezvous function should be possible to implement in the SSM application itself**
- Overhead of being rendezvous must not be too big in terms of processing power, memory or signalling traffic consumption
- It must be possible to add rendezvous fallback and load-sharing properties (these functions are not part of the basic requirement set)
- Registering sources to discovery process must be as simple as possible
- There shouldn't be additional hypothesis on the receivers than SSM already brings
- **Discovery mechanism should provide enough information on the sources that non-active sources and respective SSM channels can be torn down by the receivers**

Signaling requirements



- **Source discovery signaling must be separated from the actual multicast traffic** to achieve the following advantages:
 - Allow path setup before actual traffic is sent (also initial multicast packet gets delivered to receivers)
 - Allow multicast traffic patterns to be different from source discovery
 - Sources might send at low or high rates independent of signaling rate
 - Also the source discovery signaling might be periodical but not necessarily the traffic itself
 - While signaling may go via a central control point the multicast traffic should always take the optimal path (no traffic congestion point)
- Signaling architecture must be robust. Information about new sources must be distributed to receivers in less than 1 second
- New receivers must get the complete source information in less than 15 seconds (worst case)
- Discovery mechanism must support both IP versions
- Minimum amount of extra state in routers for source discovery
- Discovery should use multicast where possible, to reduce the overhead of hosting rendezvous function
- Standardized and available mechanisms and protocols should be used where appropriate
- Source discovery signaling should not necessarily be centralized, the rendezvous function may be distributed across the network to improve the robustness of the mechanism

Questions



- What are the application requirements?
- What is acceptable delay from when new source is available until others can receive
 - Others need to learn the source address
 - They will then join S,G and there may be additional delay for tree to be constructed
- Are there other examples of dynamic sources than conferencing?
- Are there applications requiring higher level of dynamicity?
- We need to get in touch with application people, can you help?