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COPS Extensions for RSVP Receiver Proxy

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Abstract

This document proposes an extension to COPS [[RFC2748](#)] and COPS Usage for RSVP [[RFC2749](#)] documents needed to support RSVP Receiver Proxy [[RSVP-PROXY](#)].

1. Introduction

RSVP Receiver Proxy[RSVP-PROXY] is an extension to the RSVP message processing in which an intermediate network node originates the Resv message on behalf of the receiver(s) identified by the Path message. Proxying the Resv involves installing reservation state in the proxying node. In other words, the proxying node is responsible for reserving resources on the outgoing interface, sending periodic Resv messages, tearing down the reservation when the Path terminates etc. The decision to proxy is made by the policy control. Policy control can either be performed using local policy or by a policy server using COPS for RSVP[RFC2749].

The current definition of COPS for RSVP does not specify any mechanism whereby the PDP can notify the PEP to act as a RSVP Receiver Proxy in response to an incoming Path message. This document specifies such an extension.

2. Functionality Required to Support RSVP Receiver Proxy Via COPS

Some of the requirements to support RSVP Receiver Proxy is already available via the existing COPS for RSVP protocol[RFC2749]. Specifically, support for installing state associated with an incoming Path message and for specifying whether the Path message should be forwarded further or not is already provided.

In addition to this, it is required to provide support for the following pieces:

- o Support for installing/deleting RSVP Receiver Proxy state
- o Providing a mechanism to notify the PDP about a PEP's capability to act as a RSVP Receiver Proxy.

Installing receiver proxy state involves:

- o Originating Resv message on behalf of the receiver identified in the Path message.
- o Sending periodic refreshes of the Resv message.
- o If required, performing admission control on the outgoing interface(s) of the Resv message.
- o Handling Path tear down and PathErr messages.

2.1 Decision: Install/Delete RSVP Receiver Proxy State

The decision to install RSVP receiver proxy state is specified in the context of since it is the incoming Path message that triggered the generation of the Resv. The decision to install receiver proxy state is in addition to accepting the Path message. It is therefore appropriate to add a new flag to the Decision Object [RFC2748] to specify this additional functionality.

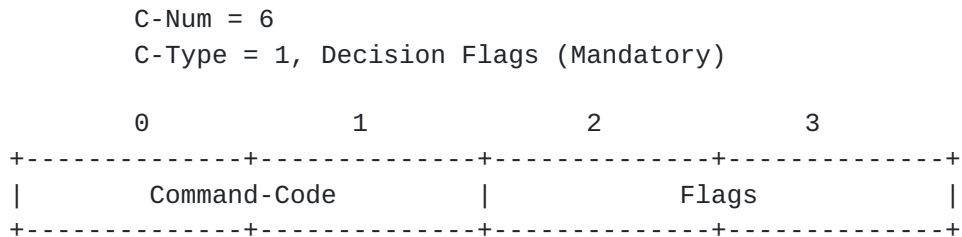
We propose to use a Decision Flag of 0x03 to specify that a receiver proxy state must be installed/deleted. The PDP MUST return a Decision object with the newly defined decision flag to instruct the PEP to install the receiver proxy state.

If the RSVP Receiver Proxy decision flag is set and the command code is Install, a new Resv state MUST be installed and proxy Resv messages MUST be originated according to RSVP messaging rules. If the RSVP Receiver Proxy decision flag is set and the command code is Remove, then the proxied Resv state MUST be removed and proxy Resv messages MUST no longer be generated by the PEP.

The "Replacement Data" object specified along with this decision will carry the objects that need to be inserted into the Resv message generated by the PEP.

2.2 The Modified Decision Object

The Decision object with the new flag looks as follows:



Commands:

- 0 = NULL Decision (No configuration data available)
- 1 = Install (Admit request/Install configuration)
- 2 = Remove (Remove request/Remove configuration)

Flags:

- 0x01 = Trigger Error (Trigger error message if set)
- 0x03 = Install/Delete RSVP Receiver Proxy state
- Note: Trigger Error is applicable to client-types that are capable of sending error notifications for signaled messages.

2.3 Ability to Provide RSVP Receiver Proxy Functionality

As per the COPS specification[RFC2748], a client receiving a Decision object with an unrecognized flag MUST ignore the flag. So, a PEP which doesn't recognize the flag to install/delete RSVP Receiver Proxy state will ignore it. Thus, the PDP has no mechanism to determine whether the PEP will support the decision to act as a proxy. To overcome this problem, there must be a mechanism provided for a PEP to notify the PDP about its ability to act as a RSVP Receiver Proxy. This ability is conveyed via a new object called RSVP

Capability object. This object is communicated by the PEP to the PDP

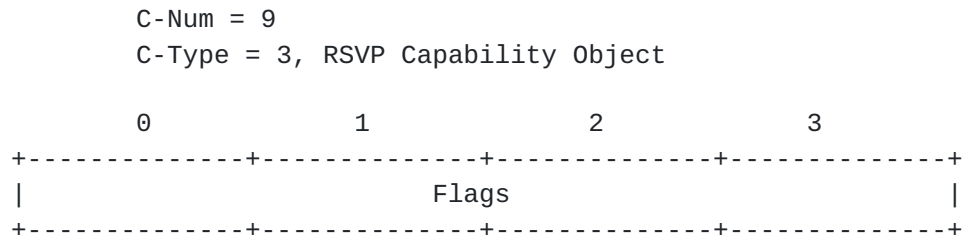
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in the Client-Open message. It is carried in the ClientSI object of the Client-Open message.

2.4 RSVP Capability Object

The newly defined RSVP capability object has the following format:



Flags:

0x01 = Ability to act as a RSVP Receiver Proxy

This object is defined to be a subtype of the ClientSI object. As currently defined, this object carries a single capability, the capability to act as RSVP Receiver Proxy.

Any node capable of supporting RSVP Receiver Proxy MUST include this object in the Client-Open message. Any PDP capable of supporting RSVP Receiver Proxy MUST set the flag in the Decision object to install/delete RSVP Receiver Proxy state only if it receives this object in the Client-Open message.

3. Compatibility With Existing COPS For RSVP Implementations

It is possible that either the PEP or the PDP does not support RSVP Receiver Proxy. In either case, there are no compatibility problems with existing PDPs or PEPs.

If a PDP does not support the extensions specified in this document, the consequence is that the PEP will not be able to implement RSVP Receiver Proxy under COPS policy control.

If the PEP that does not support the specified COPS for RSVP extensions receives a DEC message with the newly specified Decision flag, it MUST delete its request specifying the Unknown COPS Object reason code because the PEP will be unable to comply with the information contained in the decision object. This is compliant with [\[RFC2748\]](#).

4. Security Considerations

The use of COPS for RSVP Receiver Proxy introduces no new security issues over the base COPS for RSVP [COPS]. The security mechanism described in that document should be deployed in the scenarios that

RSVP Receiver Proxy is deployed as well.

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5. References

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