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User Defined Errors for RSVP

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Abstract

The Resource ReserVation Protocol (RSVP) defines an ERROR_SPEC object for communicating errors. That object has a defined format that permits the definition of 256 error codes. As RSVP has been developed and extended, the convention has been to be conservative in communicating errors. Further, no provision for user defined errors exists in RSVP.

This document defines a new RSVP object to permit user defined error values to be communicated.

Contents

1. Introduction

The Resource ReserVation Protocol (RSVP) [RFC2205] defines an ERROR_SPEC object for communicating errors. That object has a defined format that permits the definition of 256 error codes. As RSVP has been developed and extended, the convention has been to be conservative in communicating errors. Further no provision for user defined errors exists in RSVP.

When developing extensions to RSVP it is often useful for those implementing to define error messages to aid both in the initial debugging and in testing against older versions or other implementations.

This document defines a new RSVP object to permit user defined errors to be communicated. This will enable diverse organizations to define errors which they can use for internal development. These error values could also be shared with the community at large to aid in promoting interoperability between diverse implementations.

RSVP PathErr and ResvErr messages require the presence of an ERROR_SPEC object. [RFC3473] defines the Notify message that also requires the presence of an ERROR_SPEC object. In order to not change the mandatory contents of these messages, this document defines a new error code value that indicates that the new object is present and carries a user defined error code.

1.1. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [KEYWORDS].

2. User Defined Error

Error Code = <tba>: User Error Spec

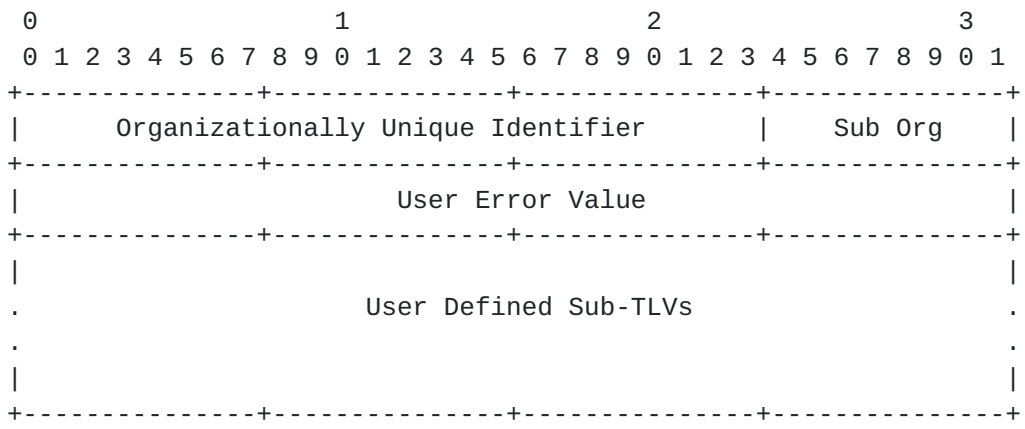
This error code is used to signal the presence of a USER_ERROR_SPEC. No subcodes are defined.

When sending this error code, a USER_ERROR_SPEC object SHOULD be included in the PathErr, ResvErr or Notify message.

3. USER_ERROR_SPEC Class

A new RSVP object class is defined called the the USER_ERROR_SPEC Class. The class number is taken from the range 192 - 247. This is done for backward compatibility. Existing implementations will ignore the object and pass it along.

USER_DEFINED_ERROR object: Class = <tba>, C-Type = 1



Organizationally Unique Identifier (OUI)

A unique identifier of an organization. OUIs are assigned by the IEEE.

Sub-organization

An organization MAY use this field to create independent Error Value spaces. This is intended to facilitate teams which are doing parallel development. If independent spaces are not required, this field SHOULD be set to zero.

User Error Value

The format and contents are specified by the (sub-) organization indicated by the OUI and Sub Org fields.

User Defined Sub-TLVs

The format and contents are specified by the (sub-) organization indicated by the OUI and Sub Org fields.

4. Procedures for using the User Error Spec

4.1. Procedures for sending the User Error Spec

A USER_DEFINED_ERROR object MAY be included in any PathErr or ResvErr message. The Organizationally Unique Identifier MUST be a valid value assigned by the IEEE. As specified in [RFC2205], an ERROR_SPEC object MUST be included with a valid error code. If no other error code applies, the error code MUST be set to <tba>, Unspecified Error.

4.2. Procedures for receiving the User Error Spec

It is RECOMMENDED that implementations at a minimum log the OUI, Sub-organization, and User Error Value. If an implementation is capable of interpreting the contents of the User Error Spec it MAY take any appropriate action.

5. IANA Considerations

This document makes the following assignments from the RSVP Error Codes and Globally-Defined Error Value Sub-Codes registry (pending IANA action):

Value	Name
<tba>	User Error Spec

This document makes the following assignments from the RSVP Class Names, Class Numbers, and Class Types registry (pending IANA action):

Number Space	Value	Name
Class Numbers	<tba>*	User Error Spec
Class Type	1	User Defined Error

* Assignment is requested from the range 192 through 247

6. Security Considerations

This document makes no changes to the basic message exchanges of [RFC2205] and [RFC3473]. It will result in a small increase in the number of error messages sent in cases where messages were silently dropped due to the lack of an appropriate error code.

7. Acknowledgments

The authors would like to thank Elisheva Hochberg for motivating this document.

8. Normative References

[RFC2205] Braden, R., Zhang, L., Berson, S., Herzog, S., and S. Jamin, "Resource ReSerVation Protocol (RSVP) -- Version 1 Functional Specification", RFC 2205, September 1997.

[RFC3473] Berger, L., "Generalized Multi-Protocol Label Switching (GMPLS) Signaling Resource ReserVation Protocol-Traffic Engineering (RSVP-TE) Extensions", RFC 3473, January 2003.

[KEYWORDS] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

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