Network Working Group
Request for Comments: 3468
Category: Informational

L. Andersson
Consultant
G. Swallow
Cisco Systems

February 2003

The Multiprotocol Label Switching (MPLS) Working Group decision on MPLS signaling protocols

Status of this Memo

Copyright Notice

Abstract

This document documents the consensus reached by the Multiprotocol Label Switching (MPLS) Working Group within the IETF to focus its efforts on "Resource Reservation Protocol (RSVP)-TE: Extensions to RSVP for Label-Switched Paths (LSP) Tunnels" (RFC 3209) as the MPLS signalling protocol for traffic engineering applications and to undertake no new efforts relating to "Constraint-Based LSP Setup using Label Distribution Protocol (LDP)" (RFC 3212). The recommendations of section 6 have been accepted by the IESG.

Conventions used in this document

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 BCP 14, RFC 2119 [RFC2119].

Table of Contents

1. Introduction

1.1 Objectives of document

This document documents the MPLS Working group consensus to continue to develop RFC 3209 [RFC3209] as the signalling protocol for MPLS signaling for Traffic Engineering applications.

This document also documents the MPLS working group consensus to not undertake any new work related to RFC 3212 [RFC3212], e.g., there are no plans to progress RFC 3212 beyond proposed standard. No other actions are taken relative the document status of RFC 3212 [RFC3212] or RFCs that specify extensions to RFC 3212.

Section 6 summarizes the consensus of the MPLS working group on this issue. This consensus has been accepted by the IESG. All other sections are documentation of the consensus process.

1.2 Nomenclature

This document uses the term "CR-LDP related working group drafts" to refer to a group of Internet Drafts that specify changes or extensions to [RFC3212] and the term "CR-LDP related RFCs" to discuss the group of RFCs that specify the protocol and the applicability of [RFC3212].

The CR-LDP related working group drafts are:
"Multi Protocol Label Switching Label Distribution Protocol Query Message Description" [QUERY]
"Improving Topology Data Base Accuracy with Label Switched Path Feedback in Constraint Based Label Distribution Protocol [FEED]
"Signalling Unnumbered Links in CR-LDP" [UNNUM]
"Fault Tolerance for the Label Distribution Protocol (LDP)" [FT]
"Generalized MPLS Signaling - CR-LDP Extensions" [RFC3472]
"Generalized Multi-Protocol Label Switching Extensions for SONET and SDH Control" [SONET]
"Generalized MPLS Signalling Extensions for G.709 Optical Transport Networks Control" [G709]
"Generalized Multiprotocol Label Switching Extensions to Control Non-Standard SONET and SDH Features" [SDH]

CR-LDP related RFCs

The CR-LDP related RFCs are:
RFC 3212, "Constraint-Based LSP Setup using LDP"
RFC 3213, "Applicability Statement for CR-LDP"
RFC 3214, "LSP Modification Using CR-LDP"

No further updates of the CR-LDP related RFCs, beyond their current statuses are planned within the MPLS Working Group.

2. Background

Very early (1997) in the MPLS standardization it was clear that a protocol would be needed that would enable providers to setup LSPs that took other information (e.g., various QoS parameters) into account.

Development of this type of signalling protocol took two different tracks:

- extensions to RSVP for setting up MPLS tunnels [RFC3209]

- extensions to LDP for setting constraint based LSPs [RFC3212]

The motivation for the choice of protocol in both cases was straightforward. Extending RSVP-TE to do in an MPLS environment what it already was doing (handling QoS information and reserving resources) in an IP environment is comprehensible; you only have to add the label distribution capability. Extending a native MPLS

protocol like LDP, which was designed to do label distribution, to handle some extra TLVs with QoS information is also not revolutionary.

The MPLS group never reached a consensus on which way to go. Both protocols were progressed to proposed standard.

3. CCAMP implementation study

An implementation survey of GMPLS implementations was published in June 2002 [GMPLS]. The survey includes responses from 22 different implementers. Twenty-one of 22 implementations include the GMPLS signalling based on [RFC3209], while only 3 include signalling based on [RFC3212].

4. MPLS Working Group discussion

4.1 Phase 1

The GMPLS implementation report prompted questions asking if it was reasonable to have two different protocols for the same thing. The discussion was brought to the MPLS Working Group at the meeting in Yokohama in July 2002. After discussion at the meeting it was decided to "bring this to the list" and also invite comments from the other Sub-IP Area Working Groups.

The following question sent to the mailing lists:

"As there are issues with having two similar standards (potentially diverging), and it generates duplicate work in several IETF working groups, the question was asked whether we should make CR-LDP informational (which still make it available and possible to work with) and progress only RSVP-TE on the standards track."

The response to this question was largely positive, but some problems were immediately pointed out:

- there are non-IETF standards which reference RFC 3212. Taking CR-LDP off the standards track would cause un-necessary problems for those organizations and should be done only after co-ordinating with those organizations

- there is, e.g., in RFC 2026 [RFC2026], no documented process according to which a document on the standards track may be move to a status that is non-standards track

Each of these arguments is by themselves strong and would have led to some reformulation of the proposal to move CR-LDP to informational. Moreover, in combination it was clear that the original proposal was not viable.

On the other hand the support for doing additional development of CR-LDP as an IETF standards track alternative to RSVP-TE was extremely small.

4.2 IETF process

The current IETF process for managing changes in RFC status does not include any information on how to move an existing standard track RFC to a non-standard track status, nor does it include a prohibition of such an action. It has been shown that such actions have been previously taken e.g., RFCs 2673 and 2874 were moved from Proposed Standard to Experimental. Though the cases are not exactly parallel to the MPLS signalling case it shows that the IETF and IESG are prepared to take such decisions given that the arguments are sufficiently strong.

4.3 Relationship to other standards organizations

The relationship with other standard organizations is an important part of IETF work. We are dependent on their work and they make use of our technology; each organization has their own area of expertise. It is therefore necessary that both sides handle their standards documentation in such a way that no unnecessary updates or revisions are introduced simply by sloppy handling of documents.

Consequently we need to keep CR-LDP referenceable, i.e., on the standards track, for the foreseeable future. The implication of this is not that we need to progress it further, or need to undertake further work in the area. One implication however is that standards organizations which reference the document, need to be notified of our decision so that they (at their own pace) can change their references to more appropriate documents. It is also expected that they will notify us when they no longer have a need to normative reference to CR-LDP.

4.4 Phase 2

Based on the feed back from this first discussion the question to the working group were reformulated as:

"Should the MPLS WG focus its efforts on a signalling protocol for traffic engineering applications on RSVP-TE, and hence the WG effort with CR-LDP be discontinued? This would not involve any change in

document status for CR-LDP, nor would it hinder continued individual contributions in the CR-LDP space. It would involve a change in the MPLS WG charter to reflect this."

It was pointed out that "nor would it hinder continued individual contributions" is too weak. We actually discourage, while it is not prohibited, continued work in the CR-LDP area. That is the whole point with taking this decision.

It was also pointed out that while it is quite acceptable to not accept further working group documents, it would also be appropriate to take the existing CR-LDP related working group Internet Drafts through the process to proposed standard or informational as intended. This is applicable to the following documents, since much of the work has already been completed on them:

- in MPLS WG
  -- Multi Protocol Label Switching Label Distribution Protocol Query Message Description
  -- Improving Topology Data Base Accuracy with Label Switched Path
  -- Feedback in Constraint Based Label Distribution Protocol
  -- Signalling Unnumbered Links in CR-LDP
  -- Fault Tolerance for the Label Distribution Protocol (LDP)
- in CCAMP WG
  -- Generalized MPLS Signaling - CR-LDP Extensions
  -- Generalized Multi-Protocol Label Switching Extensions for SONET and SDH Control
  -- Generalized MPLS Signalling Extensions for G.709 Optical Transport Networks Control
  -- Generalized Multiprotocol Label Switching Extensions to Control Non-Standard SONET and SDH Features

Some of the documents listed above are not in themselves extensions to CR-LDP, but in one way or another are deemed to be "equally applicable to CR-LDP". For those documents it will be fully appropriate to progress them beyond proposed standard in the future if they meet the requirements.

RFCs that are extensions to CR-LDP, e.g., RFCs 3213 and 3214, will remain proposed standard documents.

After this compromise was proposed a good consensus quickly formed supporting the proposal. Close to 90% of the people participating discussion said that they support or at least accept this outcome of the working group discussion.

5. MPLS Working Group consensus

In a message to the working group (date) the working groups chairs stated that consensus had been reached on:

- that the MPLS WG needs to focus its efforts on RSVP-TE (RFC 3209) as protocol for traffic engineering signalling.

- that the Working Group will undertake no new work related to CR-LDP.

- that the WG charter should be updated to reflect this.

- that the WG will recommend that CR-LDP (RFC 3212) remain a proposed standard.

- that the WG will recommend that RFCs 3213 and 3214, which are closely related to CR-LDP, remain proposed standard.

- that existing Working Group drafts related to or updating/changing CR-LDP will be progressed through the standards process to proposed standard or informational RFCs as appropriate.

- that "the existing cr-ldp working group documents" are:
  - -- Multi Protocol Label Switching Label Distribution Protocol Query Message Description
  - -- Improving Topology Data Base Accuracy with Label Switched Path Feedback in Constraint Based Label Distribution Protocol Signalling Unnumbered Links in CR-LDP
  - -- Fault Tolerance for the Label Distribution Protocol (LDP)
  - -- Generalized MPLS Signaling - CR-LDP Extensions
  - -- Generalized Multi-Protocol Label Switching Extensions for SONET and SDH Control
  - -- Generalized MPLS Signalling Extensions for G.709 Optical Transport Networks Control
  - -- Generalized Multiprotocol Label Switching Extensions to Control Non-Standard SONET and SDH Features

- that the MPLS working group will take on no new Working Group documents related to CR-LDP.

- that the MPLS working group will entertain no efforts to promote CR-LDP beyond proposed standard.

- that individual contributions related to CR-LDP area are not prohibited, but discouraged.

- that a message will be sent to the relevant standards organizations notifying them of this change of focus on MPLS signalling protocols.

6. Recommendation to the IESG

Based on the consensus in the MPLS working group we recommend the IESG to:

- confirm the MPLS Working Group consensus to undertake no new work on CR-LDP and focus on RSVP-TE as signalling protocol for traffic engineering applications for MPLS, as described in this document

- adopt as an IETF policy to refrain from entertaining work that intends to progress RFC 3212 or related RFCs beyond proposed standard

- adopt as an IETF policy to refrain from entertaining new working group documents that are extensions to RFC 3212

- review the IETF process with respect to management of documents that needs to be moved from standards track to any other status

- publish this document as Informational RFC

7. Security Considerations

This document only discusses a refocusing of the MPLS Working Group work and consequently brings no new security considerations.

8. IANA Considerations

This document brings no IANA considerations.

9. References

9.1 Normative

[RFC2026] Bradner, S. "The Internet Standards Process -- Revision 3", BCP 9, RFC 2026, October 1996.

[RFC2119] Bradner, S. "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC3212] Jamoussi, B., Ed., Andersson, R., Callon, R., Dantu, R., Wu, L., Doolan, P., Worster, T., Feldman, N., Fredette, A., Girish, M., Gray, E., Heinanen, J., Kitly, T. and A. Malis, "Constraint-Based LSP Setup using LDP", RFC 3212, January 2002.

[RFC3209] Awduche, D., Berger, L., Gan, D., Li, T., Srinivasan, V. and G. Swallow, "RSVP-TE: Extensions to RSVP for LSP Tunnels", RFC 3209, December 2001.

9.2 Informative

[RFC3213] Jamoussi, B., Ash, J., Girish, M., Gray, B. and G. Wright, "Applicability Statement for CR-LDP", RFC 3213, January 2002.

[RFC3214] Jamoussi, B., Ash, J., Lee, Y., Ashwood-Smith, P., Fedyk, D., Shalecki, D. and L. Li, "LSP Modification Using CR-LDP" RFC 3214, January 2002.

[RFC3472] Ashwood-Smith, P. and L. Berger, Eds., "Generalized Multi-Protocol Label Switching (GMPLS) Signaling Constraint-based Routed Label Distribution Protocol (CR-LDP) Extensions", RFC 3472, January 2003.

[GMPLS] Rekhther, Y. and L. Berger, "Generalized MPLS Signaling - Implementation Survey", http://www.ietf.org/IESG/Implementations/ MPLS-SIGNALING-Implementation.txt, June 2002.

[QUERY] Ashwood-Smith P. and A. Paraschiv, "Multi Protocol Label Switching Label Distribution Protocol Query Message Description", Work in Progress.

[FEED] Jamoussi, B., et al., "Improving Topology Data Base Accuracy with LSP Feedback in CR-LDP", Work in Progress.

[RFC3480] Kompella, K., Rekhter, Y. and A. Kullberg, "Signalling Unnumbered Links in CR-LDP (Constraint-Routing Label Distribution Protocol)", RFC 3480, February 2003.

[RFC3479] Farrel, A., Ed., "Fault Tolerance for the Label Distribution Protocol (LDP)", RFC 3479, February 2003.

[SONET] Mannie, E. and D. Papadimitriou, "Generalized Multiprotocol Label Switching Extensions for SONET and SDH Control", Work in Progress.

[G709] Papadimitriou, D., Ed., "Generalized MPLS Signalling Extensions for G.709 Optical Transport Networks Control", Work in Progress.

[SDH] "Generalized Multiprotocol Label Switching Extensions to Control Non-Standard SONET and SDH Features" Work in Progress.

10. Authors' Addresses

Loa Andersson

EMail: loa@pi.se

George Swallow
Cisco Systems, Inc.
250 Apollo Drive
Chelmsford, MA 01824

EMail: swallow@cisco.com

11. Full Copyright Statement

Acknowledgement

Funding for the RFC Editor function is currently provided by the Internet Society.