        Change Process for Multiprotocol Label Switching (MPLS) and
             Generalized MPLS (GMPLS) Protocols and Procedures

Status of This Memo

   This document specifies an Internet Best Current Practices for the
   Internet Community, and requests discussion and suggestions for
   improvements. Distribution of this memo is unlimited.

Abstract

   This document provides guidelines for applying or extending the MPLS
   or GMPLS ((G)MPLS) protocol suites and clarifies the IETF's (G)MPLS
   working groups' responsibility for the (G)MPLS protocols. This
   document is directed to multi-vendor fora and Standards Development
   Organizations (SDOs) to provide an understanding of (G)MPLS work in
   the IETF and documents the requisite use of IETF review procedures
   when considering (G)MPLS applications or protocol extensions in their
   work. This document does not modify IETF processes.

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1. Introduction

    The MPLS and GMPLS technology is developed in two main tracks in the
    IETF. "MPLS" refers to the work done for packet switched networks,
    while "GMPLS" refers to the efforts to apply the MPLS protocols to
    all types of networks including packet and non-packet technologies.

    Though GMPLS by definition is a superset of MPLS, the term "(G)MPLS"
    is used in this document to indicate both of these tracks. A
    terminology section that covers the use of terms and concepts used in
    this document is found in Section 2.6.

    [RFC4775] discusses procedural issues related to the extension or
    variation of IETF protocols by other SDOs. It provides the
    guidelines and procedures to be used by other SDOs when considering
    the requirements for extensions to IETF protocols. [RFC4775]
    recommends that major extensions to, or variations of, IETF protocols
    only take place through normal IETF processes or in coordination with
    the IETF.

    The (G)MPLS protocol families were developed within the IETF and
    constitute significant protocol suites within the Internet standards.
    The (G)MPLS suites of protocols have become popular for a number of
    new applications and deployment scenarios. There have been concerns
    with regards to other technology fora developing, using, and
    publishing non-standard protocol extensions as a standard not only
    for use within their community, also for wider use by the industry.
    Especially concerning is the development of extensions, without
    consulting the (G)MPLS working groups, which are in conflict with
    efforts on-going in the (G)MPLS working groups, and then presented to
    the (G)MPLS working group as 'fait accompli'.

    The definition and publishing of non-standard extensions by other
    fora, without IETF review, and outside of the IETF publication
    process, regardless if rationalized as limited to use among fora
    vendors, or limited to a particular application, or rationalized as
    allowing timely demos, has the unfortunate potential to hinder
    interoperability and increase complexity of the protocol, sows
    confusion in the industry, and circumvents the Internet standards
    process that exists to ensure protocol implementability. As
    described in [RFC4775], non-standard extensions, including
    experimental values, are not to be portrayed as industrial standards
    whether by an individual vendor, an industry forum, or a standards
    body.

    This document clarifies the IETF's MPLS and Common Control and
    Measurement Plane (CCAMP) working groups' roles and responsibilities
    for the (G)MPLS protocols and documents the requisite use of, and how

   to apply, the [RFC4775] procedure of using the IETF review processes,
   [RFC2026] and [RFC2418], for fora wishing to apply or extend the
   (G)MPLS protocols. Use of the IETF review processes will ensure an
   open process for protocol development and ensure a non-harmful
   evolution for these IETF protocols, which will benefit the larger
   industry users' community. IETF itself cannot enforce a forum to use
   the (G)MPLS change procedure, though any forum not following it, when
   applying for IANA assignment or IETF publication, will be delayed
   until this procedure has been completed.

   This document does not change the formal IETF standards process as
   defined in [RFC2026] and [RFC2418]. It is consistent with the
   general procedures for protocol extensions defined in [RFC4775] and
   shows how they are applied in the case of (G)MPLS. Any procedures
   described in this document are to be implemented in a way consistent
   with these three documents. They MUST be used when other SDOs and
   fora wish to propose (G)MPLS changes. They SHOULD be used internally
   within the IETF unless the changes concerned are considered non-
   controversial by the responsible Area Director(s) (e.g., covered by
   the working group charter), in which case other aspects of the normal
   IETF standards process cover the necessary procedures.

1.1. Document Source

   This document is the joint work of the IETF Routing Area Directors,
   the IETF MPLS and CCAMP Working Group Chairs, and the IETF's liaisons
   to the ITU-T. It had considerable review and comment from key
   members of the ITU-T who have given their time and opinions based on
   experience for which the authors are grateful. The IESG has also
   provided valuable input to arrive at the process documented here.
   The acknowledgements section lists those whose contributions have
   been particularly helpful.

1.2. Conventions Used in This Document

   Although this document is not a protocol definition, 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 [RFC2119]. This usage
   is chosen to make the steps and procedures completely clear.

2. Overview of (G)MPLS within the IETF

   This section describes the key IETF working groups developing the
   (G)MPLS technology and provides information on IETF working groups
   using the (G)MPLS technology.

It should be remembered that the IETF environment is highly dynamic.
Working groups and whole areas come and go. The overview of the
relevant working groups within the IETF is only a snapshot in time.

2.1. IETF Working Groups Developing (G)MPLS Technology

Two working groups in the IETF's Routing Area are responsible for
work related to developing the (G)MPLS technologies: Multiprotocol
Label Switching (MPLS) working group and the Common Control and
Measurement Plane (CCAMP) working group.

The following sections provide brief overviews of the chartered work
of these two IETF working groups.

2.1.1. Multiprotocol Label Switching Working Group

The Multiprotocol Label Switching (MPLS) working group is responsible
for standardizing the base technology that uses label switching, and
for describing the implementation of Label Switched Paths (LSPs) over
various packet and frame-based link level technologies. The working
group charter includes procedures and protocols for the distribution
of labels between routers, as well as encapsulations, operation and
management, traffic engineering, and multicast considerations.

This document assumes that the MPLS working group remains the
chartered authority on MPLS technologies, but notes that the IETF may
appoint another working group (refer to [RFC2418]) to handle specific
extensions or changes to the protocols. Further, in the event that
the MPLS working group completes its work and is closed, the IETF
will use the non-working group standards track document process
(described in [RFC2026]) using designated experts from the community
[RFC2434] for the MPLS protocols.

2.1.2. Common Control & Measurement Plane Working Group

The IETF Common Control and Measurement Plane (CCAMP) working group
coordinates the work within the IETF defining common control and
measurement planes for ISP and SP core tunneling technologies. This
includes, but is not limited to, defining signaling protocols and
measurement protocols such that they support multiple physical path
and tunnel technologies using input from technology-specific working
groups such as the MPLS working group. It also includes the
development of protocol-independent metrics and parameters for
describing links and paths that can be carried in protocols.

The technology that the CCAMP working group focuses on is called
Generalized MPLS (GMPLS), indicating that CCAMP addresses a
generalized technology, where labels are defined in such a way that

they will be compatible with the technology over which the data is
transported. While the MPLS working group focuses on packet- and
frame-switched technologies, the CCAMP working group work focuses on
common methods across a broad spectrum of switching technologies
including packet and frame technologies. In this respect, GMPLS can
be viewed as a superset of MPLS.

The procedures in this document assume that the CCAMP working group
remains the authority on GMPLS technologies, but acknowledges that
the IETF may appoint another working group (refer to [RFC2418]) to
handle specific extensions or changes to the protocols. Further, in
the event that the CCAMP working group completes its work and is
closed, the IETF will use the non-working group standards track
document process (described in [RFC2026]) using designated experts
from the community [RFC2434] for the GMPLS protocols.

2.1.3. MPLS and CCAMP Division of Work

From time to time, the MPLS and CCAMP working groups decide to divide
work between themselves in a way that does not strictly follow the
split between the working groups as defined in the working group
charters. This is the case, e.g., for P2MP TE LSPs, where the MPLS
working group is specifying requirements and base technology for all
of the (G)MPLS technologies.

An entity or individual that wishes to propose extensions or changes
to (G)MPLS should first decide to which working group (MPLS or CCAMP)
it will bring the proposal. However, the MPLS and CCAMP working
group chairs, in conjunction with their Area Directors, may redirect
the proposal to another working group.

2.2. Other (G)MPLS Technology-Related Working Groups

Problem statements and requirements for (G)MPLS technology have been
produced by several working groups in addition to the MPLS and CCAMP
working groups. IETF working groups are defined for the management
of specific tasks by their charter. Their charter defines their
role, relationship with other working groups, and the applicable
procedures to follow when extensions to (G)MPLS may be needed. This
section provides an overview of the (G)MPLS-related groups and their
responsibilities. Additional information describing the working
groups and their charters is available on the IETF web pages.

The IP over Optical (IPO) working group and the Internet Traffic
Engineering working group (TEWG) are examples of working groups which
focus on problem statements and requirements for (G)MPLS to be
considered by the (G)MPLS working groups. These working groups have
not specified any protocols.

The Bidirectional Forwarding Detection (BFD) working group, also may
use the (G)MPLS protocols and mechanisms. The BFD working group is
chartered for requirements evaluation and protocol specification
related to BFD. If the working group needs to extend or change the
(G)MPLS protocols, the procedures specified by its charter and the
IETF's standard processes are applicable.

The Layer 2 VPN (L2VPN) and Layer 3 VPN (L3VPN) working groups have
been chartered to specify a limited number of solutions for Provider
Provisioned VPNs. Both working groups are in the Internet Area.
Much of the work of the L2VPN and L3VPN working groups does not
include specifying new protocols or extensions to existing protocols.
Where extensions are needed, the procedures as specified by their
charters and the IETF's standard processes are applicable.

The Layer 1 VPN (L1VPN) working group is chartered to specify
mechanisms necessary for providing Layer 1 VPN services
(establishment of layer 1 connections between CE devices) over a
GMPLS-enabled transport service-provider network. Protocol
extensions required for L1VPN will be done in cooperation with MPLS,
CCAMP, OSPF, IS-IS, IDR, L3VPN, and other WGs where necessary. That
is, the L1VPN working group will not develop GMPLS protocol
extensions in isolation, but will develop requirements and propose
extensions that will be reviewed and approved by the (G)MPLS working
groups.

The Pseudo Wire Emulation End to End (PWE3) working group is a
working group that may use the (G)MPLS protocols in its
specifications. Should the PWE3 specifications require extension or
changes to the (G)MPLS protocols, the procedures as specified by its
charter and the IETF's standard processes are applicable.

2.3. Organizations Outside the IETF

A number of standards development organizations (SDOs) and industrial
forums use or reference the (G)MPLS protocols in their
specifications. Some of these organizations have formal or informal
liaison relationships with the IETF [RFC4052]. The IETF exchanges
information with these organizations about what is happening on both
sides, including plans and schedules, using liaison statements
[RFC4053]. More details about the cooperation relationship between
the IETF and the ITU-T can be found in [RFC3356].

The procedures in this document are applicable to all organizations
outside the IETF whether or not they have formal liaison
relationships with the IETF. If any organization outside the IETF
has a requirement for extensions or modifications to the (G)MPLS
protocols then the procedures in this document apply.

3. Overview of (G)MPLS Change Process

   This is a non-normative section, as it is intended to provide a high-
   level view of [RFC4775] procedures for protocol extensions.
   Application of these procedures for (G)MPLS are defined in detail in
   Section 4.

   Whenever there is reason to believe that a particular problem may be
   solved by use of or extensions to the (G)MPLS protocols, a
   communication using the formal liaison process, or, for a forum
   without a formal relationship, an informal communication, may be used
   to discuss the problem with the IETF ([RFC4052] and [RFC4053]).
   Collaboration with the IETF in the early discussion phase will
   facilitate a timely understanding of whether the problem has already
   been solved, may be outside the scope of the (G)MPLS protocols, or
   may require more investigation.

   Whenever any extension or change to the (G)MPLS protocols is desired,
   a problem statement and/or requirements statement must be produced
   and must be submitted to IETF as an Internet-Draft. When the
   requirements come from an external organization, informal
   communications, such as e-mail to working group mailing lists, is
   strongly encouraged as it facilitates timely and cooperative work.
   However, if desired, the Internet-Draft, containing the
   requirement(s), may be submitted to the working group using a formal
   liaison statement. IETF's response to the request will be given as a
   reply to the liaison. This use of formal communication reduces the
   risk of confusing an individual participant's opinion for that of the
   group as can happen on mailing lists, though it does introduce a more
   lengthy communication cycle. If there is no formal liaison
   relationship, a communication may be sent directly to the (G)MPLS
   working group, a relevant Area Director, or the IESG.

   The IETF, through the appropriate Area Director, and the chairs of
   the MPLS and CCAMP working groups for (G)MPLS related work, will
   direct the requirements draft to an appropriate working group for
   assessment and comment. This process may require communication and
   discussion for clarification, but the IETF undertakes to perform the
   assessment in a timely manner.

   In assessing the requirements statement I-D, the IETF may determine:

   - that the requirements can be satisfied without modifications to the
     (G)MPLS protocols

   - that the requirements are not sufficiently general or there is not
     sufficient interest to do a standards-track solution to warrant a
     Standards-track change to the (G)MPLS protocols

   - that the requirements justify a standards-track change to the
     (G)MPLS protocols

   - that the requirements might not be possible to satisfy without
     violating the (G)MPLS architecture in a way that would harm the
     (G)MPLS technology

   - that the requirements should be combined with other requirements to
     solve a more general problem or solve the same problem in a more
     flexible way.

   In the event that the IETF agrees to develop a solution, the IETF
   will set milestones that would result in timely delivery of the
   solution in a timely manner. If the IETF rejects the requirements,
   this will only be done with clear explanation and full discussion
   with the source of the requirements.

   The solutions that are developed within the IETF may be sourced from
   external organizations and presented for review, discussion,
   modification, and adoption as Internet-Drafts. Such solutions drafts
   may be presented to the IETF in advance of the completion of the
   requirements work, but all solutions will be processed through the
   normal IETF process with other proposed solutions. Solution drafts
   are adopted as an IETF working group draft when the requirements are
   stable, and not before the protocol-responsible working group has a
   charter item to cover the solutions work. It is strongly recommended
   for interested parties to start informal discussion in the IETF, as
   early as possible, and to co-author in the IETF's work. It is not
   recommended for the source forum to continue to work on solutions in
   parallel with on-going work in the IETF. If the protocol-responsible
   working group is unable to accept the work (e.g., due to current work
   load), the IETF processes ([RFC2418]) provide alternate options for
   ensuring the work is completed.

4. MPLS and GMPLS Change Process

   This section defines the (G)MPLS change process and the rules that
   must be followed in order to make extensions or changes to the
   (G)MPLS protocols. The language of [RFC2119] is used in order to
   clarify the required behavior of the IETF and the originator of the
   change request. It is consistent with the general procedures for
   protocol extensions defined in [RFC4775]. Any interpretation of
   procedures described in this document and their implementation are to
   be in a way consistent with [RFC4775].

Anyone who intends to use one of the existing (G)MPLS protocols, but
thinks that it will not satisfy their needs MUST use the procedures
described in this document. They SHOULD be used internally within
the IETF unless the changes concerned are considered non-
controversial by the responsible Area Director(s) (e.g., covered by
the working group charter), in which case other aspects of the normal
IETF standards process apply. Changes or extensions to the (G)MPLS
protocols MUST NOT be made by any other mechanism. The IETF MUST NOT
endorse any publications (including RFCs, whether on the Standards
Track, Informational, or Experimental) that change or extend the
(G)MPLS protocols except for those that arise through the correct
execution of the procedures in this document. The IETF MUST NOT
endorse any IANA action that allocates (G)MPLS protocol codepoints,
except as a result of actions arising from the correct execution of
the procedures in this document.

4.1. Flow Diagram

Figure 1 gives a visual overview to illustrate the roles of a (G)MPLS
requirements evaluation working group (REWG) and (G)MPLS protocol
solutions working group (PSWG). The figure presents two alternatives
for a requestor: (1) contact the IETF early in the problem definition
phase (preliminary investigation), or, (2) later, with a requirements
statement. The figure is for illustration only; it does not contain
all of the possible interactions and IETF procedure alternatives.
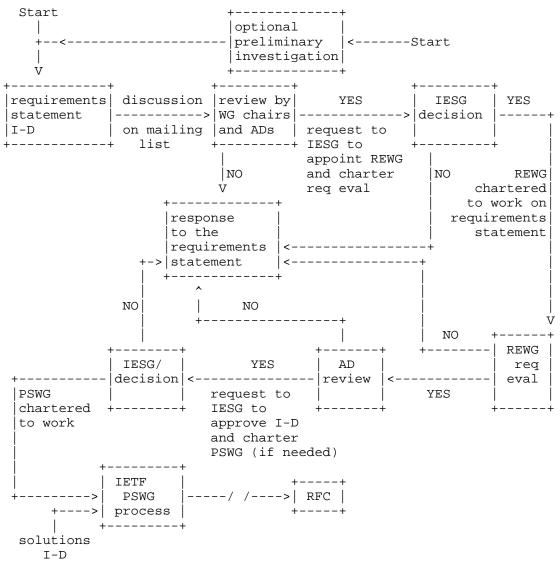The text in the subsequent sections describes the process.

```
   Start                        +-------------+
     |                          |optional     |
     +--<--------------------|preliminary  |<-------Start
     |                          |investigation|
     V                          +-------------+
   +-----------+ discussion +---------+  review by|    YES      +---------+   YES
   |requirements| ----------->|review by|------------->| IESG    |------+
   |statement  |            |WG chairs|                |decision |      |
   |I-D        | on mailing |and ADs  | request to     |         |      |
   +-----------+    list     +---------+ IESG to        +---------+      |
                                |       appoint REWG       |            |
                                |NO     and charter        |NO      REWG|
                                V       req eval           |      chartered|
                    +-------------+                        |      to work on|
                    |response     |                        |      requirements|
                    |to the       |                        |      statement  |
                    |requirements |<-----------------+      |          |
                 +->|statement    |<-----------------+      |          |
                 |  +-------------+                         |          |
                 |        ^                                 |          |
              NO |        |     NO                          |          |
                 |   +----------------+                     |          V
                 |   |                |                     | NO   +------+
            +--------+        +-------+  +--------|REWG |
            | IESG/ |    YES       | AD    |        | req  |
   +-----------|decision|<--------------|review |<------------| eval |
   |PSWG       |        |  request to  |       |    YES      |      |
   |chartered  +--------+  IESG to     +-------+              +------+
   |to work                approve I-D
   |                        and charter
   |                        PSWG (if needed)
   |         +---------+
   |         | IETF    |                  +-----+
   +--------->|  PSWG  |-----/ /---->| RFC |
       +---->| process |              +-----+
       |     +---------+
   solutions
      I-D
```

Figure 1: Change Process Overview

4.2. Description of Process Stages

   This section describes how the (G)MPLS change process works, what is
   expected from individuals or organizations that want to extend or
   change the (G)MPLS protocols, and the responsibilities of the IETF.

4.2.1. Preliminary Investigation

   This step is OPTIONAL, and is intended to provide a lightweight way
   to "feel out" the IETF's position on a proposal without going to the
   effort of writing an Internet-Draft. The intention is to determine
   whether the problem has been examined already, whether the problem is
   in scope for the IETF, and whether solutions are already known.

   Although the preliminary investigation phase is optional it is
   RECOMMENDED that the originator of any requirements consult and
   discuss the issues concerned as early as possible to avoid any wasted
   effort, and the preliminary investigation phase provides a mechanism
   to do this.

   Useful discussions may be held at this stage in order to ensure that
   the problem statement and requirements statement Internet-Drafts
   contain the right material. This step is described as lightweight
   because no Internet-Draft is required and because the step largely
   involves offline discussions. However, it may be the case that this
   step involves considerable technical discussions and may, in fact,
   involve an extensive, substantive exchange of ideas and opinions.

   This step SHOULD be carried out informally on the mailing list of the
   REWG or on the Routing Area discussion mailing list, and MAY be
   initiated by any individual, group of individuals, external
   organization, or IETF working group.

   When an external SDO has a liaison relationship with the IETF, it MAY
   carry out this step using a formal liaison. The liaison SHOULD be
   sent to the designated liaison manager who is responsible for
   forwarding them to the IESG who will assign a Responsible AD. The
   initiators of the liaison SHOULD make themselves available for
   discussion on the selected mailing list. If a formal liaison is
   used, the IETF will respond using the procedures of [RFC4053].

   At this stage, a problem statement I-D MAY be produced to help
   further the discussions and to clarify the issues being addressed.

   A possible outcome of this preliminary investigation is that the
   requirements and problem are understood, but agreed to be out of
   scope for the IETF. Alternatively, it may be that the problem can be
   solved with existing protocols. The full list of outcomes from the
   preliminary investigation phase are similar to those for the
   requirements statement evaluation phase described in Section 4.2.2,
   but the requirements statement evaluation phase that allows wider
   IETF community participation in developing a complete requirement set
   MUST form part of the process if the IETF is to consider to develop
   protocol solutions. The process cannot move direct from the

preliminary investigation phase to the development of solutions
unless the working group agrees (e.g., the problem is minor).

4.2.2. Requirements Statement Evaluation

Before the IETF can formally pronounce on requests to change or
extend the (G)MPLS protocols, a requirements statement I-D MUST be
written per [RFC2026].

The requirements statement I-D MUST be introduced by the authors to
the IETF through an email to the REWG mailing list, to the Routing
Area discussion mailing list, or by a formal liaison from an external
SDO which will result in the IETF introducing the requirements
statement I-D to the REWG mailing list. If the requirements
statement I-D is brought to the IETF through a formal liaison, the
initiators of the liaison SHOULD make themselves available for
discussion on the designated IETF mailing lists.

After discussion on the IETF mailing lists, the responsible Area
Director MUST decide whether the requirements will be formally
evaluated by the IETF, and MUST deliver a response to the per
[RFC4053] and [RFC4775]. If a formal liaison was not used, the
response SHOULD be delivered to the appropriate contact as listed on
the communication.

The IETF response MUST be sufficiently explanatory to inform the
requesting organization of what, if anything, the IETF has decided to
do in response to the request. The following list is provided to
illustrate possible responses:

a. Requirements not understood. Further discussion is required.

b. Requirements understood, but judged to be out of scope for the
    IETF. In this case, the originator of the requirements can work
    on requirements and solutions and will not be impeded by the
    IETF. The IETF may request to be kept informed of progress.

c. Requirements understood, but no protocol extensions are needed.
    It may be desirable for the external SDO to cooperate with the an
    IETF working group in the production of an Applicability
    Statement Internet-Draft.

d. Requirements understood, and the IETF would like to develop
    protocol extensions. This results in execution of the rest of
    the procedure, described below. The requirements raised in the
    requirements statement I-D may be combined with other
    requirements to produce more general extensions or changes to the
    (G)MPLS protocols.

4.2.3. Working Group Procedures

   In many cases, the problem covered by the requirements statement I-D
   will fall within the scope of the existing charter of a working
   group. In this case, the responsible Area Directors will designate
   the working group as the REWG and pass the requirements statement I-D
   to the working group for evaluation. If the problem is not covered
   by an existing charter, other alternatives (refer to [RFC2418]) may
   be used, e.g., rechartering, BOF, chartering a new working group.

   If the IETF modifies its prior decision to accept the work, the IETF
   MUST communicate this to the requestor in a timely manner.

4.2.4. REWG Evaluation of the Requirements Statement I-D

   The objective of the REWG evaluation process is to determine a clear
   and complete statement of the requirements for changes or extensions
   to the (G)MPLS protocols. This will necessitate normal IETF working
   group procedures in the REWG and MAY include the generation of
   revisions of the requirements statement I-D in cooperation between
   the members of the REWG and the original authors of the requirements
   statement I-D.

   The originators of the requirements statement I-D MUST make
   themselves available to discuss the work on the REWG mailing list.
   If this does not happen, the chairs of the REWG MAY determine that
   there is insufficient support for the work and MAY reject the
   requirements statement I-D.

   The output of the REWG will be either:

   - a completed requirements statement I-D that has been accepted by
     working group consensus within the REWG and has passed through
     working group last call;

   or

   - a rejection of the requirements using the response procedure as
     described in Section 5.

4.2.5. AD Evaluation of Completed Requirements Statement I-D

   As with all Internet-Drafts produced by a working group, the ADs will
   review the completed requirements statement I-D produced by the REWG.
   The ADs will then pass the document to the IESG for review. If
   charter changes are needed or a new PSWG needed, the appropriate
   process will be followed.

4.2.6. IESG review of Requirements Statement I-D and PSWG Charter

   As with all Internet-Drafts, the IESG will review and make a decision
   on the progression of the requirements statement I-D.

   If the IESG rejects the requirements statement I-D, it will generate
   an appropriate response to the working group (and, if needed, to the
   originator of the request).

   The IESG will review any proposed charter changes for the PSWG or, if
   needed, consider alternatives. This might include the formation of a
   new working group specifically to work on the solutions.

4.2.7. Solutions Work

   The appropriate PSWG will start work on solutions following the
   normal IETF process.

   Solutions I-Ds MAY be prepared externally (such as within an external
   organization) or within the IETF, submitted to the IETF for draft
   publication using the procedures of [RFC2418], and introduced to the
   PSWG for consideration. Such I-Ds MAY be submitted at earlier stages
   in the process to assist the REWG in its development and discussion
   of the requirements, but no I-D will be formally considered as a
   solutions I-D until the PSWG has a charter item that covers the work
   and the REWG chairs are confident that the requirements are stable.

   The IETF makes no guarantees that an externally produced solutions
   I-D will form the basis of the PSWG solutions I-D, but the PSWG MUST
   consider such an I-D for review and revision as a possible solution
   I-D, using the same open procedures ([RFC2418]) as for any individual
   submission. The IETF's procedures are based on open and fair
   participation, and thorough consideration of technical alternatives.

   Interested parties (both implementers and users) of the SDO
   originating the request are strongly encouraged to participate in the
   PSWG to ensure appropriate interest is shown in the solutions work
   and to provide timely solutions development. The IETF's work, as
   that of any SDO, is driven by its participants. The IETF is an open
   community and any SDO requesting IETF solutions work SHOULD ensure
   appropriate industry interest in the work, or the IETF MAY
   discontinue its support of the work. Appropriate communication of
   the discontinued work will be made to the originator of the request
   (if the originator is reachable).

   The final development of the solutions I-D is subject to the normal
   working group review, consensus, and last call within the PSWG.

   Where the requirements originated from an external organization, the
   PSWG SHOULD regularly communicate its progress using a formal liaison
   process if one exists. This communication SHOULD also be used to
   request review input and comment on the development of the solutions
   I-D. The solutions I-D MUST be communicated to the originating
   organization during working group last call for final review against
   the requirements. When the solutions I-D is complete (normally upon
   completing working group last call and/or on entering the RFC
   Editor's queue) the PSWG MUST inform the originating organization of
   the completed solution.

5. Rejecting the Requirements Statements I-D

   Rejection of the requirements statements is a sensitive matter for
   the authors of the requirements and MUST be handled with full
   disclosure and explanation by the IETF. All working group actions
   are taken in a public forum ([RFC2418]).

   The requirements can be rejected at various stages of the process as
   described in the previous sections. The person or group that makes
   the rejection is responsible for generating an explanation of the
   rejection and MUST follow the [RFC4775] process. Possible reasons
   for rejection are described in this section.

5.1. Reasons for Rejection

   The requirements statement I-D can only be rejected with full
   disclosure by the IETF. Possible reasons for rejection and possible
   next steps as described here.

   - Requirements not understood. Either during preliminary
     investigation or during evaluation of the requirements statement
     I-D, it was not clear what the requirements are, or what the
     problem being addressed is.

     This rejection forms part of an on-going communication and it is
     expected that the process will continue with further iterations.

   - Out of scope for the IETF. Many stages of this process may
     determine that the requirements are out of scope for the IETF. In
     this case, the IETF MUST NOT constrain the authors of the
     requirements statement I-D from working on a solution. If any
     (G)MPLS changes are later identified, the requestor MUST reinitiate
     the (G)MPLS change procedure.

   - No protocols extensions or changes are needed. At some stage in
     the evaluation of the requirements it may become clear that they
     can all be met through appropriate use of existing protocols. In

this case, no further evaluation of the requirements is required,
but the REWG MUST explain how the protocols can be used to meet the
requirements and MAY cooperate with the authors of the requirements
statement I-D in the production of an Applicability Statement
Internet-Draft or a Profiles Internet-Draft that explains precisely
how the existing protocols can be used to meet the requirements.

- Insufficient support within the IETF. Although the work described
  within the requirements statement I-D is within scope for the IETF,
  and despite the support of the originators of the requirements
  statement I-D on the REWG mailing list, the chairs of the REWG have
  determined that there is insufficient support in the REWG to
  complete requirements statement I-D and initiate solutions work in
  the PSWG. In this case, the IETF MUST NOT restrict the authors of
  the requirements statement I-D from working on a solution. The
  solution (and/or IANA codepoints requested) SHALL be presented to
  the IETF's (G)MPLS PSWG for review and possible publication as an
  Informational or Experimental RFC, and, pending IETF review
  results, the IETF SHALL NOT block applications to IANA for
  codepoints. If IANA codepoint assignments are required, the IANA
  Requirements prescribed for those assignments in the relevant RFCs
  MUST be satisfied. It is highly recommended for the SDO to
  encourage its participants to participate in the IETF work to
  ensure appropriate industry representation in the work.

- Insufficient support for the work from the original requesters. If
  the authors of the requirements statement I-D do not make
  themselves available on the REWG mailing list for discussion of the
  requirements or do not contribute the completion of the
  requirements statement I-D, the chairs of the REWG MAY determine
  that there is insufficient support for the work and MAY reject the
  requirements statement I-D. In this case, the IETF MUST NOT grant
  permission for the work to be carried out in any other
  organization, and MUST NOT endorse the publication of any changes
  or extensions to the (G)MPLS protocols and MUST NOT instruct IANA
  to allocate any codepoints. The requirements may be reintroduced
  by starting the procedure again from the top.

- Satisfying the requirements would break the technology. It is
  possible that an assessment will be made that, although the
  requirements are reasonable, it is not possible to satisfy them
  through extensions or changes to the (G)MPLS protocols without
  violating the (G)MPLS architecture in such a way as would break the
  (G)MPLS technology. In this case, a recommendation will be made
  that some other technology be used to satisfy the requirements.
  See Section 7 for further discussions of the protection of the
  integrity of the (G)MPLS technology. In this case, the IETF MUST
  NOT grant permission for the work to be carried out in any other

organization, and MUST NOT endorse the publication of any changes
or extensions to the (G)MPLS protocols and MUST NOT instruct IANA
to allocate any codepoints.

5.2. Actions Required When Rejecting Requirements Statement I-Ds

Upon rejection, the IETF MUST make a clear statement of why the
requirements statement I-D has been rejected and what next step
actions are acceptable (refer to Section 5.1).

The communication of the rejection depends on the form of the
original submission as follows.

- If the requirements are brought to the IETF as a preliminary
  investigation (see Section 4.2.1) through an email exchange then
  the response MUST be made as an email response copied to an IETF
  mailing list so that it is automatically archived.

- If the requirements are brought to the IETF as a preliminary
  investigation (see Section 4.2.1) through a formal liaison, the
  rejection MUST be delivered through a formal liaison response.

- If a requirements statement I-D has been produced and discussed on
  an IETF email list, the response MUST be made as an email response
  and copied to the email list.

- If a requirements statement I-D has been produced and brought to
  the IETF through a formal liaison, the rejection MUST be delivered
  through a formal liaison response.

- If an IETF working group has been involved in the review or
  production of any Internet-Drafts for the requirements or for the
  solutions, the working group MUST be notified of the rejection and
  the reasons.

The responsibility for the generation of the response lies with the
person, people, or group that instigates the rejection. This may be
the IESG, one or more Area Directors, one or more working group
chairs, or a designated expert [RFC2434]. In the case of the use of
a liaison relationship, the IETF's liaison manager has responsibility
for ensuring that the procedures in this document, and particularly
the rejection procedures, are followed.

5.3. Appeals

[RFC2026] contains additional information related to procedure
disagreements and appeals. The rejection of a requirements statement
I-D as described in Sections 5.1 and 5.2 may be appealed in the event

it is disputed and cannot be reversed by direct discussion between
the parties. The conflict resolution and appeal mechanism is
documented in [RFC2026].

6. Abandonment of the Solutions I-D

Once the solutions work has been started by the PSWG, it may be
abandoned before completion. This can happen if the PSWG chairs
determine that there is no longer working group support for doing the
work. This could arise, for example, if no one (including the
originators of the requirements statement I-D) is willing to
contribute to the development of a solutions I-D.

In the event that the solutions work is abandoned by the PSWG, the
Area Directors responsible for the PSWG MUST be consulted. The
originators of the requirements statement I-D MUST be informed that
the work has been abandoned using a mechanism dependent on how the
requirements were introduced (as discussed in Section 5.2).

If the solution is abandoned in this way, work on solutions for the
requirements MUST NOT be started in another forum. The status of
extensions and changes to the (G)MPLS protocols with regard to the
specific requirements returns to how it was before the process
started. Any new examination of the requirements MUST commence at
the top of the process.

6.1. Appeals

The abandonment of a solutions I-D may be appealed in the event it is
disputed and cannot be reversed by direct discussion between the
parties. The conflict resolution and appeal mechanism is documented
in [RFC2026].

7. (G)MPLS Integrity and Ownership

The (G)MPLS working groups are REQUIRED to protect the architectural
integrity of the (G)MPLS protocols and MUST NOT extend the GMPLS
architecture with features that do not have general use beyond the
specific case. They also MUST NOT modify the architecture just to
make some function more efficient at the expense of simplicity or
generality.

The architectural implications of additions or changes to the (G)MPLS
protocols MUST consider interoperability with existing and future
versions of the protocols. The effects of adding features that
overlap, or that deal with a point solution and are not general, are
much harder to control with rules and risk impacting the protocol as
a whole. Therefore, to minimize operational and technical risks to

   the (G)MPLS technology, IETF processes SHALL be followed for any
   requests on extensions to (G)MPLS protocols. With respect to (G)MPLS
   protocols, the (G)MPLS PSWG is the chartered "owner" of the (G)MPLS
   protocol, as long as the working group exists. All changes or
   extensions to (G)MPLS MUST first be reviewed by the (G)MPLS PSWG.

8. Security Considerations

   All requirements statement I-Ds MUST give full consideration to the
   security impact of the proposed additional features or functions.
   All solutions I-Ds MUST consider the impact on the security of the
   protocol extensions and to the pre-existing protocol.

   This documents does not itself introduce any security issues for any
   (G)MPLS protocols.

   The IETF process is itself at risk from denial of service attacks.
   This document utilizes the IETF process and adds clarity to that
   process. It is possible, therefore, that this document might put the
   IETF process at risk.

   Therefore, provided that the number of requirements statement I-Ds is
   not unreasonable, there will be no significant impact on the IETF
   process. The rate of arrival of requirements statement I-Ds MAY be
   used by the IESG to detect denial of service attacks, and the IESG
   SHOULD act on such an event depending on the source of the
   requirements statement I-D and the perceived relevance of the work.
   The IESG might, for example, discuss the issue with the management of
   external organizations.

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10. IANA Considerations

   This document makes no specific requests to IANA for action. The
   procedures described in this document assume that IANA will adhere to
   the allocation policies defined for the (G)MPLS codepoint registries
   and that the IETF will not endorse allocation of codepoints from
   those registries except where work has been carried out in accordance
   with the procedures described in this document.

11. References

11.1. Normative References

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11.2. Informative References

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