

# RFC6374 in the presence of LSP merging

draft-bryant-mpls-flow-ident  
and  
draft-chen-mpls-source-label

M. Chen, X. Xu, Z. Li, L. Fang, G. Mirsky, S. Bryant,  
& C. Pignataro

# Background

- The authors of draft-chen-mpls-source-label and draft-bryant-mpls-flow-ident who were present at the IETF and a number of others interested in this problem met earlier this week and discussed these two drafts.
- These slides represent the outcome of this discussion.

# The Key Need

- The key operational need that caused these drafts to be written was the necessity for passive performance measurements of customer traffic in networks.
- This is not an easy task in MPLS networks where label merging happens such as occurs in the MP2(M)P, ECMP, and FRR cases.
- The goal is thus to provide operators with the ability to conduct RFC6374 passive measurements in such cases.

# The Problem

- RFC6374 was designed for instrumenting P2P and P2MP LSPs (MPLS-TP origins).
- In strict P2P and P2MP there is an equivalence assumption between destination (top label) and source.
- We need to measure in the presence of label merging in such networks.
- We need a solution that works for MP2P and MP2MP, and that in turn needs some form of identity,

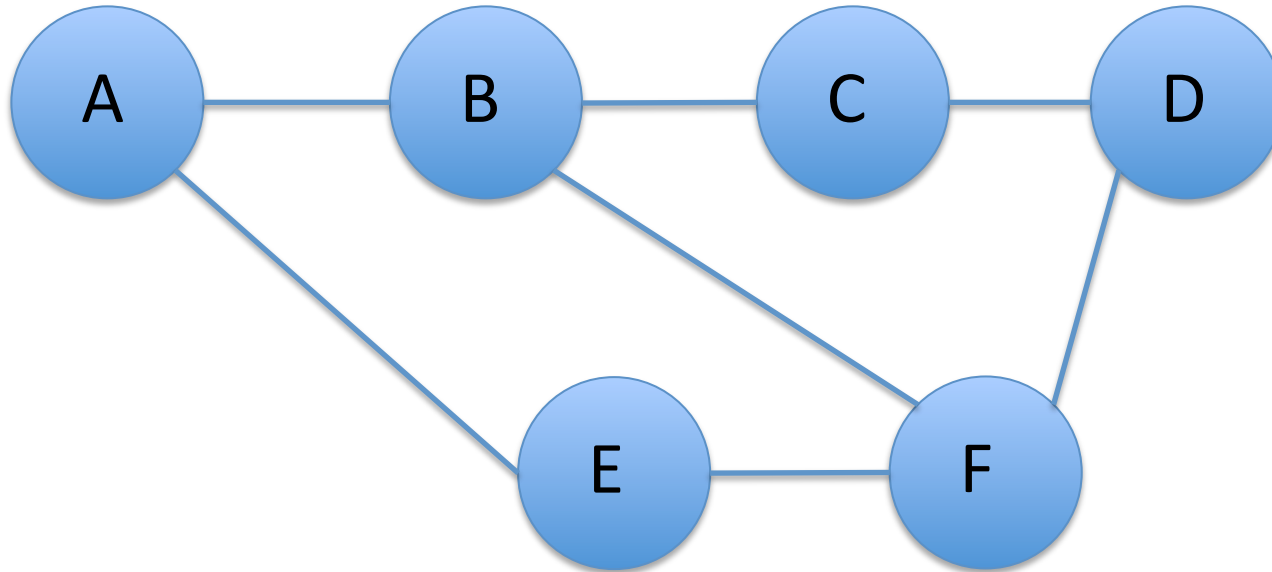
## **BUT**

- There are many flows between a given source and destination and thus the general case is that we need FLOW identification to instrument an MPLS network.

## **AND**

We need FLOW identity for P2P, P2MP, MP2P and MP2MP LSP types.

# Loss Measurement Considerations



- Path lengths/queues vary
- Multiple interfaces at ingress and egress
- Losses are very low – therefore absolute accounting is needed

**Therefore packet group demarcation is as integral to loss measurement as ingress flow identification.**

# Units of Identification

- Per source LSR - everything from one source is aggregated
- Per group of LSPs chosen by an ingress LSR - an ingress LSP aggregates group of LSPs (ex: all LSPs of a tunnel).
- Per LSP - the basic form.
- Per flow [RFC6790] within an LSP - fine graining method (for example application or origin specific instrumentation).

# Network Scope

- Constrained to the set of flows that are uniquely identifiable at an ingress LSR, or some aggregation thereof.
- No assistance from outside the MPLS domain.
- Within the LSP domain
- Identity scope of a component of an LSP constrained to the scope of that LSP

# MPLS Backwards Compatibility

- New feature **MUST NOT** stop any existing MPLS technology or implementation working.
- Incremental deployment is needed.
- Optional feature disabled by default.



# Relaxation of Constraints

- May require that all egress LSRs of a point to multipoint or a multi- point to multipoint LSP to support the ident.
- Similarly all egress LSRs are enabled to support the required identity type, or none of them are.

# Dataplane

- Method of identification must minimize changes to the MPLS data plane.
- Ideally no change – but any change **MUST** be:
  - Small
  - General purpose.
  - Non limiting
- Minimum impact on stack size
- Respect the scarcity of reserved labels

# Privacy

- Inserting additional identity is at odds with a demand for greater care over privacy
- Any solution should not degrade the privacy of the MPLS network below its current level
- Explicit globally unique identifiers have less privacy than opaque flow identifiers

# Next Steps

## Before the Dallas IETF

- Issue a draft that describes the requirements as we jointly see them for discussion with the MPLS WG at the next meeting
- Issue a draft proposing a solution capable of meeting these requirements for discussion with the MPLS WG at the next meeting