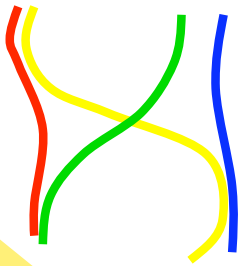


# Quality Measurement Requirements for Tunneling Protocols

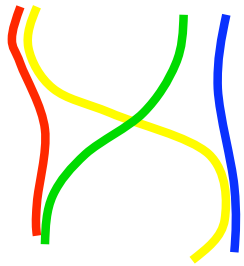
draft-kikuchi-tunnel-measure-req-01.txt
(draft-kikuchi-passive-measure-00.txt)

OPSAWG

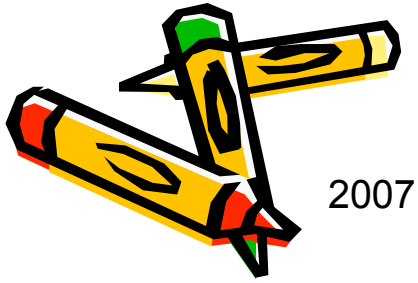
69th IETF

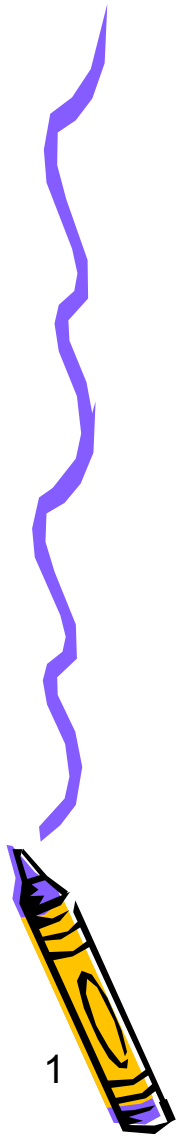
Chicago, IL

# Contents

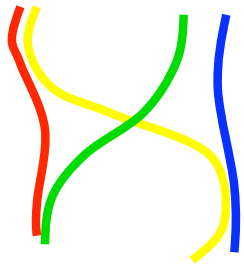


- Background
- About the original -00 draft
- Update from 68th IETF
- Current I-Ds
  - The requirements
  - Metrics and an algorithm
- An Example
- Discussion

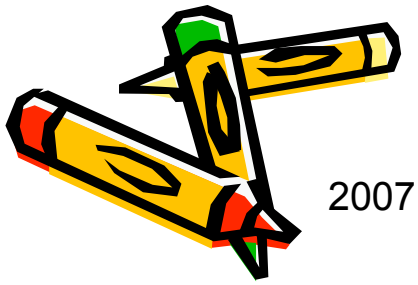




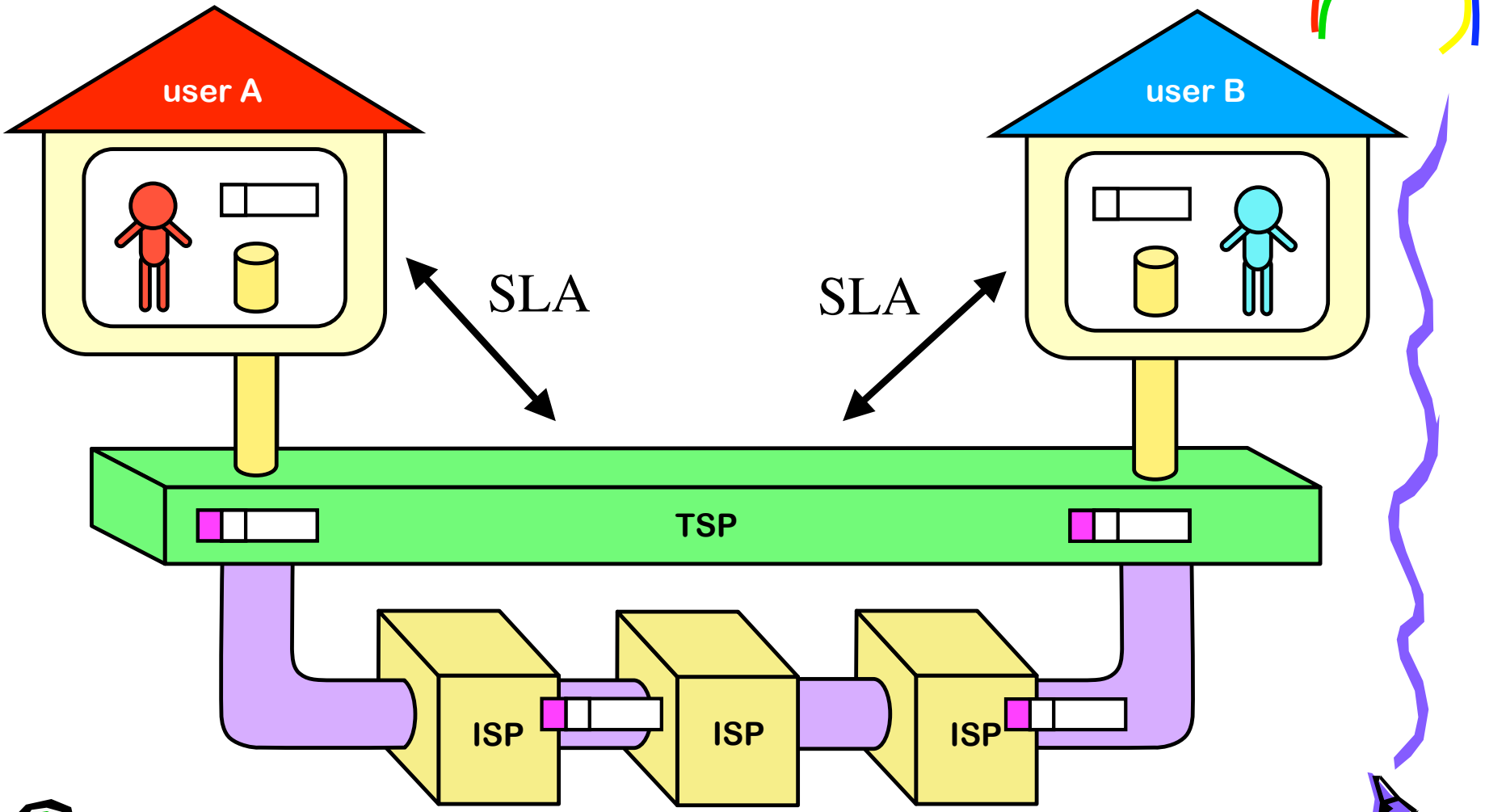
# Background



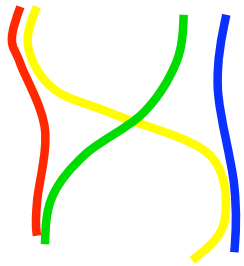
- TSPs:
  - Transport Service Providers who provide transports to users using tunneling technology
- Who needs requirements?
  - TSPs want to know their tunnels' quality
    - No sufficient monitoring way
      - no SNMP, no syslog, no CLI, …



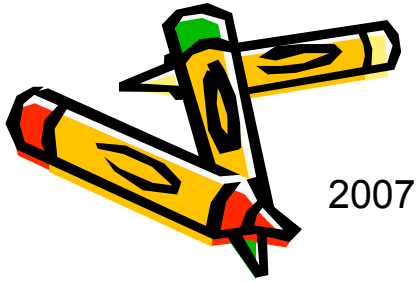
# TSP service model

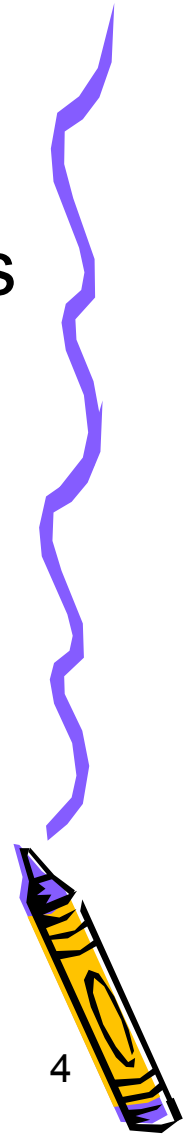


# Motivations

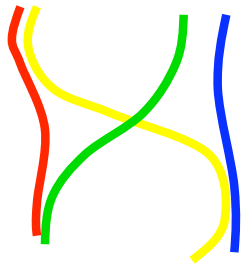


- TSP
  - needs to know tunnels' quality,
  - may need to show the quality to their users according to SLA,
    - i.e. service quality of customers' real traffic
  - and may want to chose a better tunnel when they use two or more tunnels

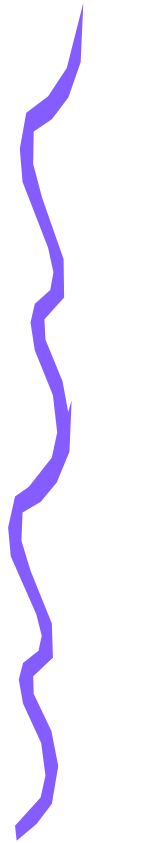


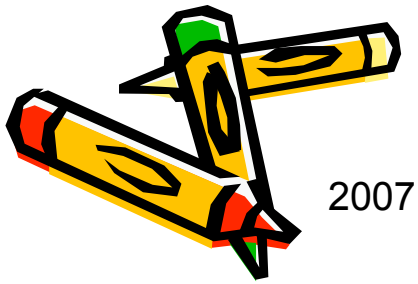


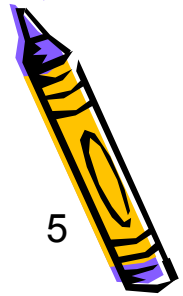
# About the -req-00.txt



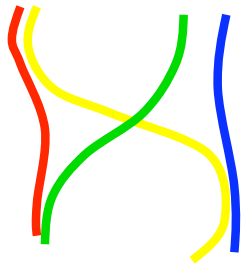
- Aims to describe both
  - requirements for tunneling protocols, and
  - a passive measurement method
- Presented in 68th IETF in Czech
  - OPS area open meeting



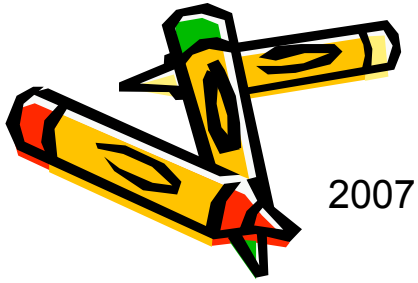


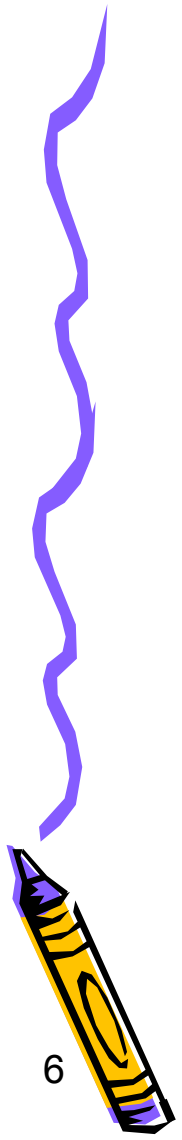


# Comments in 68th IETF

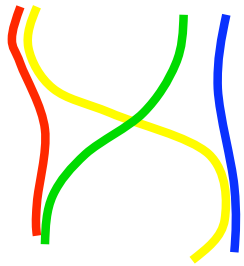


- Why is the I-D tunnel specific?
- Seq # may cause fragmentation?
- should discuss in IPPM or BMWG?

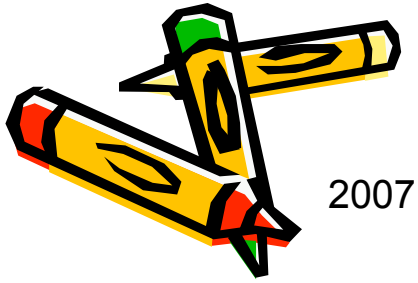


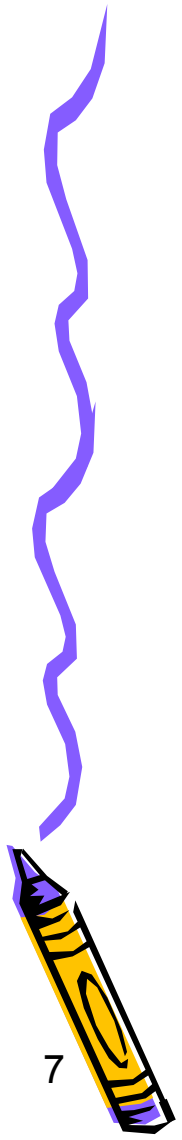


# Update



- splitting the original I-D into two I-Ds
  - focus on the Requirements
    - as -reqs-01.txt
  - Metrics and Algorithm
    - as a new I-D
    - should discuss in APM WG?
      - APM WG will come near future?





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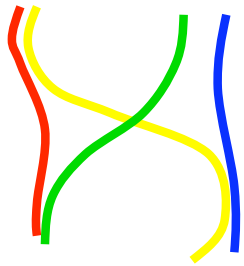
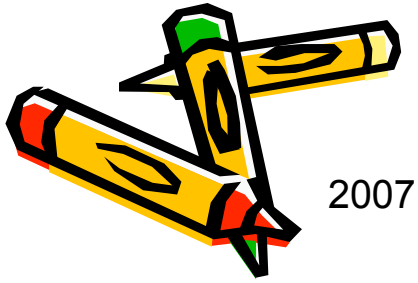
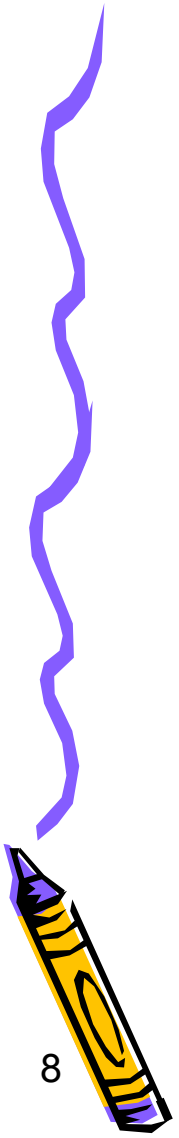


- Comment #1
  - Why is the I-D tunnel specific?
- Answer
  - specially needed by TSPs
- Action
  - append a new paragraph explicitly
    - in the section 3 ``motivation''





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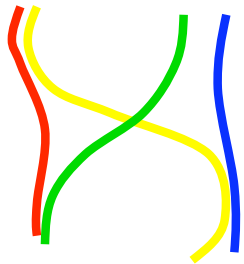
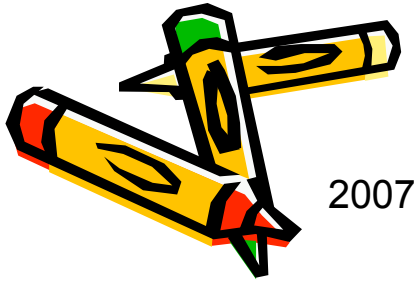
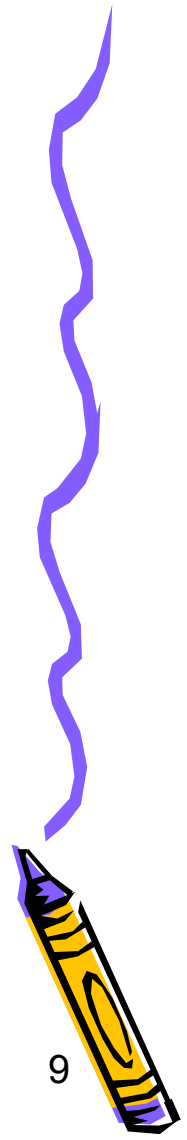


- Comment #2
  - Seq # may cause fragmentation?
- Answer
  - measurement and overhead are trade-off
- Action
  - a new section ``overhead consideration''
    - as the section 4.4





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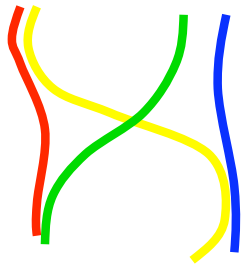
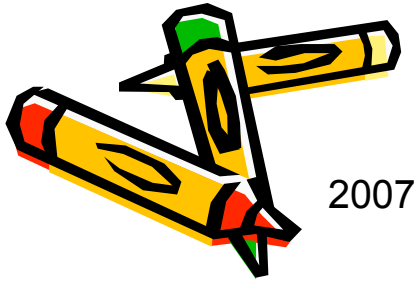
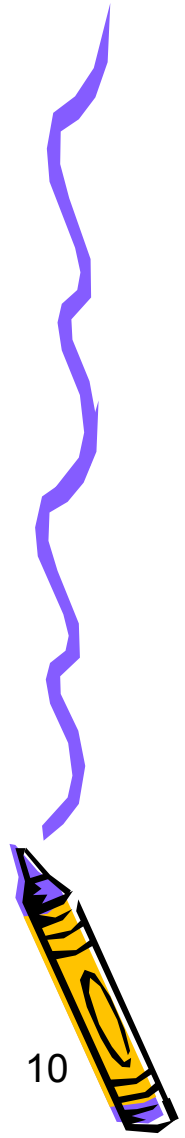
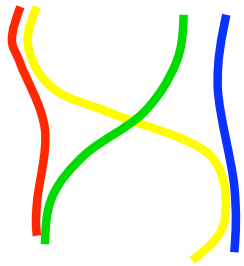


- Comment #3
  - should discuss in IPPM or BMWG?
- Answer
  - Neither IPPM nor BMWG is applicable
    - BMWG is for laboratory environments
    - IPPM does not intend to specific protocols
- Action
  - will attend APM BOF

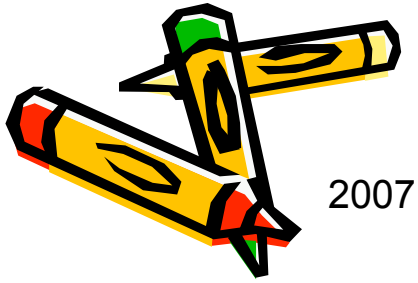


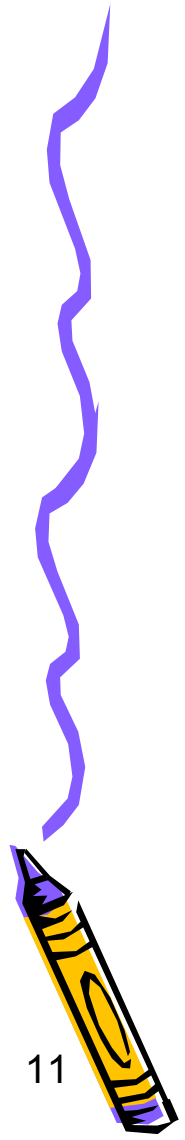


# Other updates to -01.txt

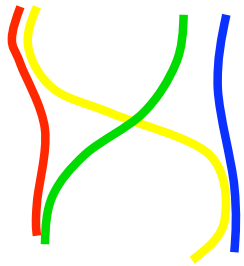


- distinguish the requirements into
  - general requirements
  - requirements with sequence numbering
- use of the keywords
  - according to RFC2119

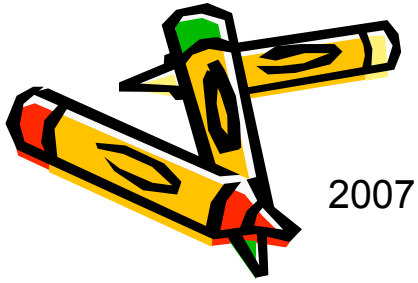


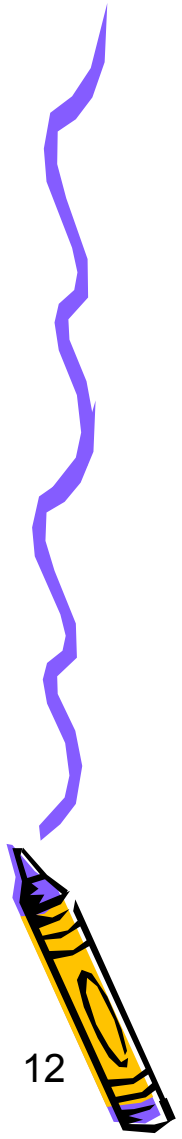


# General Requirements

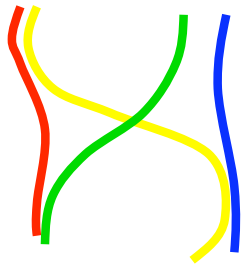


- active v.s. passive
  - passive measurement SHOULD be supported
- quality evaluation
  - MUST define ``what'' and ``how''
    - in-sequence/out-of-sequence (REQUIRED)
    - lost, duplication and reordering (SHOULD)
    - delay and jitter (MAY)
- getting quality information
  - MUST define ``how'', e.g. via SNMP

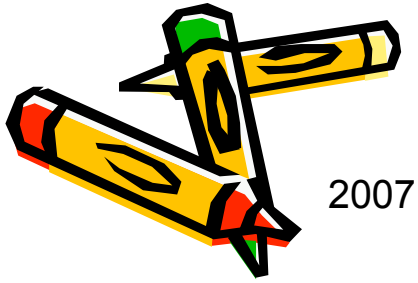




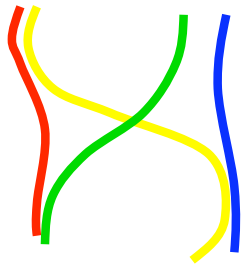
# Requirements with seq #



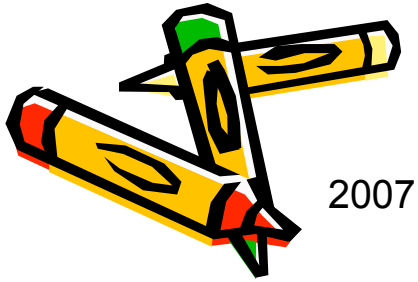
- if sequence number is used...
- MUST indicate enabled or not
  - by a indication flag or
  - ``0'' for the meaning ``disabled''
    - additional steps are needed
- the length of the field SHOULD be long enough
  - trade-off to the overhead



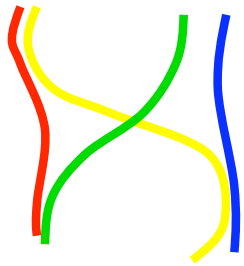
# -passive-measure-00.txt



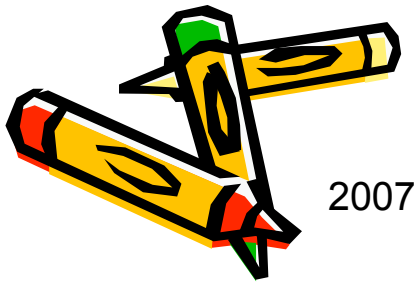
- Title:
  - One-way Passive Measurement of End-to-End Quality
- A solution for the -req-01.txt
  - passive measurement
  - metrics (what) and algorithm (how)
    - less resource consumption and less accurate



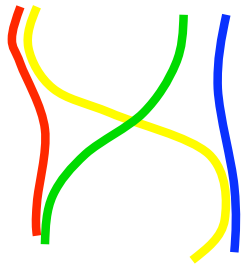
# Metrics



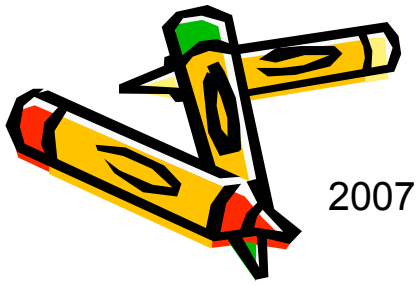
- in-sequence/out-of-sequence for each packet
- # of irregular packets since a tunnel appeared
- irregular types
  - lost: does not arrive in-sequence
    - except duplication
  - duplication: identical packet arrival uninterruptedly
  - reordering: arrival after successive packets



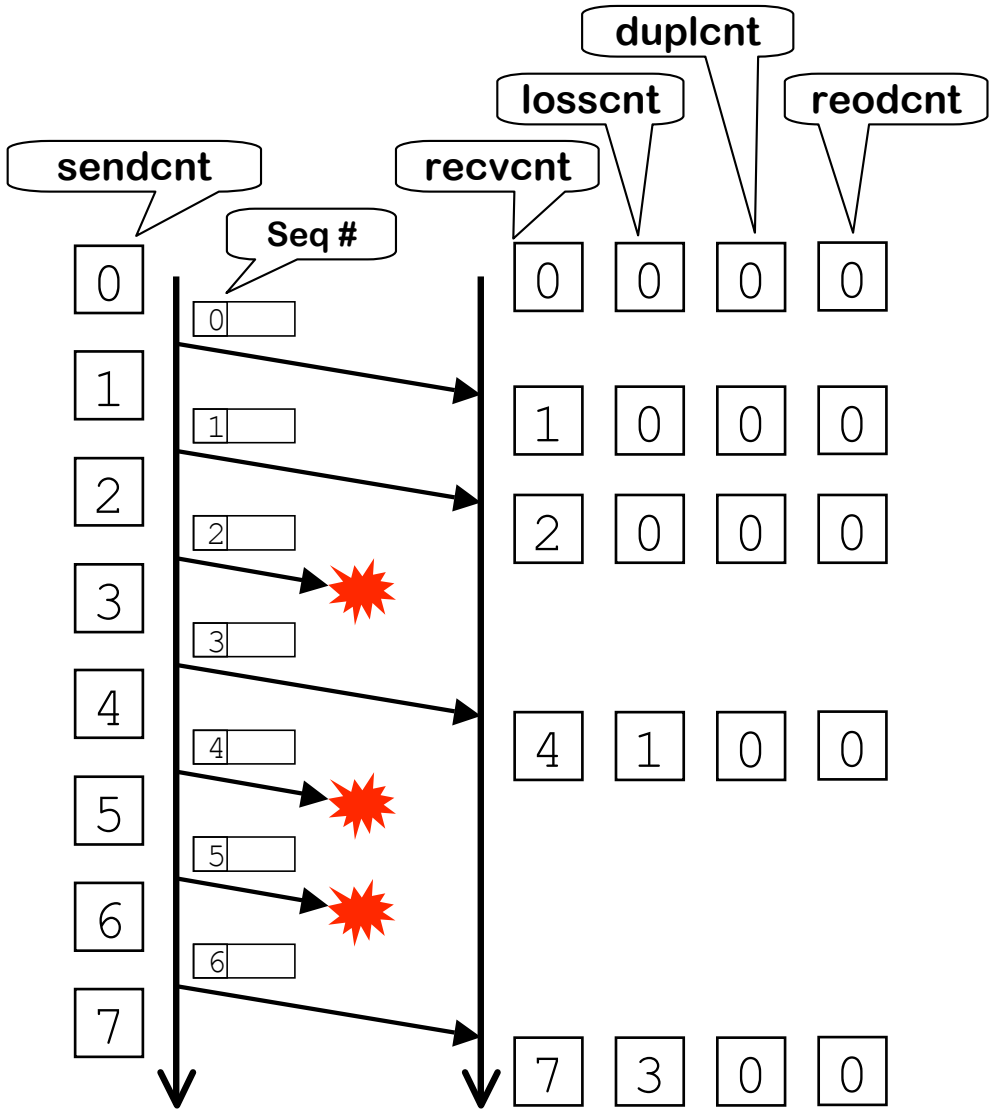
# Measure how?



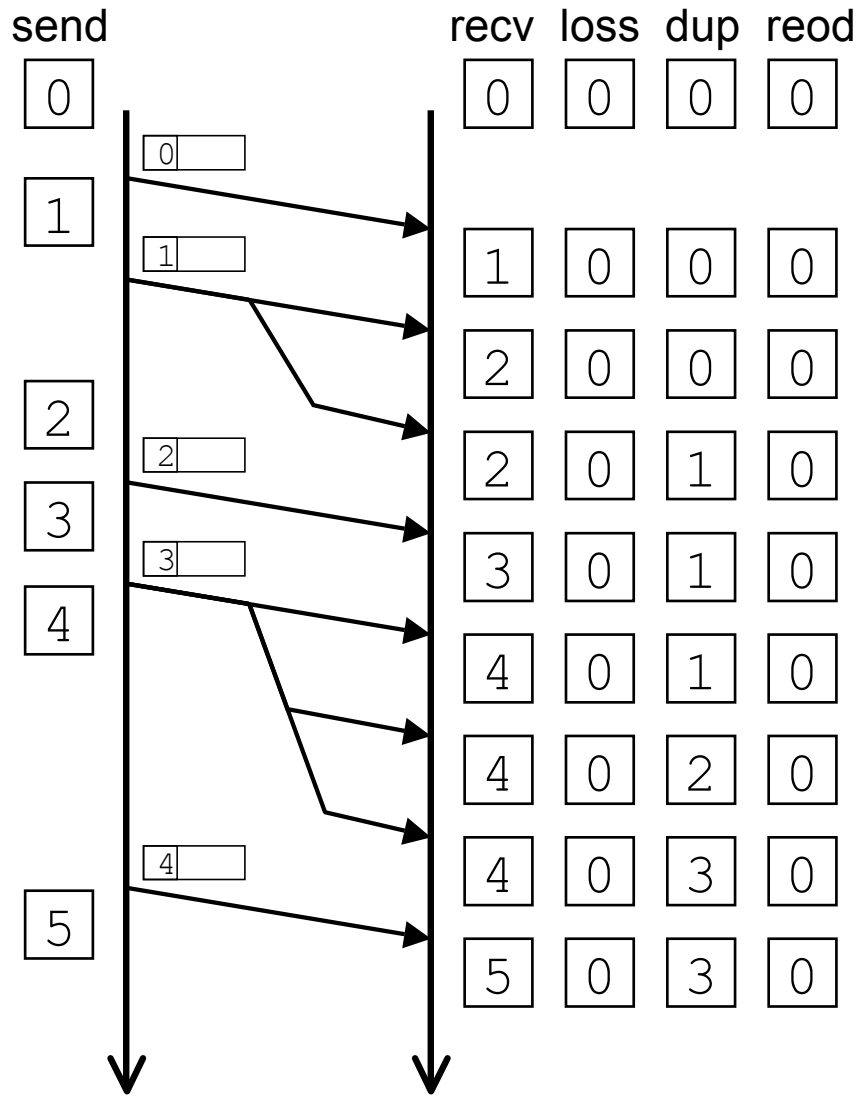
- Passive measurement
  - impose sequence numbers at tunnel ingress
  - expose them and measure at tunnel egress
- Monitor how?
  - not specified here



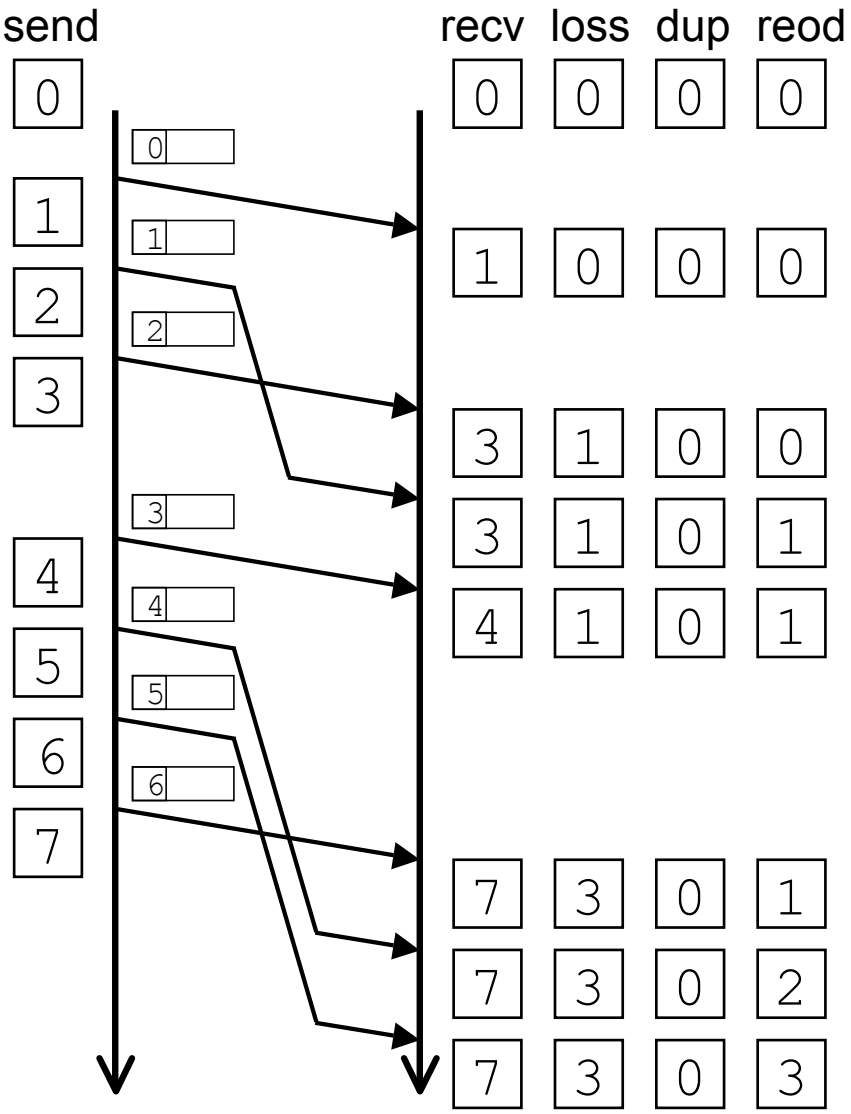
# Detecting packet loss



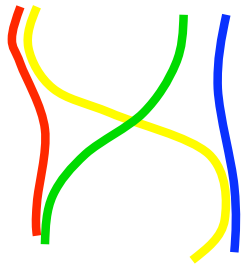
# Detecting duplication

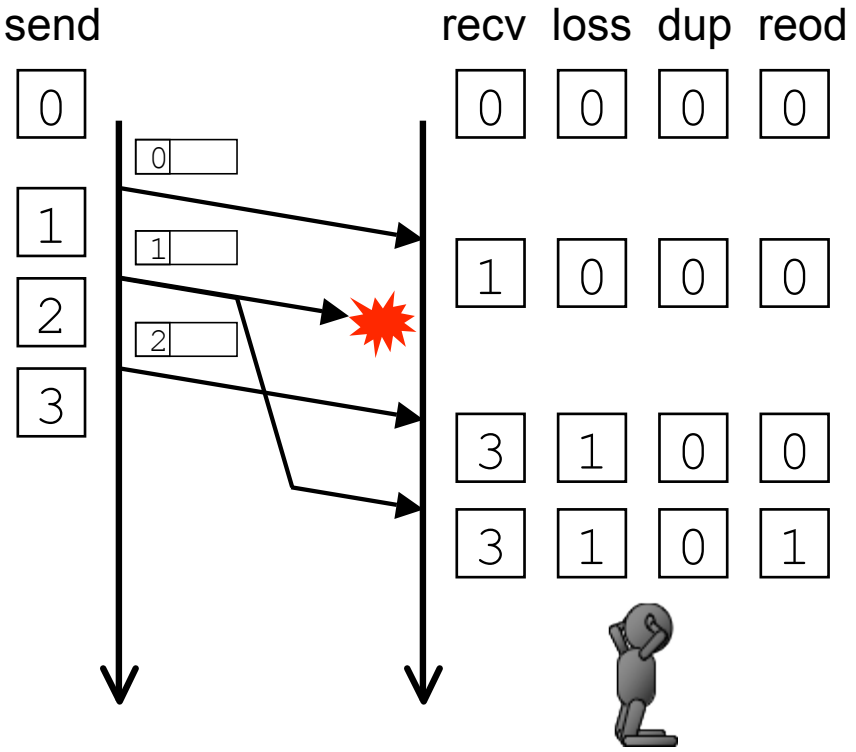


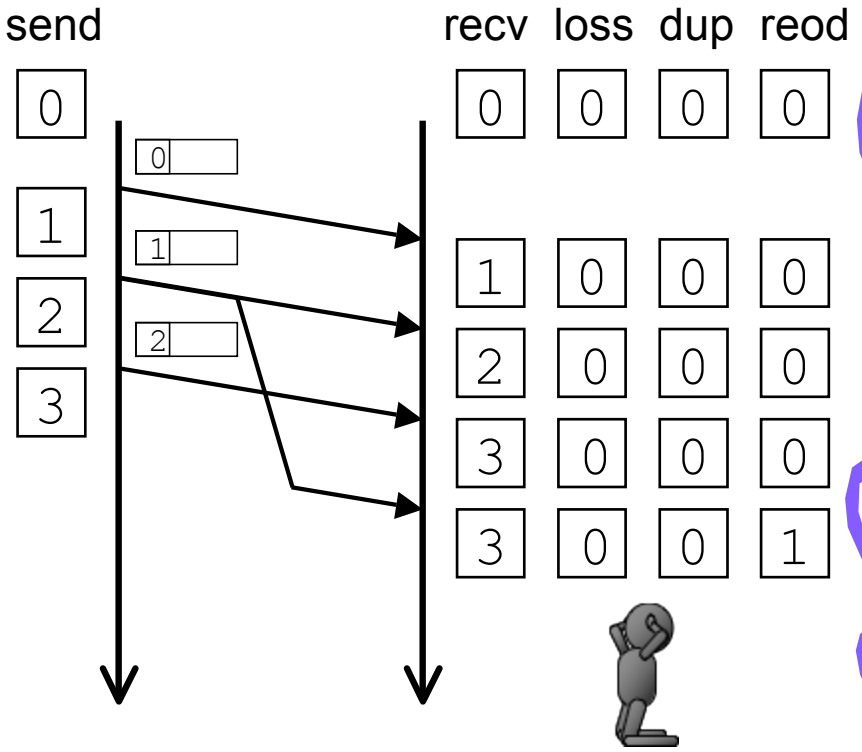
# Detecting reordering

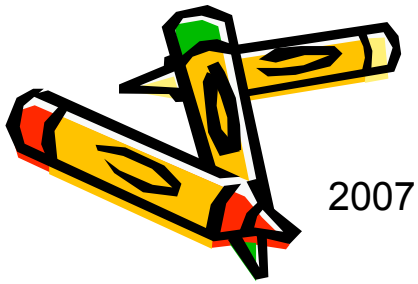


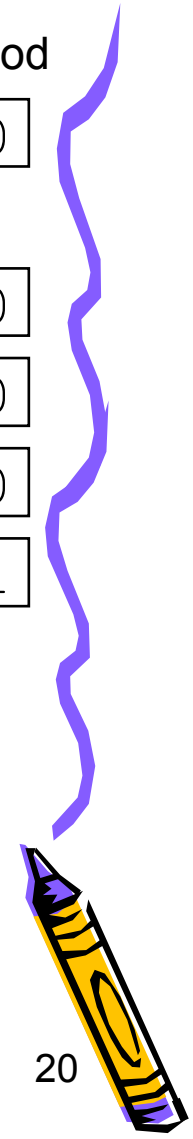
# Complex situations





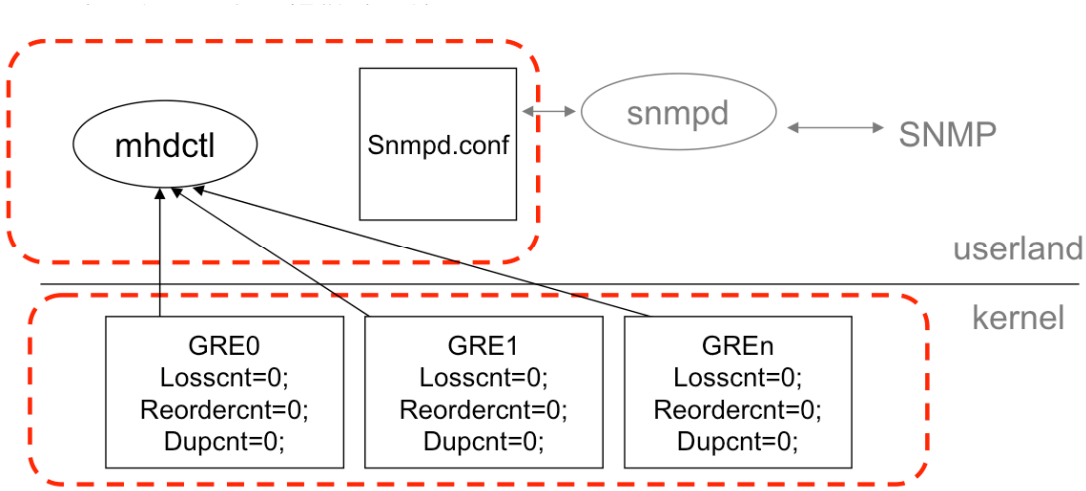



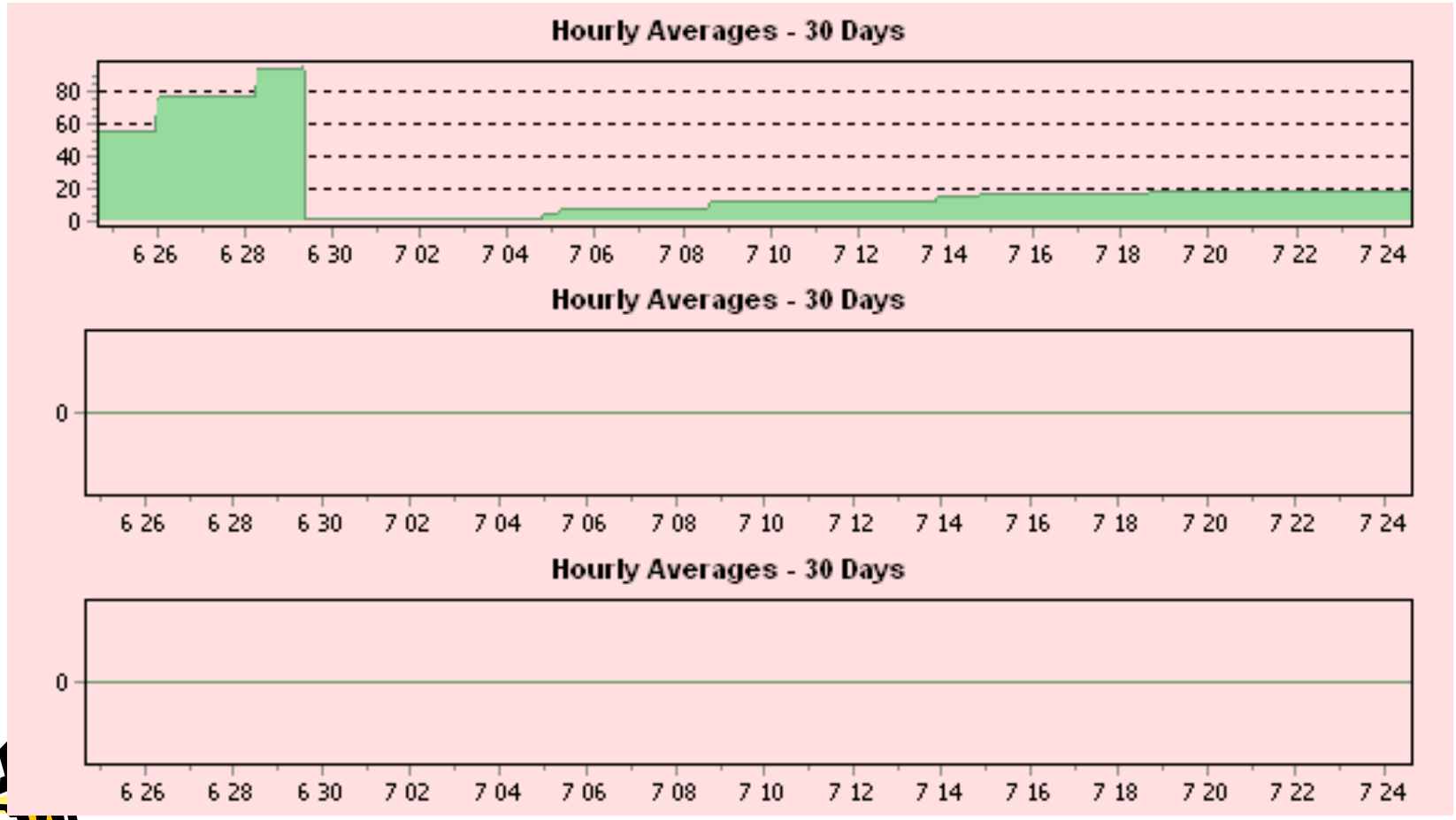


# An Implementation Example

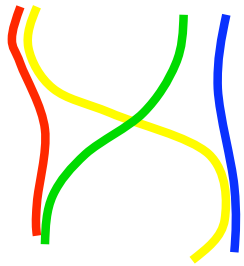
- GRE header extension (RFC2890)
  - according to the draft
  - Can get quality information via SNMP
    - using private MIBs of inetcore.com



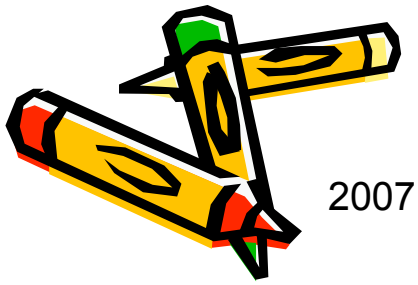
# A sample of real quality

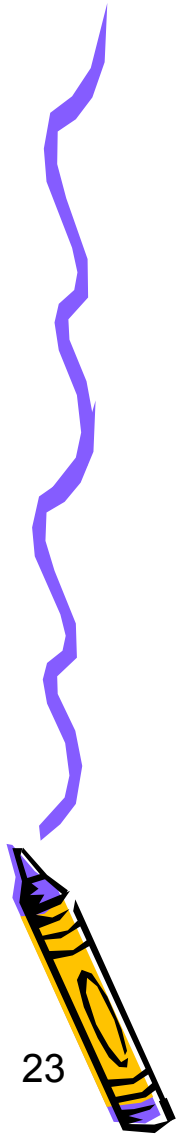


# Next steps

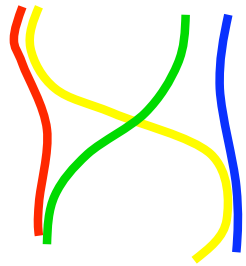


- getting comments
- attending APM BoF
- to revise the I-Ds
- to find suitable WGs if necessary
- to publish the docs as RFCs
- to write related docs, e.g. MIBs.

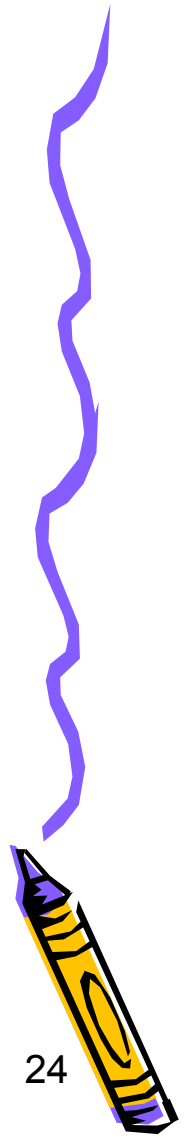


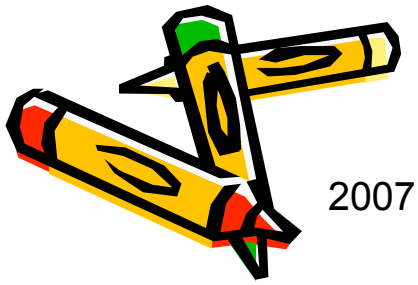


# Thank you!

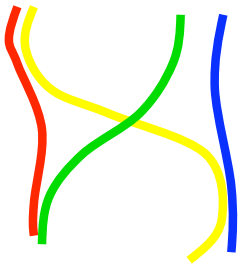


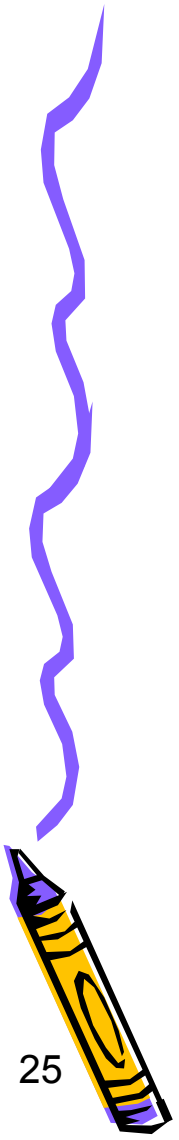
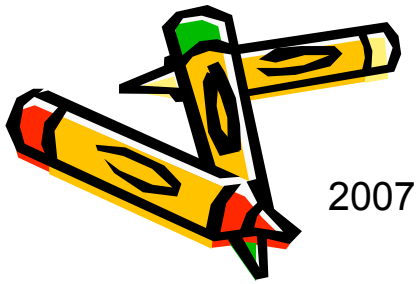
- Any comments, questions and advice





# Acknowledgements




- Useful discussions in TEReCo Research Project
- Sponsored in part by MIC Japan
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