dratf-stephan-ippm-multimetrics-00.txt

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Summary

o   Context

o   Motivations

o   Presentation of the IDs to merge

o   Method used to merge the 3 IDs

o   presentation of the resulting ID

o   Discussion

Context

o 54th IETF: draft-stephan-ippm-multicast-metrics-00.txt

    Measuring the performance of multicast services

o 55th IETF: draft-stephan-ippm-spatial-metrics-00.txt

    Decomposition & Aggregation of metrics results

o 61th IETF: draft-liang-multiparty-para-00.txt

    Multiparty Communication parameters

o 62nd IETF:

- Henk request:
  - opinion on Lei document
- JP (PCE chair) request
  - Metrics to control path quality

o -> Merge 3 IDs in a potential WG document
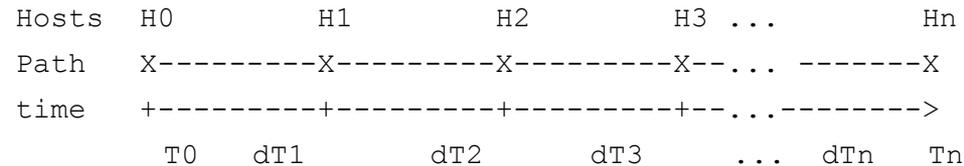
Motivation for spatial metrics

o End-to-end measure decompositions:
- clear and helpful information to identify tree branches or path segments with problems.

o PCE WG
- end-to-end metrics definitions decomposition for controlling path quality.

o PSAMP WG
- sampling techniques usable to measure one-way delay.
- common metric to couple PSAMP packet observations and IPPM end-to-end measures.

o Traffic engineering and troubleshooting
- require spatial views
  - o one-way delay consumption
  - o packet loss location identification.

Motivation for one-to-group metrics

o   Simple one-way metric cannot describe a multi-connection situation. we need metrics to present the performance of a multiparty communication.

o   One-to-group performance metrics are needed for several reasons:

- For designing and engineering multicast trees and MPLS point-to-multipoint LSP;
- For evaluating and controlling of the quality of the multicast services;
- For presenting and evaluating the <u>relative</u> QoS requirements for the multiparty communications.
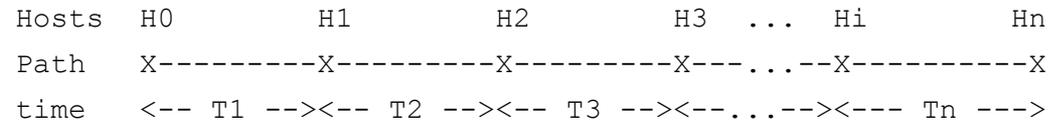
draft-stephan-ippm-spatial-metrics-00.txt

End-to-end metrics decomposition

```
Hosts  H0          H1          H2          H3 ...          Hn
Path   X---------X---------X---------X--... ------X
time   +---------+---------+---------+--...-------->
        T0    dT1       dT2       dT3      ... dTn    Tn
```

Decompose the behavior of a packet send by H0 to Hn in the
    path H1,H2...

End-to-end metrics aggregation

```
Hosts  H0          H1          H2          H3  ... Hi          Hn
Path   X---------X---------X---------X---...--X----------X
time   <-- T1 --><-- T2 --><-- T3 --><--...--><--- Tn --->
```
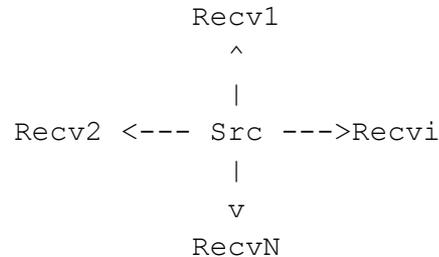
Composition of e2e metrics from H0 to H1, H1 to H2...

draft-liang-multiparty-para-00.txt

One-to-group performance key indicator

```
                Recv1
                 ^
                 |
Recv2 <--- Src --->Recvi
                 |
                 v
                RecvN
```

- Statistics describing the performance from Src to the group of receivers.

Group-to-One performance key indicator

```
                Src1
                 |
                 v
Src2 --->Dst<---Srci
                 ^
                 |
                SrcN
```
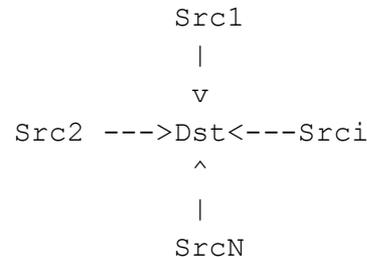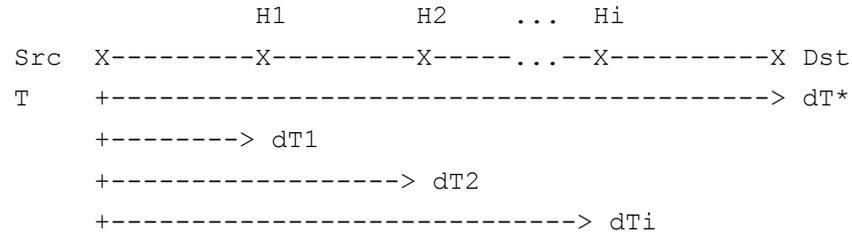
- Statistics describing the performance from the group of sources to Dst.

Method used to merge the 3 ID

o   Methodology:
- only metrics packets sends from one host
- Low level metrics only: base for PKI computation

o   Potential metrics
- Multicast One-to-many metrics
- End-to-end metrics decomposition
- End-to-end metrics aggregation
- One-to-Group performance key indicator
- Group-to-One performance key indicator

o   Selected metrics
- End-to-end metrics decomposition & PKI discussion
- One-to-Group metrics & PKI discussion
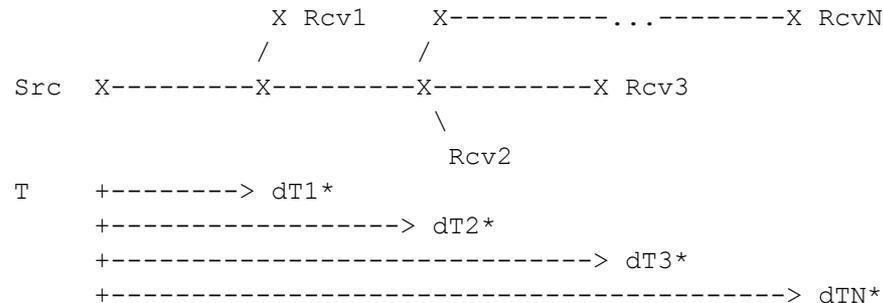
dratf-stephan-ippm-multimetrics-00.txt

Spatial decomposition of end-to-end metrics

```
                    H1          H2    ...  Hi
    Src  X---------X---------X-----...--X---------X Dst
    T    +------------------------------------> dT*
         +--------> dT1
         +----------------> dT2
         +--------------------------> dTi


    Type-P-Spatial-One-way-Delay-Stream <T*,dT1,dT2,...,dTn,dT*>
            Metrics to analyse the performance of a path
```

One-to-group metrics

```
                      X Rcv1     X----------...-------X RcvN
                     /          /
    Src  X---------X---------X---------X Rcv3
                                \
                                 Rcv2
    T    +--------> dT1*
         +----------------> dT2*
         +--------------------------> dT3*
         +--------------------------------------> dTN*


    Type-P-one-to-group-One-way-Delay-Stream { dT1*, dT2*,...,dTn* }
            Intermediary metrics to compute one-to-group PKI
```

*RFC2679 Singleton Type-P-One-way-Delay

Discussion