Active and Passive Metrics and Methods
(and everything in-between, or Hybrid)

draft-ietf-ippm-active-passive-03
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Definitions

- First, define Performance Metric and Method of Measurement.
- Next, define Active and Passive Methods
- Then, recognize that IPPM's Active Metrics deliberately incorporate some methods in the Metric Definition – therefore, Active Metrics.
- Hybrid Methods are a combination of Active and Passive attributes
- Multiple categories of Hybrid, Type I, Type II, and the already-named Spatial Metrics, RFC 5644

Reviews, Comments, Support

- Brian - add more complete defs. for Hybrid
- Joachim and Tal - Many refinements to definitions from examining examples.
- Greg, Joachim, and Mike – examined circumstances under which a Hybrid Method could be expected to produce results comparable to Passive (end of 3.8)
- Joachim – clarifications for 2D Figure in section 4.1
- Tal – suggested examination of Y.1731 methods (4.4)
- Nalini and Tiziano – support and additional comments.

Status

- Three updates since last IPPM session
- Version 01 addressed comments at IETF-93
- WGLC generated solid reviews and support
  - Version 02 addressed comments up to the draft deadline, Oct 19th
- One line of examination continued through the end of WGLC, Oct 21st (and beyond)
  - Agreed wording incorporated in Version 03

BACKUP

Revised -00 classification: 2 Dimensions

1. The degree to which the stream of interest effects overall network conditions experienced by that stream and other streams. This is a key dimension for Active measurement error analysis.

2. The degree to which stream characteristics are known a' priori. There are methodological advantages of knowing the source stream characteristics, and having complete control of the stream characteristics. …number of packets … when sent … what kind … This is a key dimension for Passive measurement error analysis.

Section 4.1 ends with a paragraph of examples for error associated with each type of method.

draft-zheng-ippm-framework-passive-03

* cites metrics of throughput, latency, and errors as active, (sec 4.1)
>>> These metrics can be measured using many methods
* uses the phrase "existing traffic" when describing passive measurements, and "existing on the network" when referring to passive metrics (sec 4.2)
>>> Consistent with IPPM Wg draft-ietf-ippm-active-passive definitions.
* indicates that definition of Hybrid is a combination of active and passive
>>> also consistent with draft-ietf-ippm-active-passive definitions
(sec 6, Methodology for "IP Passive Performance Measurements" from title)
 BUT cites inserting Y.1731 OAM along with "altering the packet"
>>> Neither of these are "existing traffic"
>>> Do detailed methods belong in the framework?

We* didn't start the fire…

- IPPM chartered since 1997, working as part of BMWG before that… RTFM and IPFIX long-timers
- First PAM conference in 2000
- Many terms are in common use in IETF, but *some* lack formal definitions
- The notions of active and passive are well-established, so let's document them.
- Further, let's help classify new methods according to useful criteria

* "we" is likely everyone sitting in the session, except Matt Mathis, Bill Cerveny, and Nevil Brownlee. Al here since '98.
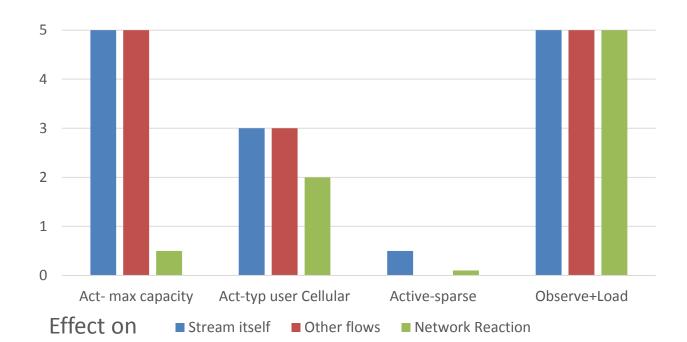
Words and Meaning

- Words can only have strong meaning within a Context (part of the definition)
- We need definitions in Standards Work:
  - Communicate Effectively
  - Avoid Ambiguity
- Start with Fundamental terms and build from there

On to classification: 2 Dimensions

```
Affect of the measurement stream on network conditions
    ^ Max
    |* Active using max capacity stream
    |
    |
    |
    |
    |* Active using stream with load of typical user
    |
    |
    |
    |* Active using extremely sparse, randomized stream
    |                                    * PDM                    Passive
    | Min                                                              *
    +-----------------------------------------------------------------|
    |                                                                  |
    Stream                                                          None
    Characteristics
    completely
    known
```

More Dimensions of Categorization

- Decompose "effect on network conditions" to
  - Effect on the measured stream (itself)
  - Effect on unmeasured flows that share the path
  - Effect on network state or adaptation (features in net under test have influence)

Effect on   ■ Stream itself   ■ Other flows   ■ Network Reaction

Two Classifications discussed

- PDM
  - Method may have small affect on measured stream
  - Measured stream has unknown characteristics until observed/processed to add PDM header
- Coloring
  - Method may have small affect on measured stream (possibly less than PDM)
  - Measured stream has unknown characteristics until observed/processed to color the header