Advancing Metrics on the Standards Track

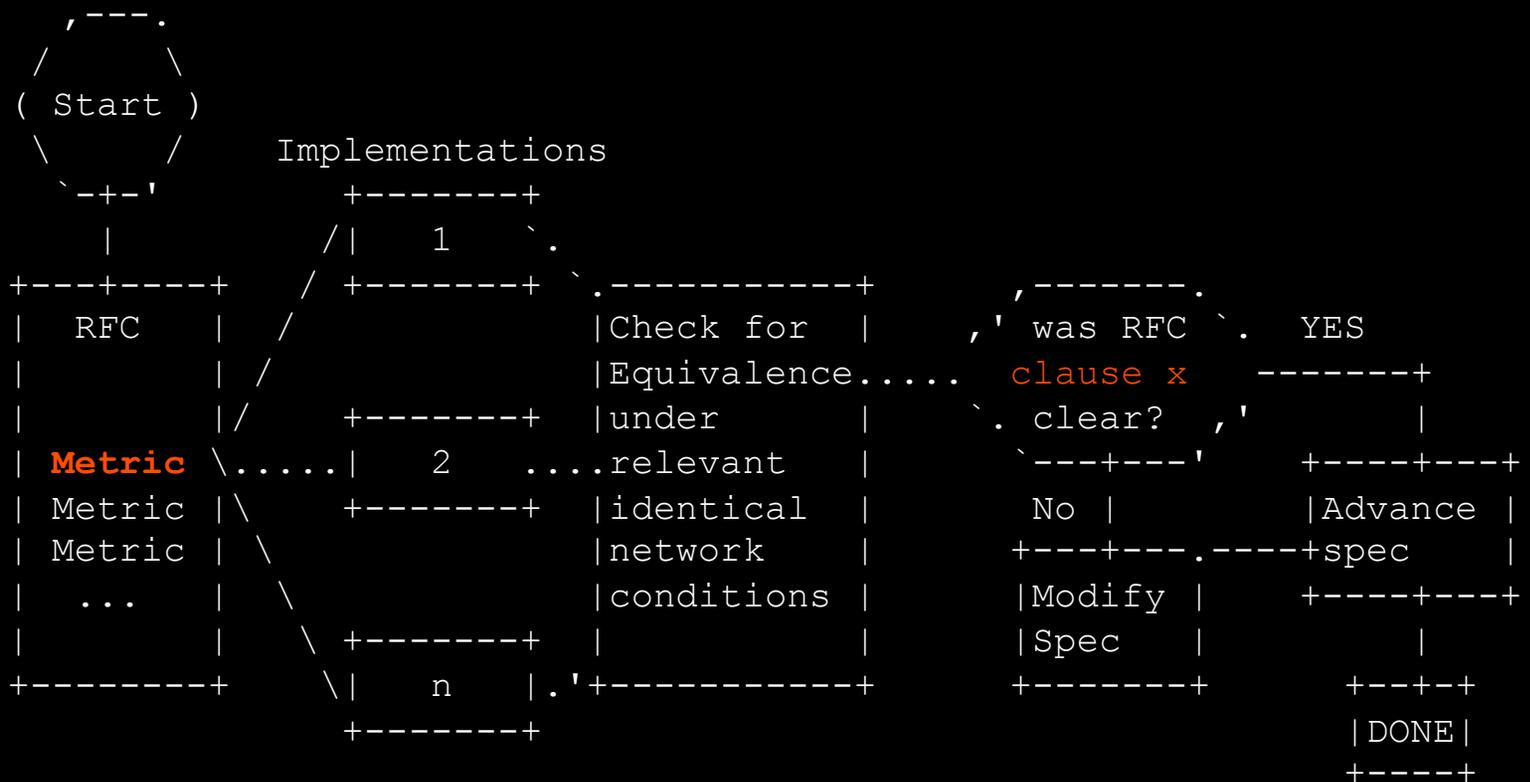## Problems and Possible Solutions

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Outline

- Issues with comparing implementations

- Definition-centric metric advancement

- Examples of the Definition-centric approach: brief test methods in the lab

Comparing Implementations as the focus of testing and analysis - Issues

- **Implementation Variability**
- **Deciding Statistical Methods**
- **Assumption of non-interoperable implmnt.**
- **Determining whether Lab test can serve**
- **Achieving "Identical" Network Conditions**
- **IETF is not in the Certification Business**

Definition-Centric Process

```
   ,---.
  /     \
 ( Start )            Implementations
  \     /          +-------+
   `-+-'           /|   1   `.
    |            / +-------+ `.-----------+         ,-------.
+---+----+     / +-------+   |Check for   |      ,' was RFC `.  YES
|  RFC   |  /                |Equivalence.....  clause x    -------+
|        | /                 |under       |    `. clear?  ,'       |
| Metric \.....|   2   ....relevant   |        `---+---'    +---+---+
| Metric |\    +-------+  |identical   |         No |        |Advance |
| Metric | \              |network     |      +---+---.----+spec    |
|  ...   |  \             |conditions  |      |Modify |    +---+---+
|        |   \ +-------+  |            |      |Spec   |        |
+--------+    \|   n   |.'+-----------+      +-------+      +--+-+
              +-------+                                    |DONE|
                                                          +----+
```

4

What's Different? (the sub-points)

- **Start with an RFC**
  - Focus on a specific clause
- **Run test(s) with Implementations**
  - Test plan is customized to a specific clause
- **Evaluate Measurements & Compare**
  - Clear expected measured results
  - Obvious place to take action if text is found to be ambiguous

Example 1 – Loss Threshold

- See Section 3.5 of [RFC2679], 3rd bullet point and also Section 3.8.2 of [RFC2679].

- 1. configure a path with 1 sec one-way constant delay

- 2. measure one-way delay with 2 or more implementations, using identical waiting time thresholds for loss set at 2 seconds

- 3. configure the path with 3 sec one-way delay

- 4. repeat measurements

- 5. observe that the increase measured in step 4 caused all packets to be declared lost, and that all packets that arrive successfully in step 2 are assigned a valid one-way delay.

Other Examples

- **One-way Delay, First-bit to Last bit, RFC 2679**
  - See Section 3.7.2 of [RFC2679], and Section 10.2 of [RFC2330].

- **One-way Delay, RFC 2679**
  - This test is intended to evaluate measurements in sections 3 and 4 of [RFC2679].

- **Error Calibration, RFC 2679**
  - This is a simple check to determine if an implementation reports the error calibration as required in Section 4.8 of [RFC2679].

We could ask about opinion/consensus

- if folks have read the draft or understood the talk…

- Does the Definition-Centric Approach appeal to the IPPM WG?

- Any other input to the Editorial Team?