CATS Metrics Definition

draft-ietf-cats-metric-definition-04
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Updates Summary Since IETF 123

- Overall Updates
  - Document status - change to Standard Track, structure and editorial nits, etc.
- Updates in Section 3: Design Principles
  - Include “service type” in level 1 metrics
- Updates in Section 4
  - Change name to “CATS Metrics Framework and Specification”
  - Define normalization and aggregation functions in section 4.2
  - Add statement on the meaning of the scores in section 4.3
- Updates in Section 5

  Minor changes in Table 1
- Appendix A
  - Level 0 metrics examples (this document won’t standardize L0 metrics) moved here from previous section 4.2

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Normalization and Aggregation functions

- Fundamental functions to transform raw metrics and derived values into forms suitable for decision-making.
- This document provides definitions and examples for these functions
- **Aggregation Functions:**
  - **Meaning** - Aggregation functions combine multiple metric values into a single representative value.
  - **Examples** - Mean average, min/max, weighted average, etc.

```
+------------+     +------------------+
| Metric 1.1 |---->|                  |
+------------+     |   Aggregation    |     +----------+
     ...           |    Function      |---->| Metric 2 |
+------------+     |                  |     +----------+
| Metric 1.n |---->|                  |
+------------+     +------------------+

Input: Multiple values                  Output: Single value
```

Figure 3: Aggregation function

Normalization and Aggregation functions - Cont’d

- **Normalization Functions:**
  - **Meaning** - Normalization functions convert metric values with or without units into unitless scores, enabling comparison across different types of metrics and systems.
  - **Examples** - Sigmoid function, min-max scaling, z-score normalization, etc.

```
+----------+     +------------------------+     +----------+
| Metric 1 |---->| Normalization Function |---->| Metric 2 |
+----------+     +------------------------+     +----------+

Input:  Value with or without units        Output: Unitless value

                Figure 4: Normalization function
```

- **Score meanings:**
  - Hard to compare unitless scores from heterogeneous CATS systems
  - Implementors of CATS metrics SHOULD provide clear and precise definitions of their metrics
  - Operators SHOULD exercise caution when making potentially impactful decisions based on unitless metrics whose definitions are unclear or underspecified.

Topics for Discussion and Feedback

- Due to the nature of this document (standardization of CATS metrics), we are proposing to change it from *informational* to *standards track*. Do we agree?
- Based on previous feedback, we are working under the assumption that this document should not standardize L0 metrics but it should standardize L1 and L2 metrics. Do we agree?

Next Steps

- Facilitate discussions over these issues in the mailing list
- Ask for WGLC before IETF 125 and submit to IESG for publication on Mar 2026
- Please feel free to comment and contribute!

Milestones

Date	Milestone	Associated documents
Mar 2026	Submit document describing CATS metrics to the IESG for publication as Informational	draft-ietf-cats-metric-definition