

Problem Statement and Requirements of end-to-end CATS

draft-yuan-cats-end-to-end-problem-requirement-01

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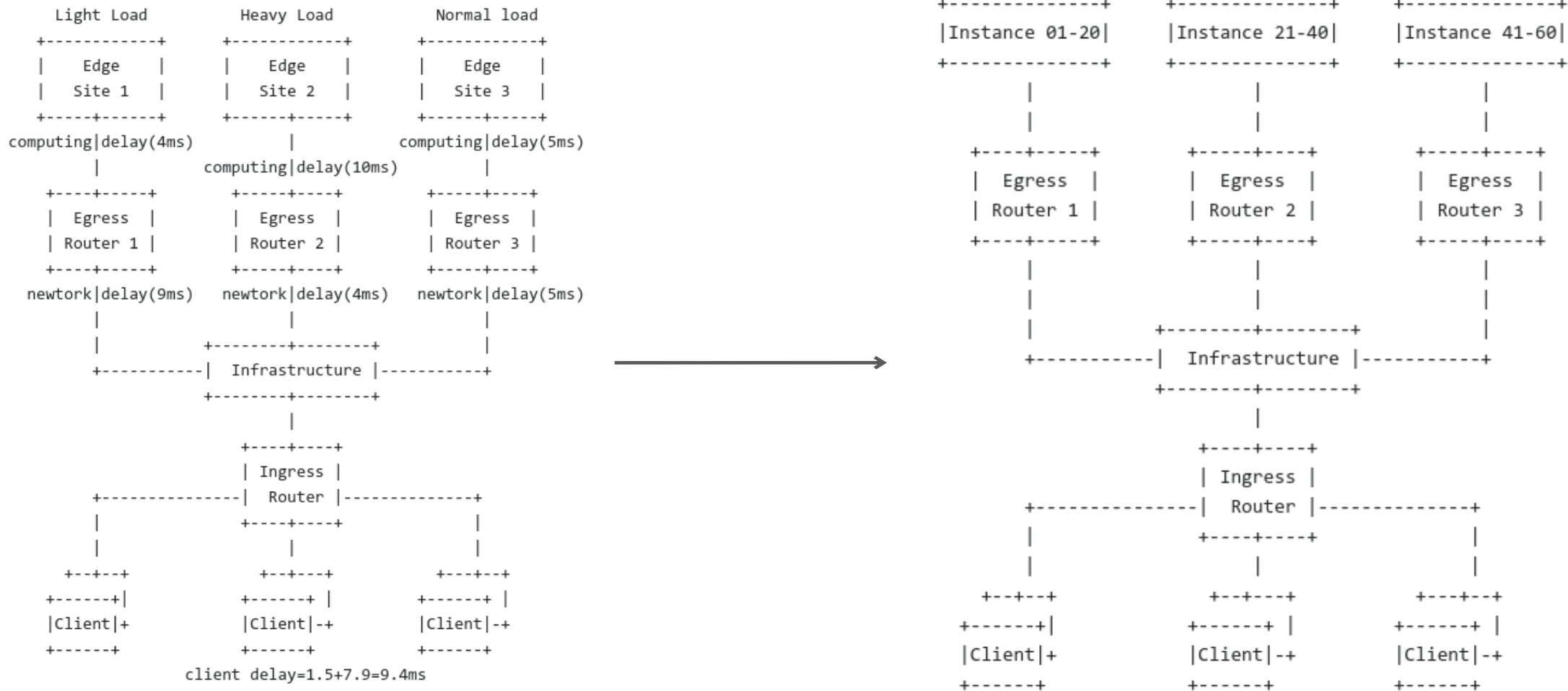
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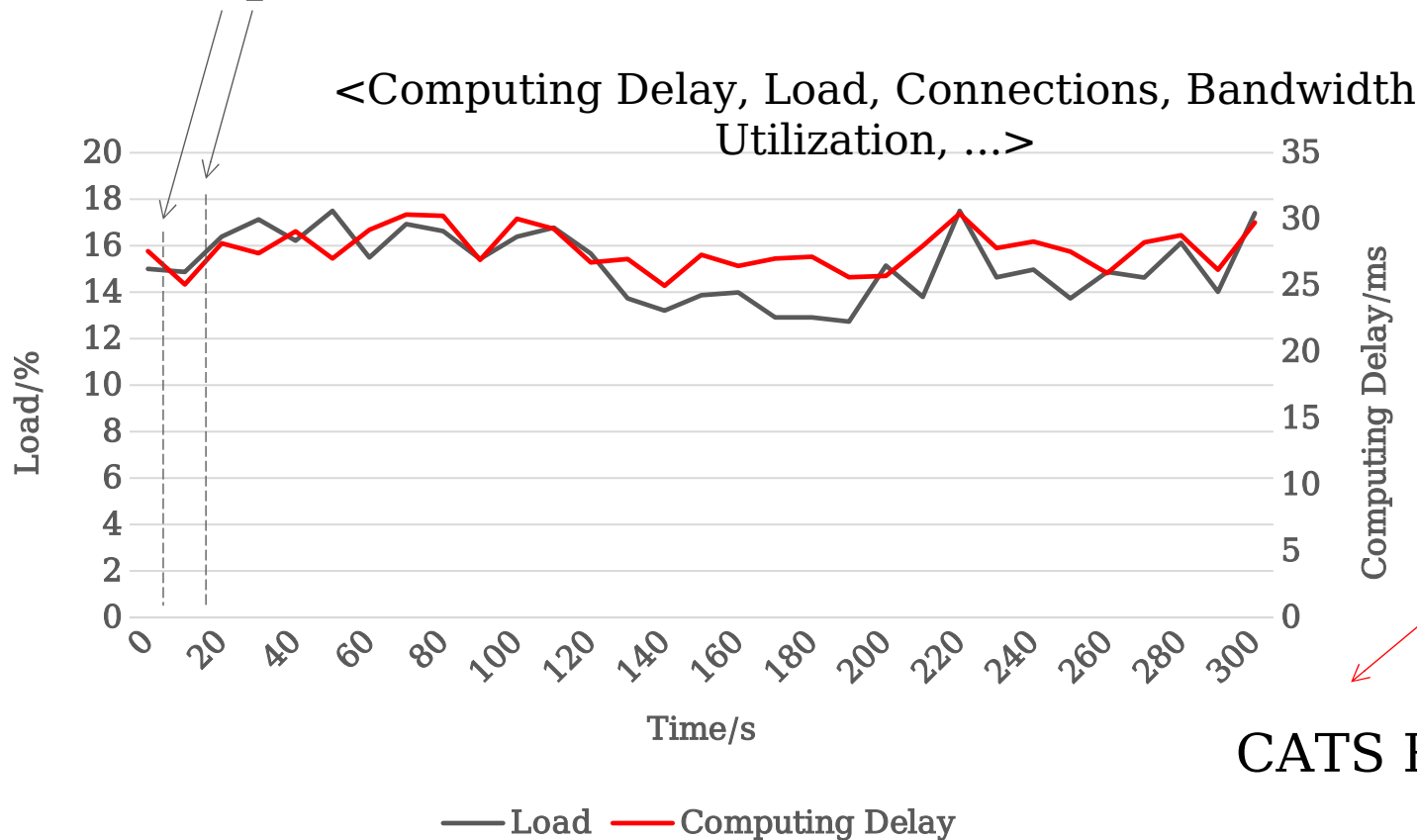
Usecase of distributed ubiquitous instances



Computing-Aware Traffic Steering (CATS)
 Problem Statement, Use Cases, and
 Requirements
[draft-ietf-cats-usecases-requirements-01](https://datatracker.ietf.org/draft-ietf-cats-usecases-requirements-01)

large amount of
 ubiquitous service
 instances

Sample and Distribute

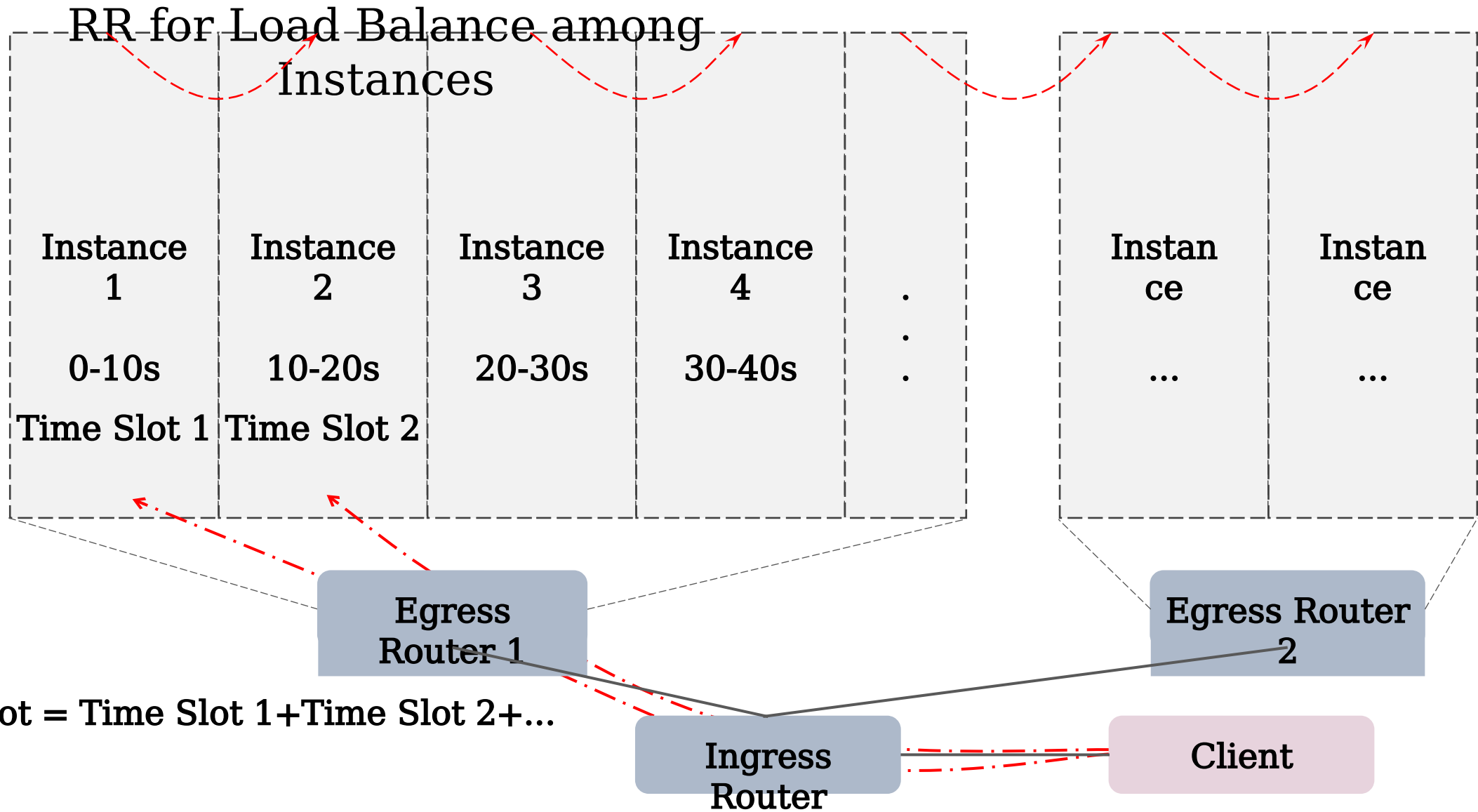


Instance s	Metrics		
Instance 1	Metric ₁ (t ₁)	Metric ₂ (t ₁)	...
	Metric ₁ (t ₂)	Metric ₂ (t ₂)	...
	Metric ₁ (t ₃)	Metric ₂ (t ₃)	...

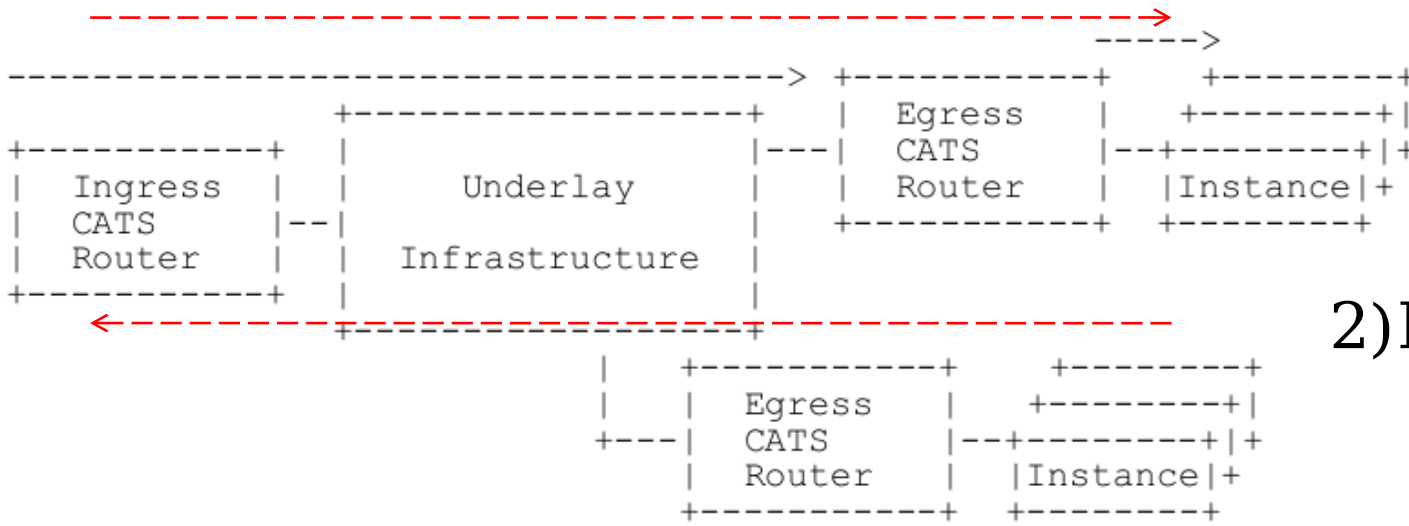
Instance 2	Metric ₁ (t ₁)	Metric ₂ (t ₁)	...
	Metric ₁ (t ₂)	Metric ₂ (t ₂)	...
	Metric ₁ (t ₃)	Metric ₂ (t ₃)	...

CATS Routers₂ × Average Instances per CATS Router

Problem 1. **Large amount of dynamic entries** are required to be recorded and maintained in the control plane for CATS routers.

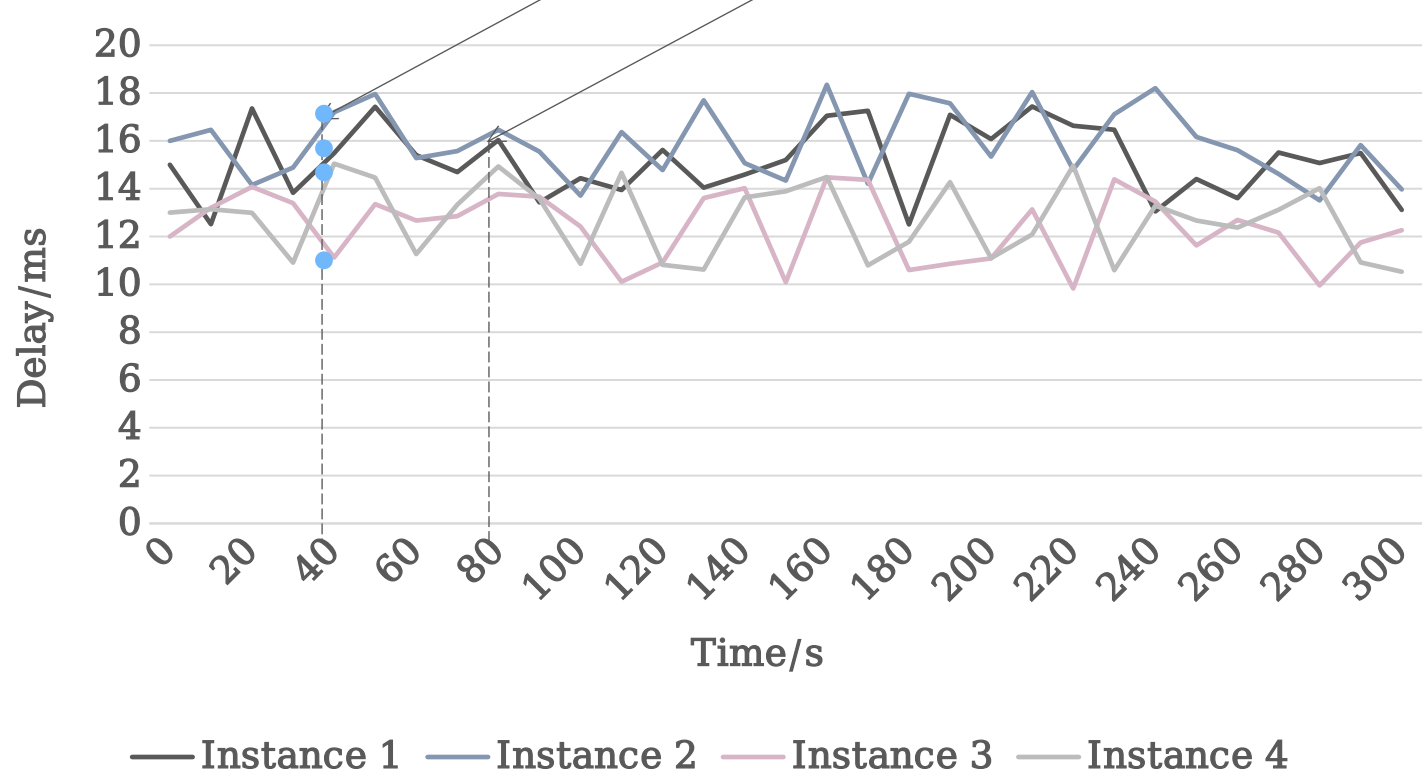


Problem 2. **Quick updates** for optimal service instance selection.



2) Distribute
1) Aggregate

Sample and Distribute



- Instance 1: Computing Delay
- Instance 2: Computing Delay
- Instance 3: Computing Delay
- Instance 4: Computing Delay
-



Best/Average/... Performance
as the representative of a
CATS Router
CATS Router 1:
Best/Average/... Computing
Delay

Requirements for CATS Network

R8: MUST provide mechanisms for metric collection.

R9: MUST provide mechanisms to distribute the metrics.

R10: MUST realize means for **rate control** for distributing of metrics.

	Hierarchical	Non-hierarchical
Entries in the control plane (Service RIB)	Local instances and global PEs with paths	All instances with paths
Entries in the forwarding plane (Service FIB)	Single 'best' entry or multiple equal entries	Single 'best' entry or multiple equal entries
Frequency of updates of Service FIB	When a relatively stable choice among PEs updates or local updates happen	When a choice among all possible instances updates

Values and advantages □

- **Reduce** the entries collected, stored and maintained in the control plane.
- **Decline** the frequency of entry updates and **damp** service route recalculation.



R: SHOULD provide mechanisms to aggregate service metrics for distribution.

Next Steps

- Refine the drafts upon comments and suggestions.
- More comments, suggestions and contributions would be welcome.