Design space of computing metric distribution

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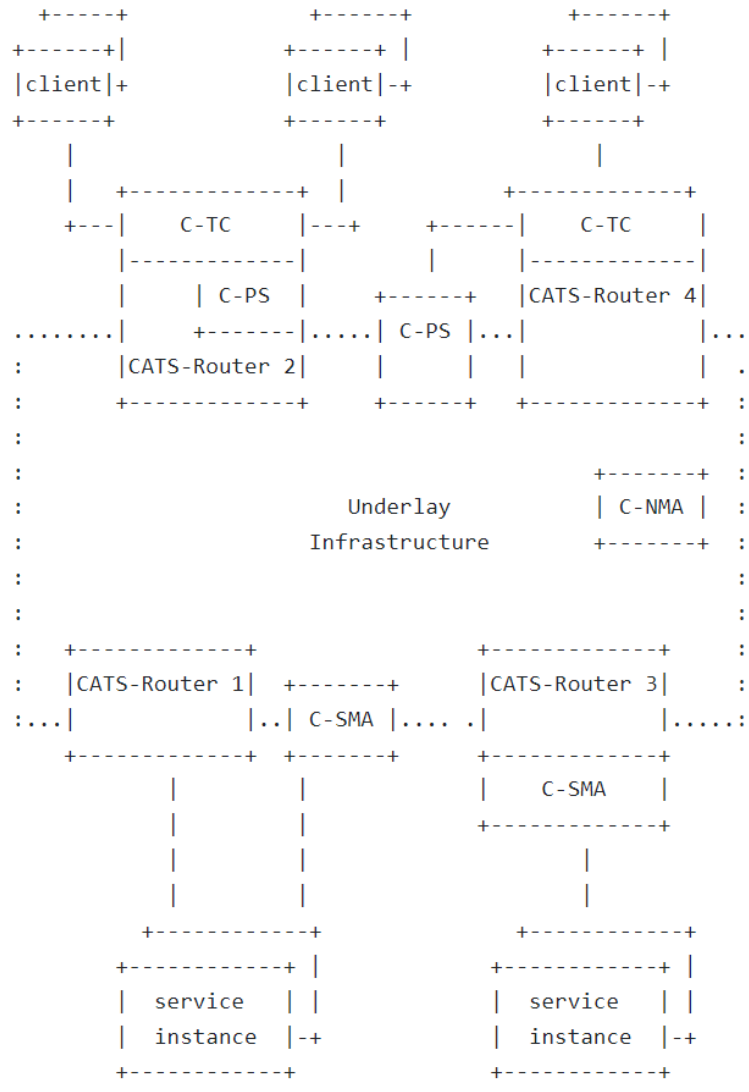
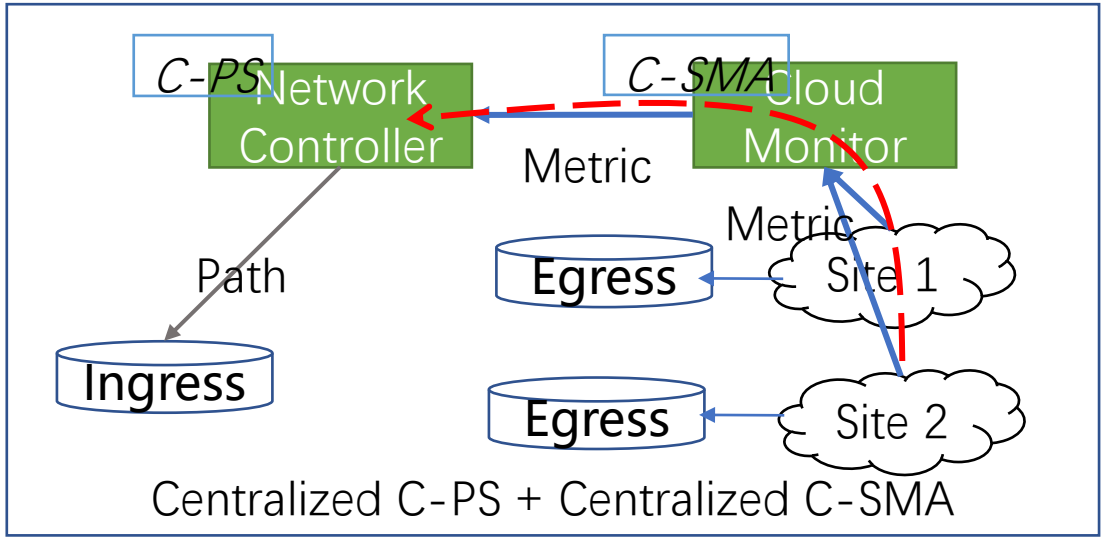
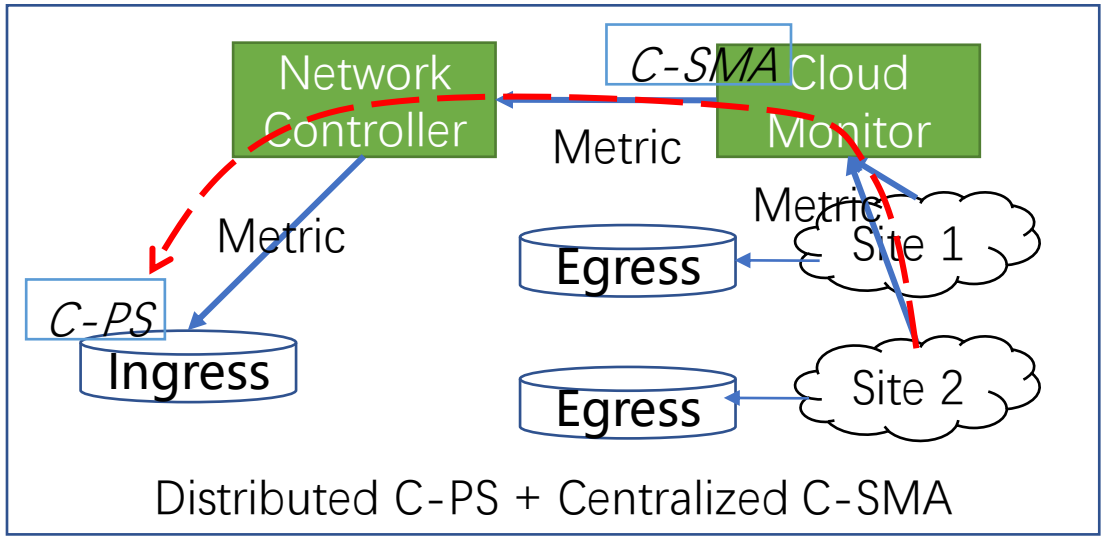
Recap of the CATS framework

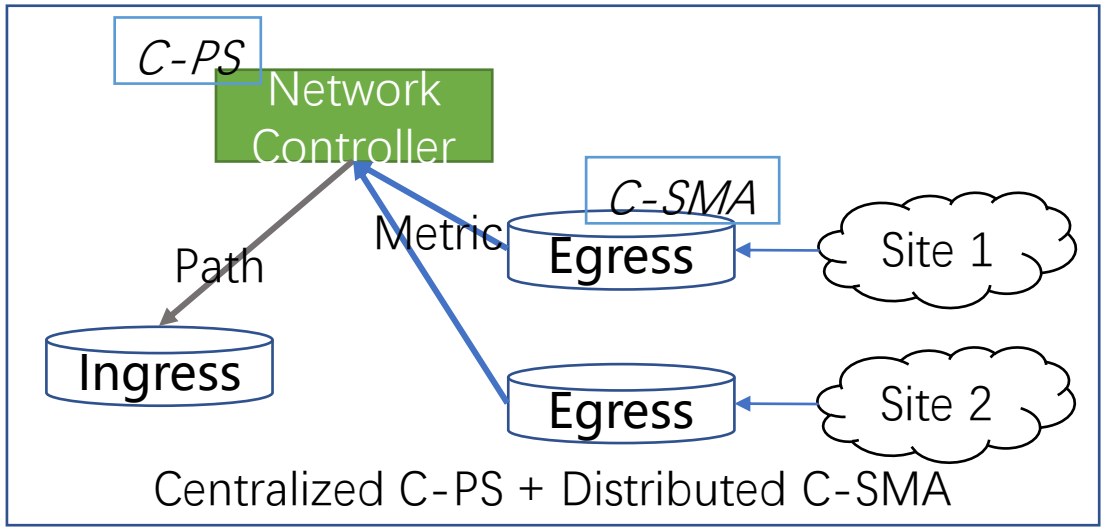
- Core functional components:
  - C-SMA: CATS Service Metric Agent
  - C-PS: CATS Path Selector
- SMA **collect** the computing metric and **distribute** it to PS to make optimal path decision.
- Design choice regarding:
  - How to collect
  - How to distribute

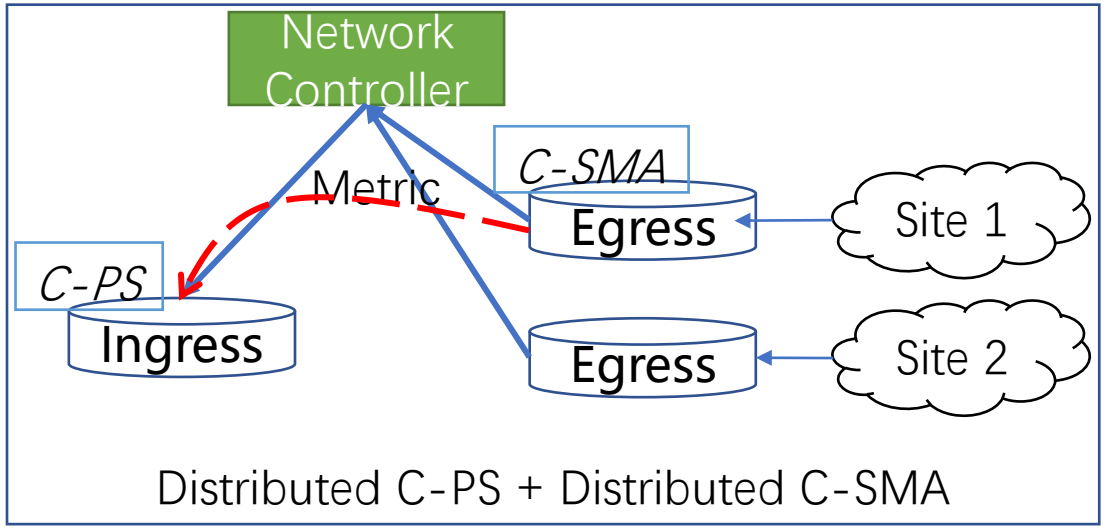


Previously in this draft









What's new: Metric distribution overhead

- Regardless of distributed/centralized. Two sides of the metric distribution: Producer(C-SMA) + Consumer(C-PS)

Metric Distribution Overhead =

No of Producer x No of Consumer x Distribution Frequency x Metric size

Reduce the scope of metric distribution

- Restrict the scope of metric distribution to ingresses that actually needs the metric
- Notification domain. draft-fu-idr-computing-info-notification-domain-01 - Computing resource notification domain in network (ietf.org)

Option 1: Pub/sub relationship

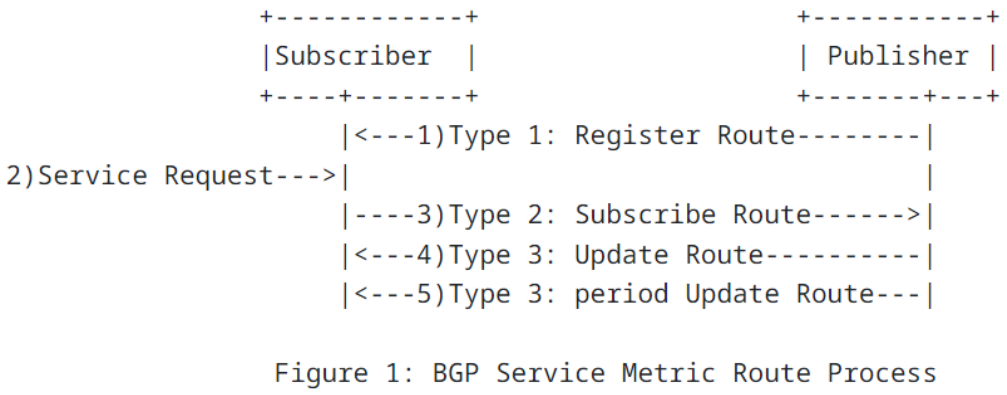


Figure 1: BGP Service Metric Route Process

draft-lin-idr-distribute-service-metric-00 - Distribute Service Metric By BGP (ietf.org)

Option 2: Hierachical. Organize the sites into different latency ring for each sites. If the distance is too far away(highly unlikely to be scheduled), distribution of detail metric can be omitted.

draft-yi-cats-hierarchical-metric-distribution-00 - Hierarchical methods of computing metrics distribution (ietf.org)

Reduce Distribution Frequency: Push versus Pull

- The optimization depends on the Push versus Pull.
- Both optimization is a trade off between the metric freshness and distribution overhead.

Distribution Frequency	Push	Pull
Without optimization	When there is new metric	When there is new client join
Optimization	Threshold. Only push meaningful update	Cache. Only fetch when cache expired

Next

- Intend to inform the discussion around the metric distribution protocol design
- Comments, suggestion, contribution is more than welcomed