

# Design space of computing metric distribution

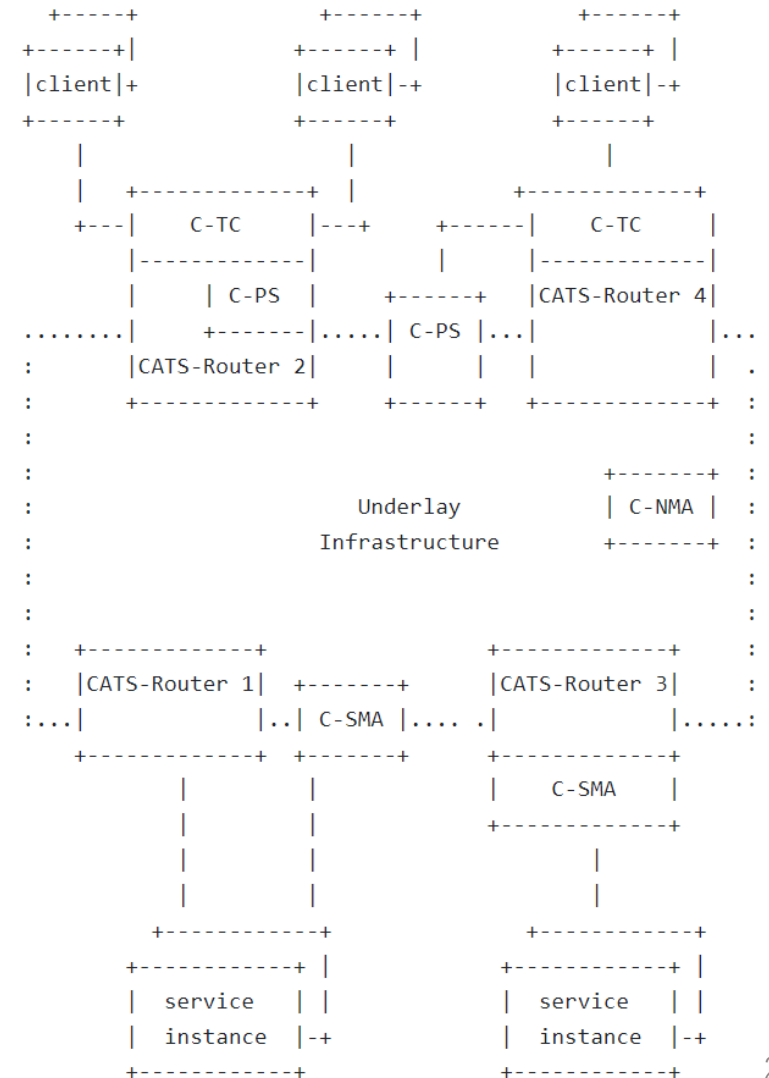
**Hang Shi**

Huawei

IETF 116

# 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



# 2x2 matrix of the design space

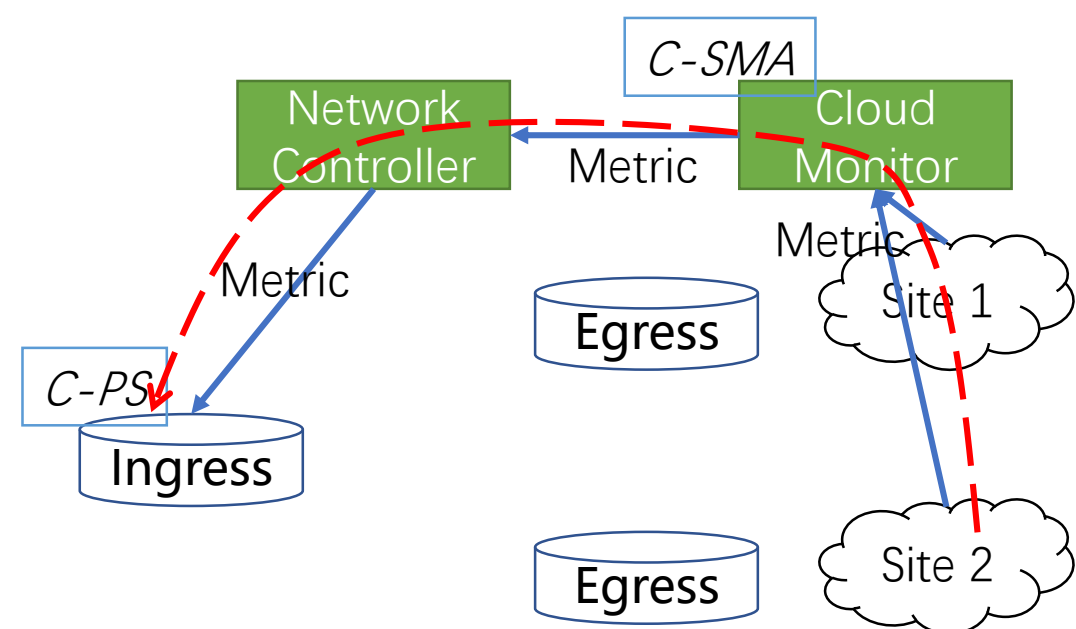
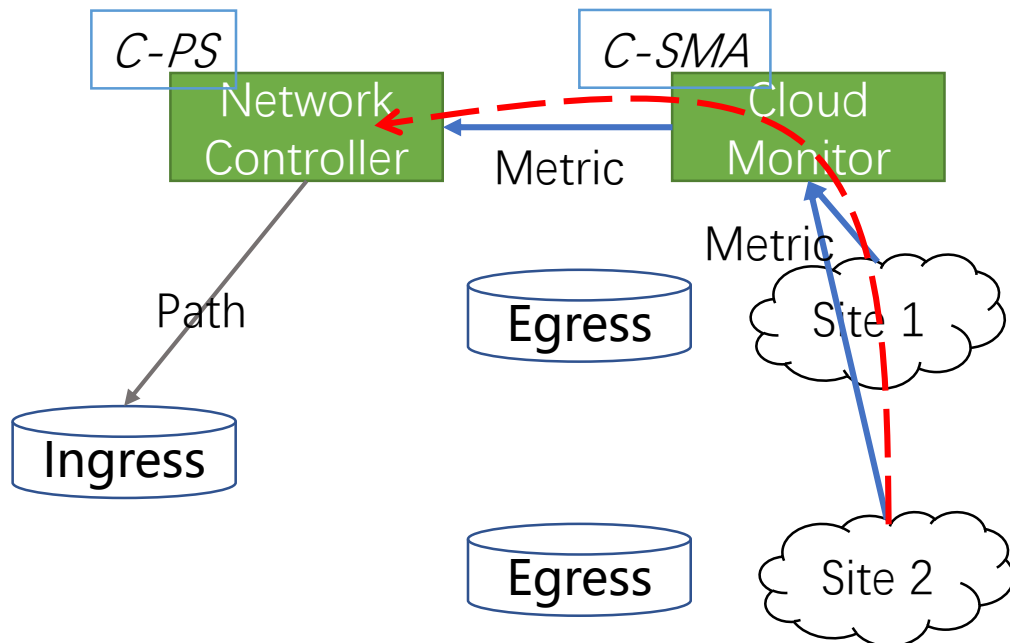
- Two ways of collecting computing metric
  - Centralized: by a cloud monitor
  - Distributed: by CATS egress router
- Two ways of distributing computing metric
  - Centralized: by network controller: calculate the path based on metric and distribute the result to ingress router
  - Distributed: each ingress router receive the computing metric and calculate the path by themselves.

Metric distribution	Centralized C-SMA	Distributed C-SMA
Centralized C-PS	Cloud monitor -> Controller	Egress -> Controller
Distributed C-PS	Cloud monitor -> Controller -> Ingress	Egress -> Controller -> Ingress

# Example of centralized C-SMA +

- Option 1: Centralized C-PS
- Network controller calculates the path
- No protocol extension needed

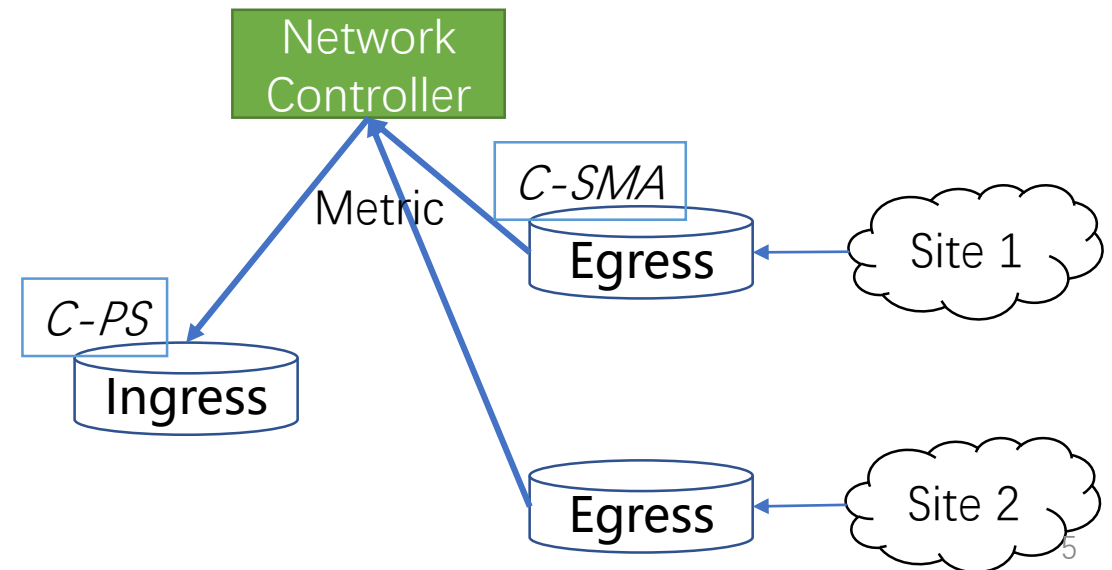
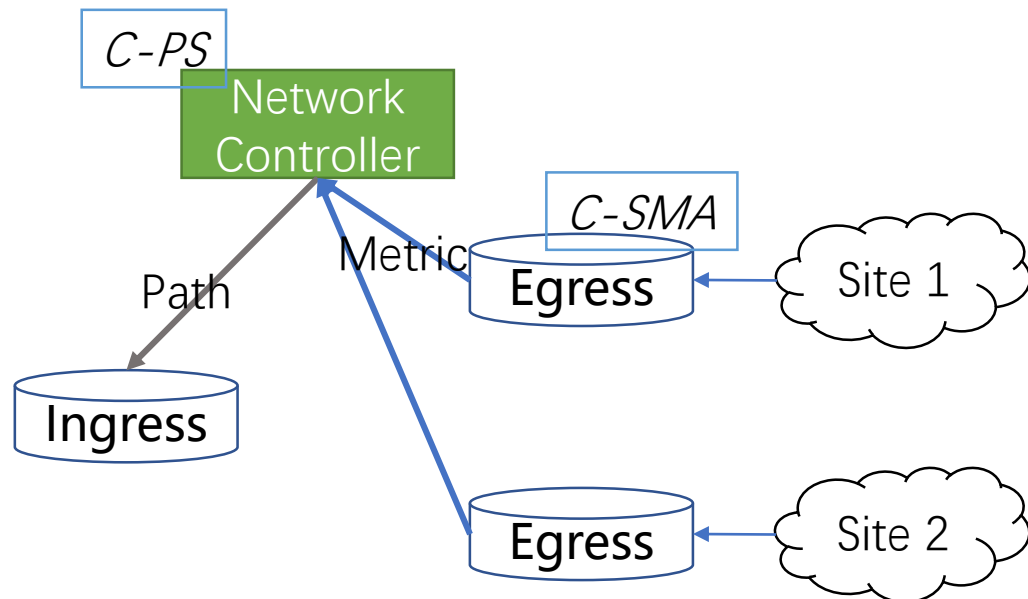
- Option 2: Distributed C-PS
- Network controller only pass the metric to Ingress (may involve pre-process)
- Southbound protocol extension to distribute the metric



# Example of distributed C-SMA +

- Option 3: Centralized C-PS
- Network controller calculate the path
- Southbound protocol extension to collect the metric. E.g. BGP-LS

- Option 4: Distributed C-PS
- Network controller only reflect the Metric (may involve pre-processing)
- Southbound protocol extension to distribute the metric. E.g. BGP, BGP-LS, BGP flowspec



# Initial Comparison

	Centralized C-SMA + Centralized C-PS	Centralized C-SMA + Distributed C-PS	Distributed C-SMA + Centralized C-PS	Distributed C-SMA + Distributed C-PS
Protocol extension choice	None	BGP flowspec	BGP-LS	BGP/BGP-LS, BGP flowspec
CATS router performance requirement	Low	High	Low	High
Network controller performance requirement	High	Low	High	Low

- Comments and Questions?
- Co-author/collaborator?