Use-cases for Collaborative LMAP

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Overview of the draft

- Movitations from China
- What is Collaborative LMAP?
- Why is it needed?
- Initial discussion over how it can be done

Motivations from China

- China's networks are complex
  - 31 provinces, 300 regions come to hierarchical networks deployments.
  - 3 ISP giants (CMCC, CTCC, CUCC) all manage nationwide networks.
- Regulator/ISP must know the network statuses of 3 ISP Giants in each region of a province, then province, and finally the whole country.
- Some 3rd party companies, e.g., Chinacache, Chinanetcenter are also providing nationwide network information reports.
- MIIT, as the official organization, has been issuing the report of broadband speed state every quarter for 2 years.

It would be prohibitive for MIIT to deploy its own dedicated probes (900+).

Collaborative LMAP

- Collaborative LMAP
  - narrow view: refers to the scenairo where multiple autonomous measurement systems collaborate together to perform large scale performance measurement.
  - broad view: LMAP practice that involves at least communication/coordination between multiple controllers/collectors
- Not currently chartered for LMAP WG
  - single controller assumption

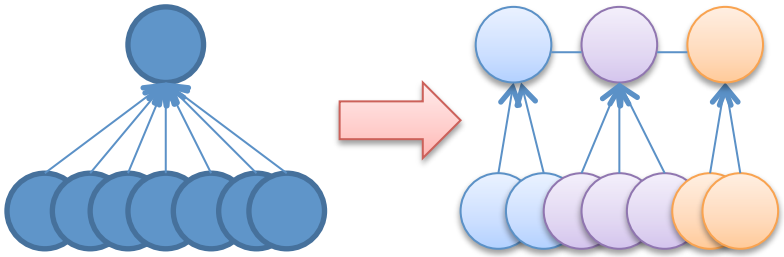
Why is Collaborative LMAP is needed

Usecases for single **ISP**

Motivated to address **scalability** of controller, **hetegeneous MAs** issue within a large ISP, or multiple sub-domains for a large ISP.

Usecases for **Regulator**

Motivated to address **capex** issue in network monitoring for dedicated LMAP system by reusing existing systems from ISPs/3rd-party entities.



Motivated to address capex issue in **QoE monitoring** for dedicated LMAP system by reusing LMAP systems from multiple ISPs/3rd-party entities.

Usecases for **ICP**

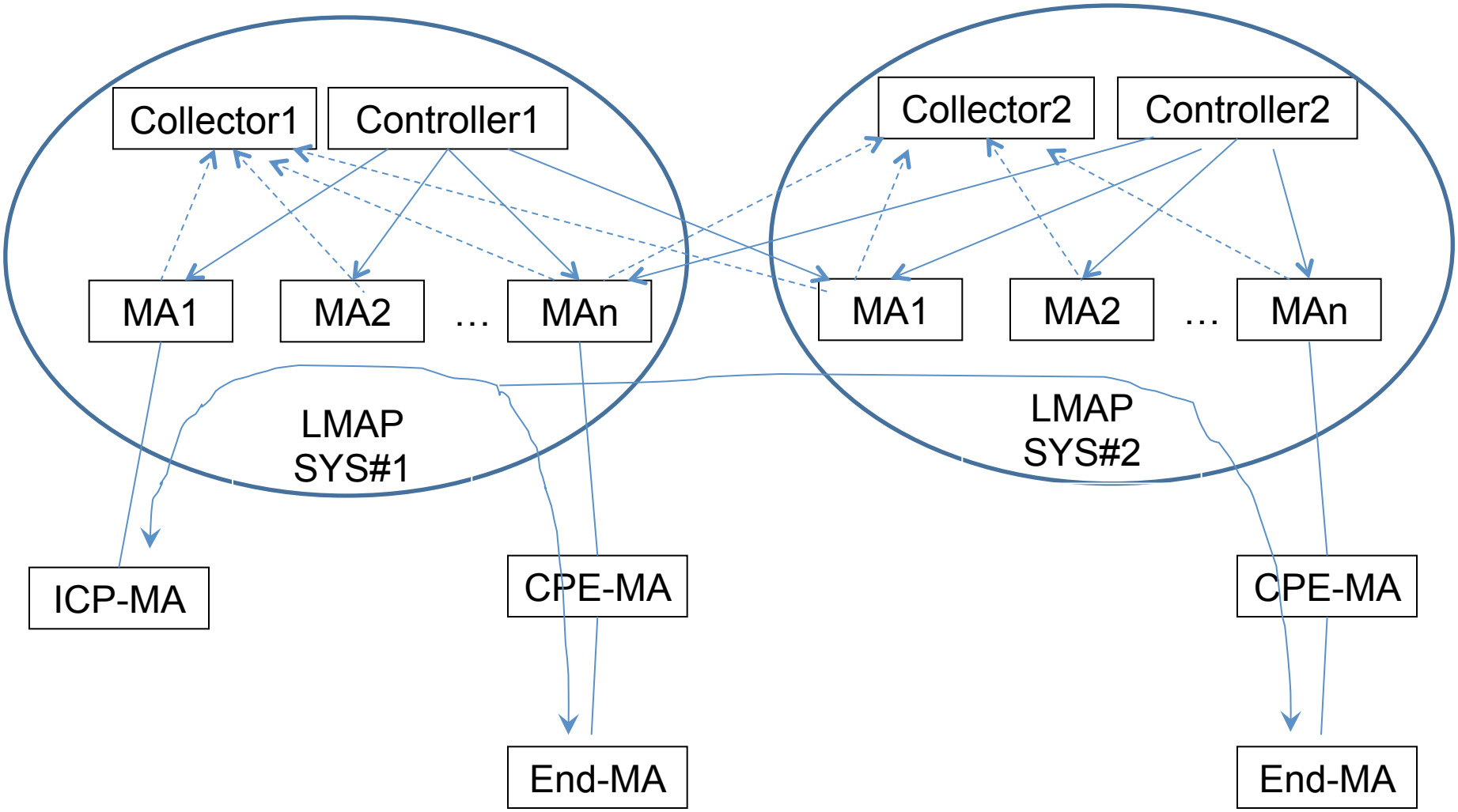
Motivated to do **trouble-shooting in segmented access environment** by reusing existing LMAP systems from multiple ISPs.

Usecases for mutiple **ISPs**

Derived Requirements

- LMAP extensions for collaboration between domains needed
  - Mechanisms for task coordination
  - Mechanisms for results aggregation
  - Extensions for authentication and authorization for collaborative measurement tasks.
  - Minimal changes preferred.

What collaborations are needed?



Discussion

- Does LMAP plan to cover these in the future?
  - If yes, will it be considered as a start?
  - If no, any idea for solving this?

- Other suggestions?

BACKUP

1-Usecases for the ISP

- scalability issue with a single controller for a fairly large scale network operator
  - [I-D.ooki-lmap-internet-measurement-system]
  - multiple controllers to share the burden of many MAs
- heterogeneous network devices as MAs
  - different Controllers speaking different LMAP protocols: HTTP client for browser built-in MAs, TR.069 for CPE built-in MAs, SNMP server for network device built-in MAs
- multi-domain ISP network
  - for large ISP, it might divide its global network into several autonomous domains.

2-Usecases For the Regulator

- Motivations for the regulator-driven LMAP
  - the current situation of its regional networks
  - the peering performance between ISPs
- Prohibitive to deploy a dedicated LMAP system for a large region
  - possible alternative: use ISP's LMAP system or a dedicated third-party systems
  - Through collaboration, MAs from multiple organizations can perform comprehensive measurement for the whole regional network

3-Usecases For the ICP

- Motivations for the ICP-driven LMAP
  - to understand the practical performance and impact of various network segments (e.g. access network, transit network and Internet) to the application
  - to guide the design, experimental and operational phases of a new feature/technology introduction
- Prohibitive and not economic to deploy a dedicated LMAP system for each local ISP
  - possible alternative: use collaborative ISP's LMAP systems

4-Usecases For the End Consumer

- Motivations for the End-driven LMAP
  - to aid trouble-shooting in segmented access environment
  - problems arise either from
    - the WLAN between the end to a third-party home gateway
    - the LAN between the home gateway to the ISP's CPE device
    - the various segments within and beyond the local ISP's domain

UE <=>home net<=>home GW<=>access ISP<=>transit ISP<=>Internet<=>ICP

Figure 2 Cross-Domain data traffic from home network to ICP

  - potential collabration between various measurement points along the way
    - end, home-GW, CPE, network devices, ICP