

# A Framework and Inventory for a Large Scale Measurement System

draft-akhter-Imap-framework-00

Aamer Akhter / [aakhter@cisco.com](mailto:aakhter@cisco.com)  
Paul Aitken / [paitken@cisco.com](mailto:paitken@cisco.com)

IETF87  
July, 2013

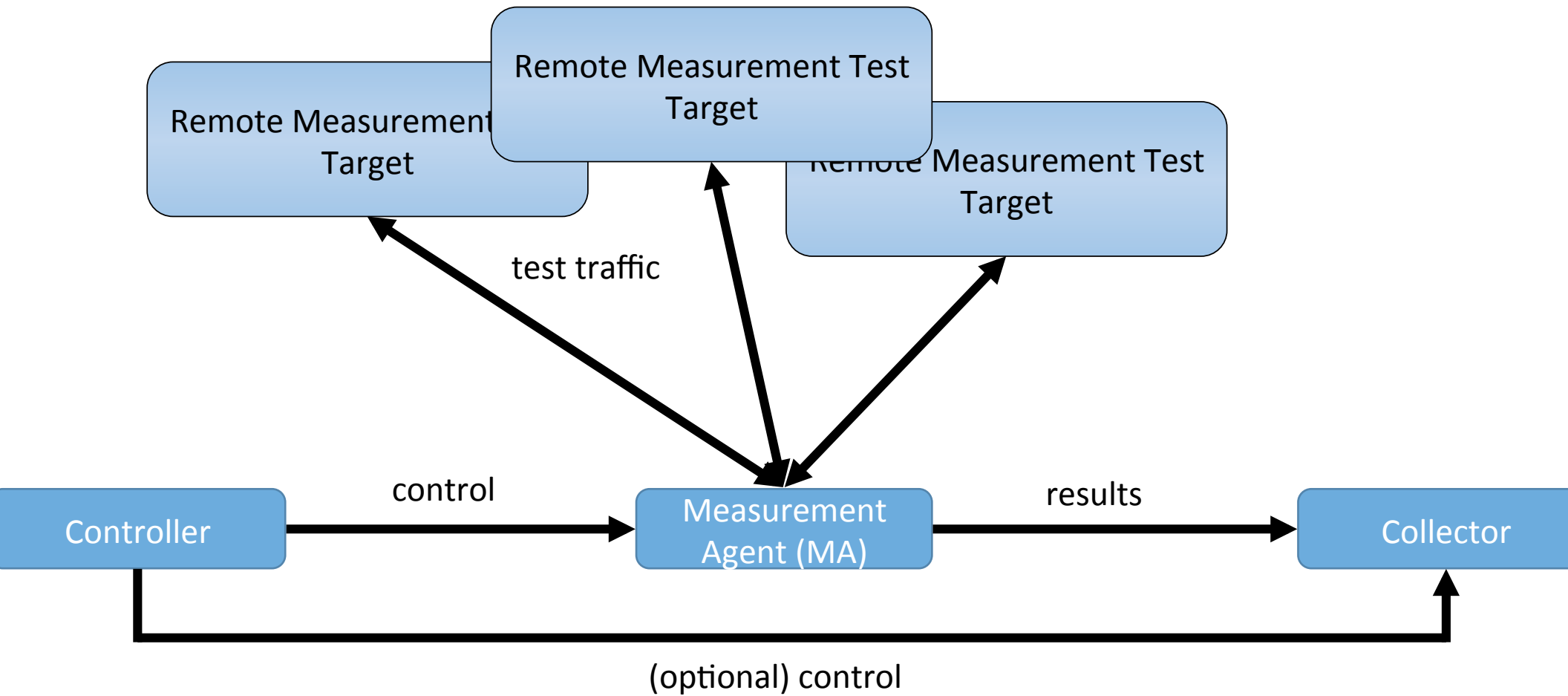
# Goals

Reuse existing standards as much as possible

- Utilize existing consensus
- Faster delivery of LMAP basics

Merge framework drafts into a single WG draft

# The Basics (a single Instruction)



# Measurement Agent Deployment Cases

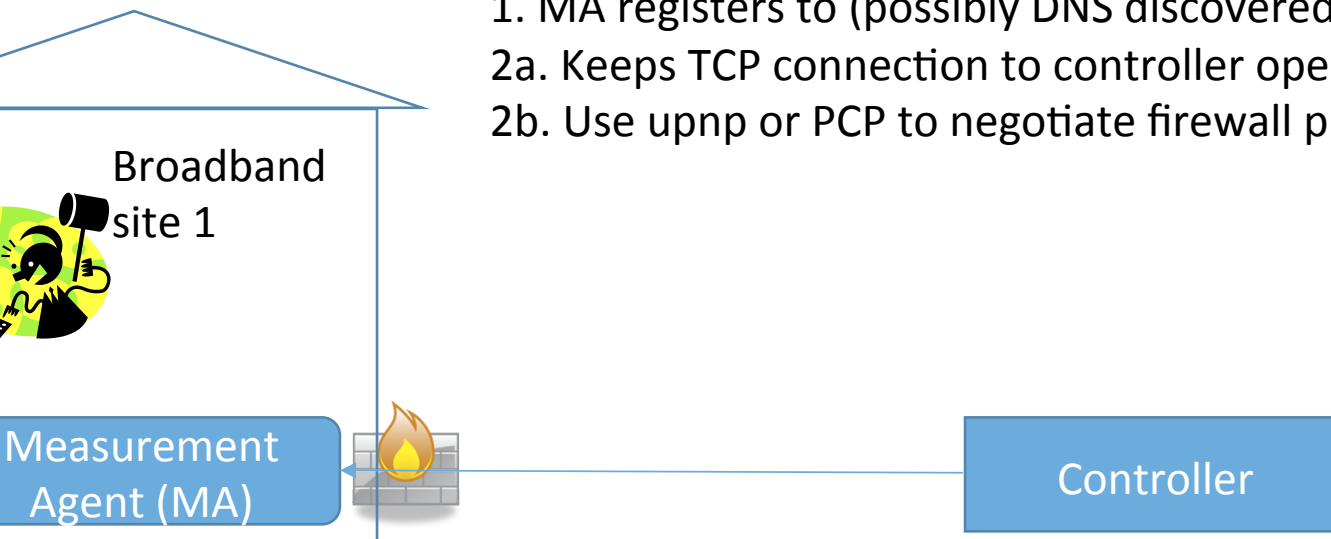
	<b>Firewall</b>	<b>Active Measurement Backoff</b>	<b>Passive Measurement</b>	<b>Notes</b>
Embedded in gateway	Good	Good	Good	
Online outside gateway	Good	Good	Good	
Online behind gateway	Problem	Good	Good	
Independent probe	Problem	Problem	Problem	Active/Passive v need traffic-replication (unusual case)
Embedded in user and system	Problem	Problem	Problem	

# Directionality of Communications

Firewall at broadband site may prevent  
Controller-initiated connections.

Controller is unable to schedule adhoc tests  
(important in troubleshooting usecases) if it cannot reach MA

1. MA registers to (possibly DNS discovered) Controller
- 2a. Keeps TCP connection to controller open via keepalives?
- 2b. Use upnp or PCP to negotiate firewall pin-hole?



# Directionality of Communications (2)

How does MA discover the correct LMAP domain?  
(DNS is not enough for non-ISP case)

- If pre-configured, what if the MA is sold and appears on another network?

# Organization of Controllers and Collectors in single LMAP Domain

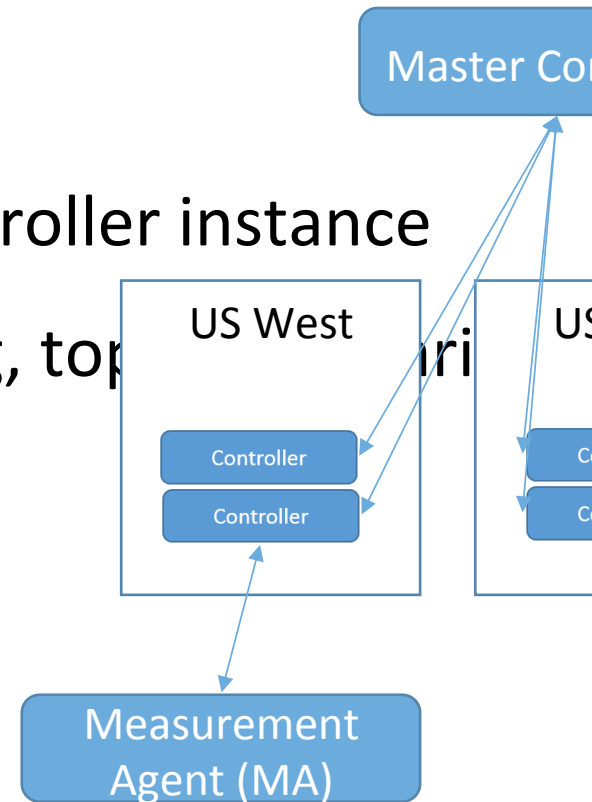
Can be multiple controllers and collectors

- Scaling, redundancy, localized failure domains

Still under the control of a single administrator

DNS resolution could be used to find a 'good' controller instance

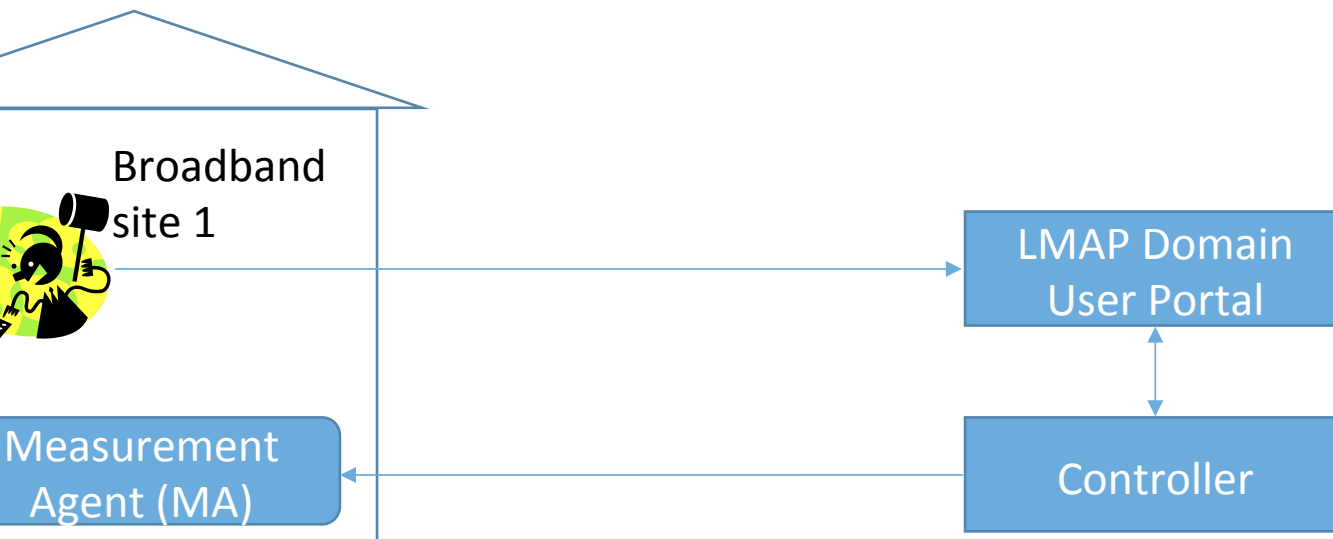
Could be unorganized, or organized along geo, org, top



# User Initiated Tests

## are they really user initiated?

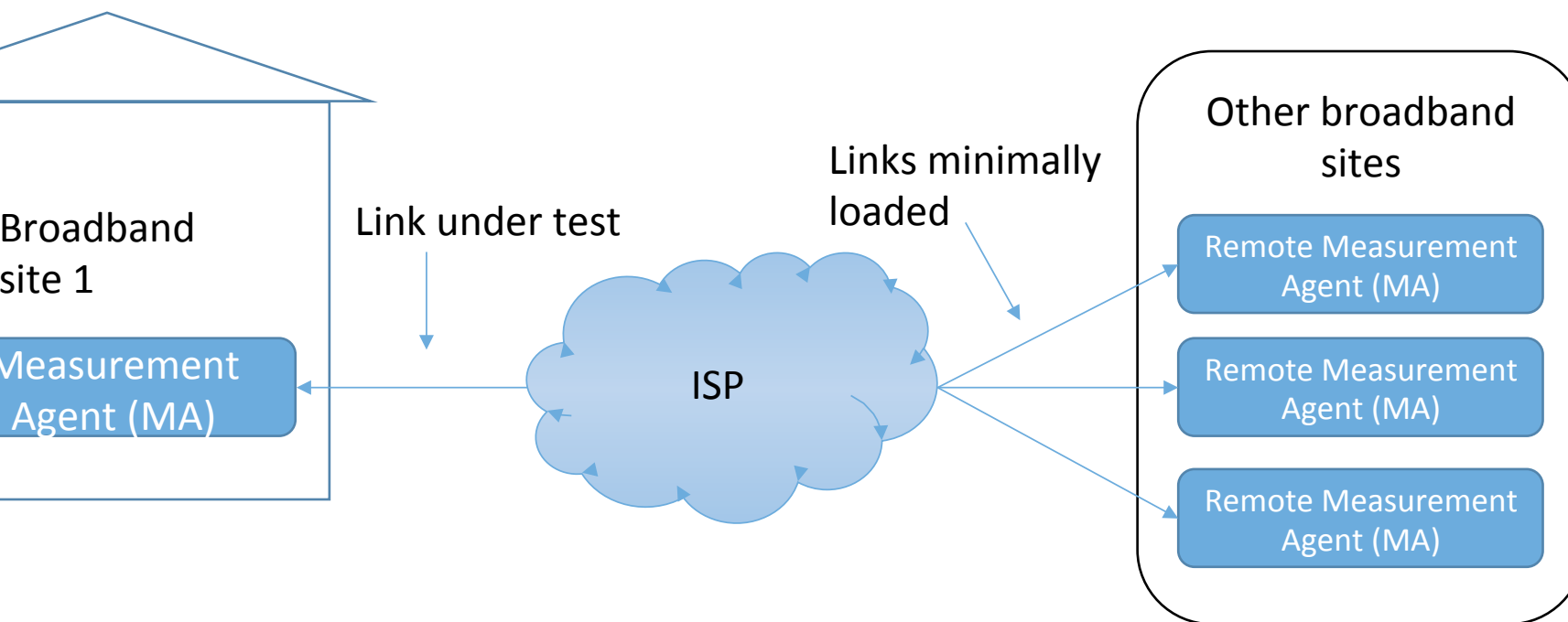
User does not directly interact with MA to schedule tests.  
LMAP Administrator may offer user-facing interface to schedule tests  
via the controller.





# Multi-Peer Test

LMAP domain administrator does not have test target inside ISP, but wants to measure inter-ISP (access link) utilization



# Controller – Collector Communications

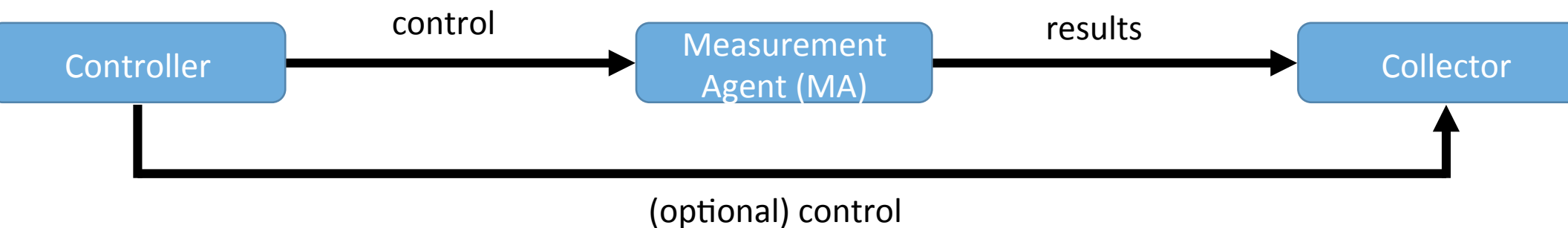
For sending Instruction+testID, Controller treats MA and Collector the same.

MA actually runs Instruction

Collector understands Instruction, associates Instruction with testID

MA reports testID+results

For comparable results, Instruction cannot vary. Locally resolved data in results.



# Test Failure

Does Controller need to be informed about Test Failure?

Could be any of a number of reasons  
(reschedule, power outage, network down etc.)

What will Collector do different if it knows of Test Failure?

# Failover

Is failover a concern?

Clear DNS cache and pick a different Controller?

Is there need for state synchronization: MA-Controller and Controller-Controller?

# Security / Privacy

Passive monitoring of user traffic is a concern

Troubleshooting cases may conflict with the need for privacy

Authentication of MA-Controller extremely important. A rogue LMAP network is an attractive target for launching DDoS attacks.

Securing of results important in MA-Collector result posting.

# A Framework and Inventory for a Large Scale Measurement System

draft-akhter-Imap-framework-00

Aamer Akhter / [aakhter@cisco.com](mailto:aakhter@cisco.com)  
Paul Aitken / [paitken@cisco.com](mailto:paitken@cisco.com)

IETF87  
July, 2013