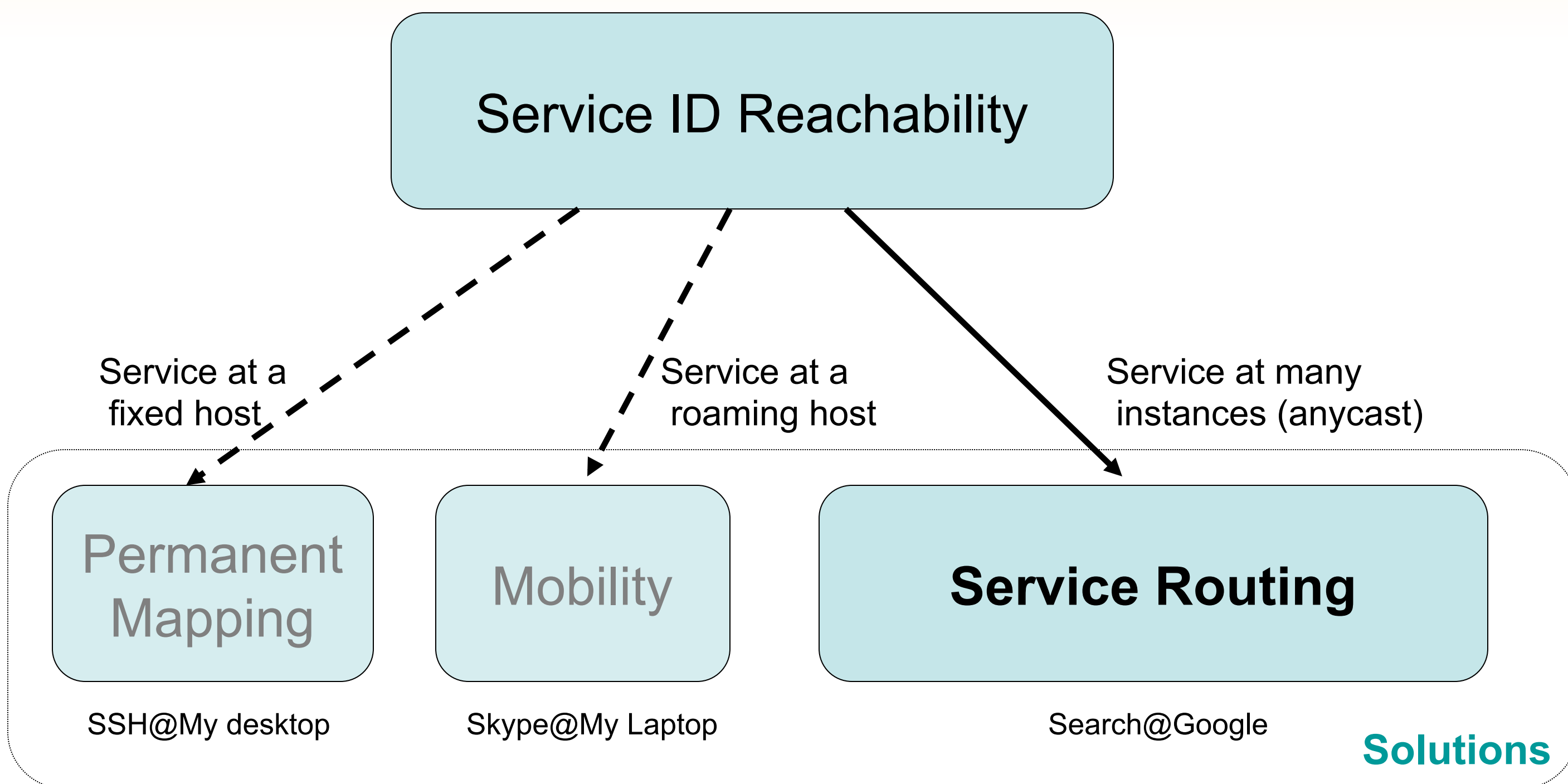


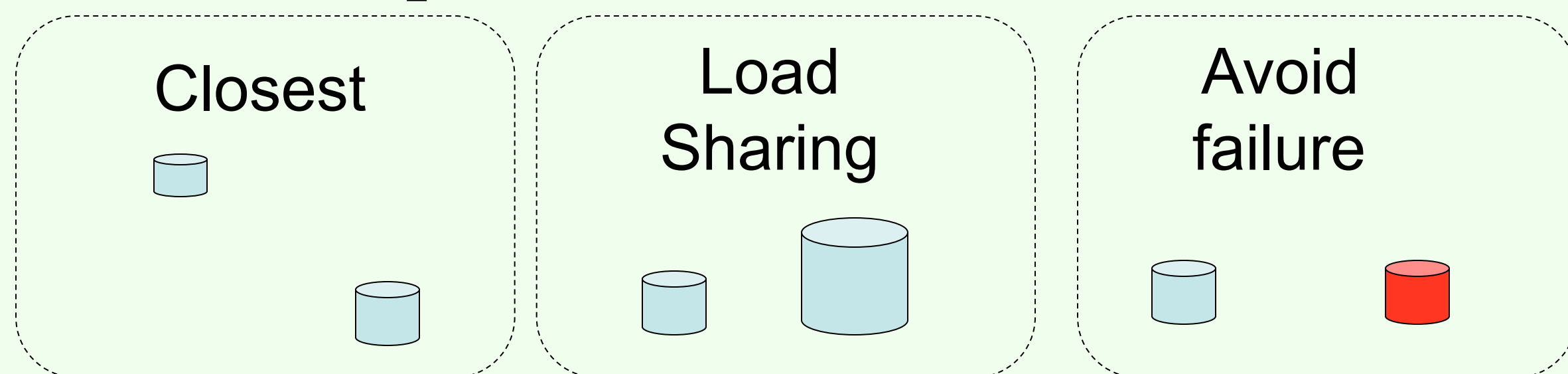
Implementing Service Routing over XIA

Yuchen Wu, Peter Steenkiste, Srinivasan Seshan, Raja Sambasivan
Carnegie Mellon University



Motivation

- Providing services is a main usage of the current Internet, routing to the best service instances is a crucial step of QoS



- Current Internet addresses instance selection via end-to-end approaches
 - No address for service ID
 - Application layer solutions
 - DNS maps service name to host IP
 - Need smart mapping
- Network Layer Service Routing : tell the network what service you want
 - Fine grained load balancing
 - Finding the closest server on the spot
 - Addresses for Service ID: accountability
 - Benefits for transport/application layer

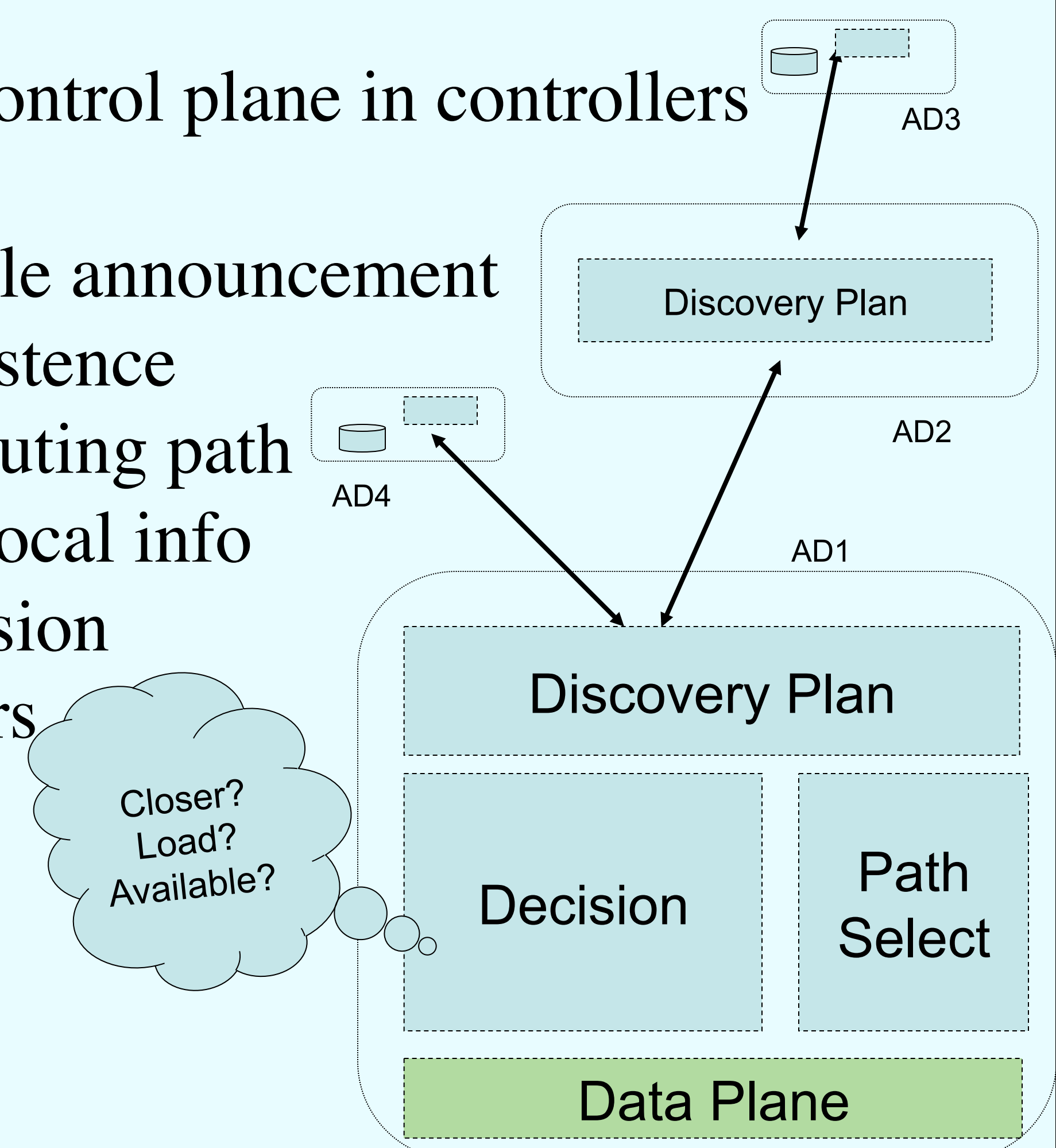
Goal

dst DAG: ●→SID

SID routing protocol: forwarding service requests to their "best" service instances

Control Plane: Add a routing daemon

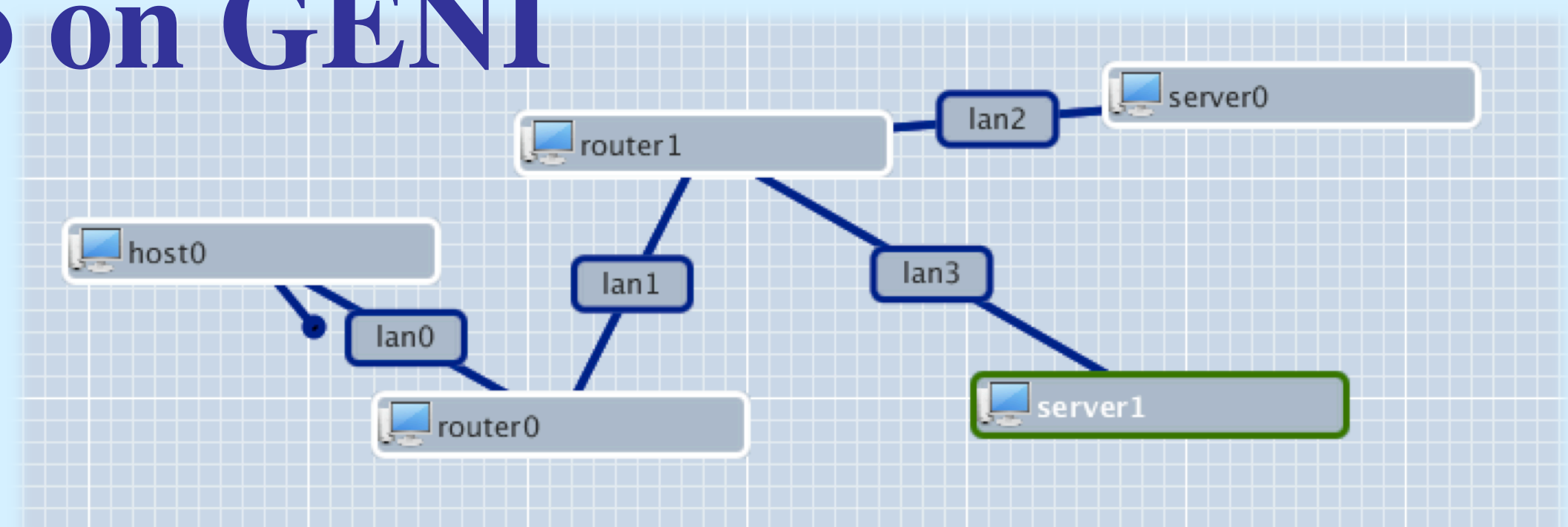
- SDN style: Control plane in controllers
- 3 sub-planes
- Link-state style announcement of service existence
- Reuse host routing path
- Decide with local info
- Forward decision to local routers



Data Plane: upgrade forwarding engines

- One SID FIB with multiple choices
- Mark the decision after choosing one
 - by DAG rescope in the packet
 - to avoid loops
- Transport layer rebind during handshake
 - rebind to the fully scoped DAG

Demo on GENI



- XIA directly talking to NIC hardwares
- Failure and latency emulation
- Accessing multiple service replicas
- Feature-rich service anycast