Relay
Node

Controller Node

Controller Node

Controller Node

Controller Node

Controller Node

Controller Node

Source

Destination

Sample Architecture

Relay Node

R

11

2

1

8

C1

9

Controller Node

10

3

4

C2

Controller Node

D

6

Directory Service

5

12

7

N1

Steps of Message Transfer

N2

Source

Destination

The steps of message transfer:

1) The relay node boots up.
2) The controller node boots up and connects to relay node.
3) The source node boots up and connects to controller node.
4) The controller assigns this source node a unique local ID number and source node receives it.
5) The source node sends its IP, its controller's IP and its unique local ID number to directory service.
6) Directory service adds this info to the hash map.
7) Directory service returns a co-ordinate URI pair to source node which contains the controller's unique hashed key along with this source's unique local ID number.
8) The source node appends the pre-determined destination co-ordinate URI (akin to the one it received earlier) to its message and passes it to the controller.
9) The controller appends a random session identifier passes that message in whole to the relay node.
10) The relay node uses the first co-ordinate out of the received pair with message to identify the controller's IP to which the message is destined to using directory service and takes note of the session identifier received with the message.
11) It sends the message as received to the respective destination controller.
12) The controller finds the second co-ordinate and routes this to respective destination and takes note of the session identifier.