

IPv4 Multicast Controller

The software is a Java application built over Floodlight. Its main function is to manage an OpenFlow compatible network to enable multicast communication over an IPv4 local network. Through the REST API exposed by the controller, multicast groups can be created assigning them an IP from a pool not available to hosts. The groups can then be joined by the hosts through the same API. When the SDN switch receives a packet for a multicast group, the packet is replicated and sent to each of the hosts participating in the multicast group.

IPv4MulticastModule

It is the main component of the software, implementing a Floodlight module. It contains the state of multicast groups and handles requests from both the SDN switches and REST clients.

It interacts with the FloodlightProvider to interact with SDN switches and install the forwarding rules. It also exposes methods accessed by the Rest resource MulticastGroup.

REST API

The API is implemented through the ServerResource MulticastGroup, which contains the methods:

	Parameters	Expected output	Behaviour
Create	None	IP of the multicast group	If a multicast address is available, it is allocated for a new empty group
Delete	Multicast group	None	Deletes the multicast group, making the address available
Join	Host and multicast group	None	Adds the host to the group
Unjoin	Host and multicast group	None	Removes the host from the group

Test scenario

The software will be tested using the Mininet software suite. The test case will use a local network with host addresses 192.168.0.0/24 and multicast addresses 192.168.1.0/28, that is 14 groups.