WHAT IS CLAIMED IS:

1. A method for establishing communication within a multicast group of nodes included in a mesh network, the method comprising:

detecting that a first message related to a member node joining the multicast group has not been received from a multicast group leader included in the multicast group;

in response, generating a first broadcast message for the member node that includes a multicast join request; and

forwarding the first broadcast message to one or more nodes included in the mesh network that are direct neighbors of the member node, wherein at least one node included in the one or more nodes further forwards the first broadcast message based on a first maximum hop limit.

2. The method of claim 1, further comprising:

receiving a second broadcast message that includes a first multicast join acknowledgment generated by the multicast group leader in response to the multicast join request; and

adding one or more additional nodes as one or more multicast forwarders to the multicast group, wherein the one or more additional nodes reside along one or more paths used to transmit the first multicast join acknowledgment from the multicast group leader to the member node.

3. The method of claim 2, further comprising forwarding the second broadcast message to the one or more nodes based on a second maximum hop limit.

4. The method of claim 2, further comprising aggregating the first multicast join acknowledgment and one or more additional multicast join acknowledgments generated by the multicast group leader under the second broadcast message.

5. The method of claim 2, further comprising delaying transmission of the second broadcast message from the multicast group leader for a predetermined period, wherein during the predetermined period, the multicast group leader processes one or

more additional multicast join requests included in one or more additional broadcast messages.

6. The method of claim 2, wherein the first multicast join acknowledgment includes a list of addresses in the one or more paths.

7. The method of claim 1, wherein, when further forwarding the first broadcast message, the at least one node decrements a hop limit in the first broadcast message.

8. The method of claim 1, wherein, when further forwarding the first broadcast message, the at least one node adds an address of the at least one node to an address vector in the multicast join request.

9. The method of claim 1, wherein the first message comprises a unicast message that includes a multicast join acknowledgment from the multicast group leader.

10. The method of claim 1, wherein the first message comprises a multicast advertisement message from the multicast group leader.

11. A non-transitory computer readable medium storing instructions that, when executed by a processor, cause the processor to perform the steps of:

detecting that a first message related to a member node joining a multicast group has not been received from a multicast group leader included in the multicast group;

in response, generating a first broadcast message for the member node that includes a multicast join request; and

forwarding the first broadcast message to one or more nodes included in a mesh network that are direct neighbors of the member node, wherein at least one node included in the one or more nodes further forwards the first broadcast message based on a first maximum hop limit.

12. The non-transitory computer readable medium of claim 11, wherein the instructions further cause the processor to perform the steps of:

receiving a second broadcast message that includes a first multicast join acknowledgment generated by the multicast group leader in response to the multicast join request;

forwarding the second broadcast message to the one or more nodes based on a second maximum hop limit; and

adding one or more additional nodes as one or more multicast forwarders to the multicast group, wherein the one or more nodes reside along one or more paths used to transmit the first multicast join acknowledgment from the multicast group leader to the member node.

13. The non-transitory computer readable medium of claim 12, wherein the instructions further cause the processor to perform the steps of:

delaying transmission of the second broadcast message from the multicast group leader for a predetermined period; and

after the predetermined period has lapsed, aggregating the first multicast join acknowledgment and one or more additional multicast join acknowledgments generated by the multicast group leader under the second broadcast message.

14. The non-transitory computer readable medium of claim 12, wherein the first multicast join acknowledgment includes a list of addresses in the one or more paths.

15. The non-transitory computer readable medium of claim 12, wherein the one or more additional nodes are added as the one or more multicast forwarders for a duration that is greater than a periodicity of a multicast advertisement message broadcasted by the multicast group leader.

16. The non-transitory computer readable medium of claim 12, wherein the one or more additional nodes comprise a first node that is not a member of the multicast group.

17. The non-transitory computer readable medium of claim 11, wherein, when further forwarding the first broadcast message, the at least one node decrements a hop limit in the multicast join request and adds an address of the at least one node to an address vector in the multicast join request.

18. The non-transitory computer readable medium of claim 11, wherein the first message comprises a multicast advertisement message from the multicast group leader.

19. The non-transitory computer readable medium of claim 11, wherein the first message comprises a unicast message that includes a multicast join acknowledgment from the multicast group leader.

20. A system, comprising:

a memory that stores instructions, and

a processor that is coupled to the memory and, when executing the instructions, is configured to:

detect that a first message related to a member node joining a multicast group has not been received from a multicast group leader included in the multicast group;

in response, generate a first broadcast message for the member node that includes a multicast join request;

forward the first broadcast message to one or more nodes included in a mesh network that are direct neighbors of the member node, wherein at least one node included in the one or more nodes further forwards the first broadcast message based on a first maximum hop limit;

receive a second broadcast message that includes a first multicast join acknowledgment generated by the multicast group leader in response to the multicast join request; and

add one or more additional nodes as one or more multicast forwarders to the multicast group, wherein the one or more additional nodes reside along one or more paths used to transmit the first multicast

~~join acknowledgment from the multicast group leader to the member node.~~

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WHAT IS CLAIMED IS:

1. A method, comprising:

transmitting, by a node included in a mesh network, a unicast message to a multicast group leader of a multicast group in response to a multicast advertisement message received from the multicast group leader, wherein the unicast message includes a first request to join the multicast group;

determining, by the node, that no message acknowledging the first request to join the multicast group has been received from the multicast group leader; and

in response to the determining, broadcasting, by the node, a first broadcast message that includes a multicast join request to one or more nodes included in the mesh network that are direct neighbors of the node, wherein the first broadcast message is forwardable by at least one node included in the one or more nodes based on a first maximum hop limit.

2. The method of claim 1, further comprising:

receiving, by the node, a second broadcast message that includes a first multicast join acknowledgment generated by the multicast group leader in response to the multicast join request; and

adding, by the node, one or more additional nodes as one or more multicast forwarders to the multicast group, wherein the one or more additional nodes reside along one or more paths used to transmit the first multicast join acknowledgment from the multicast group leader to the node.

3. The method of claim 2, wherein the second broadcast message is forwardable by the one or more additional nodes based on a second maximum hop limit.

4. The method of claim 2, wherein the second broadcast message comprises one or more additional multicast join acknowledgments generated by the multicast group leader in response to one or more additional multicast join requests.

5. The method of claim 2, wherein the second broadcast message is received after a predetermined period associated with the multicast group leader processing one or more additional multicast join requests included in one or more additional broadcast messages.

6. The method of claim 2, wherein the first multicast join acknowledgment includes a list of addresses in the one or more paths.

7. The method of claim 1, wherein the first broadcast message includes a hop limit that is decrementable by the at least one node.

8. The method of claim 1, wherein the first broadcast message includes an address vector that is updatable by the at least one node.

9. The method of claim 1, wherein the message acknowledging the first request to join the multicast group comprises a unicast message from the multicast group leader.

10. One or more non-transitory computer readable media storing instructions that, when executed by one or more processors of a node in a mesh network, cause the one or more processors to perform the steps of:

transmitting a unicast message to a multicast group leader of a multicast group in response to a multicast advertisement message received from the multicast group leader, wherein the unicast message includes a first request to join the multicast group;

determining that no message acknowledging the first request to join the multicast group has been received from the multicast group leader; and

in response to the determining, broadcasting a first broadcast message that includes a multicast join request to one or more nodes included in the mesh network that are direct neighbors of the node, wherein the first broadcast message is forwardable by at least one node included in the one or more nodes based on a first maximum hop limit.

11. The one or more non-transitory computer readable media of claim 10, wherein the instructions further cause the one or more processors to perform the steps of:

receiving a second broadcast message that includes a first multicast join acknowledgment generated by the multicast group leader in response to the multicast join request;

forwarding the second broadcast message to the one or more nodes based on a second maximum hop limit; and

adding one or more additional nodes as one or more multicast forwarders to the multicast group, wherein the one or more nodes reside along one or more paths used to transmit the first multicast join acknowledgment from the multicast group leader to the node.

12. The one or more non-transitory computer readable media of claim 11, wherein the second broadcast message is received after a predetermined period and includes one or more additional multicast join acknowledgments generated by the multicast group leader.

13. The one or more non-transitory computer readable media of claim 11, wherein the first multicast join acknowledgment includes a list of addresses in the one or more paths.

14. The one or more non-transitory computer readable media of claim 11, wherein the one or more additional nodes are added as the one or more multicast forwarders for a duration that is greater than a periodicity of a multicast advertisement message broadcasted by the multicast group leader.

15. The one or more non-transitory computer readable media of claim 11, wherein the one or more additional nodes comprise a first node that is not a member of the multicast group.

16. The one or more non-transitory computer readable media of claim 10, wherein the first broadcast message includes a hop limit and an address vector.

17. The one or more non-transitory computer readable media of claim 10, wherein the message acknowledging the first request to join the multicast group comprises a unicast message from the multicast group leader.

18. A system, comprising:

a memory that stores instructions, and

a processor that is coupled to the memory and, when executing the instructions, is configured to:

transmit a first request to join a multicast group, wherein the multicast group includes a multicast group leader;

determine that no message acknowledging the first request to join the multicast group has been received from the multicast group leader;

in response to the determining, broadcast a first broadcast message that includes a multicast join request to one or more nodes included in a mesh network that are direct neighbors of a node, wherein the first broadcast message is forwardable by at least one node included in the one or more nodes based on a first maximum hop limit;

receive a second broadcast message that includes a first multicast join acknowledgment generated by the multicast group leader in response to the multicast join request; and

add one or more additional nodes as one or more multicast forwarders to the multicast group, wherein the one or more additional nodes reside along one or more paths used to transmit the first multicast join acknowledgment from the multicast group leader to the node.