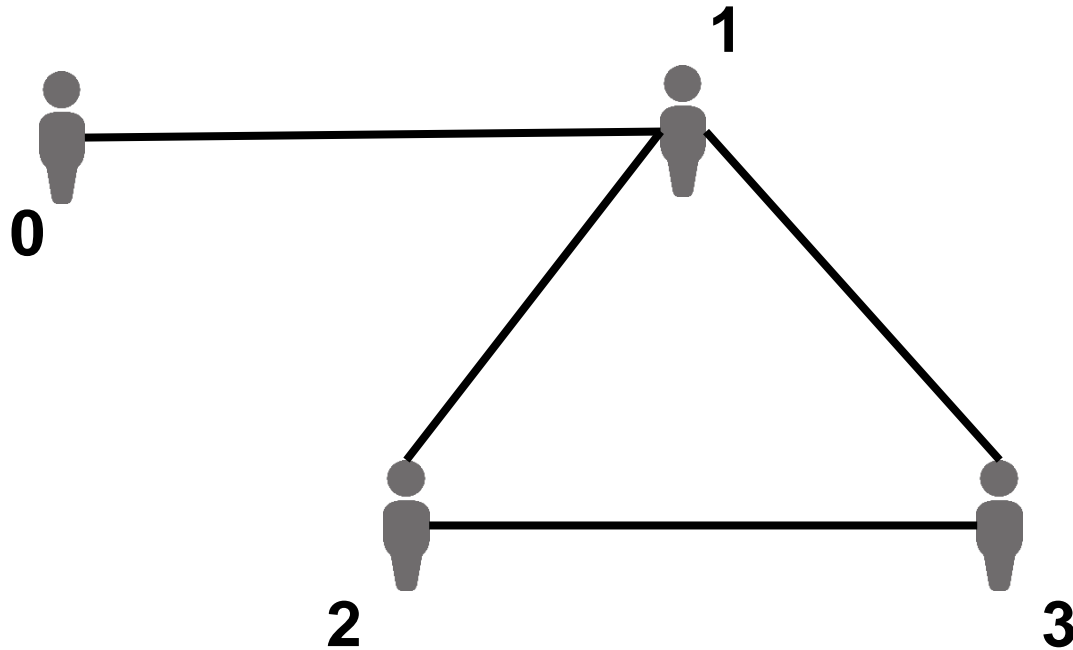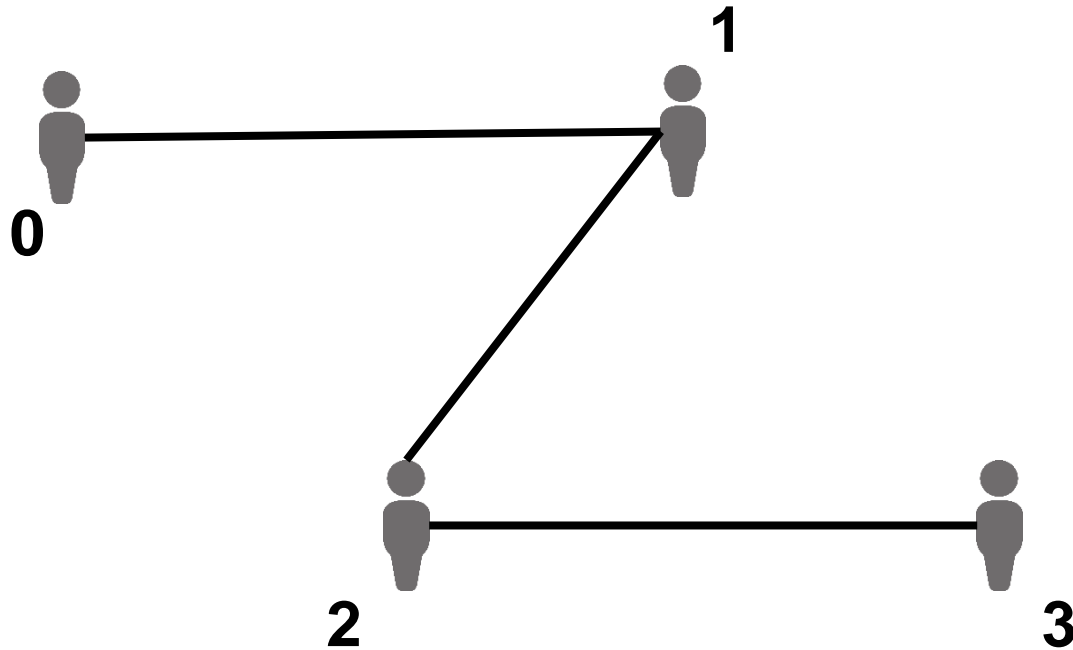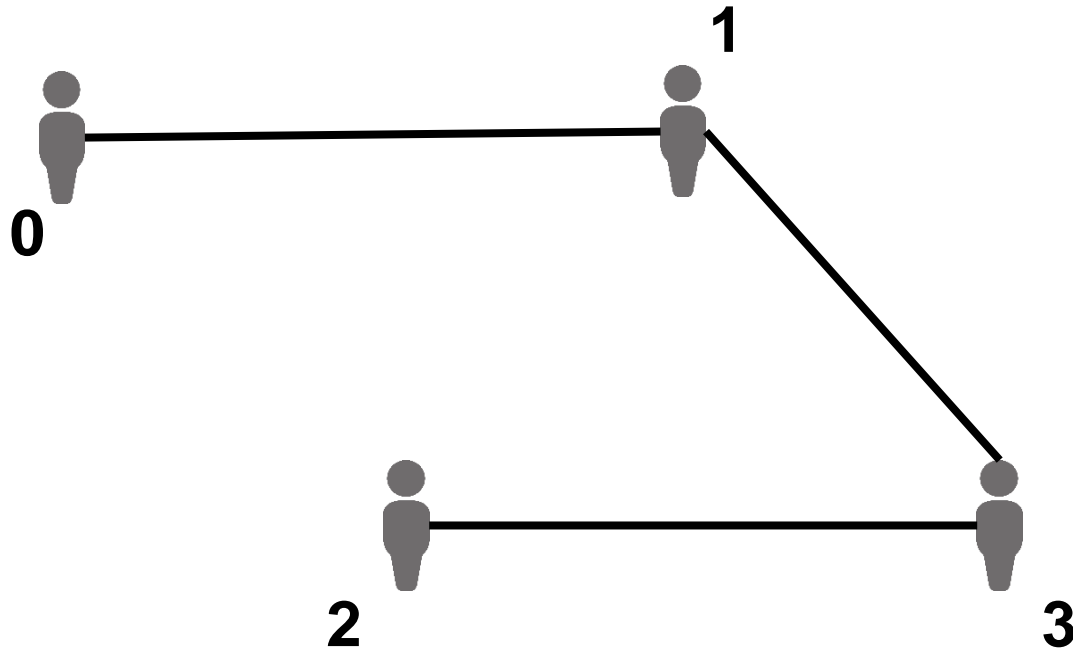# Distributed Spanning Tree

Distributed Spanning Tree - solution

Distributed Spanning Tree - solution

Distributed Spanning Tree - solution

Distributed Spanning Tree – Initiator

Initiator (leader)

Distributed Spanning Tree

Initiator (leader)

- Send Probe to all neighbors
- Receive response from all neighbors
- Compute the entire graph

- Send graph to everyone

Distributed Spanning Tree

Everyone else

- Receive probe from someone
- That someone is marked as parent
- Forward probe to all neighbors except parent
- Receive response from all neighbors
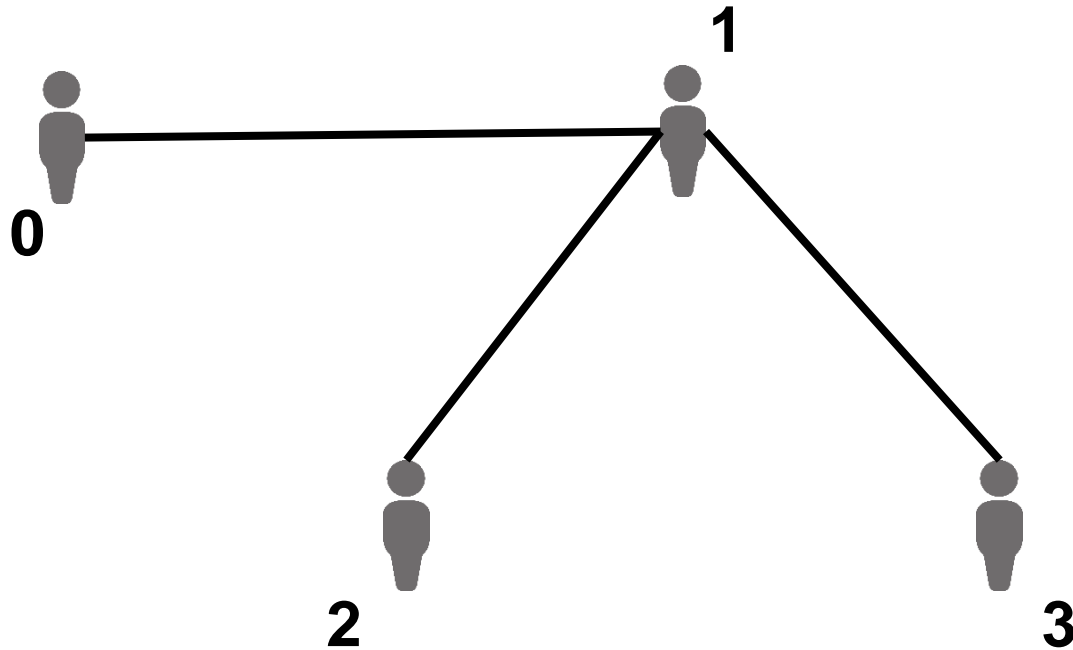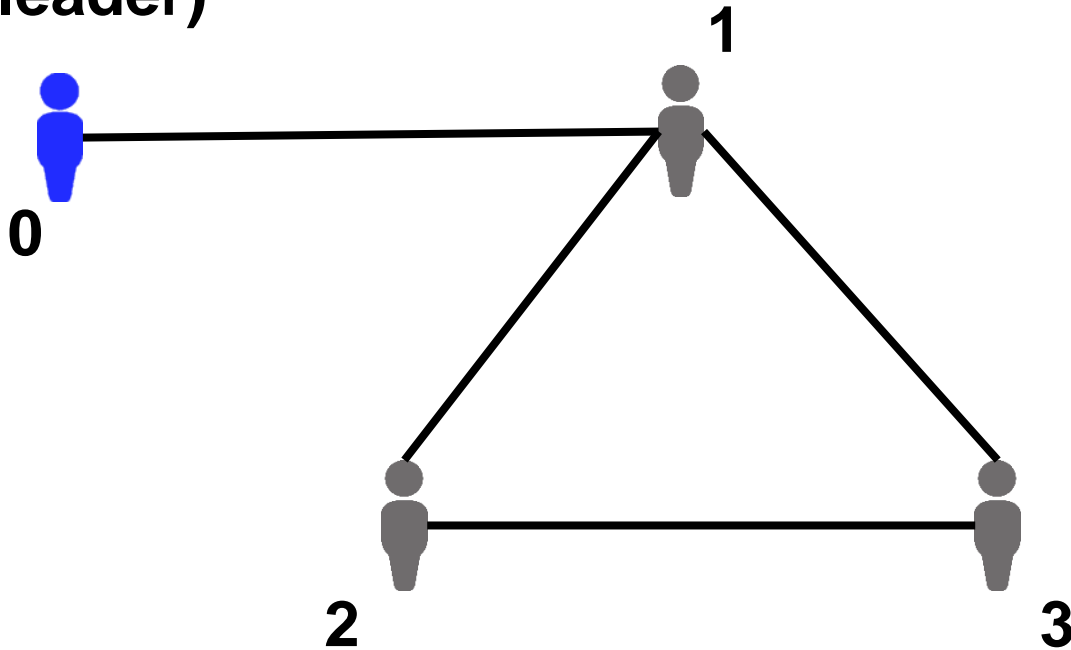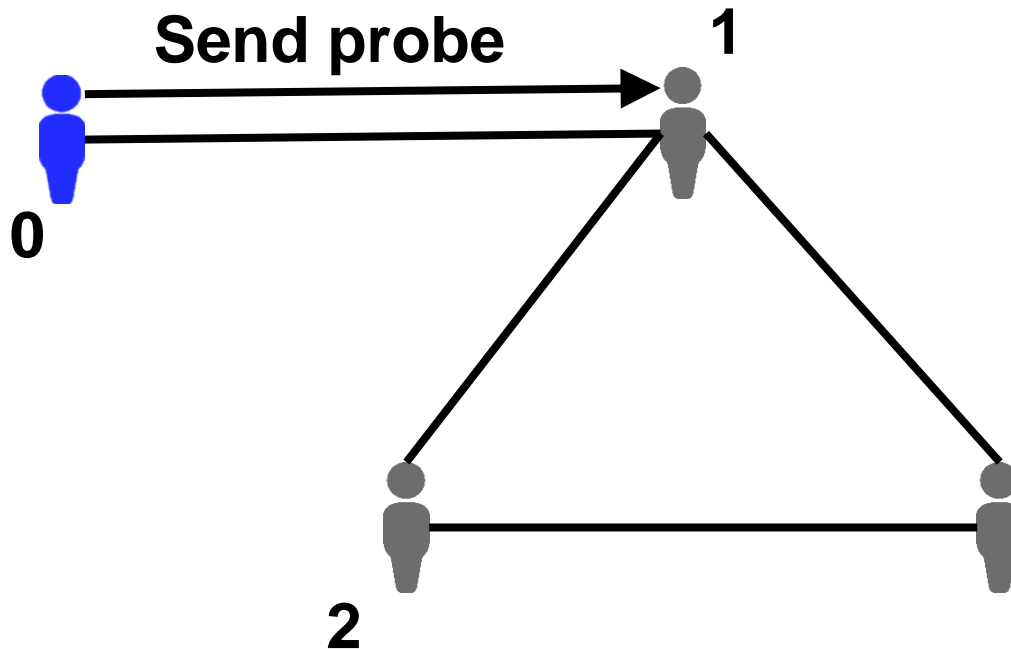- Merge responses
- Send response to parent

Distributed Spanning Tree

Send probe

Node	Parent
0	-
1	
2	
3	

0

1

2

3

Node 2
Recv probe
Mark parent
Send probe children
Recv response children
Merge responses
Send response parent

Node 3
Recv probe
Mark parent
Send probe children
Recv response children
Merge responses
Send response parent

Distributed Spanning Tree

Node	Parent
0	-
1	0
2	
3	

0

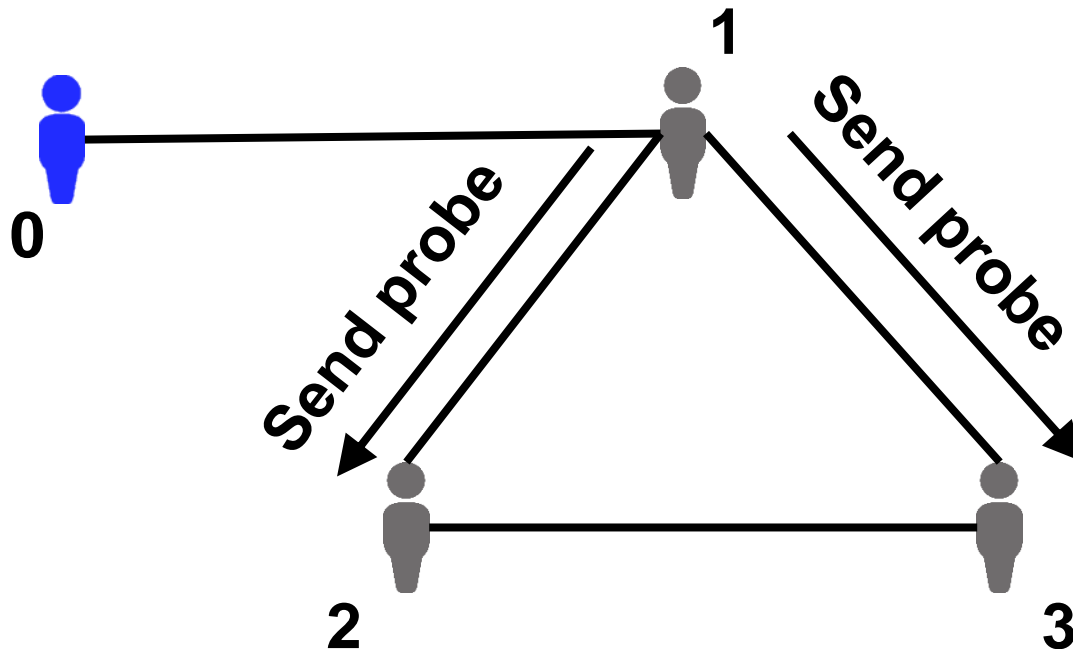**1**

Send probe

Send probe

2

3

Node 2
Recv probe
→ Mark parent
Send probe children
Recv response children
Merge responses
Send response parent

Node 3
Recv probe
→ Mark parent
Send probe children
Recv response children
Merge responses
Send response parent

Distributed Spanning Tree

Node	Parent
0	-
1	0
2	1
3	1

1
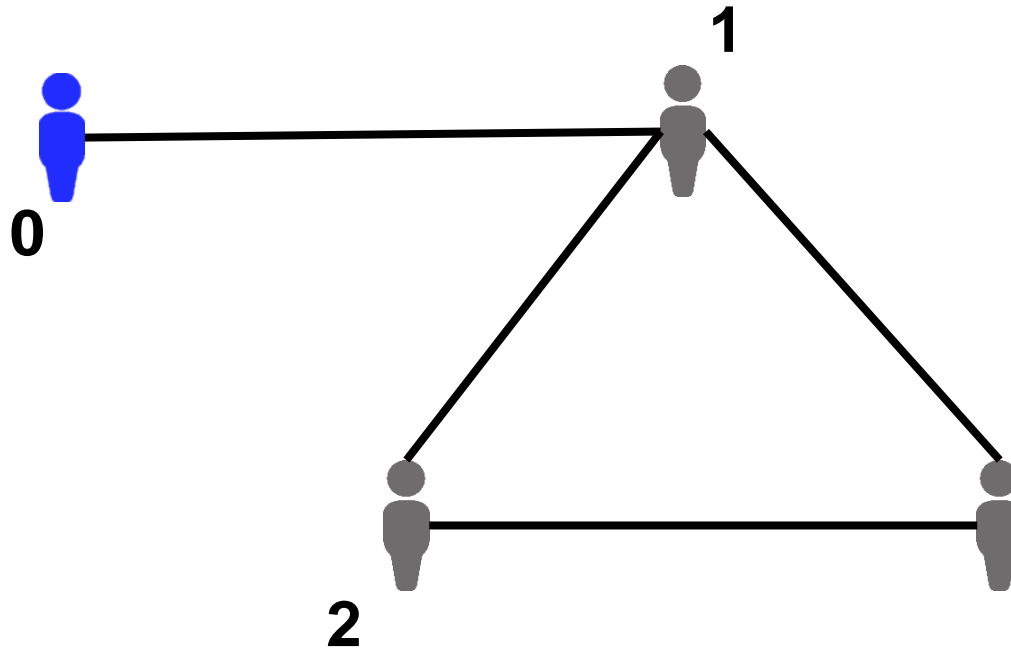
0

2

3

Node 2
Recv probe
Mark parent
→ Send probe children
Recv response children
Merge responses
Send response parent

Node 3
Recv probe
Mark parent
→ Send probe children
Recv response children
Merge responses
Send response parent

Distributed Spanning Tree – Initiator

2 and 3 treat each others probes as responses

Node	Parent
0	-
1	0
2	1
3	1

1

0

Send probe

2 **Send probe** **3**

Node 2
Recv probe
Mark parent
Send probe children
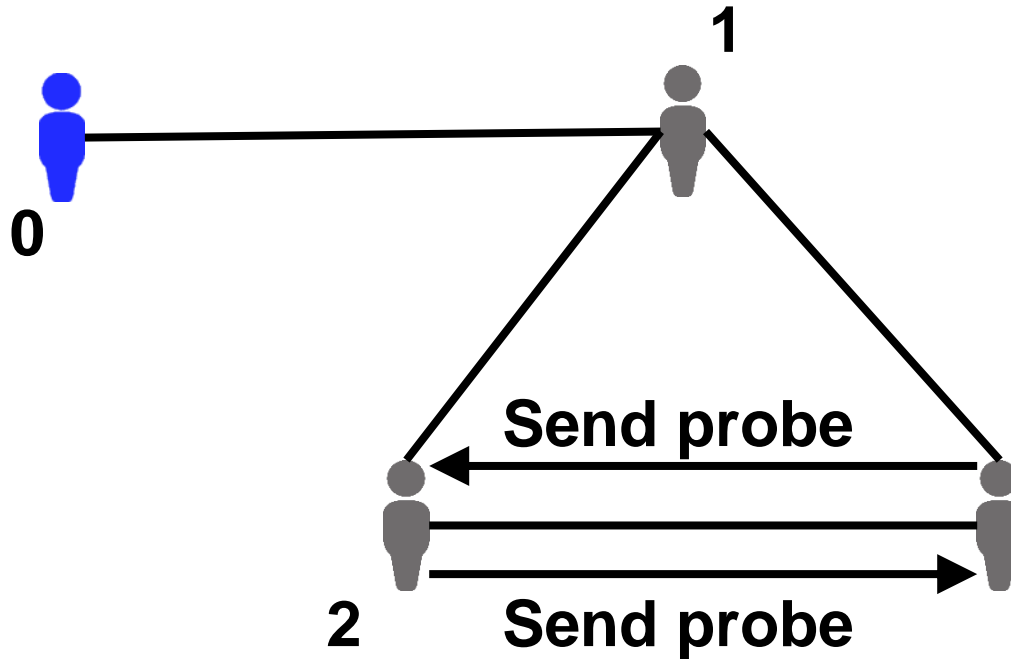Recv response children
Merge responses
Send response parent

Node 3
Recv probe
Mark parent
Send probe children
Recv response children
Merge responses
Send response parent

Distributed Spanning Tree

Node	Parent
0	-
1	0
2	1
3	1

1

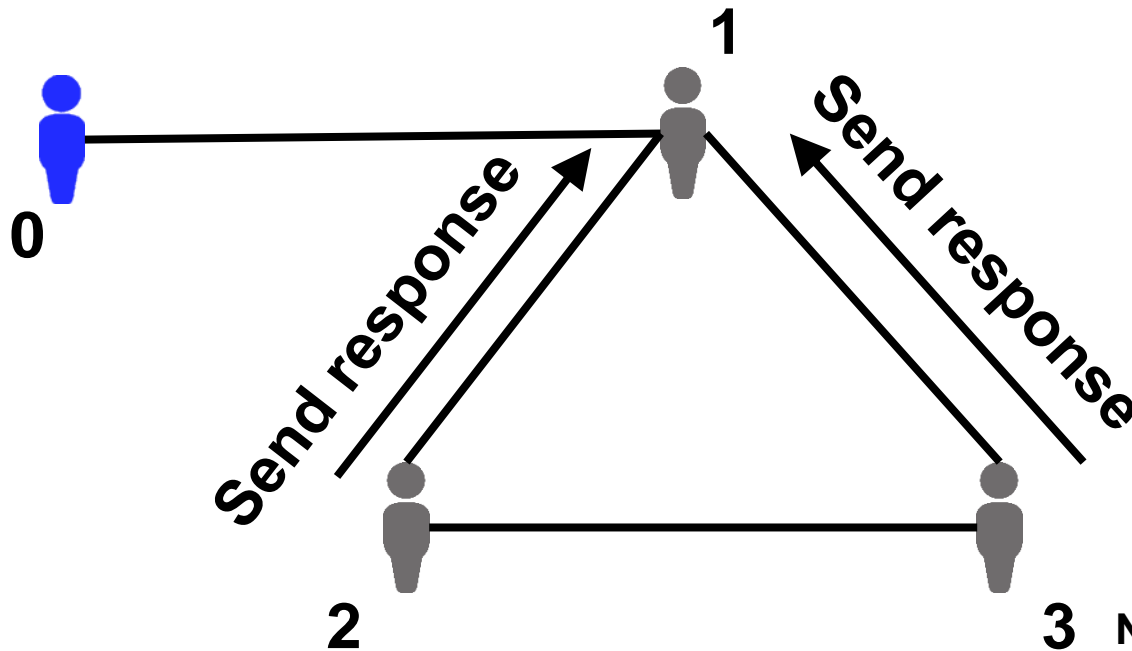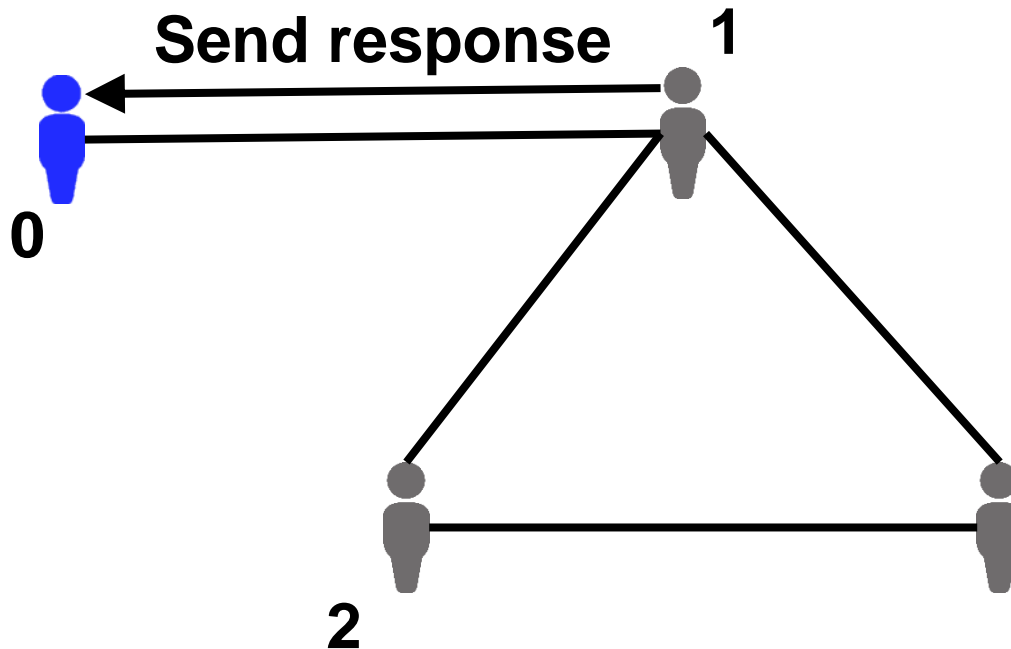**0**

Send response

Send response

2

3

Node 2
Recv probe
Mark parent
Send probe children
Recv response children
Merge responses
Send response parent

Node 3
Recv probe
Mark parent
Send probe children
Recv response children
Merge responses
Send response parent

Distributed Spanning Tree

Send response

0

1

2

3

Node	Parent
0	-
1	0
2	1
3	1

Node 2
Recv probe
Mark parent
Send probe children
Recv response children
Merge responses
Send response parent

Node 3
Recv probe
Mark parent
Send probe children
Recv response children
Merge responses
Send response parent