Fault Tolerance (Labs)

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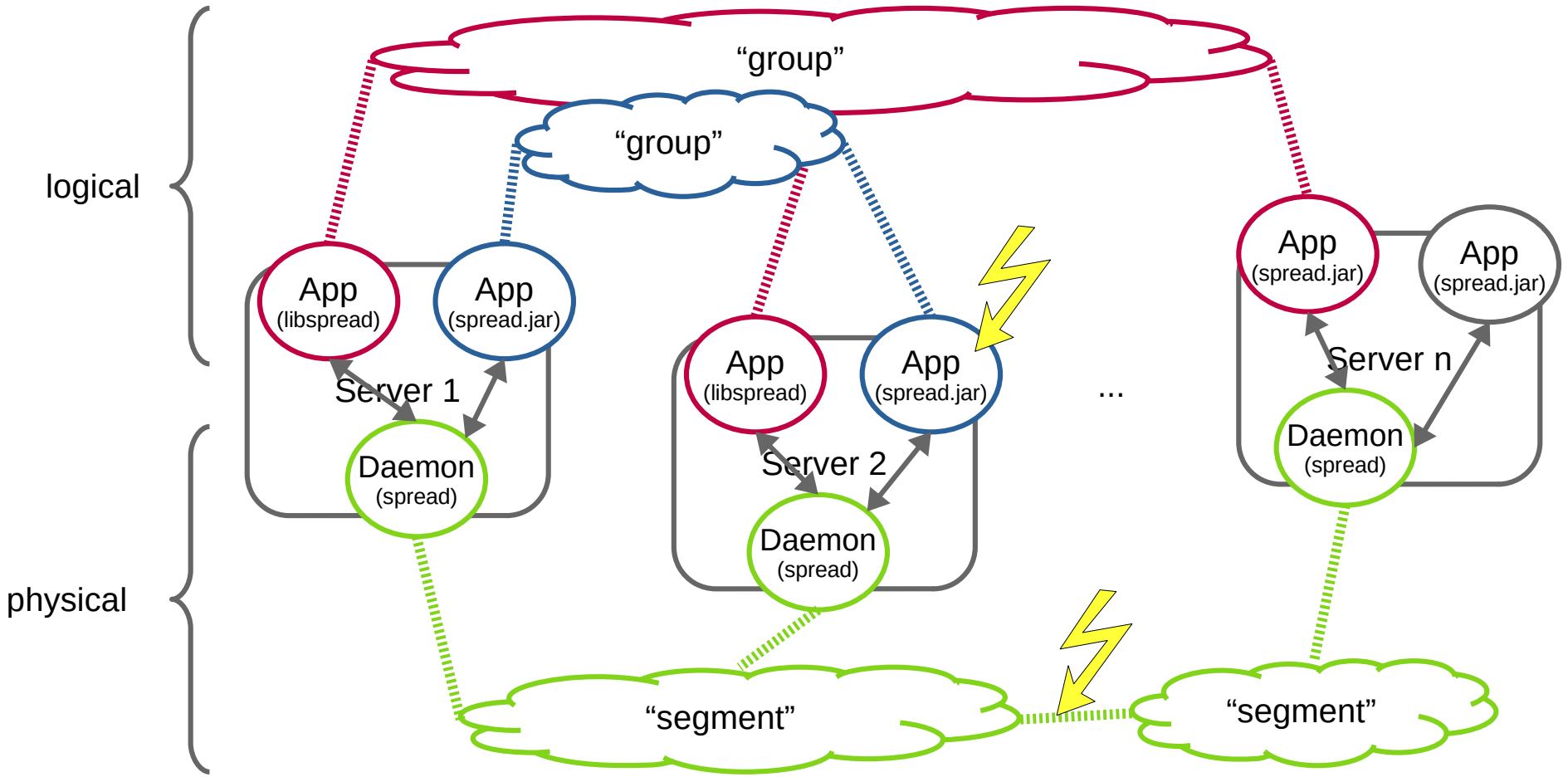
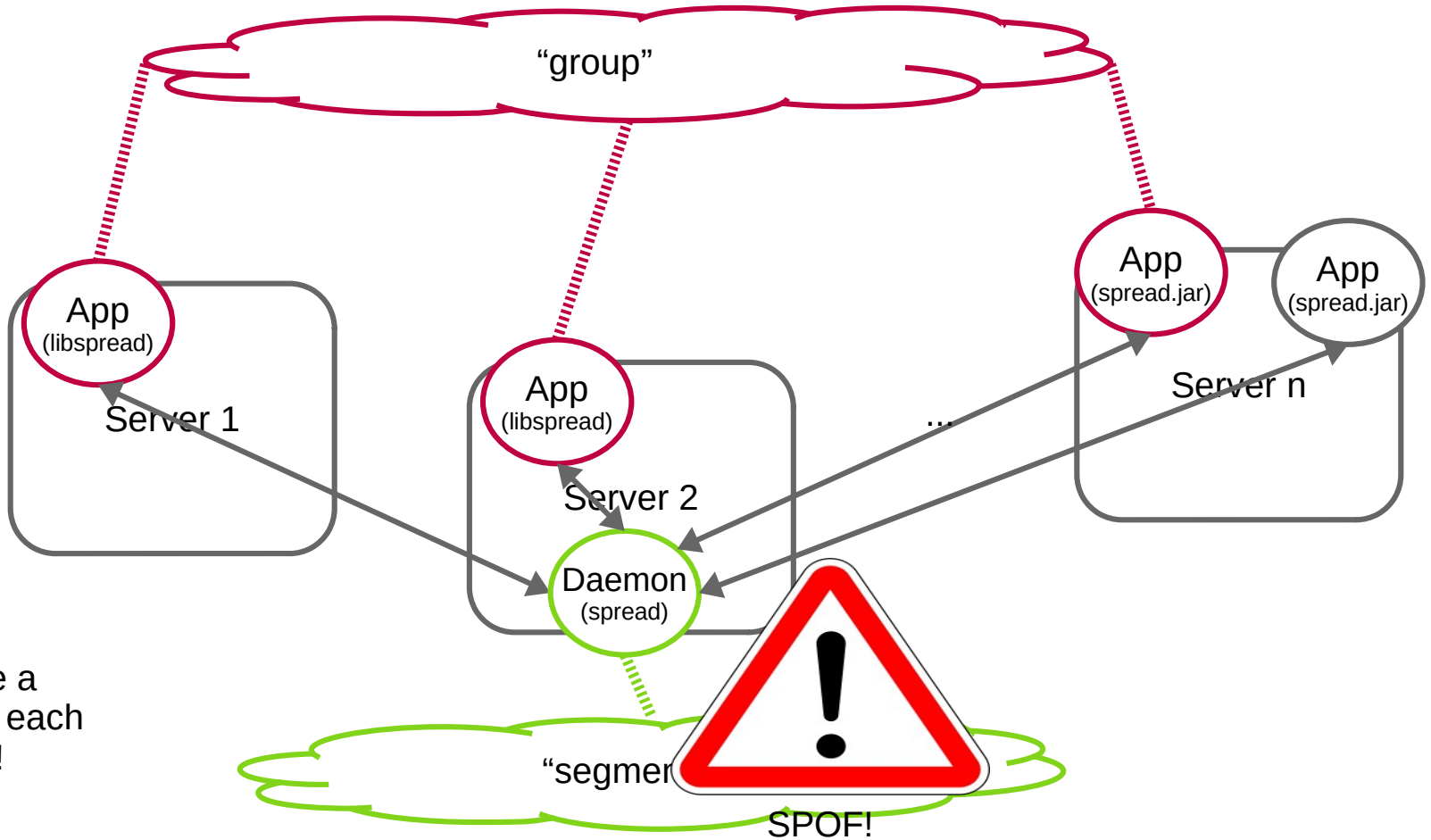
Spread

- Extended view synchrony
- Open groups:
  - Can send messages to group without joining
- Layered architecture:
  - Logical processes and groups for the application
  - Physical overlay network (“segment”) with local server daemons
- Can be used for point-to-point messages

Architecture



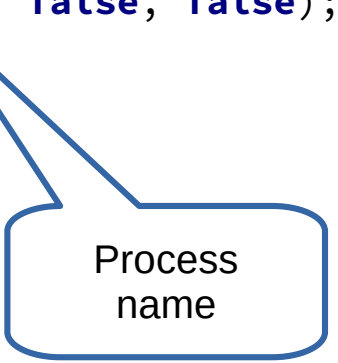
Invalid configuration



Must use a daemon for each server!

Connection

- Connection to the overlay network:




```
SpreadConnection conn = new SpreadConnection();
conn.connect(InetAddress.getByName("localhost"), 4803, "myname", false, false);

conn.add(new BasicMessageListener() {
    @Override
    public void messageReceived(SpreadMessage msg) {
        // …
    }
});

// …

conn.disconnect();
```

Joining

- Joining and leaving a logical group:

```
SpreadGroup group = new SpreadGroup();
group.join(conn, "mygroup");

// …

group.leave();
```

Sending messages

- Messages can be sent without joining a group:

```
SpreadMessage message = new SpreadMessage();
message.setData(...);
message.setSafe();
message.addGroup("mygroup");
conn.multicast(message);
```

Replying to messages

- The process name is a singleton group that can be used for addressing:

```
public void messageReceived(SpreadMessage req) {
    SpreadMessage rep = new SpreadMessage();
    rep.setData(...);
    rep.setReliable();
    rep.addGroup(req.getSender());
    conn.multicast(rep);
}
```

No agreement for a single destination

Sender is a singleton group