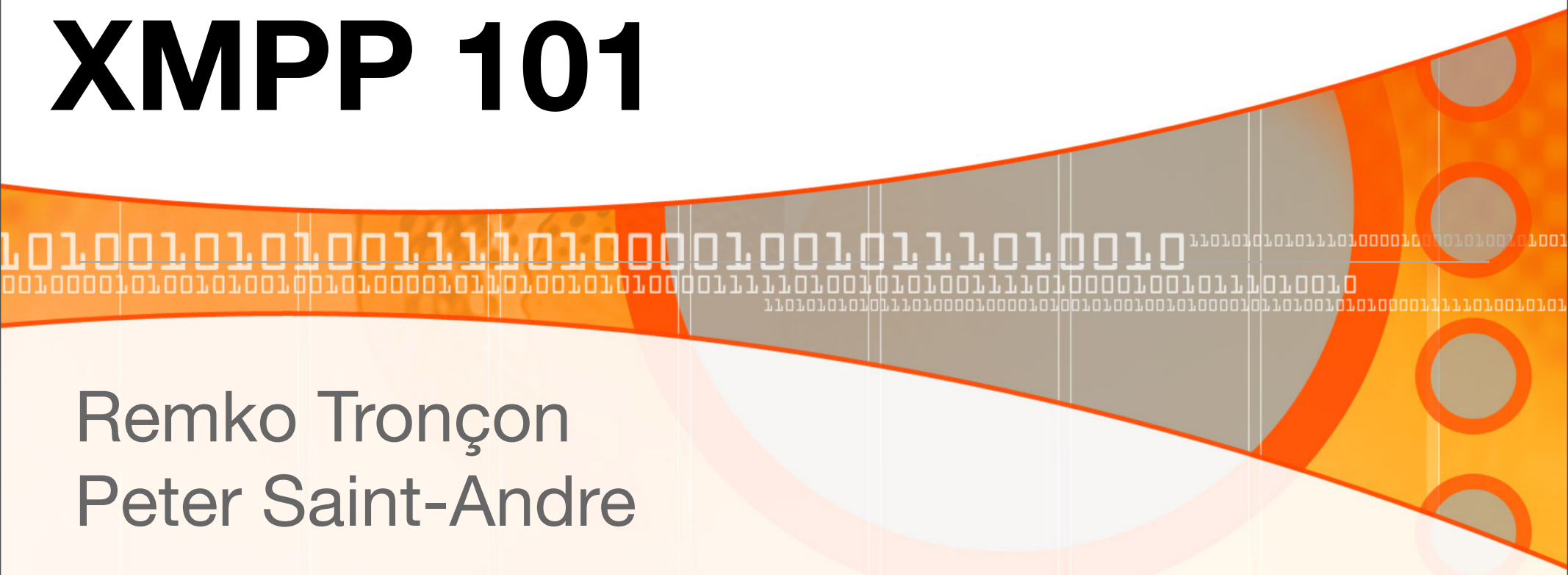
XMPP 101

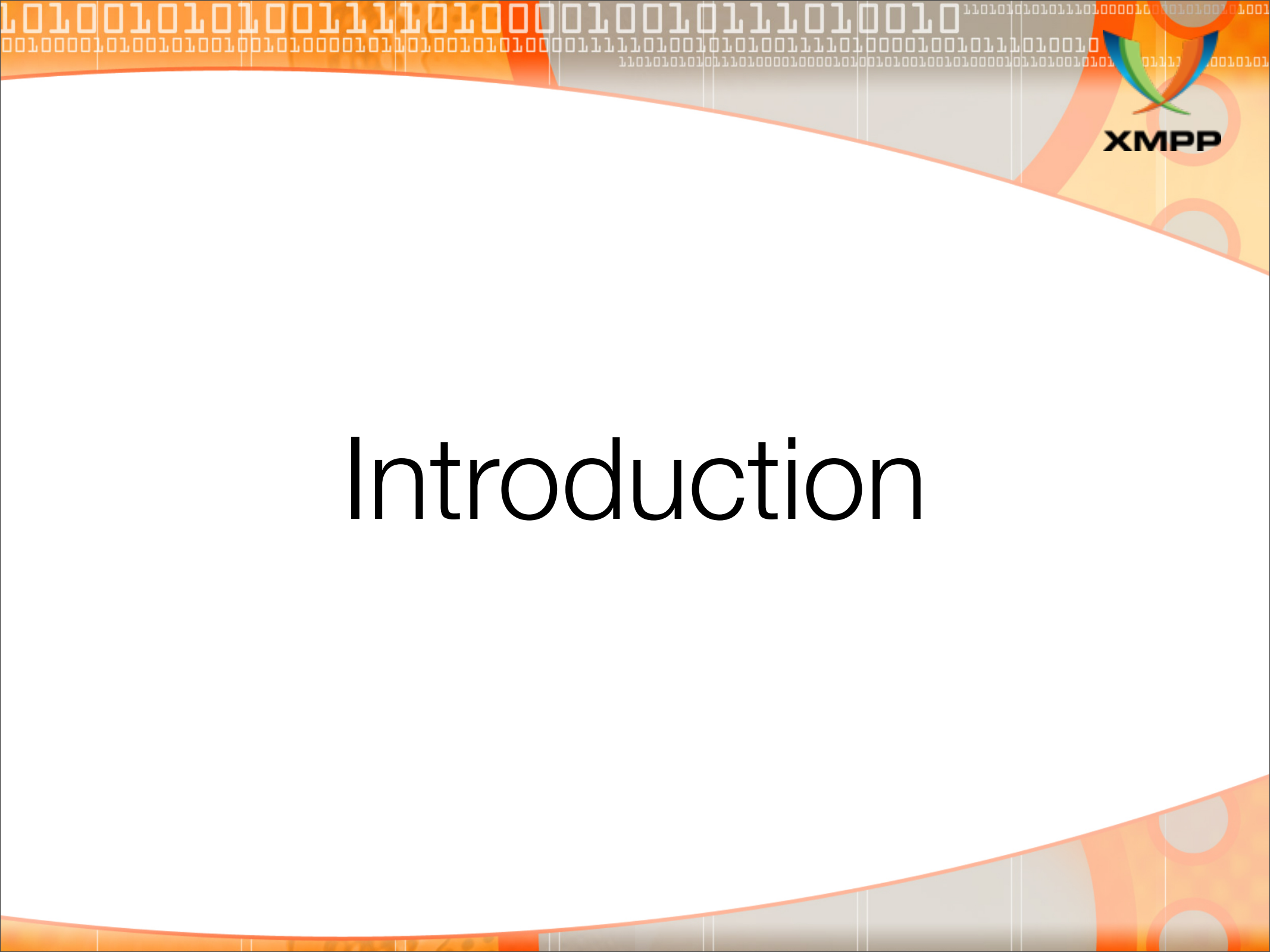


Remko Tronçon
Peter Saint-Andre

XMPP

Overview

- Introduction
- XMPP Basics
- Example code
- Extensions
- State of the bulb
- Conclusion



Introduction

About Us

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- **Peter**: Documentation guy and specification author

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- **Remko**: Developer for Psi client and other projects

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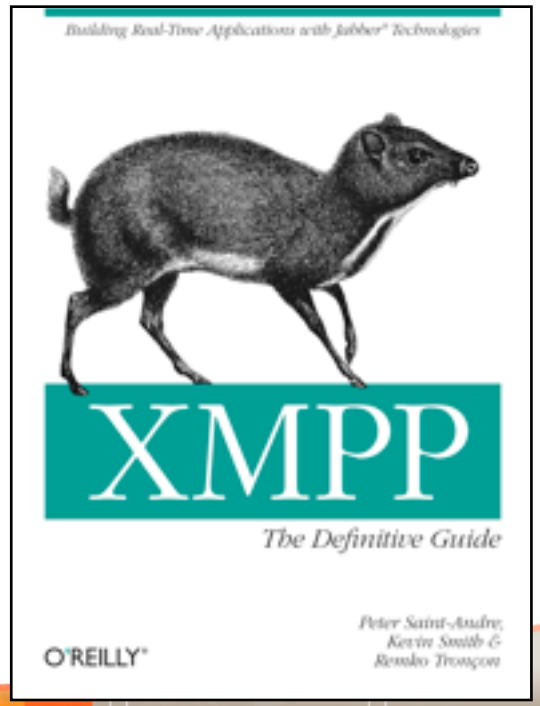
- Co-authors (with Kevin Smith) of *XMPP: The Definitive Guide (O'Reilly, 2009)*



About You

About You

- Why are you here?

About You

- Why are you here?
- What do you want to build?

About You

- Why are you here?
- What do you want to build?
- What is your background? (web, client-server, ...)

What is XMPP?

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Sister
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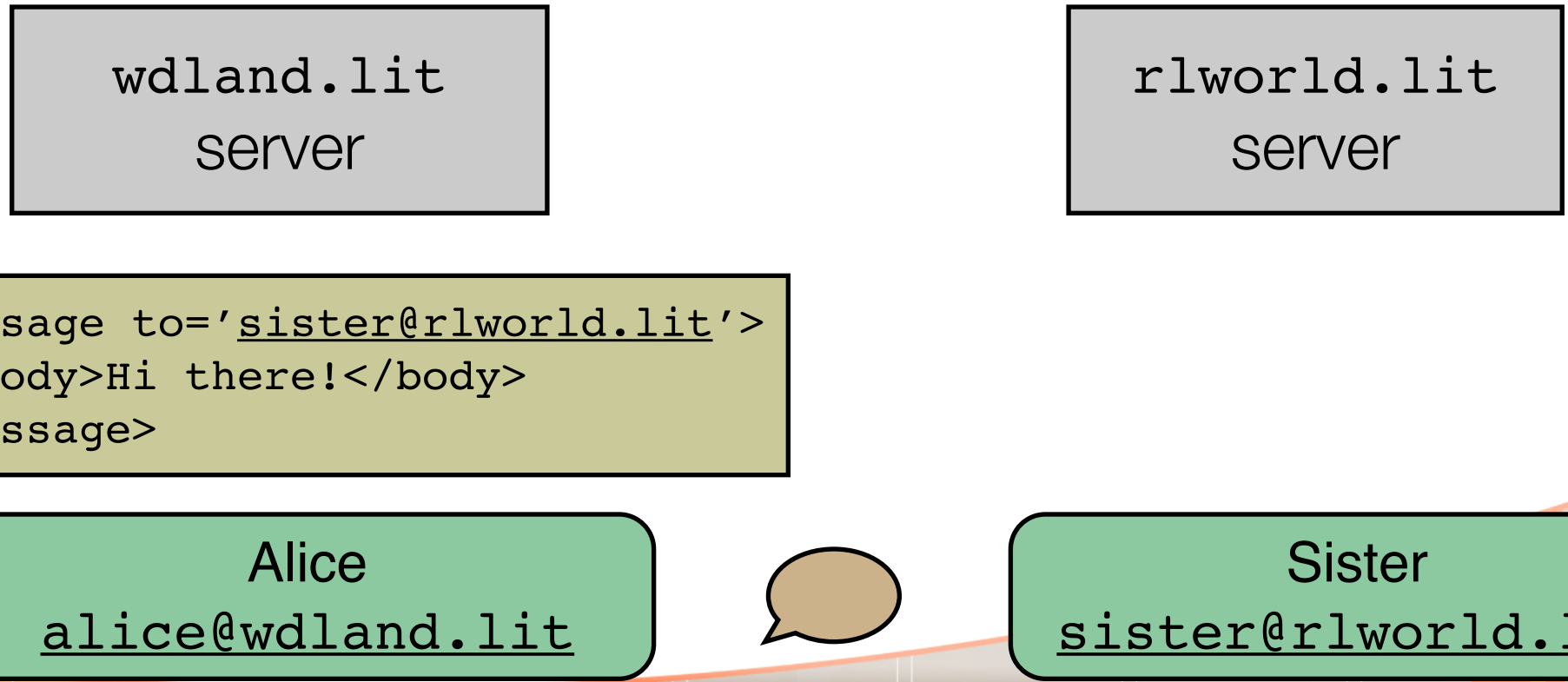

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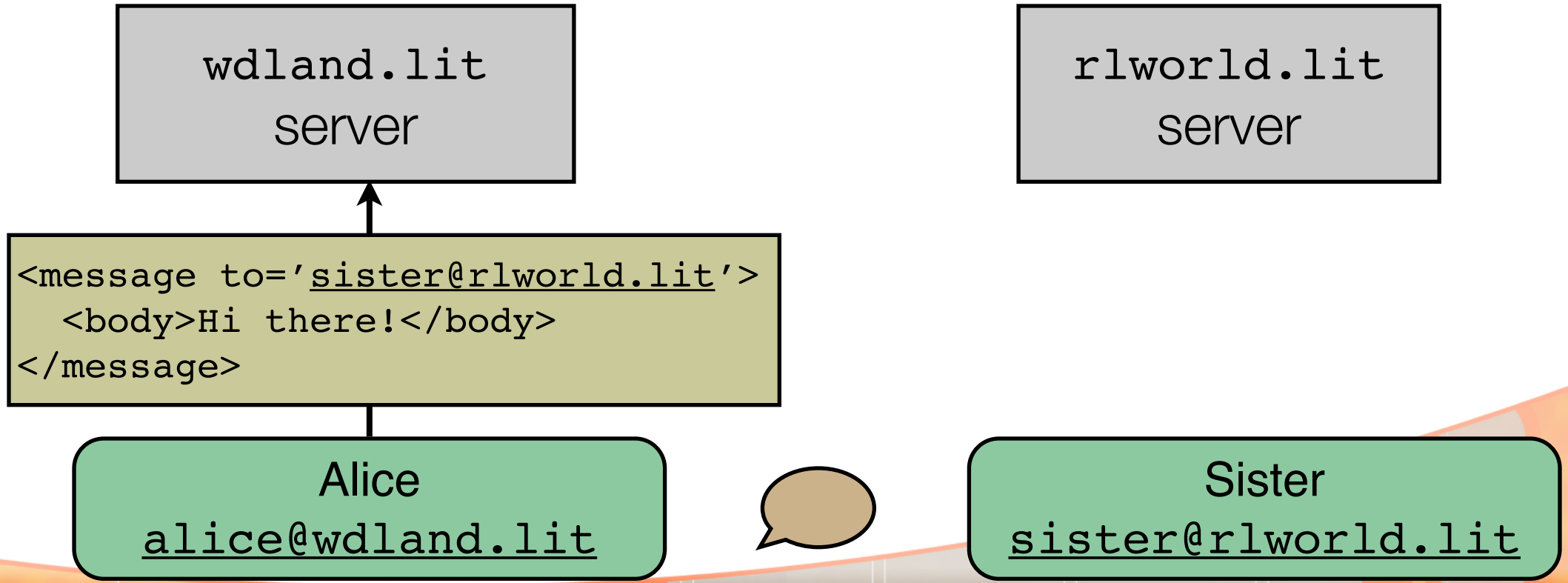

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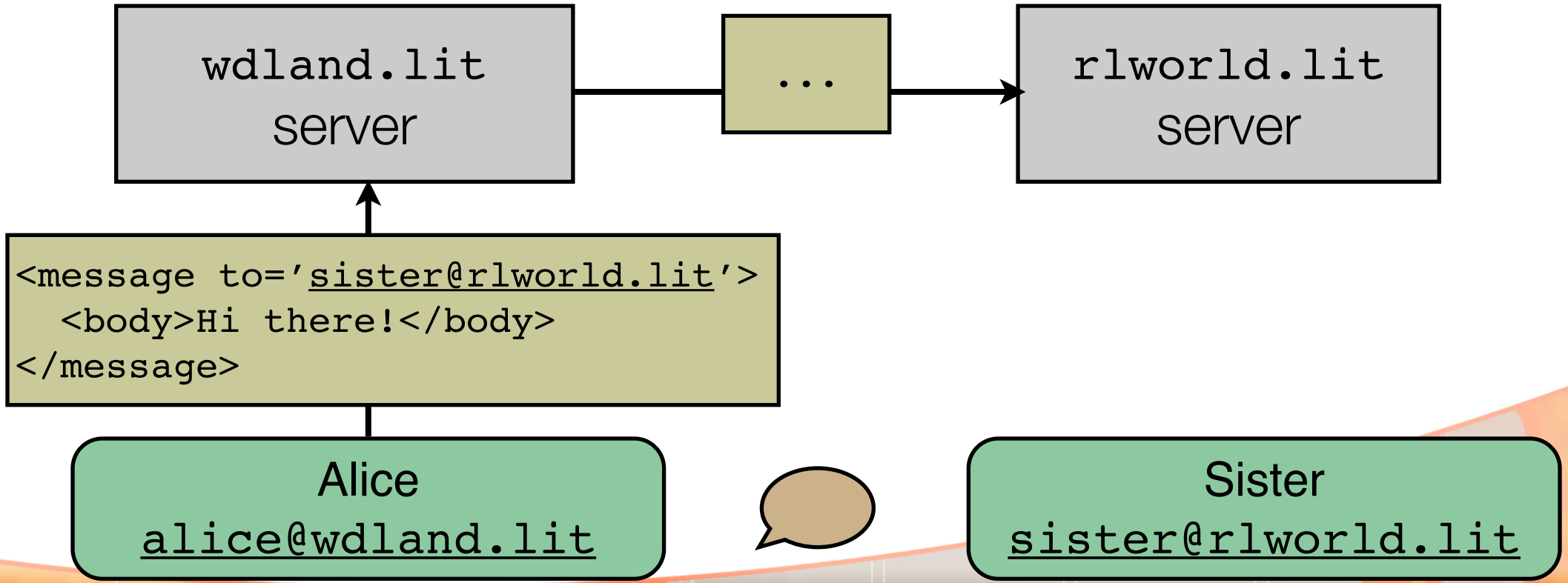

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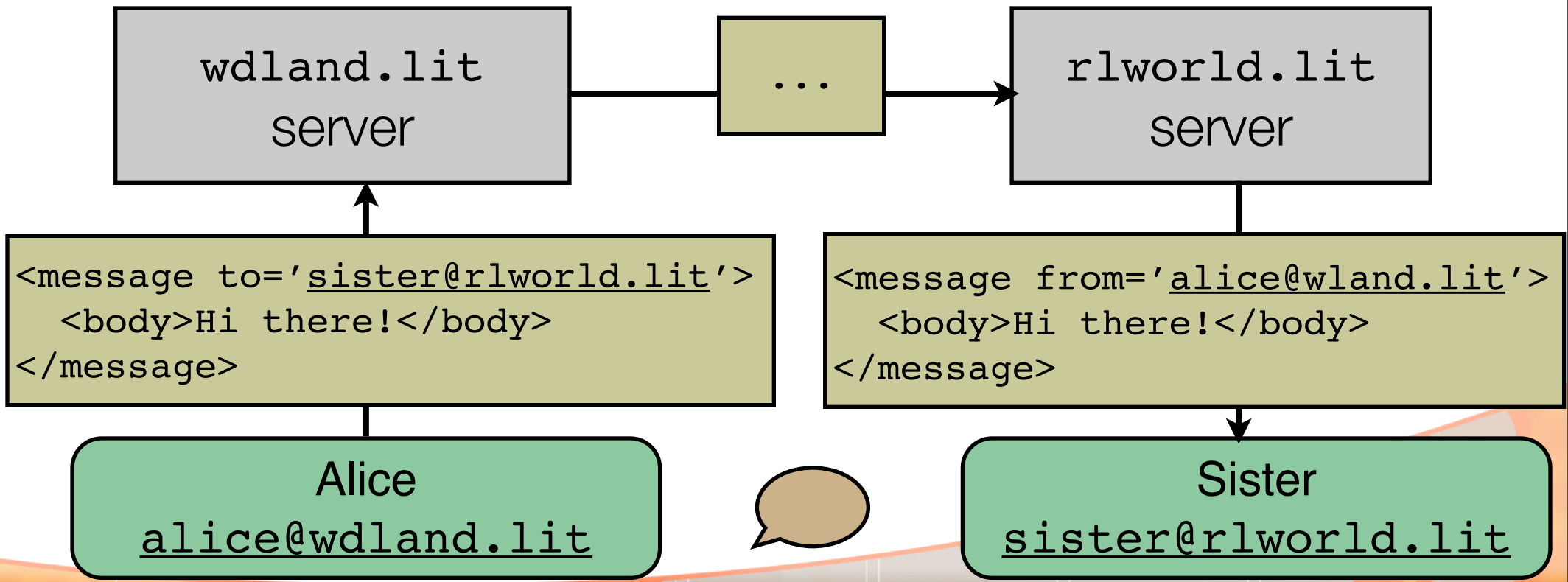

What can you do with XMPP?

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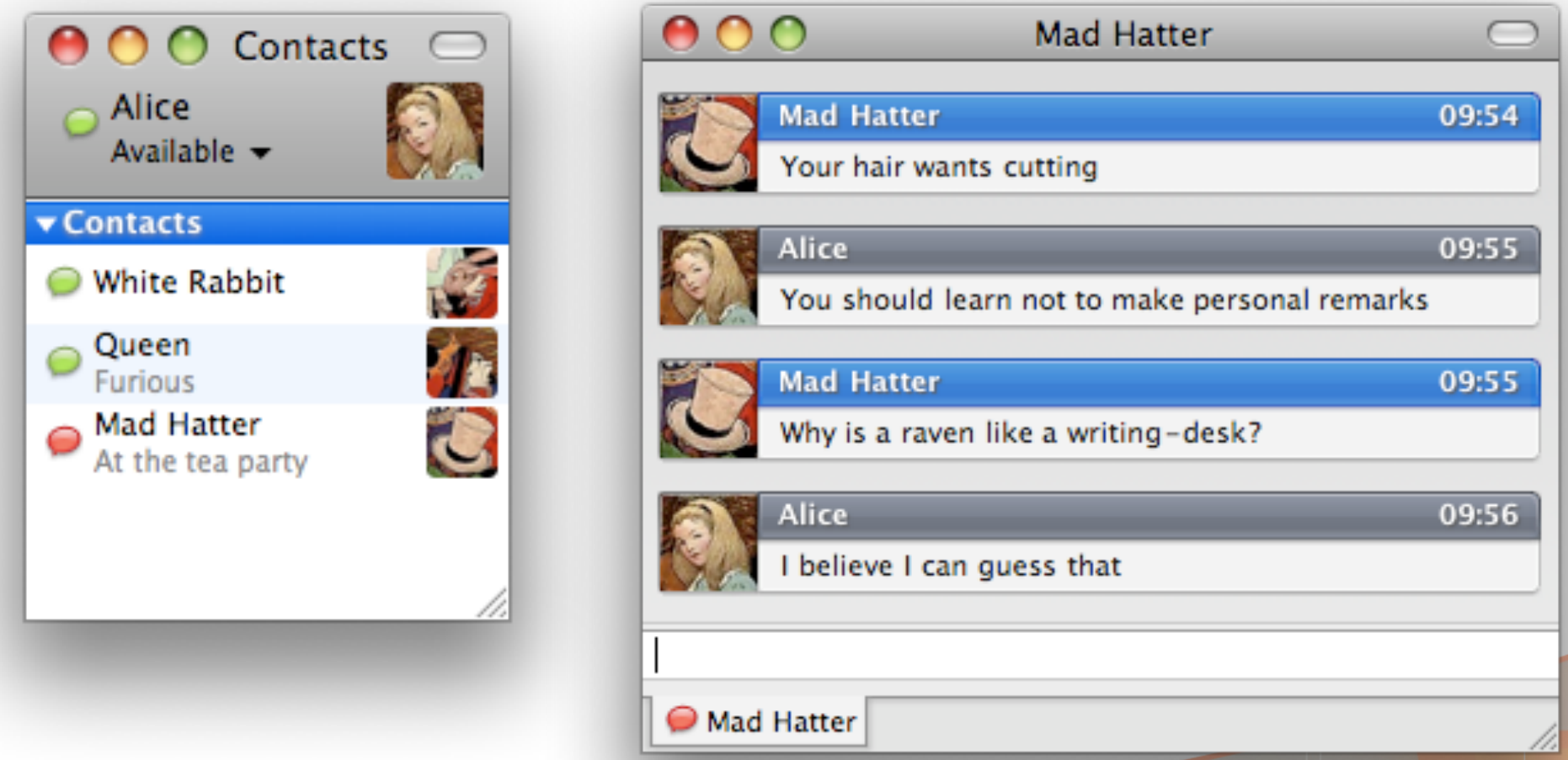
Instant Messaging



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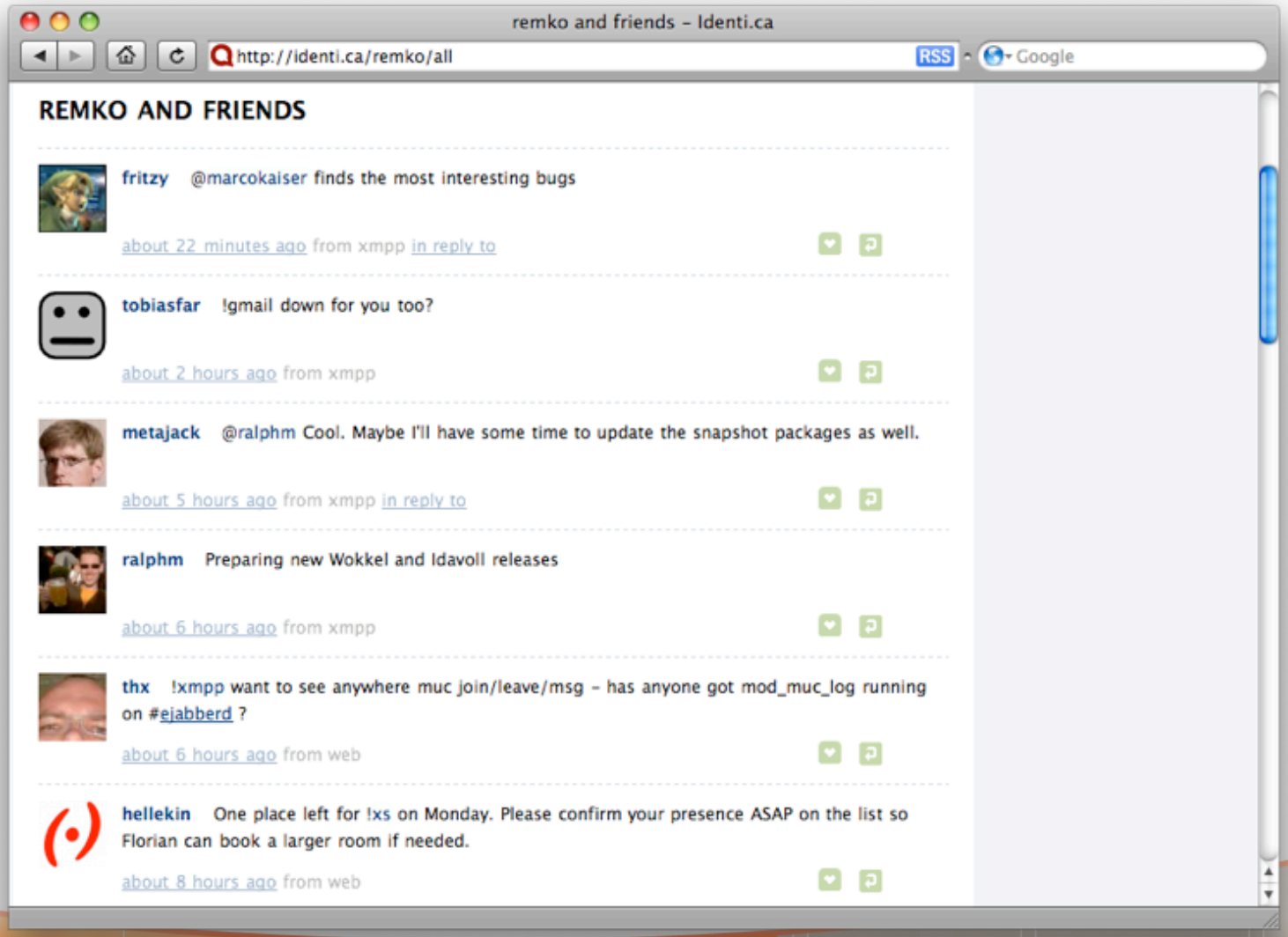
Real-time Social Networking



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Gaming

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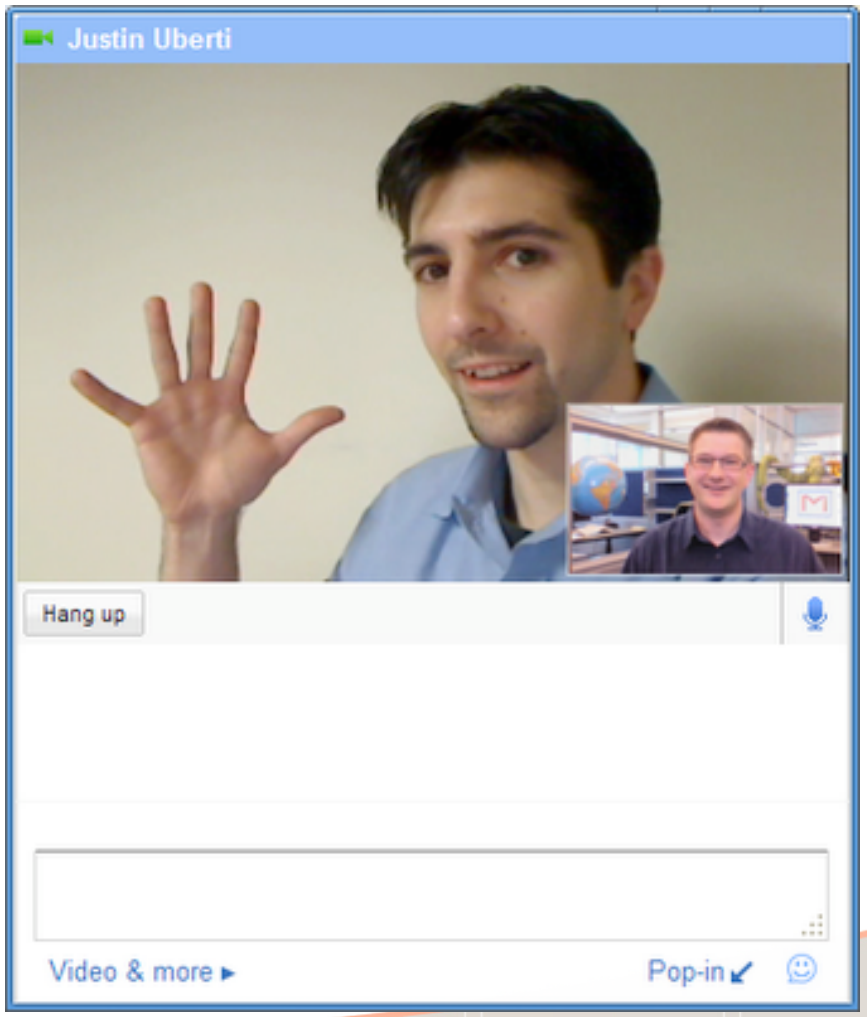
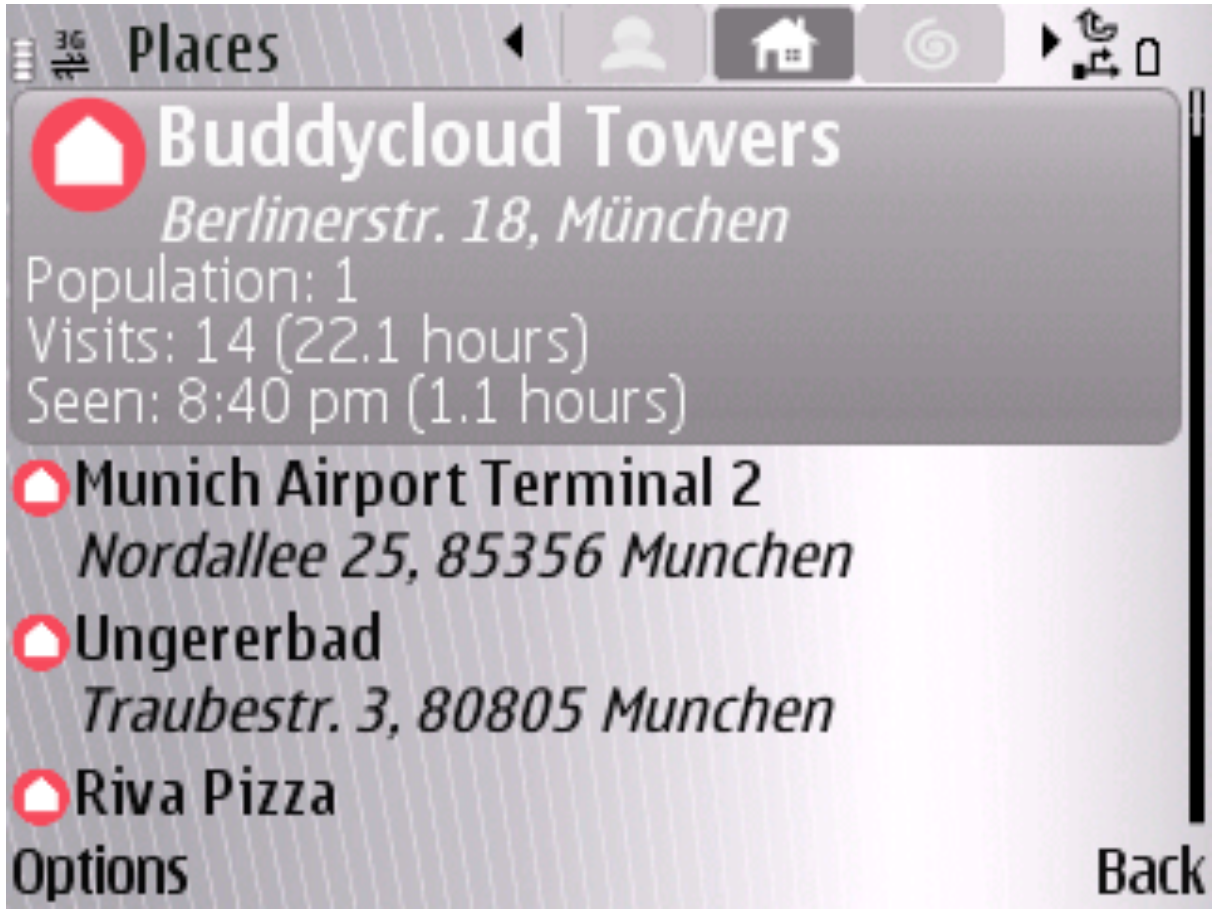
Voice & Video



What can you do with XMPP?

Mobile apps / Geolocation



What can you do with XMPP?

<insert your idea here>

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- Data forms and remote commands
- And more (lots of extensions)

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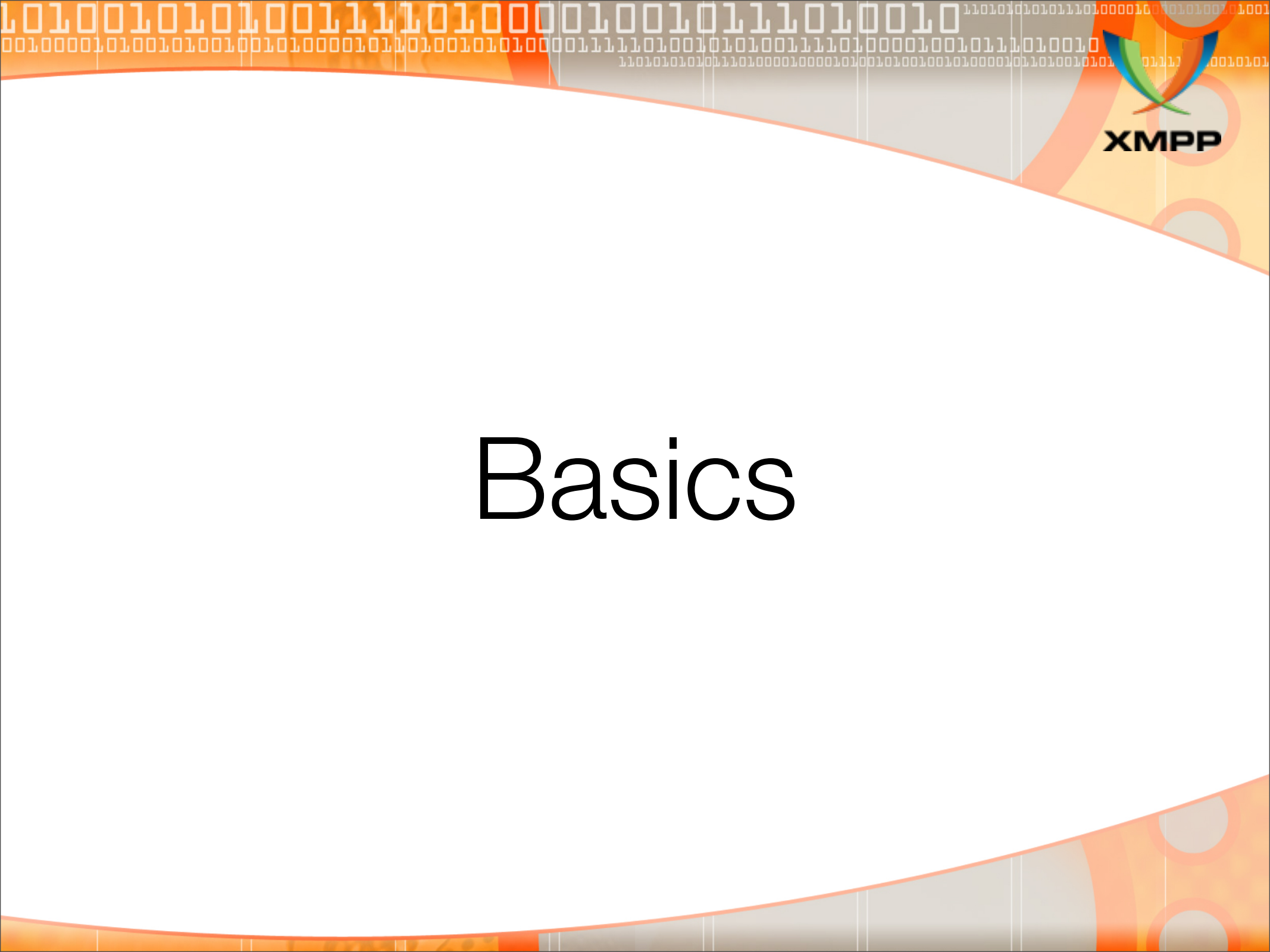
- Continuing work on improved security and more application types



Basics

Architecture

- Web architecture

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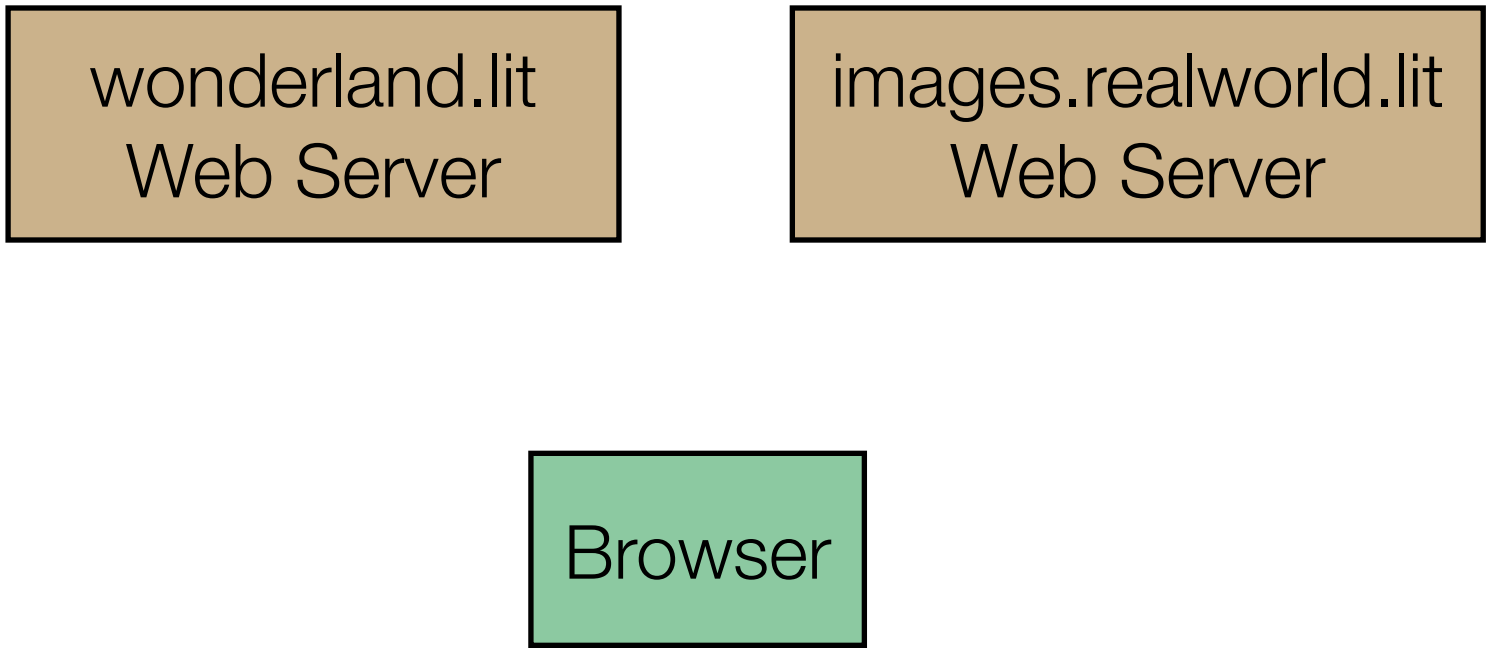

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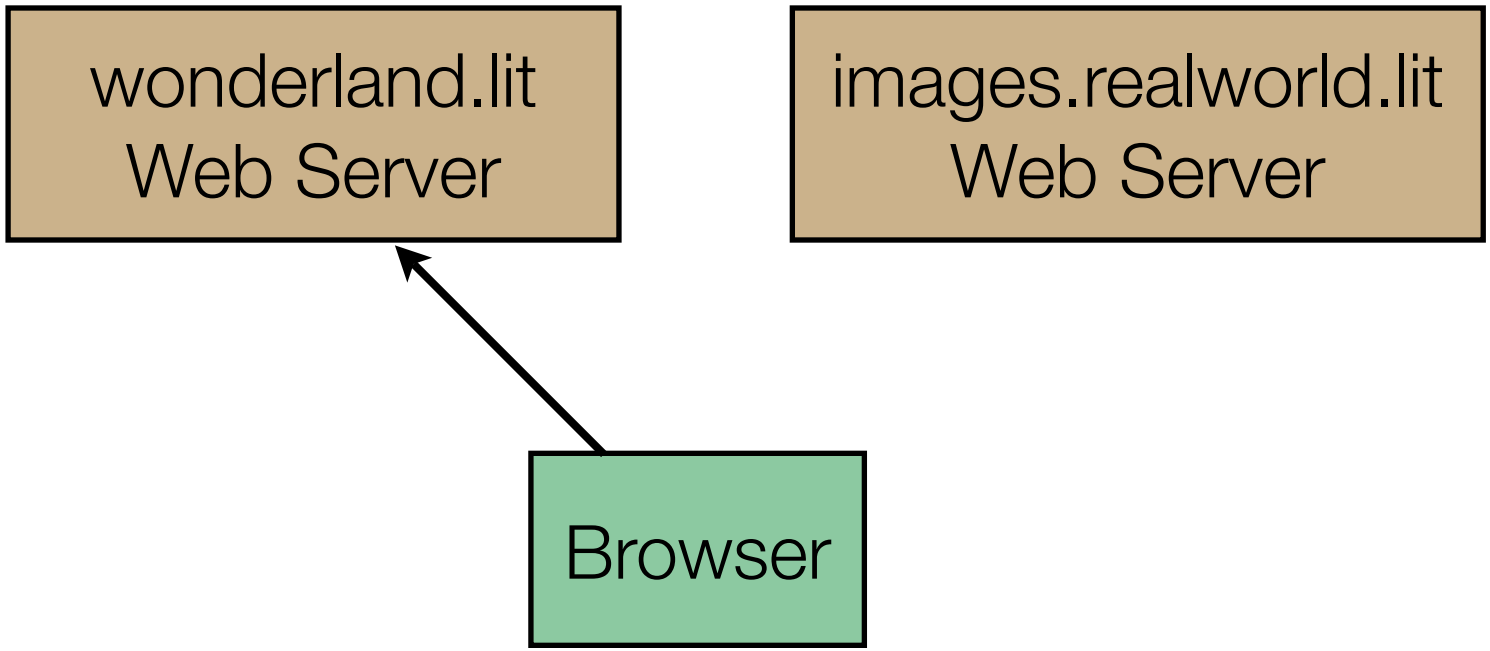

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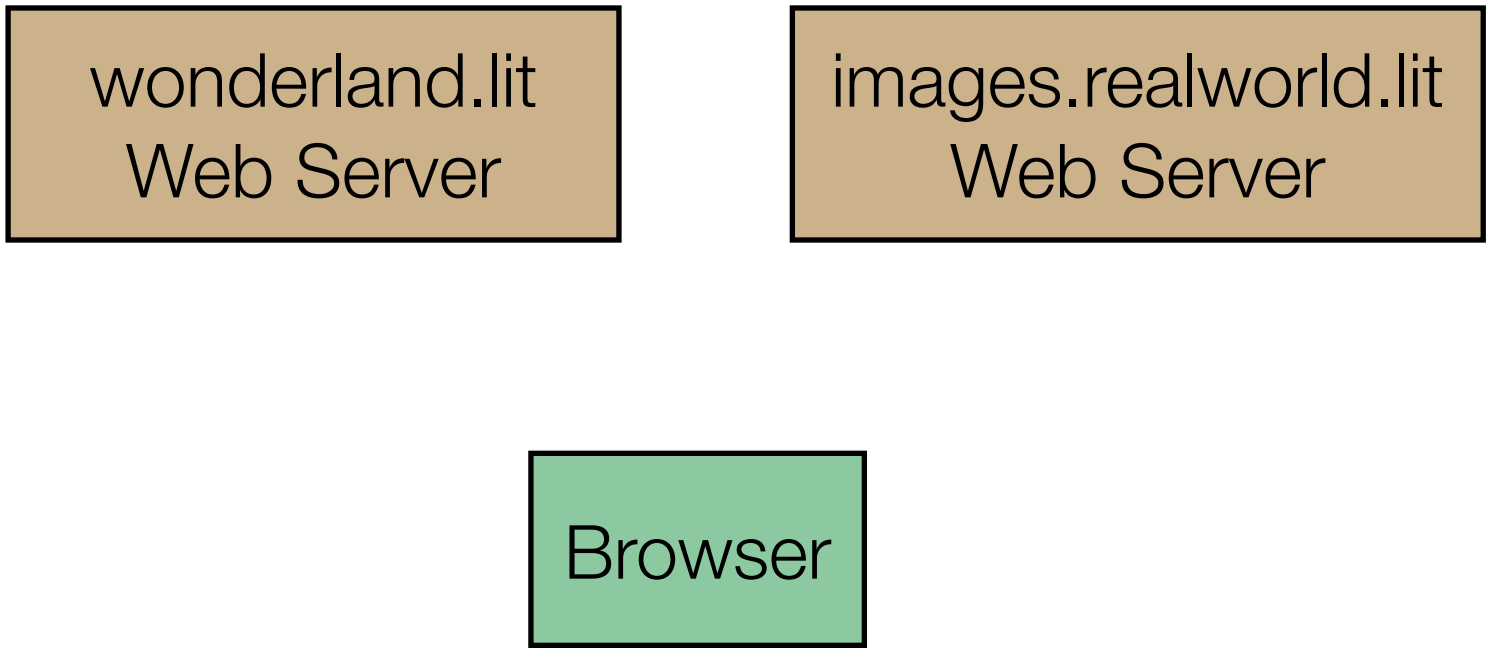

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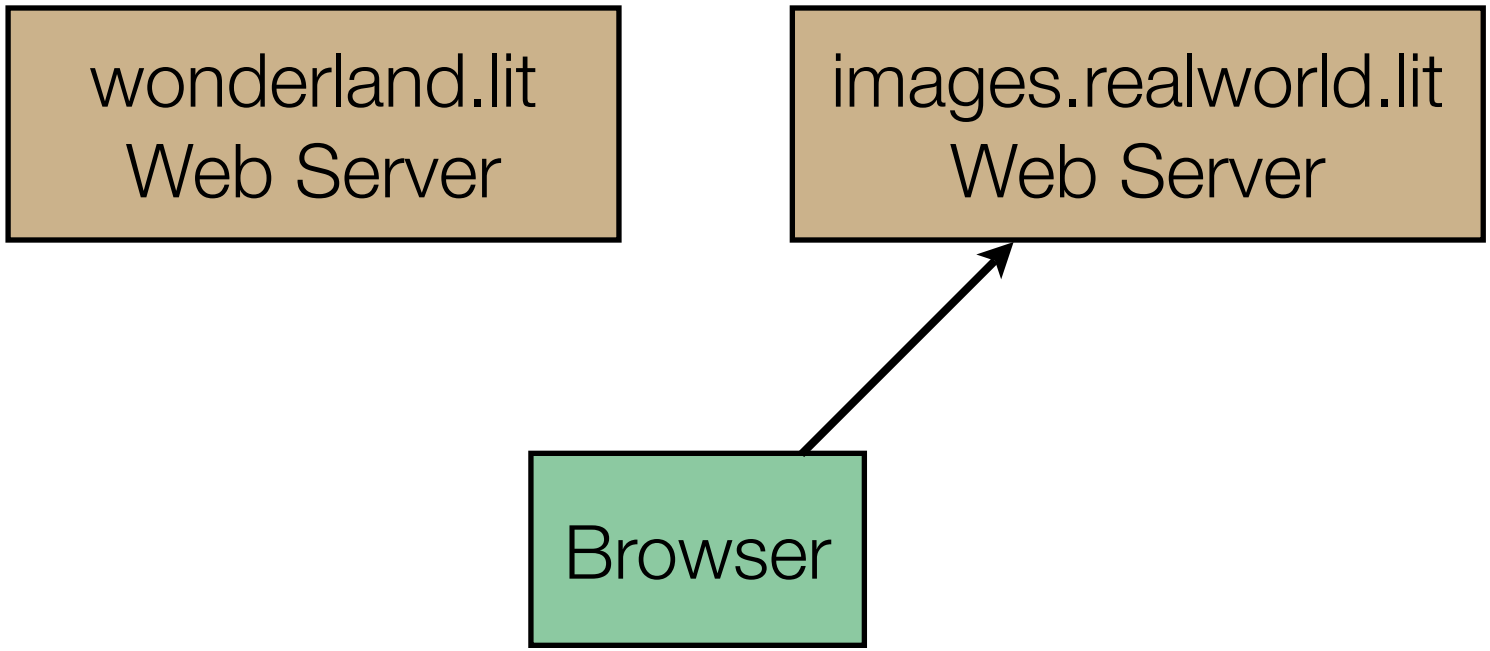

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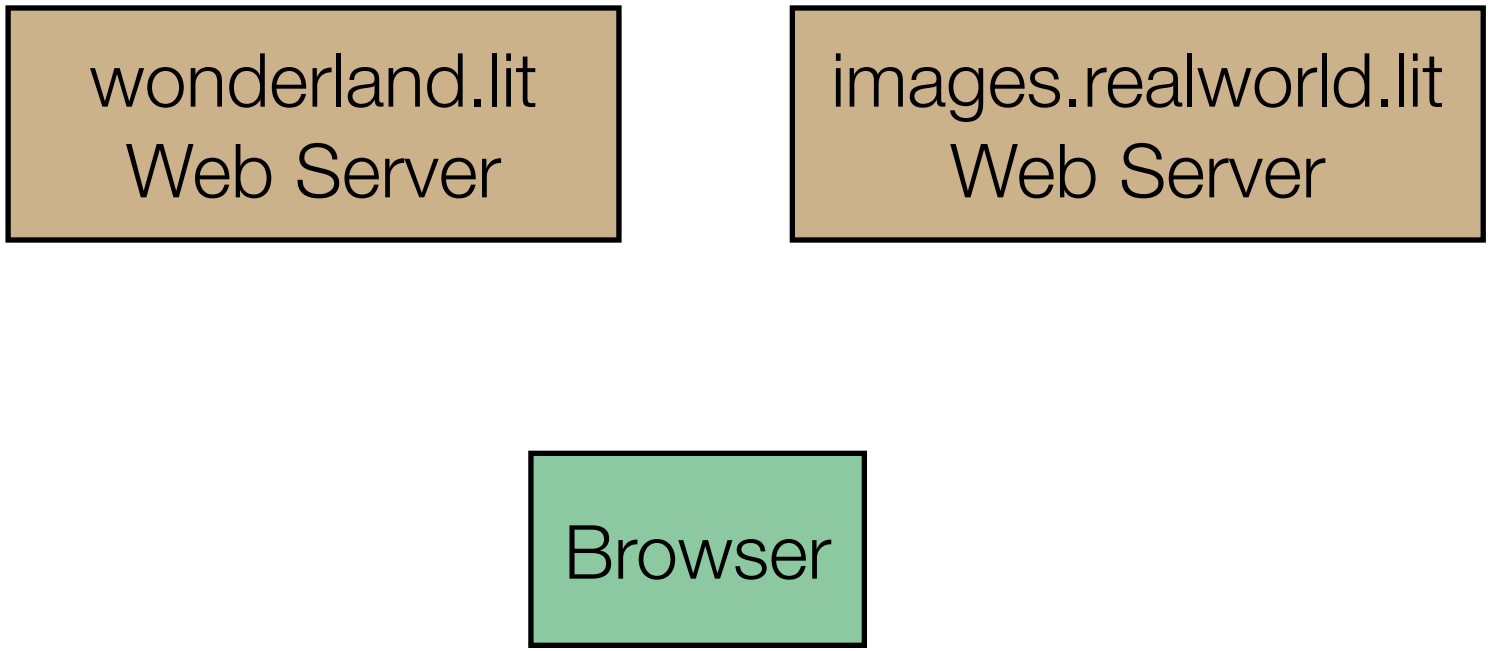

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E-Mail client
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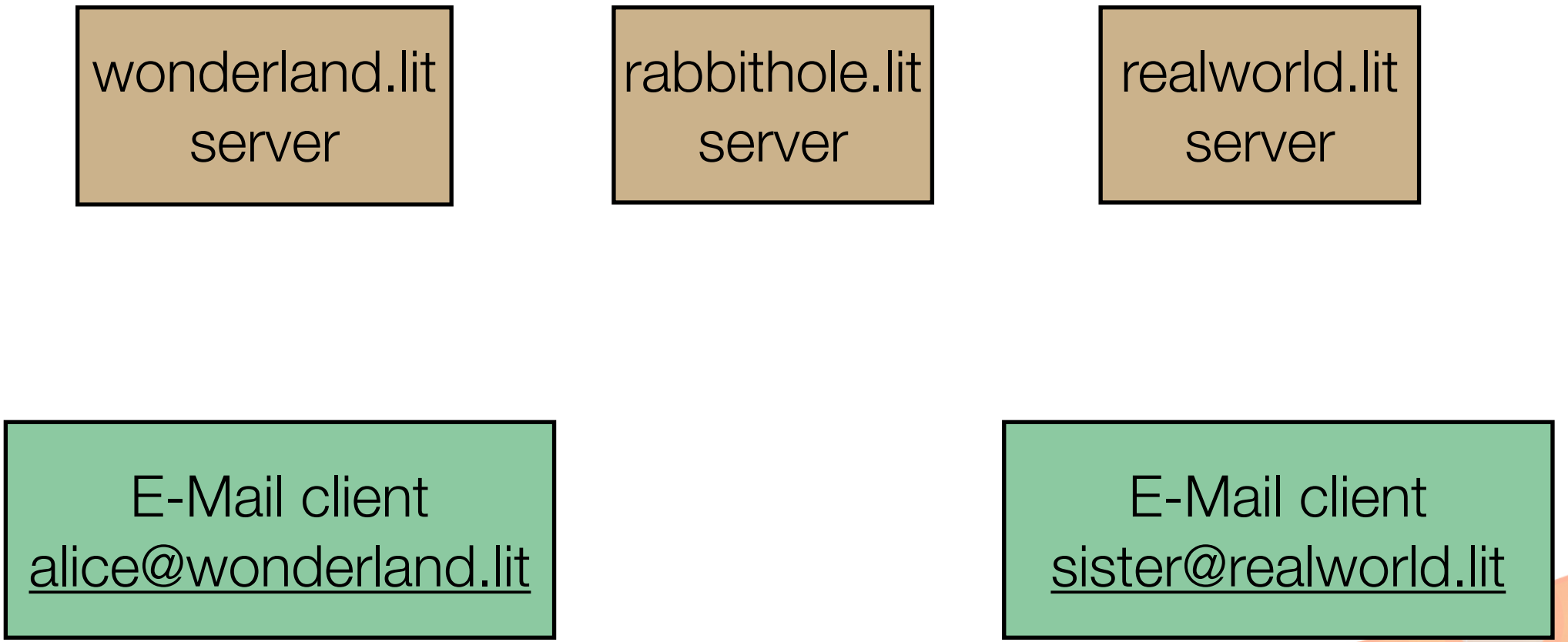

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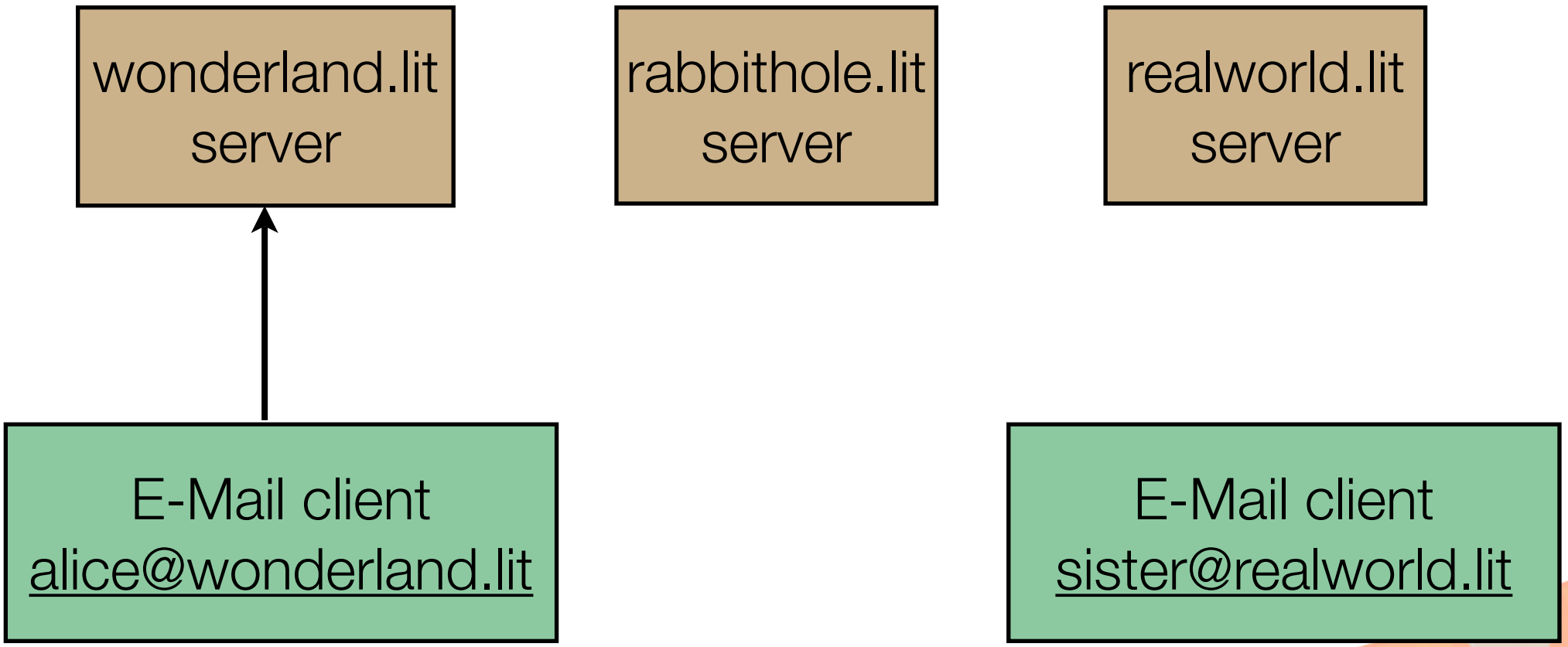

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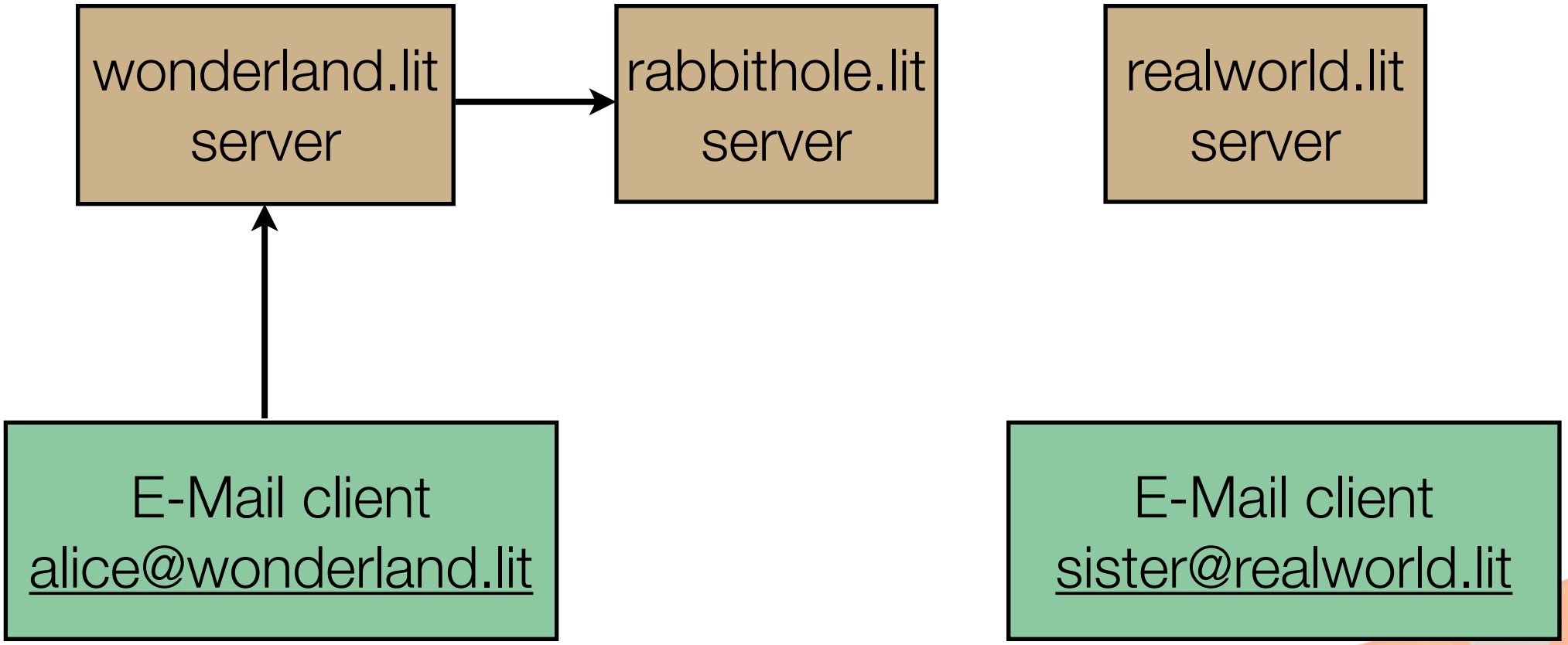

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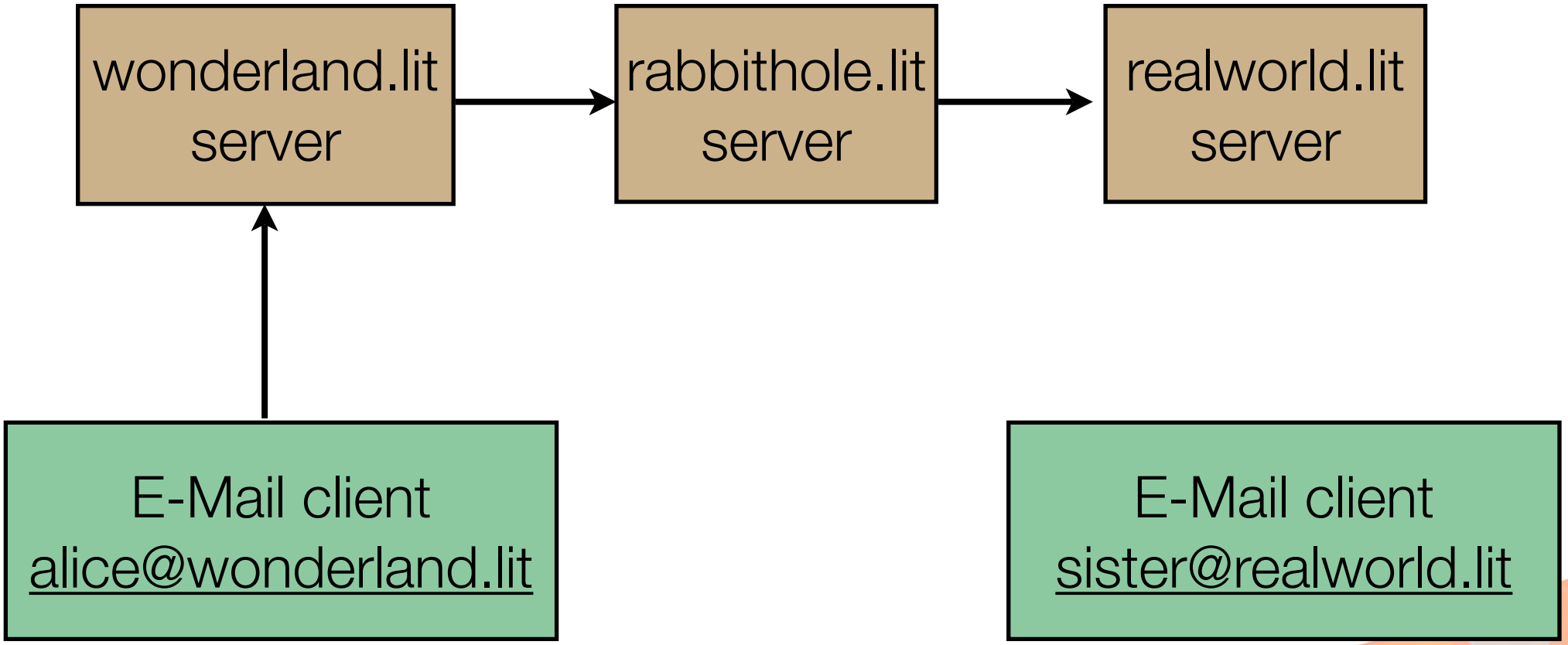

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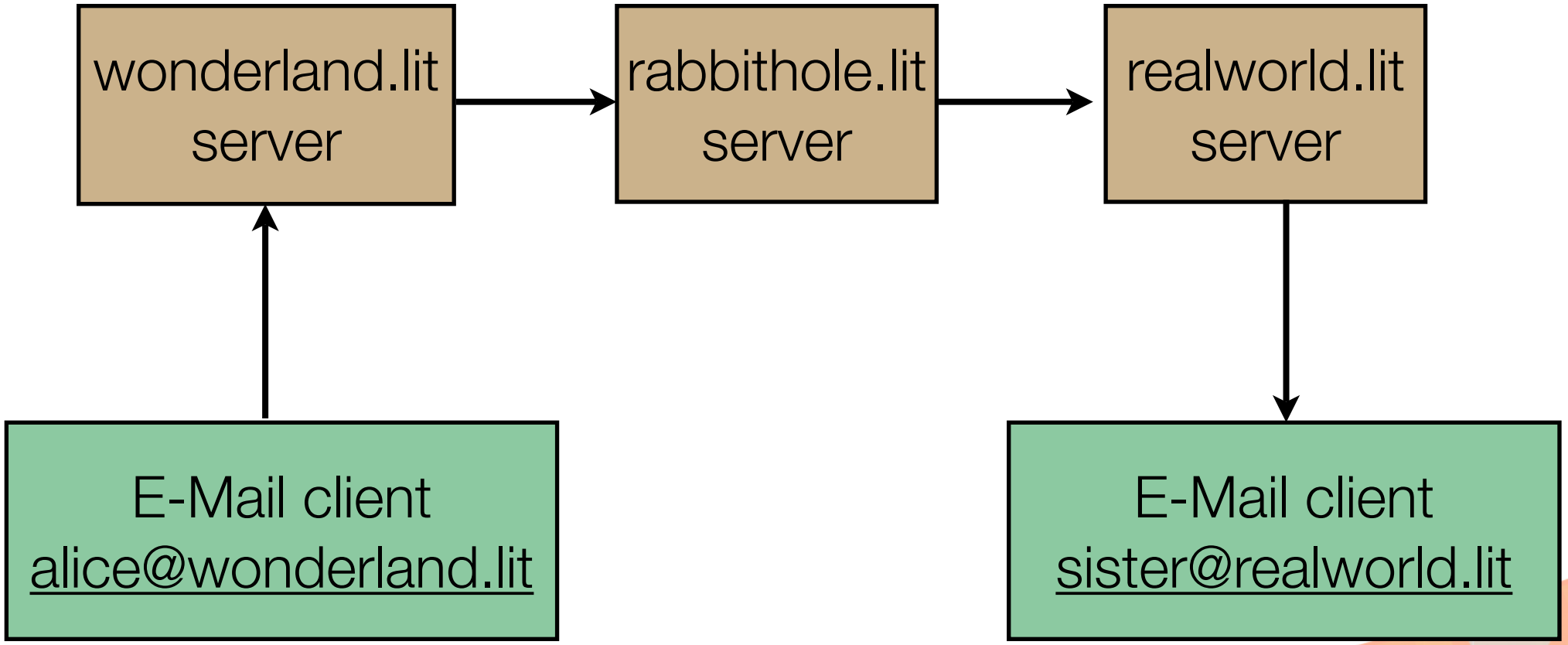

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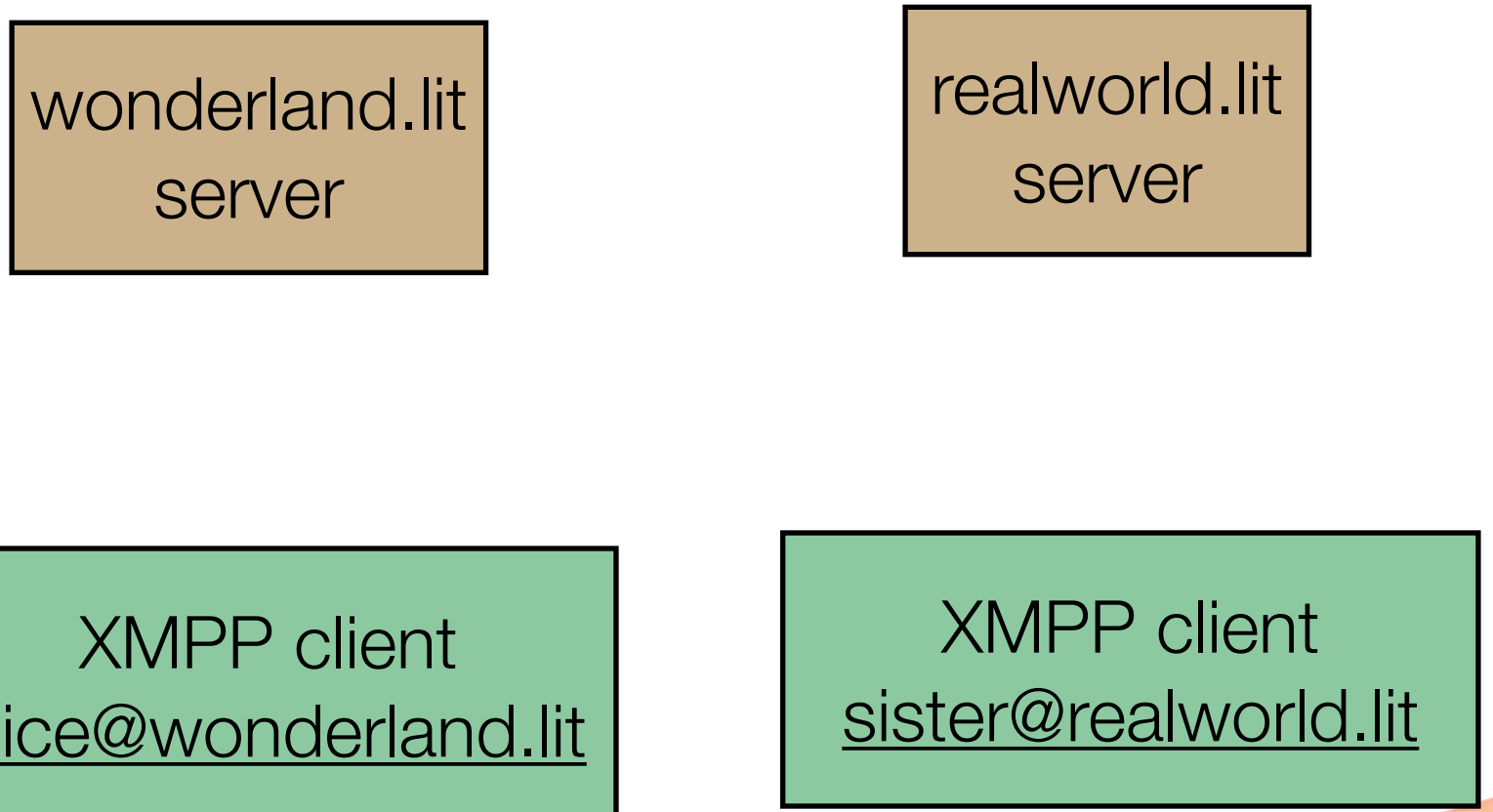

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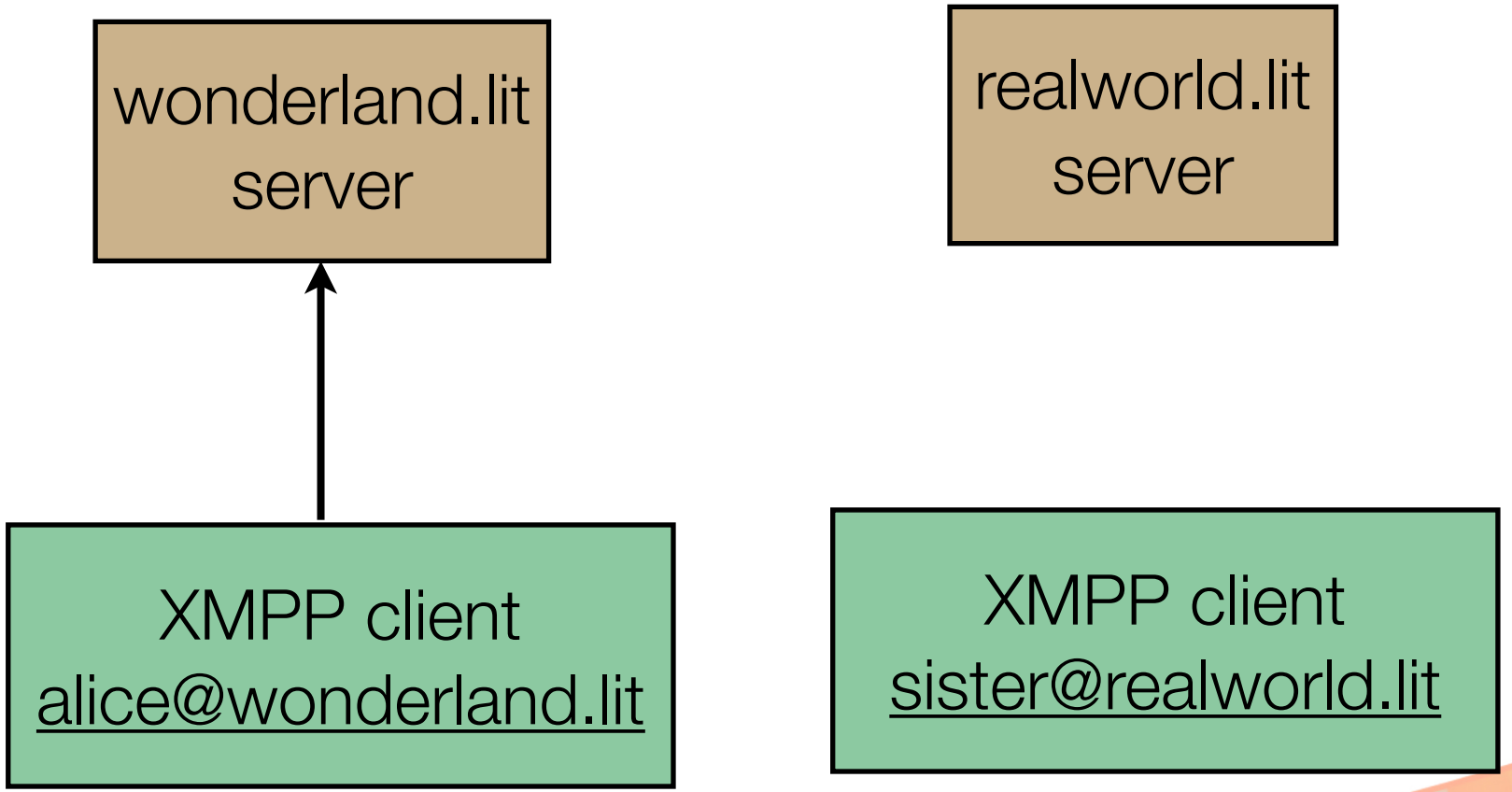

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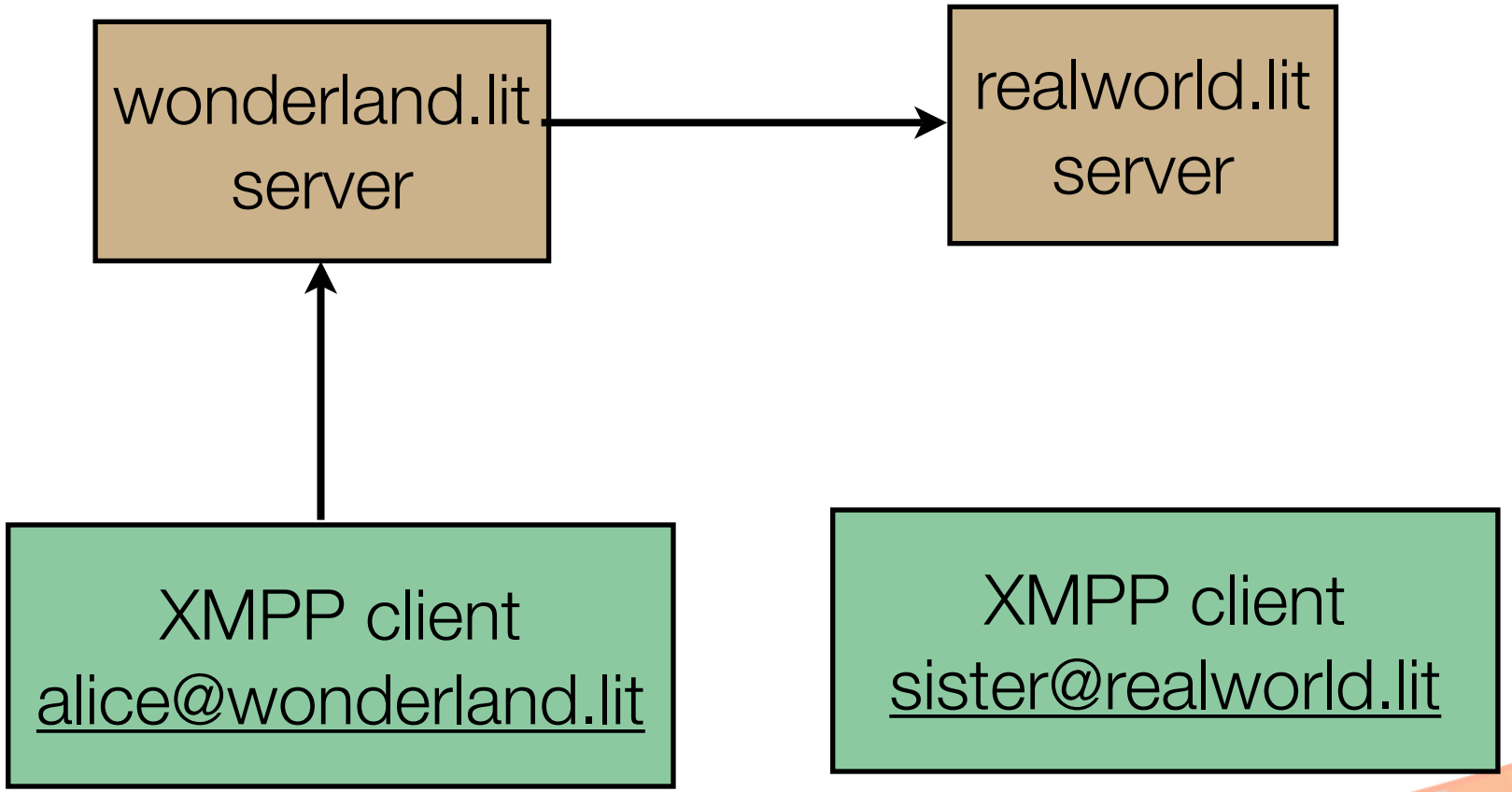

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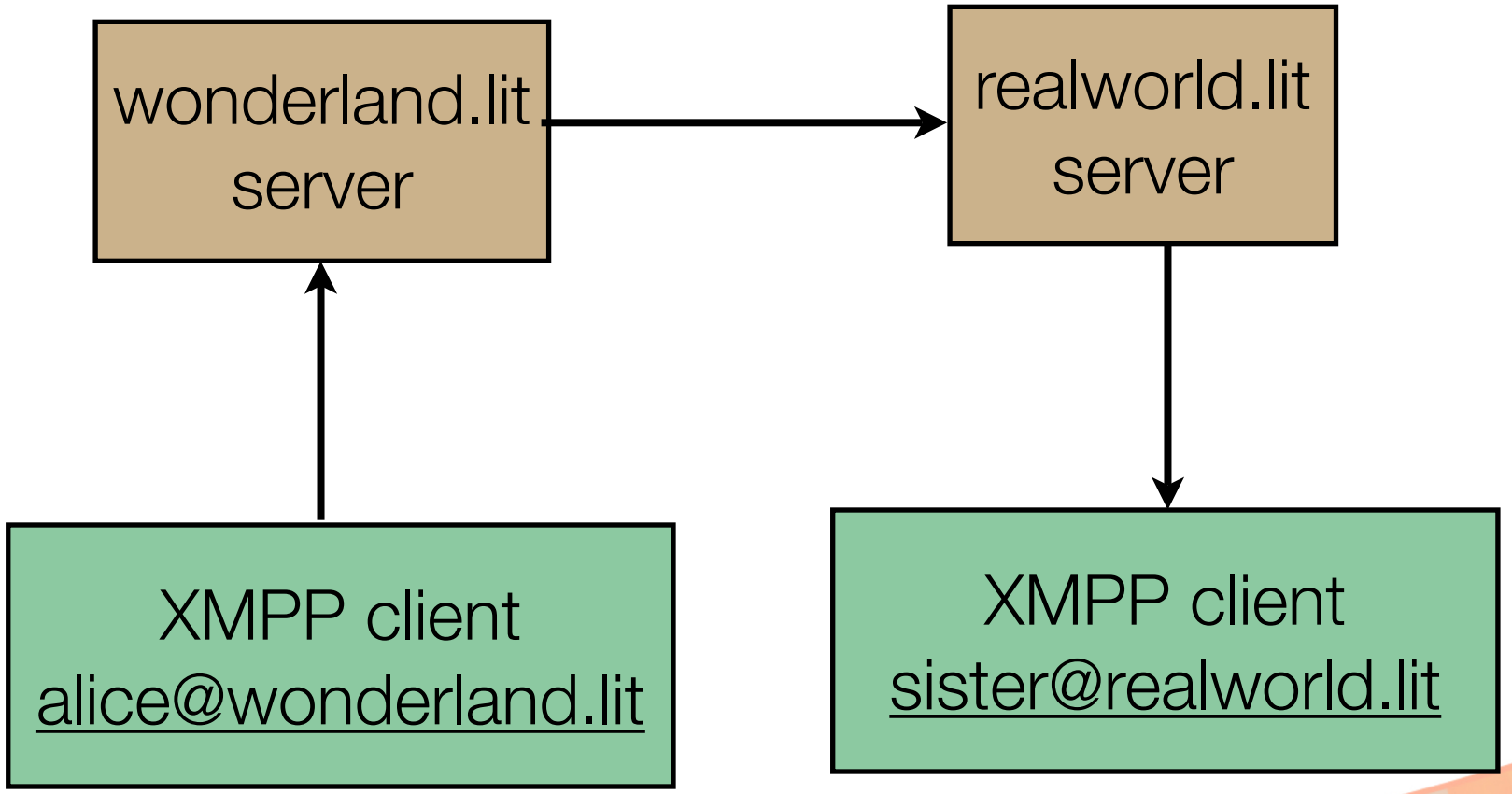

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- Decentralized
  - Robust (no single point of failure)
  - Easier to manage
- No multiple hops
  - Harder to spoof

Addresses

Jabber ID (JID)

Addresses

XMPP

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Domain

`wonderland.lit`

Addresses

Jabber ID (JID)

User Domain

alice@wonderland.lit

Addresses

Jabber ID (JID)

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Bare JID

Addresses

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Addresses

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Full JID

Streaming XML

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```
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```

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Communication Primitives

Stanzas:

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Communication Primitives

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Message Stanzas

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<message from="madhatter@wonderland.lit/foo"
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  <body>Who are you?</body>
  <subject>Query</subject>
</message>
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- From, To

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- Payloads: Body, Subject

Presence Stanzas

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- Advertise network availability (online/offline)
- ‘Show’ Statuses: Away, Do Not Disturb, Extended Away, Free for chat

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- Status messages

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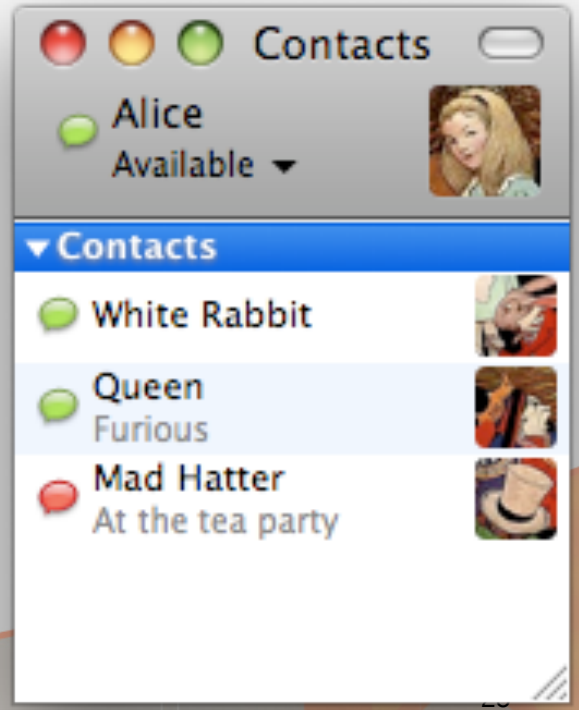

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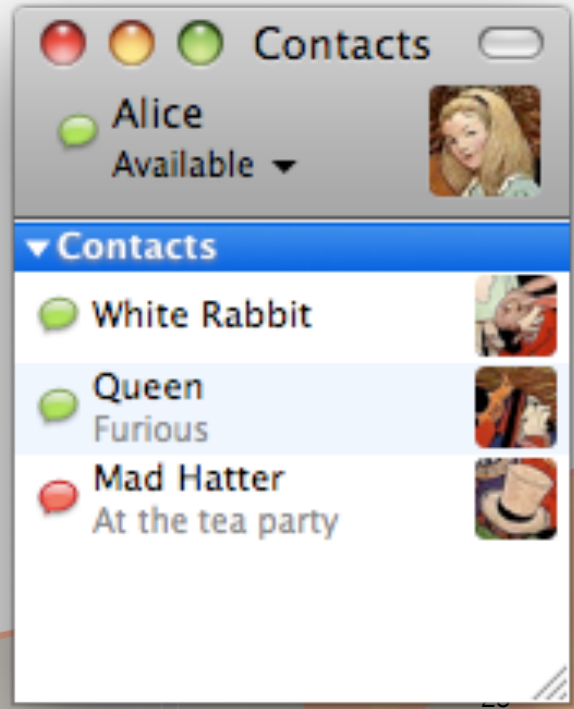

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- Request/Response
- Workflows, execute commands, query information
- Similar to HTTP GET, POST, PUT

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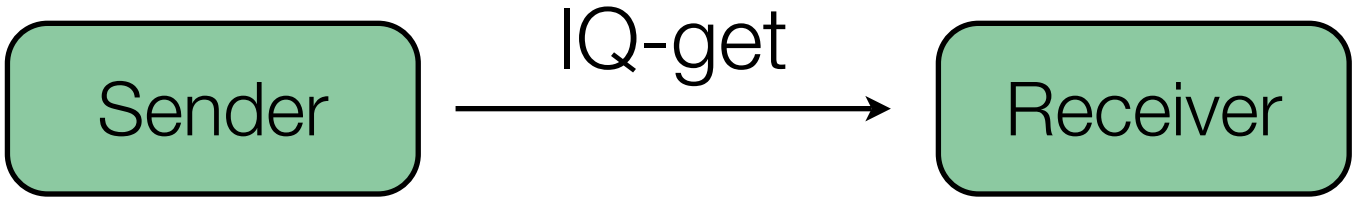

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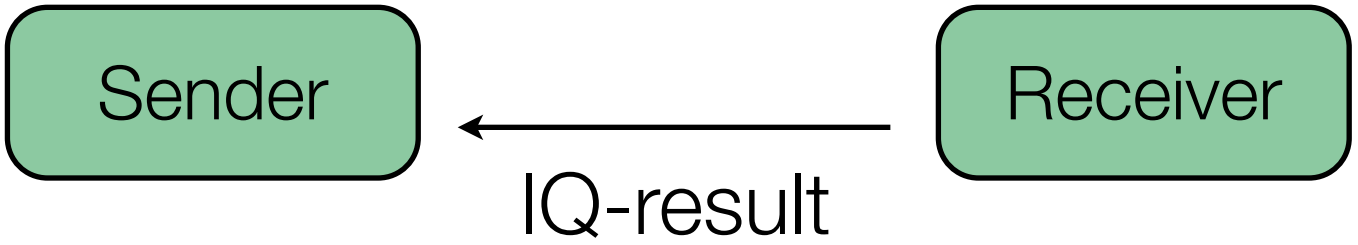

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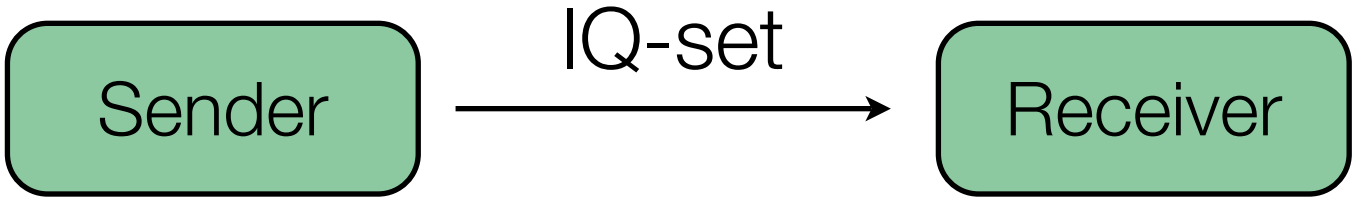

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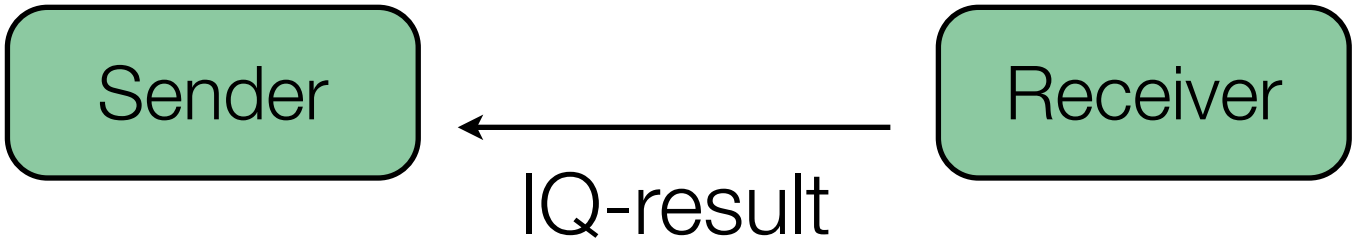

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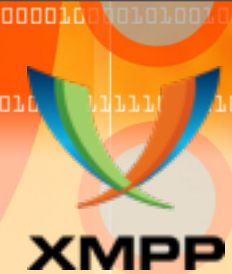

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- Can write your own "private" extensions for custom functionality

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- Different mindsets!

Code Example

Echo bot

Echo bot

- Bots

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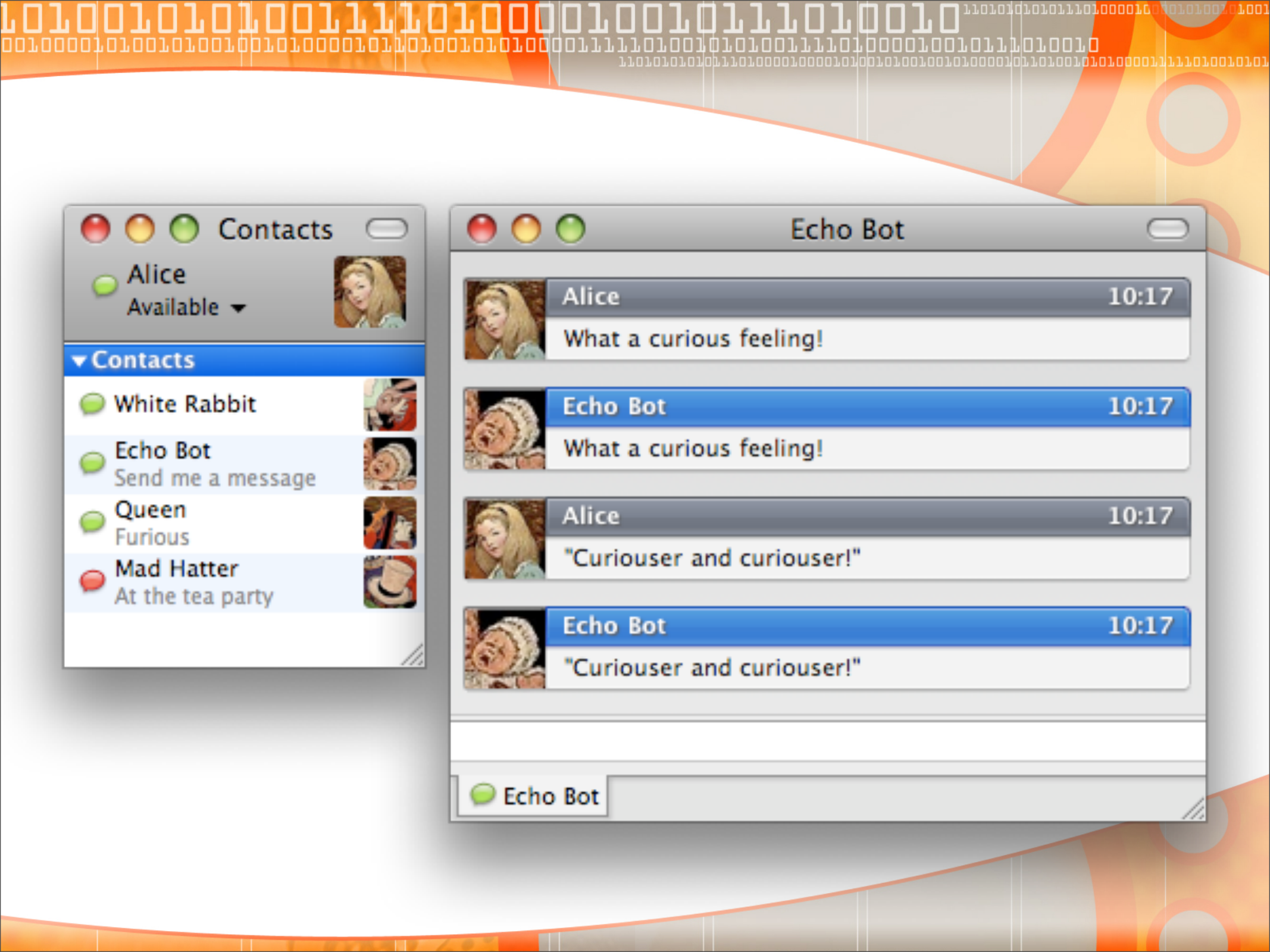
  - Connect to an XMPP server, and wait for commands / send events
- Echo bot
  - Echoes back every message that it receives


Contacts
Alice
Available
Contacts
White Rabbit
Echo Bot
Send me a message
Queen
Furious
Mad Hatter
At the tea party
Echo Bot
Alice 10:17
What a curious feeling!
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Echo Bot

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- Start coding

SleekXMPP Python Echo Bot


```
class EchoBot :
  def __init__(self, jid, password) :
    self.xmpp = sleekxmpp.ClientXMPP(jid, password)
    self.xmpp.add_event_handler("session_start", self.handleXMPPConnected)
    self.xmpp.add_event_handler("message", self.handleIncomingMessage)

  def run(self) :
    self.xmpp.connect()
    self.xmpp.process(threaded=False)

  def handleXMPPConnected(self, event):
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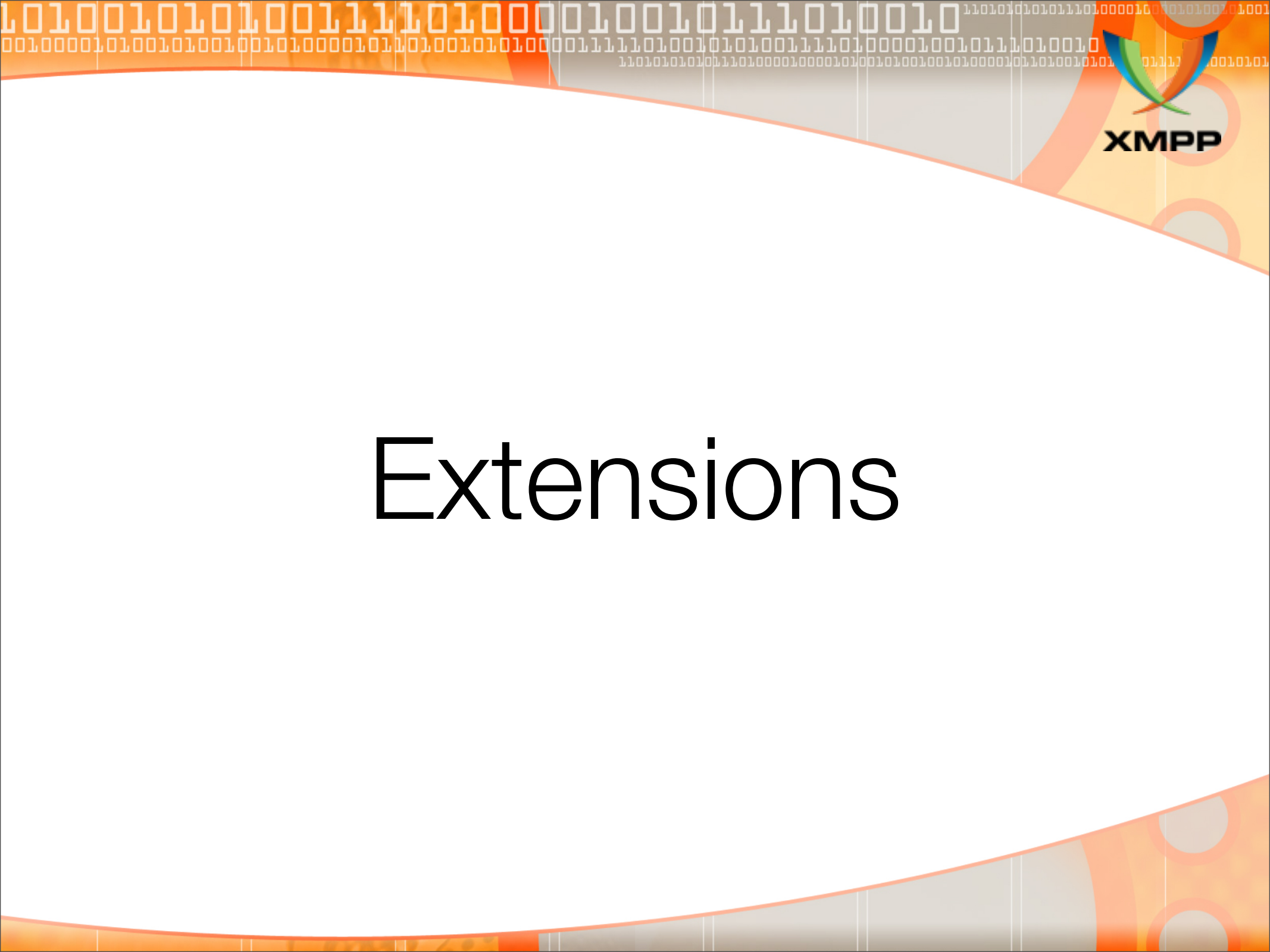
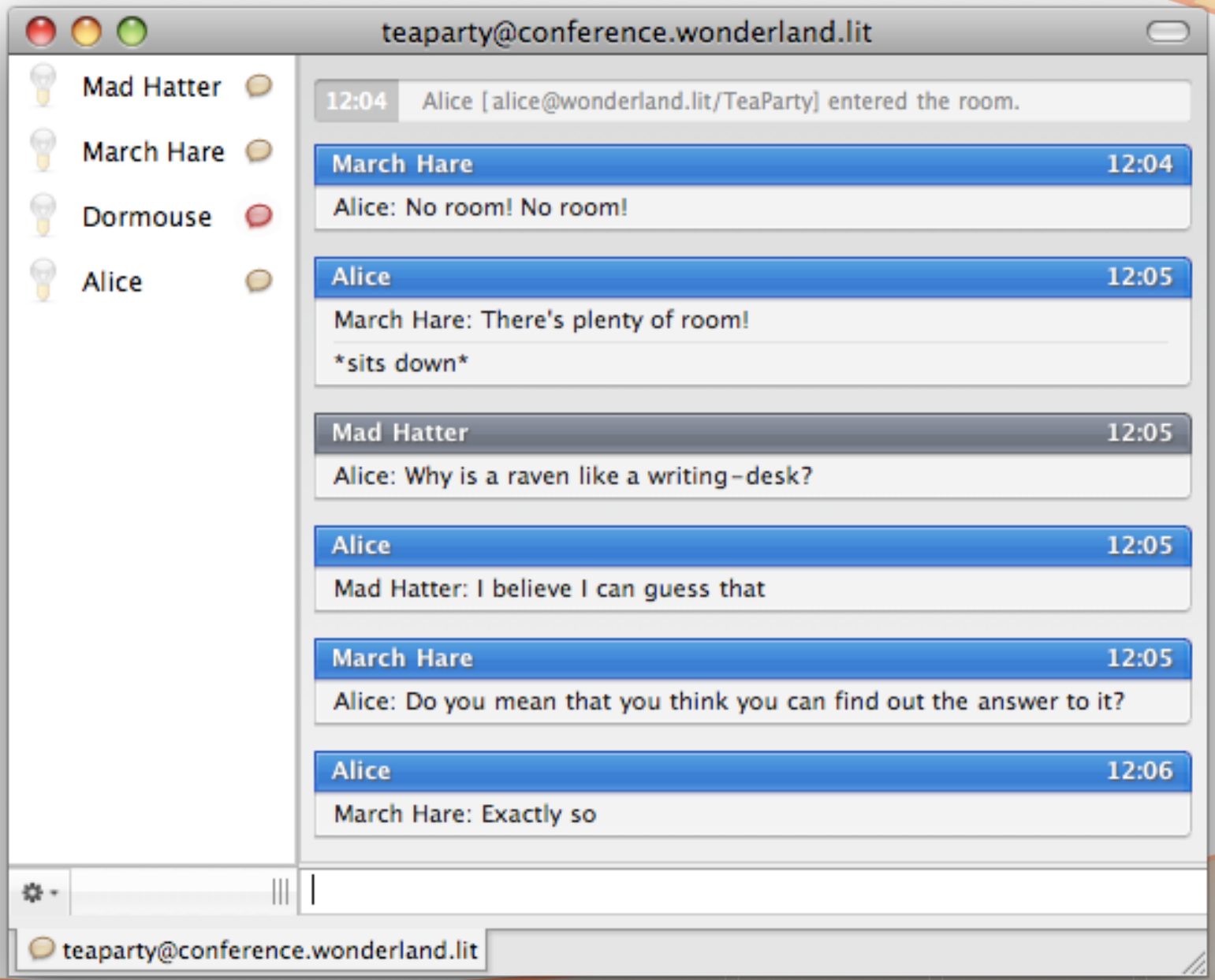


Extensions

Multi-User Chat



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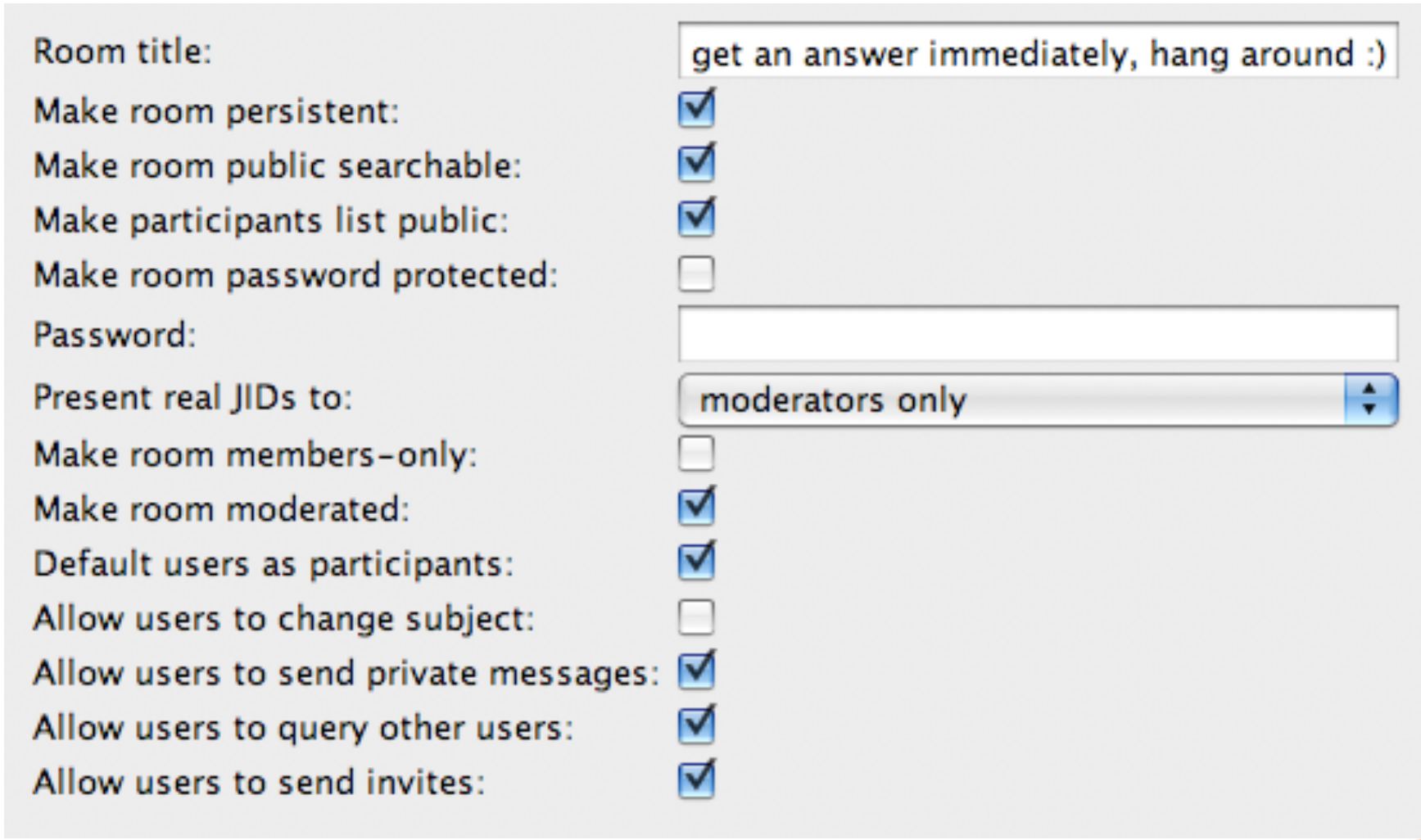

PubSub: Polling vs PubSub

Polling

PubSub

HTTP client

Service

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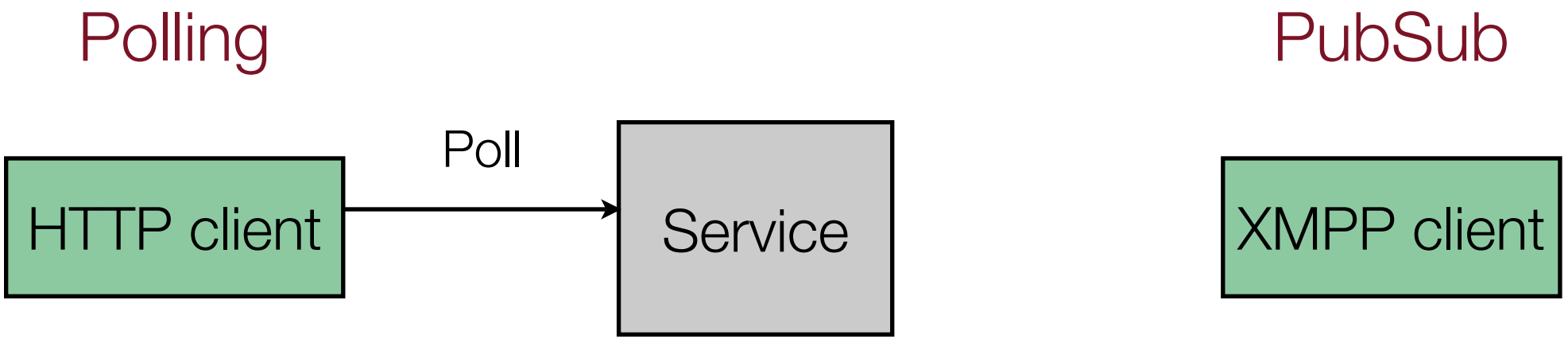

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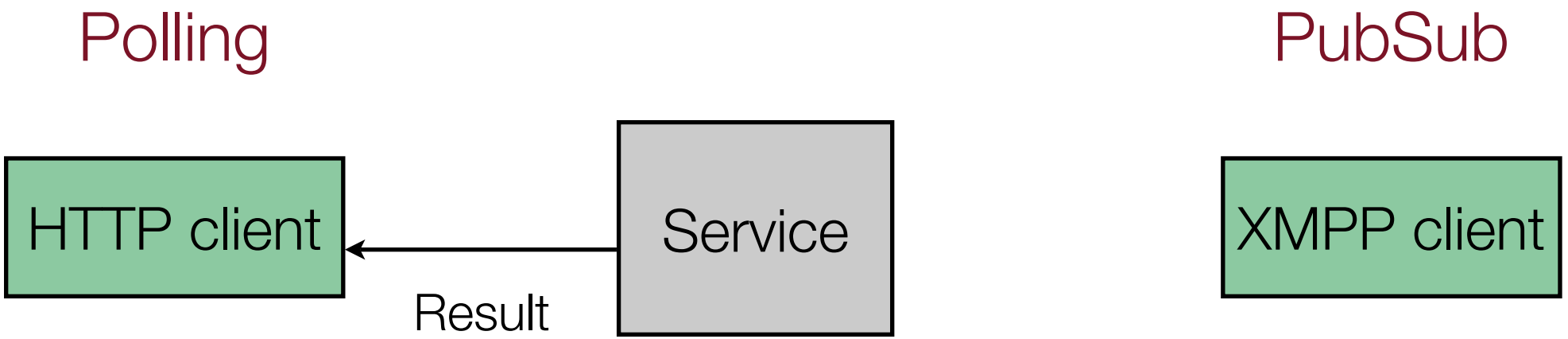

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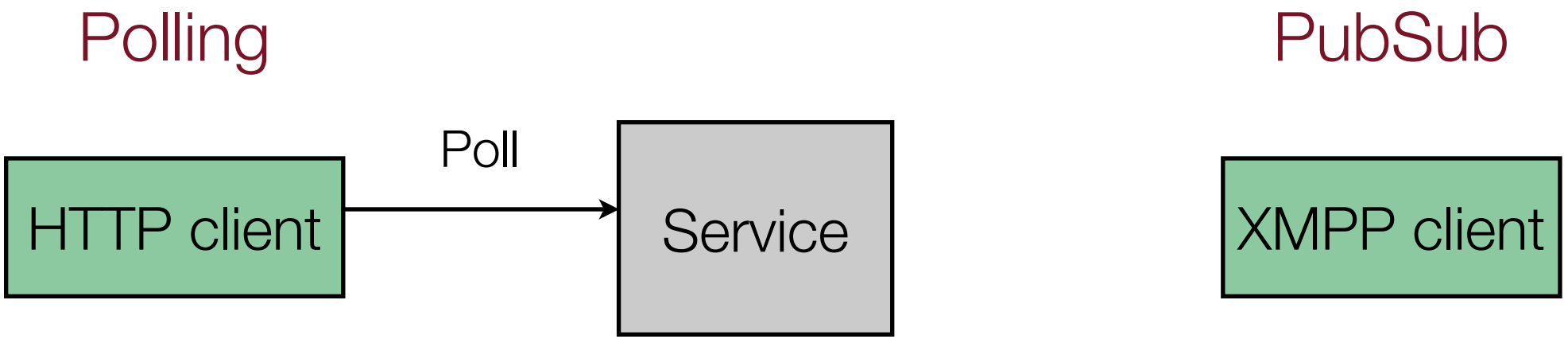

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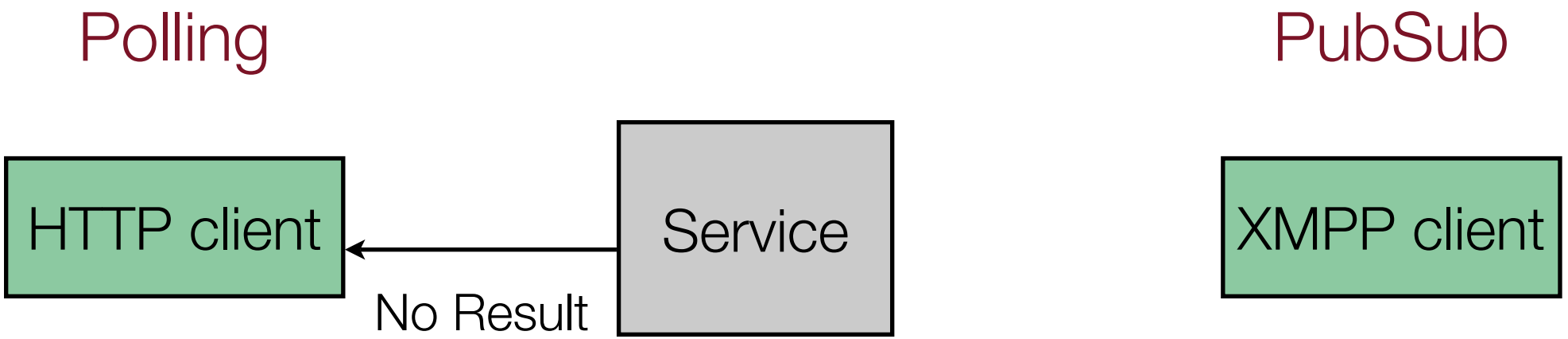

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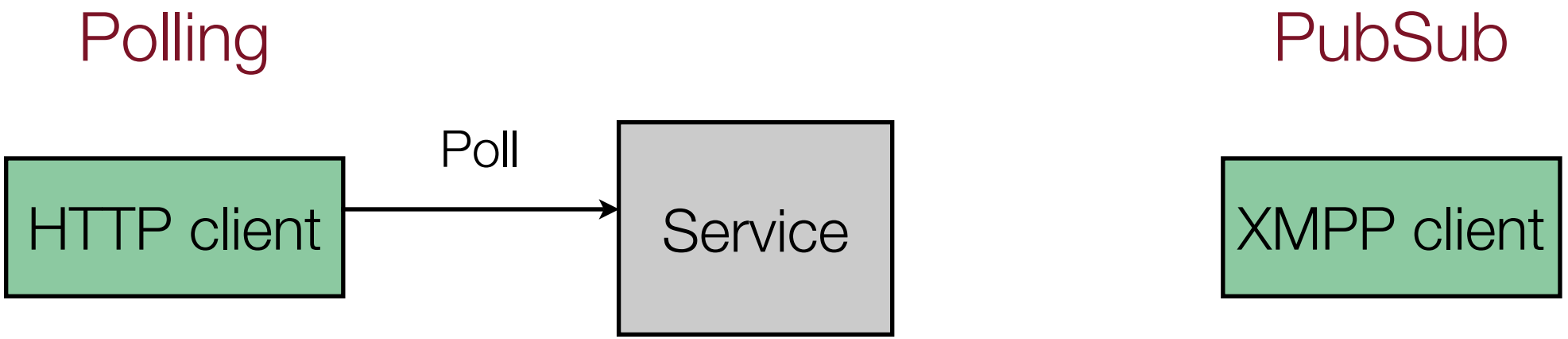

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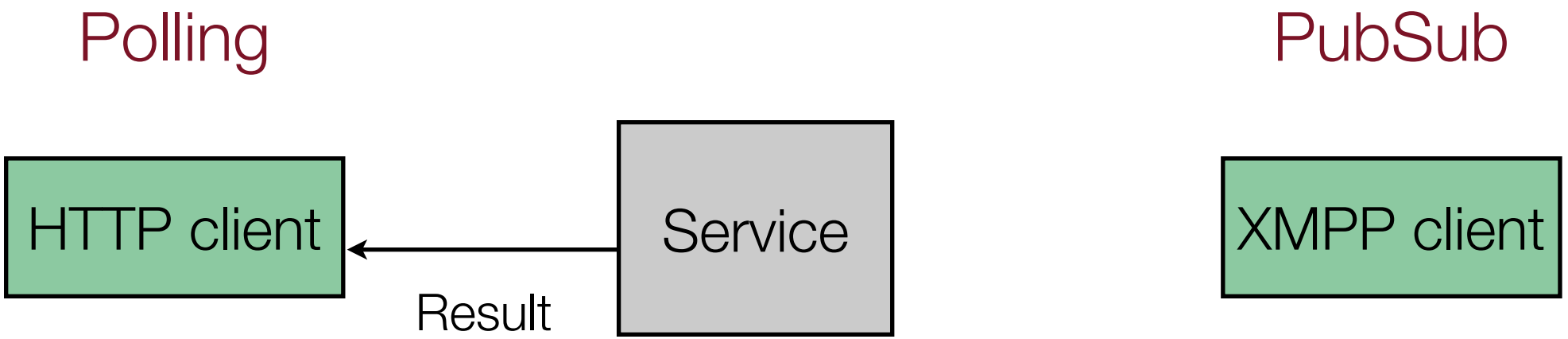

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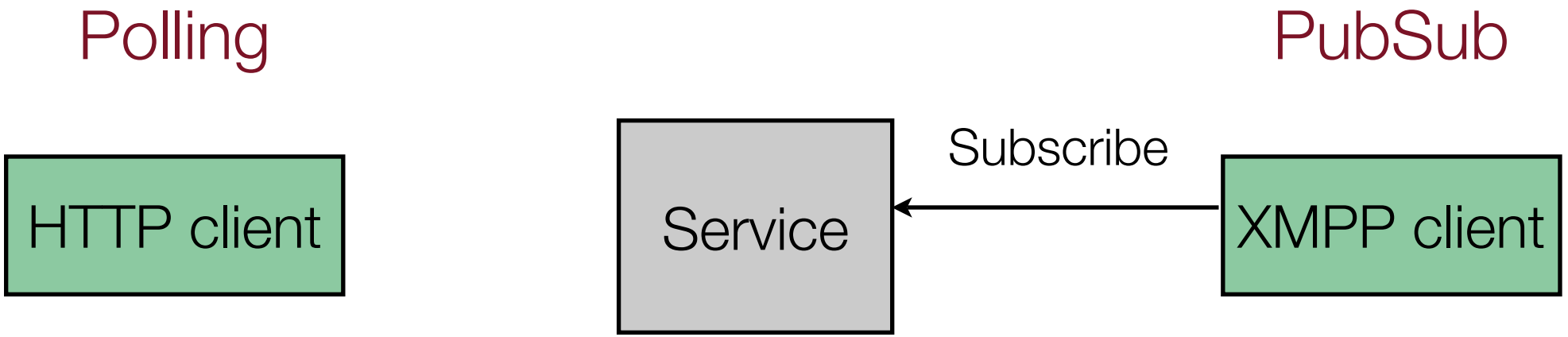

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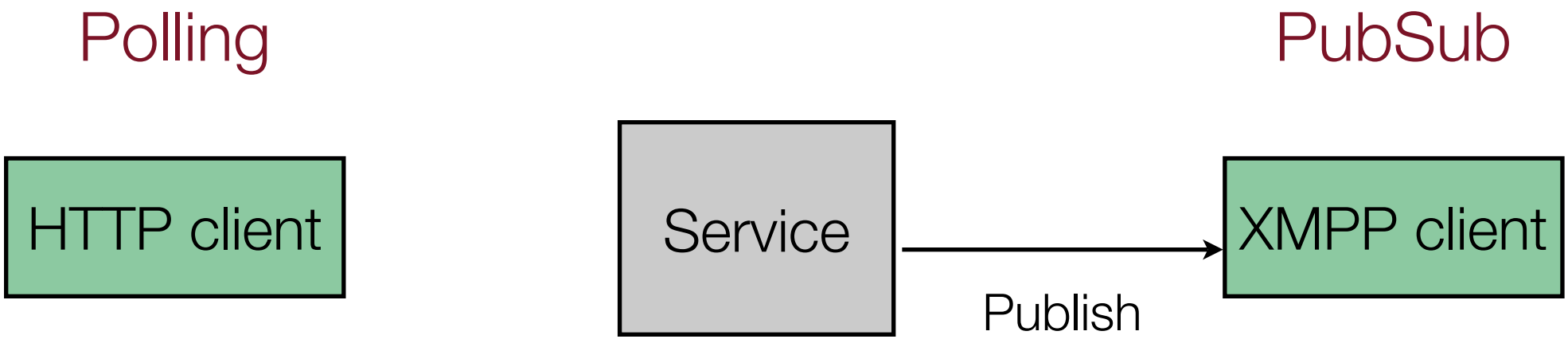

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- Configurable

PubSub: Subscribing

```
<iq from="alice@wonderland.lit/rabbithole"
    id="gh921nx3"
    to="notify.wonderland.lit"
    type="set">
  <pubsub xmlns="http://jabber.org/protocol/pubsub">
    <subscribe node="queenly_proclamations"
               jid="alice@wonderland.lit"/>
  </pubsub>
</iq>
```

PubSub: Publishing events


```
<iq from="queen@wonderland.lit/croquetlawn"
    id="ma019r58"
    to="notify.wonderland.lit"
    type="set">
  <pubsub xmlns="http://jabber.org/protocol/pubsub">
    <publish node="queenly_proclamations">
      <item>
        <entry xmlns="http://www.w3.org/2005/Atom">
          <title>A new thought</title>
          <summary>Off with their heads!</summary>
          <link rel="alternate" type="text/html"
                href="http://wonderland.lit/1865/"/>
          <id>tag:wonderland.lit,1865:entry-42</id>
          <published>1865-12-13T18:30:02Z</published>
          <updated>1865-12-13T18:30:02Z</updated>
        </entry>
      </item>
    </publish>
  </pubsub>
</iq>
```

PubSub: Receiving events


```
<message from="notify.wonderland.lit" to="alice@wonderland.lit">
  <body>A new thought: off with their heads!</body>
  <event xmlns="http://jabber.org/protocol/pubsub#event">
    <items node="queenly_proclamations"  id="bl38pahu98h">
      <item id="zi2ba967">
        <entry xmlns="http://www.w3.org/2005/Atom">
          <title>A new thought</title>
          <summary>Off with their heads!</summary>
          <link rel="alternate" type="text/html" h
                ref="http://wonderland.lit/1865/"/>
          <id>tag:wonderland.lit,1865:entry-42</id>
          <published>1865-12-13T18:30:02Z</published>
          <updated>1865-12-13T18:30:02Z</updated>
        </entry>
      </item>
    </items>
  </event>
</message>
```

Extended Presence

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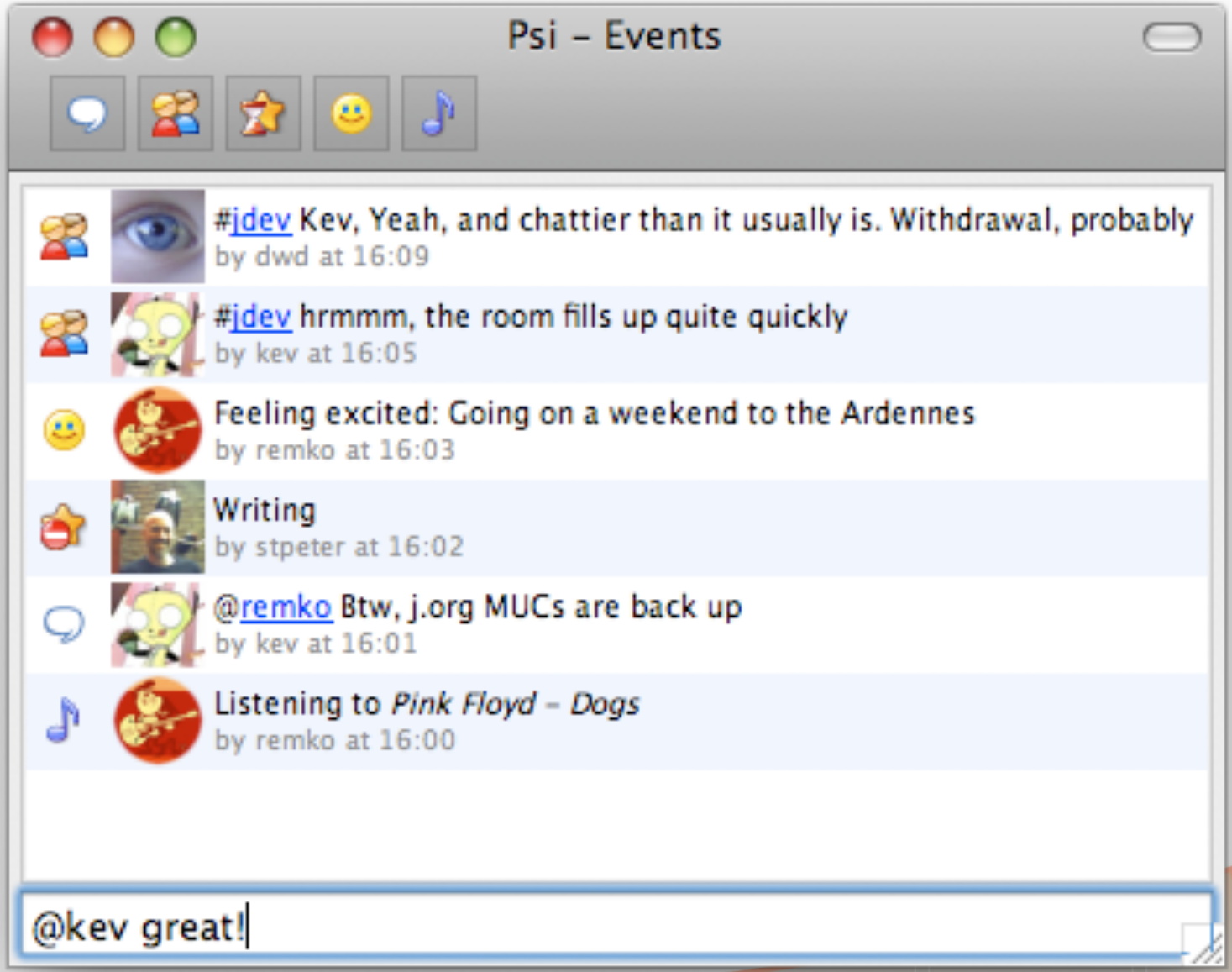
Extended Presence



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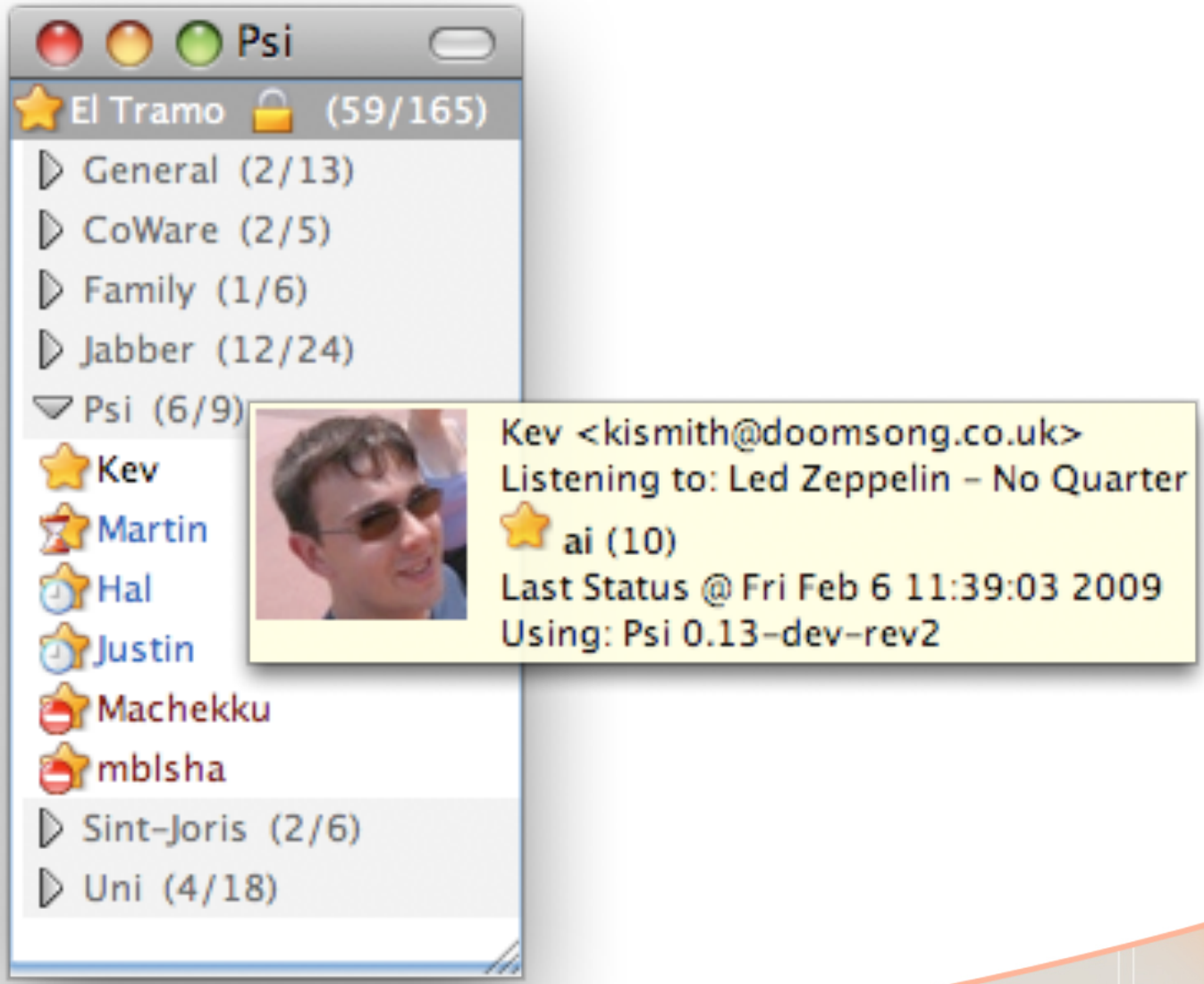

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BOSH


```
POST /webclient HTTP/1.1
Host: bosh.wonderland.lit
Content-Type: text/xml; charset=utf-8
Content-Length: 205

<body rid="90029205" sid="3m1ts1htd1s"
      xmlns="http://jabber.org/protocol/httpbind">

  <message to="sister@realworld.lit" xmlns="jabber:client">
    <body>Help, I fell down the rabbit hole!</body>
  </message>

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```

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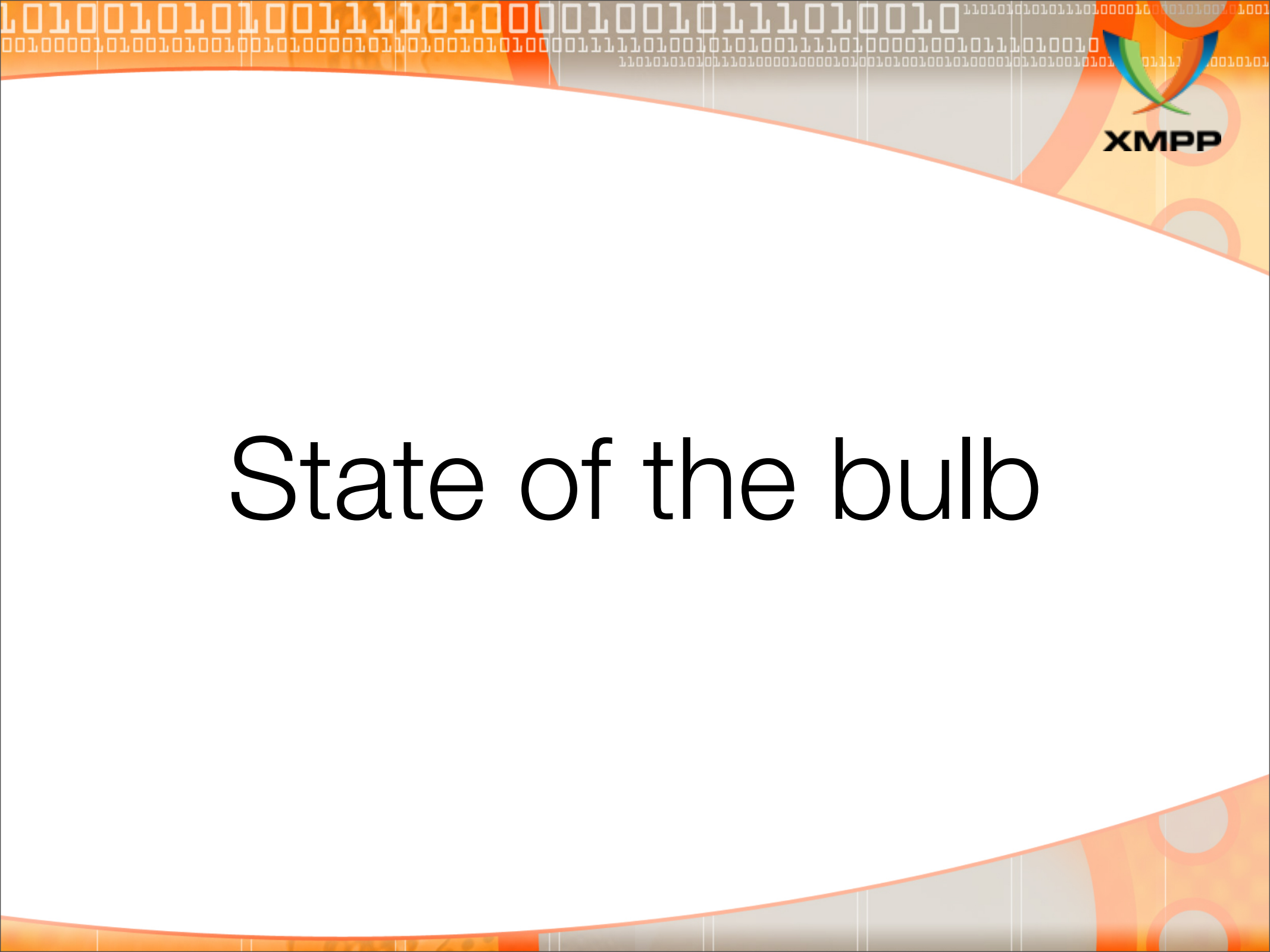

State of the bulb

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- World domination

Conclusion

Join the conversation

- http://**xmpp.org**/
- mailto:**jdev@jabber.org**
- xmpp:**jdev@conference.jabber.org**
- [mailto:|xmpp:]**stpeter@jabber.org**
- [mailto:|xmpp:]**remko@el-tramo.be**
- Jabber/XMPP booth @ FOSDEM
- XMPP Summit on Monday

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More info inside