Let’s use asyncio and TensorFlow to make a bot

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Matrix Workshop ("Chatbot!")

- ```
  python3 -m venv env
  source env/bin/activate
  ~~pip install asyncio~~
  pip install matrix-nio
  ```

- https://github.com/benparsons/matrix-nio-python-workshop
  ```

What is Matrix?

What is Matrix?

- Matrix is an open standard
  for interoperable, decentralised, real-time communication
  over the Internet.

What is Matrix?

- Matrix provides a standard HTTP API for publishing and subscribing to real-time data in specified channels…

What is Matrix?

- …which means it can be used to power IM, VoIP/ WebRTC signalling, IoT communication…

What is Matrix?

- … and anything else that can be expressed as JSON and needs to be transmitted in real-time over HTTP.

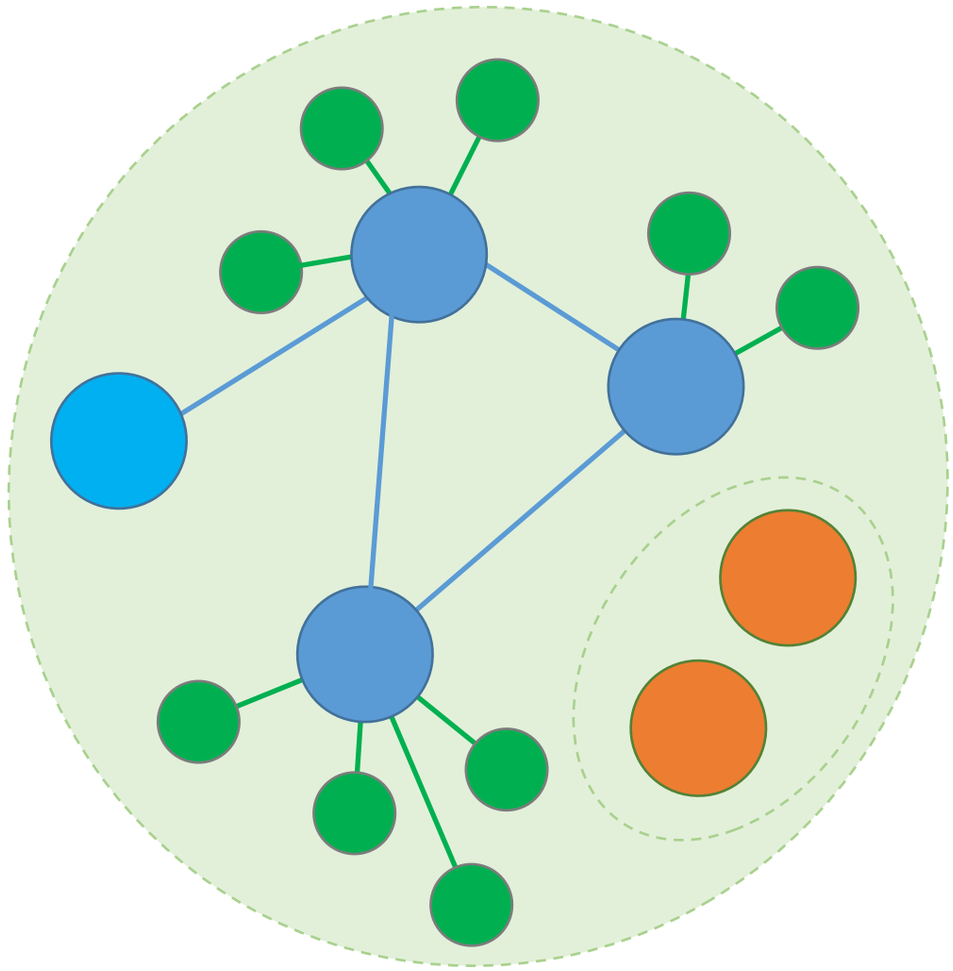
Matrix: Distributed Architecture

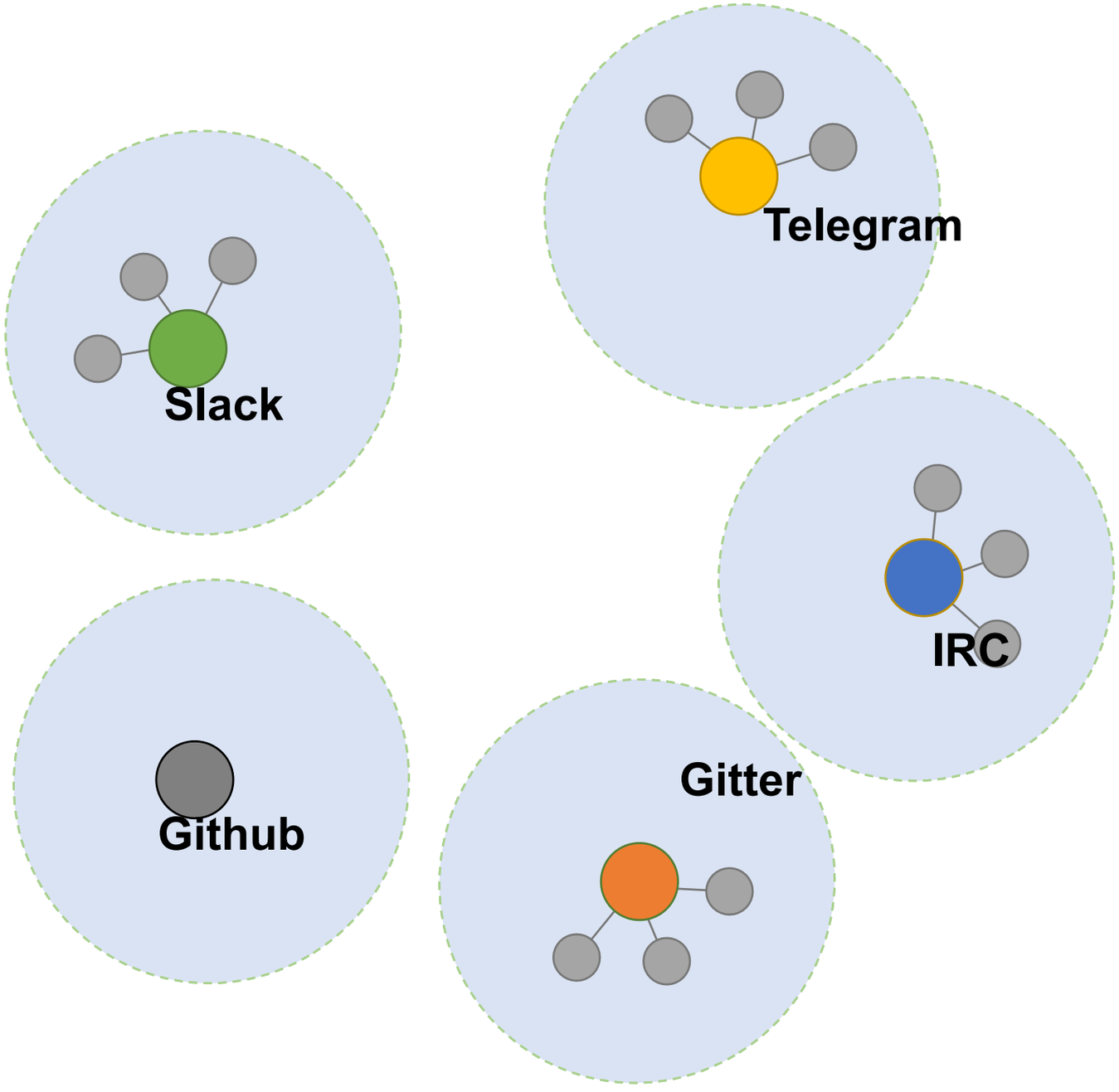
Clients

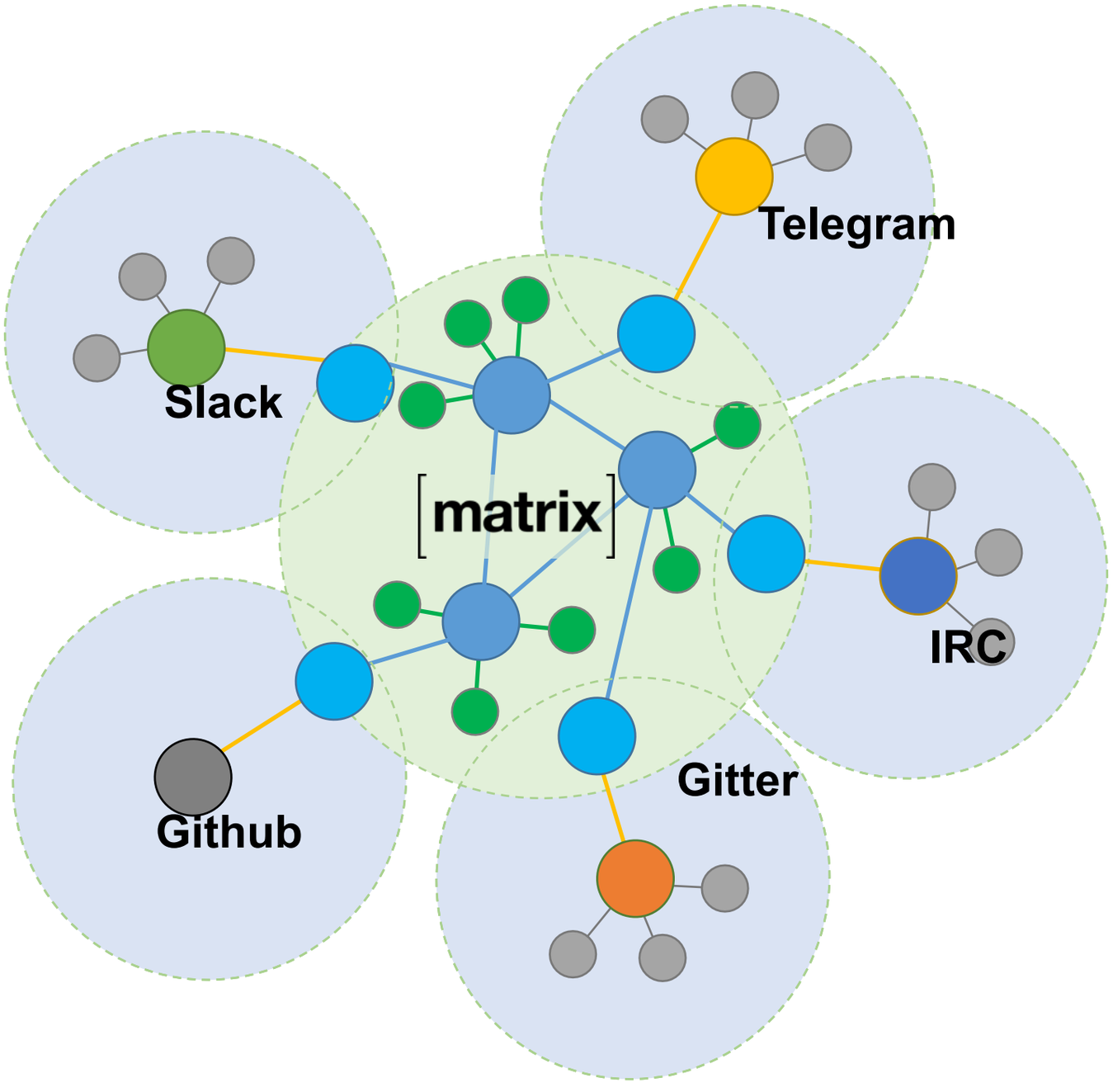
Home Servers

Applicati on Servers

Identity Servers




Slack
Telegram
IRC
Github
Gitter


Telegram
Slack
[matrix]
IRC
Gitter
Github

No single party owns your conversations.

Conversations are shared over all participants.

The Matrix APIs

- Client-Server API
- Server-Server API
- Application Service API
- Identity Server API

The Client-Server API

- **To send a message:**

```
curl -XPOST -d '{"msgtype":"m.text", "body":"hello"}'
"https://alice.com:8448/_matrix/client/api/v1/rooms/
ROOM_ID/send/m.room.message?access_token=ACCESS_TOKEN"
```

```
{
    "event_id": "YUwRidLecu"
}
```

The Client-Server API

To control a Hue light:

```
curl -XPOST –d '{\
    "room": "1",\
    "light": 2,\
    "brightness": 0.5,\
}' "https://alice.com:8448/_matrix/client/api/v1/rooms/ROOM_ID/
send/org.matrix.hue?access_token=ACCESS_TOKEN"


{ "event_id": “ORzcZn2” }
```

Client-Server API

Client-Server API

- It’s just HTTP + JSON
- Which means we can use *just* cURL to perform all interactions to with Matrix
    - (we probably won’t - users complain about UX)
- Let’s see some examples of basic operations

Create a Matrix Account

Client-Server API

- sudo apt install curl

Login

- **$ curl -XPOST -d '{"type":"m.login.password", "user":"ben-test-account", "password":"hunter2"}' "https://matrix.org/_matrix/client/r0/login"**

- *{*
- *"access_token": "QGV4YW1wbGU6bG9...gxefmKWQEtgGd",*
- *"home_server": "matrix.org",*
- *"user_id": "@ben-test-account:matrix.org"*
- *}*

Create Room

- **$ curl -H"Authorization: Bearer YOUR_ACCESS_TOKEN" -XPOST -d ‘{"room_alias_name":"my-new-room"}' "https://matrix.org/_matrix/client/r0/createRoom"**

- *{*
- *   "room_alias": "#my-new-room:matrix.org",*
- *   "room_id": "!FPUfgzXYWTKgIrwKxW:matrix.org"*
- *}*
-

Invite Users

- `$ curl -H"Authorization: Bearer YOUR_ACCESS_TOKEN" -XPOST -d '{"user_id":"@myfriend:their-server.net"}' "https://matrix.org/_matrix/client/r0/rooms/%21FPUfgzXYWTKgIrwKxW:matrix.org/invite"`

- *{}*

-

Send Message

- **$ curl -H"Authorization: Bearer YOUR_ACCESS_TOKEN" -XPOST -d '{"msgtype":"m.text", "body":"hello world"}' "https://matrix.org/_matrix/client/r0/rooms/%21FPUfgzXYWTKgIrwKxW:matrix.org/send/m.room.message"**

- *{*
- *"event_id": "155843143979pCPlu"*
- *}*
-

/sync

- **$ curl -H"Authorization: Bearer YOUR_ACCESS_TOKEN" -XGET "https://matrix.org/_matrix/client/r0/sync?since=SYNC_TOKEN"**

- *{*
- *"account_data": {*
- *"events": []*
- *},*
- *"next_batch": "NEXT_TOKEN",*
- *"presence": {*
- *"events": [*
- *{*
- *"content": {*
- *"body": "hello friend!",*
- *"type": "m.text"*
- *},*
- *"sender": "@myfriend:their-server.net",*
- *"type": "m.room.message"*
- *}*
- *]*
- *},*
- *"rooms": {*

Re-rewind

Using `AsyncClient` from `matrix-nio`

Create a Matrix Account

(yes, another one)

Create another account

- Use a second browser or profile
- This will be used for your bot

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TensorFlow Time

Install TensorFlow

- `pip install numpy==1.16.2`
- `pip install tensorflow`

What Else Could We Do?

- Have the bot automatically accept invites
- Send a welcome message on join
- Store some `state` in the room

Matrix-nio Workshop
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