

#about:matrix.org

An HTTP nerd's quick-view of the Matrix ecosystem

In this presentation

- Decentralization basics
- What is Matrix?
 - Specification overview
 - Ecosystem overview
- Building a simple Matrix client using Matrix JS SDK

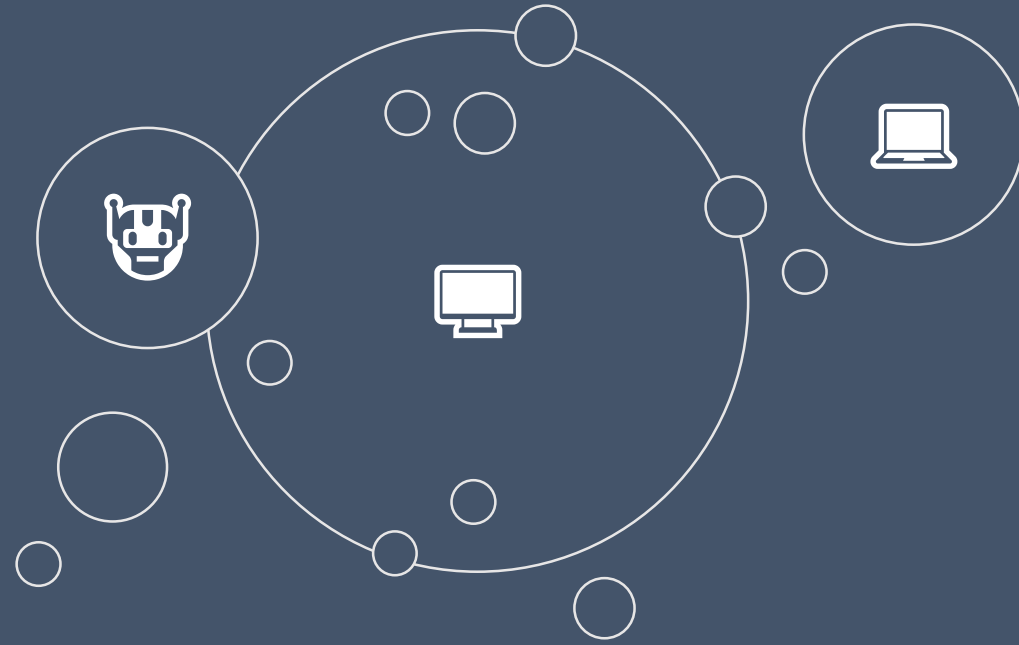
Decentralized

Creating a system with no centralized control.

Resilient: Survive failures

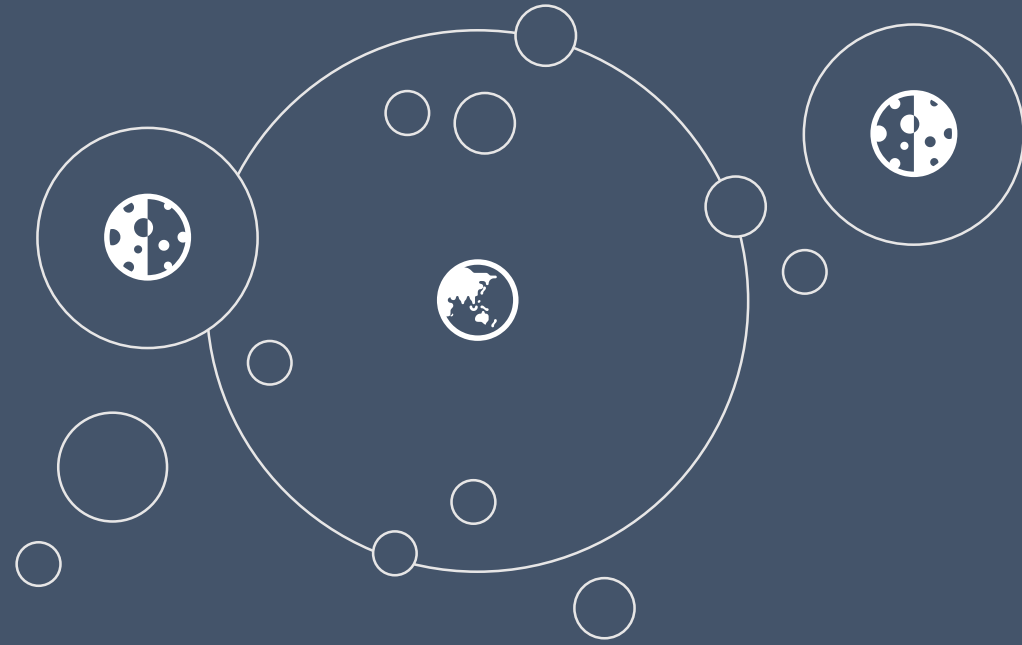
Privacy-aware: Harder to snoop on user data

Secure: E2E/distributed encryption & access control



We can decentralize enough

HTTP. DNS. HTML. JSON. Web servers. APIs. Web Browsers... **Matrix.**



About **matrix**

Open standard for interoperable, decentralized, real-time communication over IP.

See: matrix.org

Use case scenarios

- Instant Message
- VoIP/WebRTC signaling
- IoT messaging
- Bridging networks
- Conversational bots
- ...

“Anywhere you need a standard HTTP API for publishing and subscribing to data whilst tracking the conversation history.”

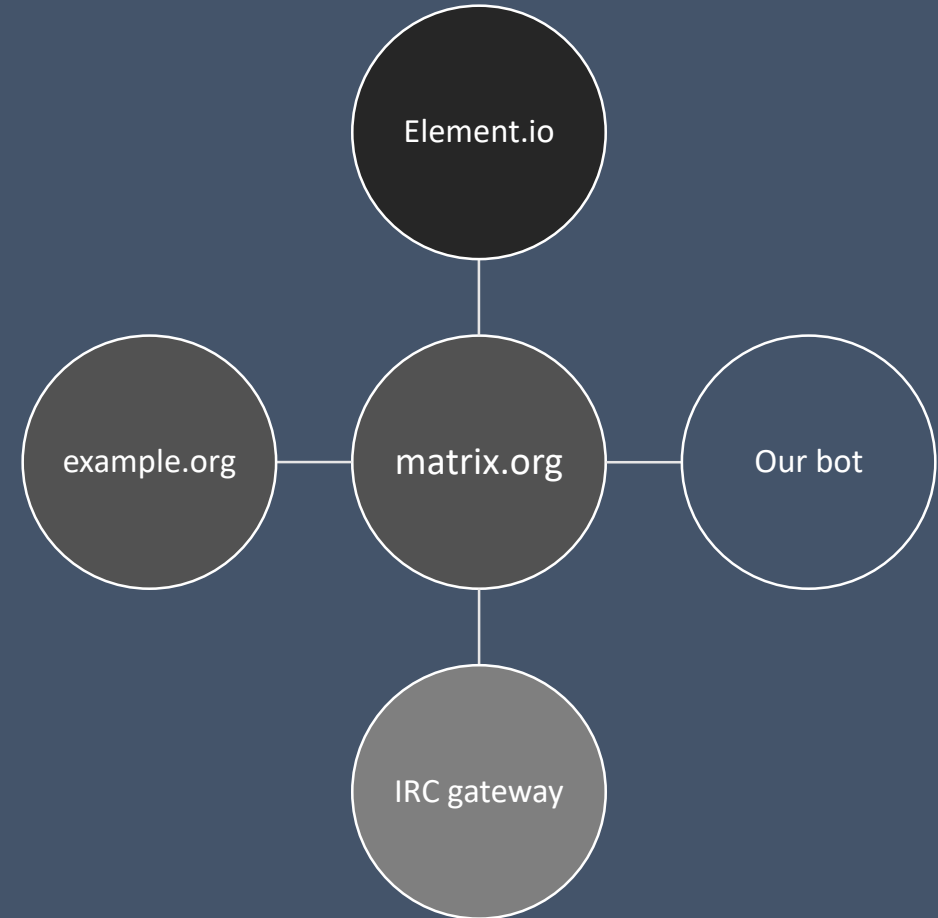
- Matrix FAQ

Key features*

JSON over HTTP APIs.

- Fully distributed “rooms”
- Inbuilt WebRTC calling
- Clients can choose to store data locally, or, not

* That I like.



IDs & namespaces

Username: @kaustavdm:matrix.org

Room alias: #matrix-dev:matrix.org

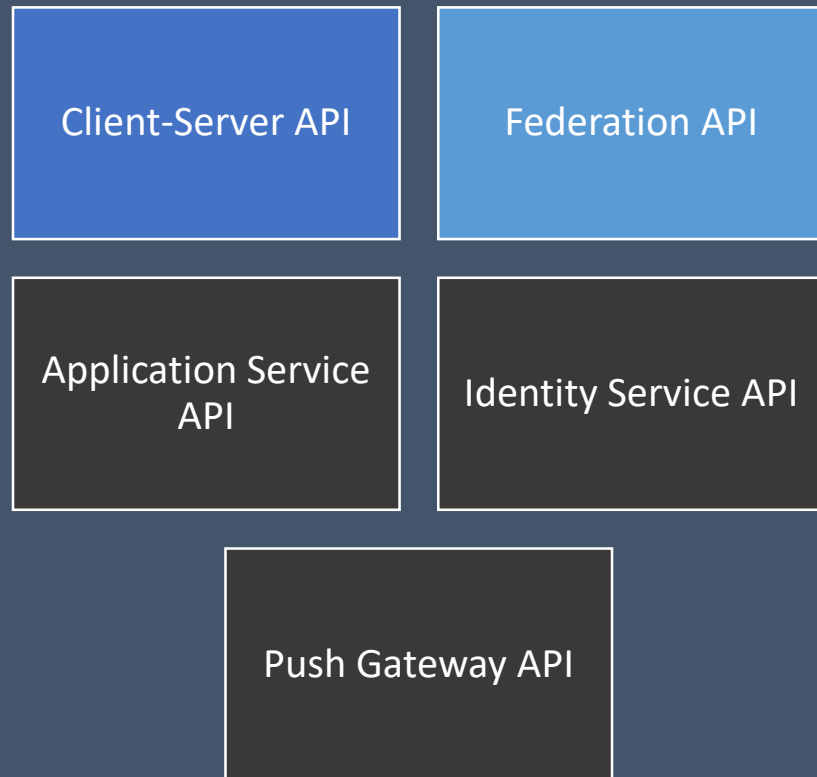
Room internal ID: !jxlRxnRZCsjpjDubDX:matrix.org

Event namespace:

- m.text
- m.room.create
- com.example.custom_event

Matrix ecosystem

Open standard – The Specification

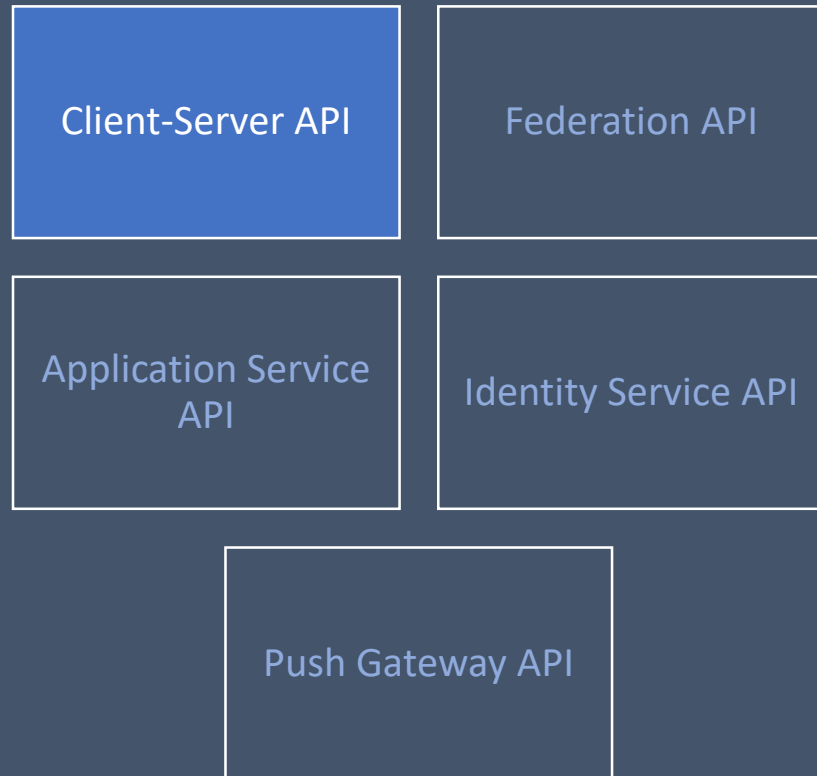


Implementation & ecosystem

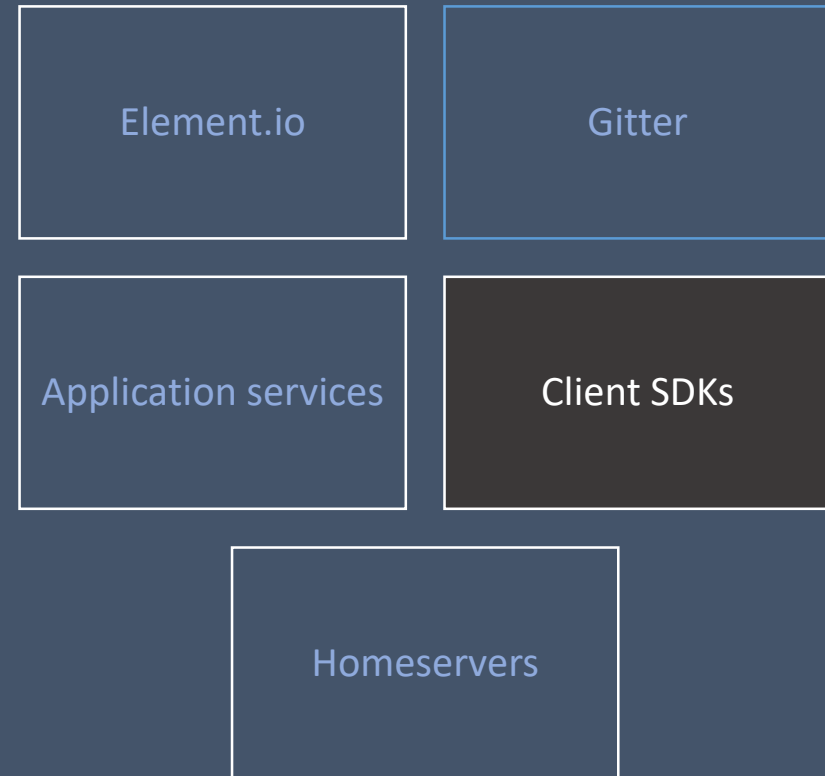


Let's focus on

Open standard – The Specification



Implementation & ecosystem



Client-Server API [Key features]

Authentication

- Login
- Register
- Account management

Events

- Syncing
- Room Events
 - Receive
 - Send

Room

- Listing
- Membership
- Permissions

User Data

- Directory
- Profile

Modules

- Instant Messaging
- Direct Messaging
- Presence
- VoIP

See: https://matrix.org/docs/spec/client_server/r0.6.1

Matrix JavaScript SDK

- Wrapper around HTTP API
- Ergonomic & idiomatic JS code
- Works in Node (LTS) & Browser

- Syncing
- Send & receive events
- Room state
- Retrying failed messages
- Queueing and pagination
- WebRTC calling

...

Using Matrix JS SDK [happy path]

What we want: Connect to Matrix as an existing user, using password login, send a message, and then quit.

How we want it: As a Node.js script.

When: Yesterday.

Next steps

- Read the Matrix specifications: matrix.org/docs/spec/
- Look at the Matrix JS SDK: github.com/matrix-org/matrix-js-sdk/
- Sample code I used: github.com/kaustavdm/matrix-js-sdk-howto/
- Try out Element.io.
- Build something nice. 😊

fin.

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