



# *NOSTR*

---

Notes and Other  
Stuff Transmitted  
by Relays

@anilsaidso

# WHAT NOSTR ISN'T



Jameson Lopp 

@lopp



Nostr is not:

- \* a blockchain
- \* a social network
- \* a consensus protocol

It's simply a protocol for passing cryptographically signed messages around a peer to peer network. It's a data layer upon which other apps can be built.

6 Jan 2023 • 15:00

# WHAT NOSTR IS

an open protocol for censorship-resistant communication networks created by @fiatjaf

A diagram with the word 'NOSTR' on the left and four purple rectangular boxes on the right. White lines connect the right side of 'NOSTR' to the left side of each box. The boxes contain the words 'Users', 'Events', 'Relays', and 'Clients' from top to bottom.

Users

Events

Relays

Clients

# USERS

Like the bitcoin protocol, nostr is **permissionless**.

To use the protocol a user generates a key pair: a **public key** and a **private key**



## Public Key

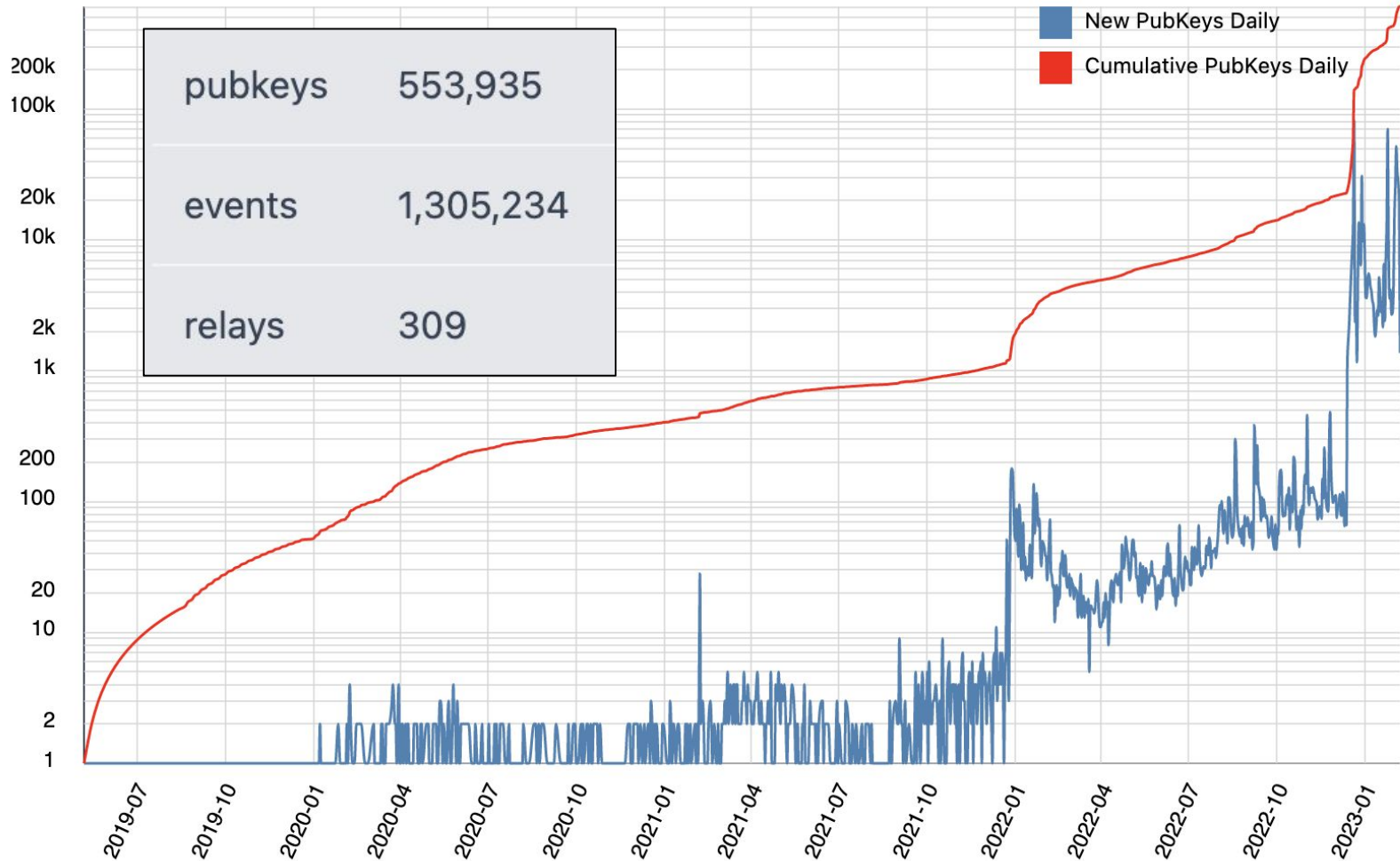
*Like a username,  
it's how others  
can find you.*



## Private Key

*For signing  
messages to prove  
authenticity.*

**\*DO NOT SHARE**



# NOSTR PERMANENTLY ALTERS INCENTIVES



**Stu**  1mo

Replying to 1m6azw8j:2s7z44g7, NVK & 1 other

e.g. Imagine a world where there are 5 social media apps and each app has 10m unique daily active users.

If you built that same ecosystem on nostr, then each app would have 50m daily active users.

If someone built a 6th social media app on nostr, it would have 50m daily active users at launch.

Why would anyone develop legacy web apps ever again?

nostr is just a much more connected way to develop web apps. The point being that on nostr there is a single massive user universe and and client merely plugs into that existing universe (think I coined a term there?).

The app developer surrenders proprietary control of user data, but gains instant access to a huge user base.

# EVENTS

(simple text-based objects).



Nostr is a protocol for packaging '**events**'

When you post content, it's not broadcast to all users nor sent directly to a particular recipient (P2P).

Instead, it is sent to a **relay/s**, readable by users also connected to that common relay.

# ANATOMY OF AN EVENT

<b>Event's unique identifier</b>	<code>{</code>
<b>User</b>	<code>"id": "c011...4c43",</code>
<b>Timestamp</b>	<code>"pubkey": "dec1...4fb3",</code>
<b>Type of event</b> (e.g. plain text note, E2E msg, etc.)	<code>"created_at": 1671551112,</code>
<b>Tags</b> (e.g. specify a post as a reply to event x)	<code>"kind": 1,</code>
<b>Message</b>	<code>"tags": [],</code>
<b>Proof that this came from the user</b> (signed with the user's private key)	<code>"content": "good morning!",</code>
	<code>"sig": "e1dc...5f1"</code>
	<code>}</code>



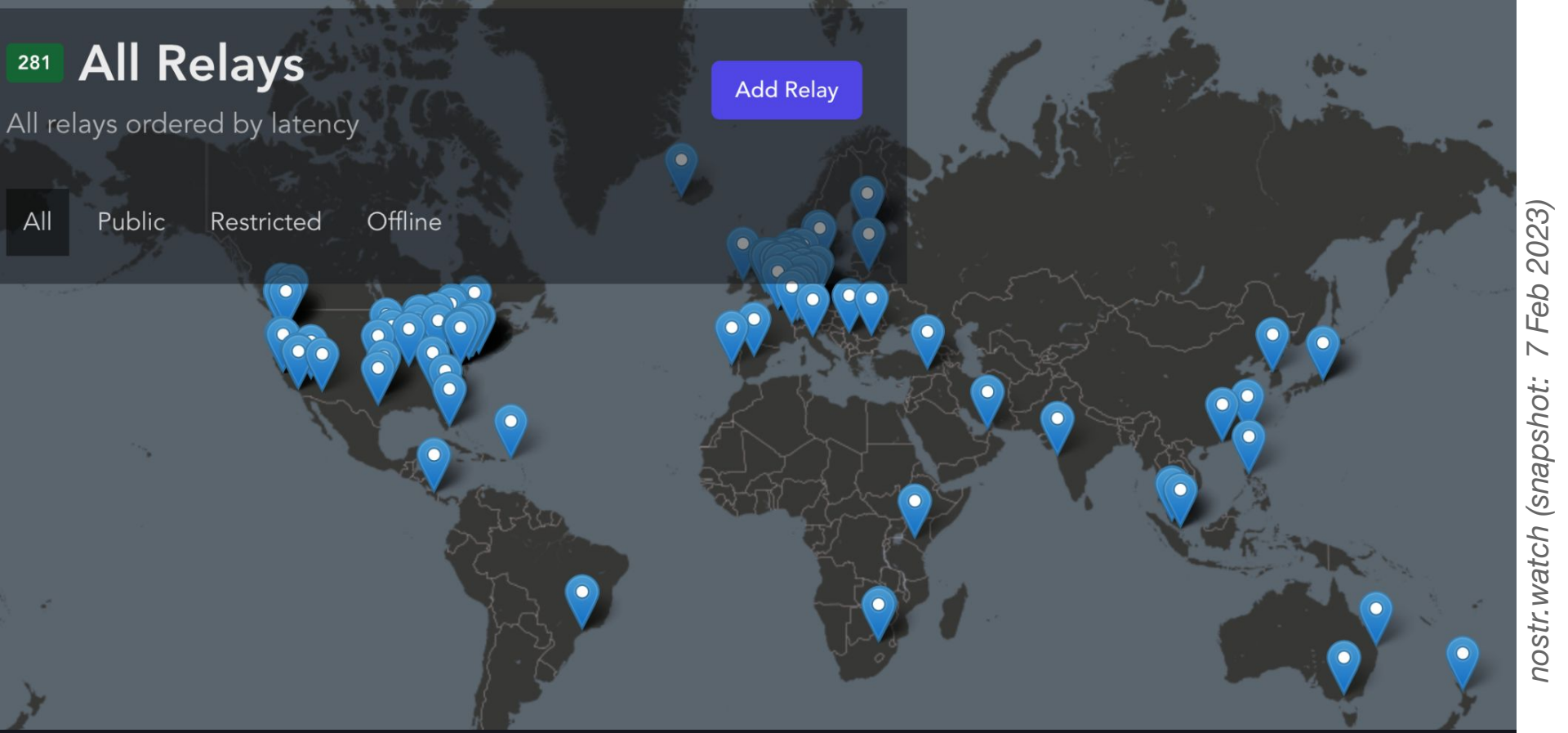
281

# All Relays

All relays ordered by latency

Add Relay

- All
- Public
- Restricted
- Offline



Public Relays  
**134**

Restricted Relays  
**51**

Offline Relays  
**96**

# RUNNING A RELAY



## Plug & Play Services

**Nostr Relay**  
Private Relay

Relay URL: `ws://umbrel:4848`

**Connect your Nostr client**

Connect your Nostr clients to your private relay to ensure all your Nostr activity, including your posts, are backed up and accessible even if you are censored by other public relays.

Add your Relay URL to your Nostr clients, like Damus, Astral, and Amethyst. In Damus, you can add it from Settings > Relays > Add Relay.

Consider installing [Tailscale](#) on your Umbrel and your devices to seamlessly connect your Nostr clients to your relay even when you are not on your local network. Enable Tailscale's MagicDNS and use `ws://umbrel:4848` as your Relay.

**Total actions**

70

- Reactions: 19
- Encrypted DMs: 14
- Channel Messages: 12
- Posts: 11
- Reposts: 7
- Following Updates: 6

**Latest actions**

- Channel Message: 17:57 Feb 04, 2023  
can we just all agree that pinesapple doesn't belong on pizza and call it a day
- Encrypted DM: 17:57 Feb 04, 2023
- Reaction: 17:57 Feb 04, 2023
- Following Update: 17:57 Feb 04, 2023
- Repost: 17:57 Feb 04, 2023
- Post: 17:57 Feb 04, 2023  
it's the one day I sleep in and btc prints a 10% candle

© Umbrel 2023. Powered by [nostr-relay](#).

## Implementations



Pierre Rochard  
@BitcoinPierre

strfry: a new [#nostr](#) relay written in C++ by Doug Hoyte ( [hoytech.com/about](#) )

This is going to be *very* performant on bare metal servers! Huge win for open source.

CC @fiatjaf @jb55

**hoytech/strfry**

a nostr relay

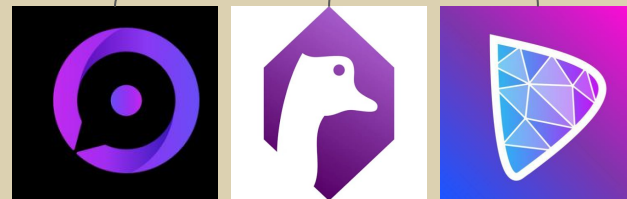
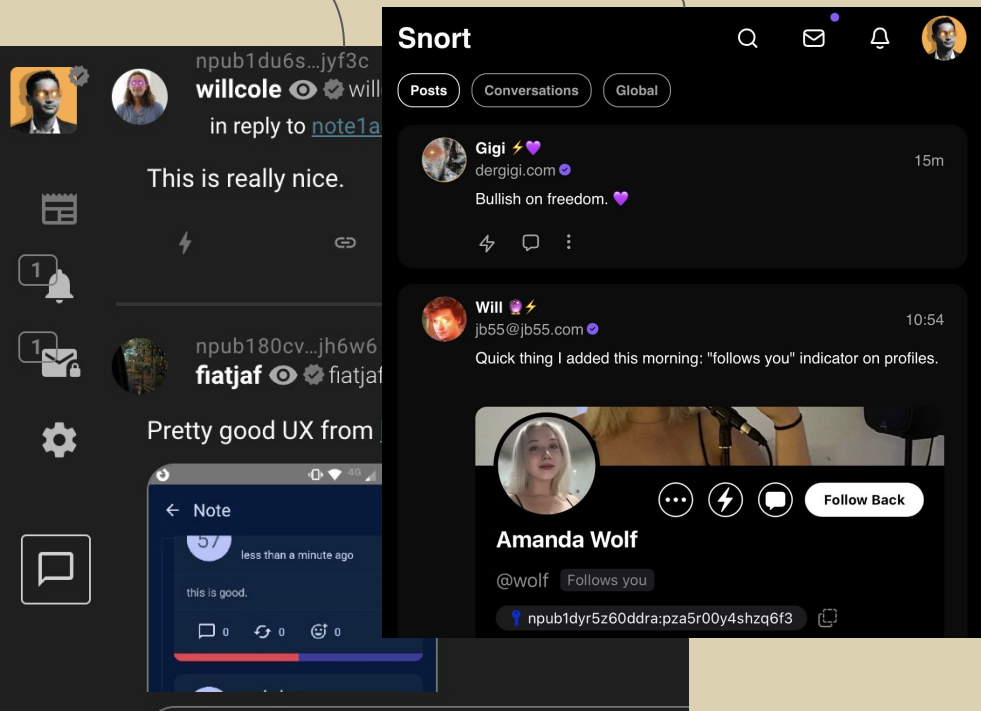
3 Contributors   6 Issues   104 Stars   13 Forks

Web  
(browser)

# CLIENTS

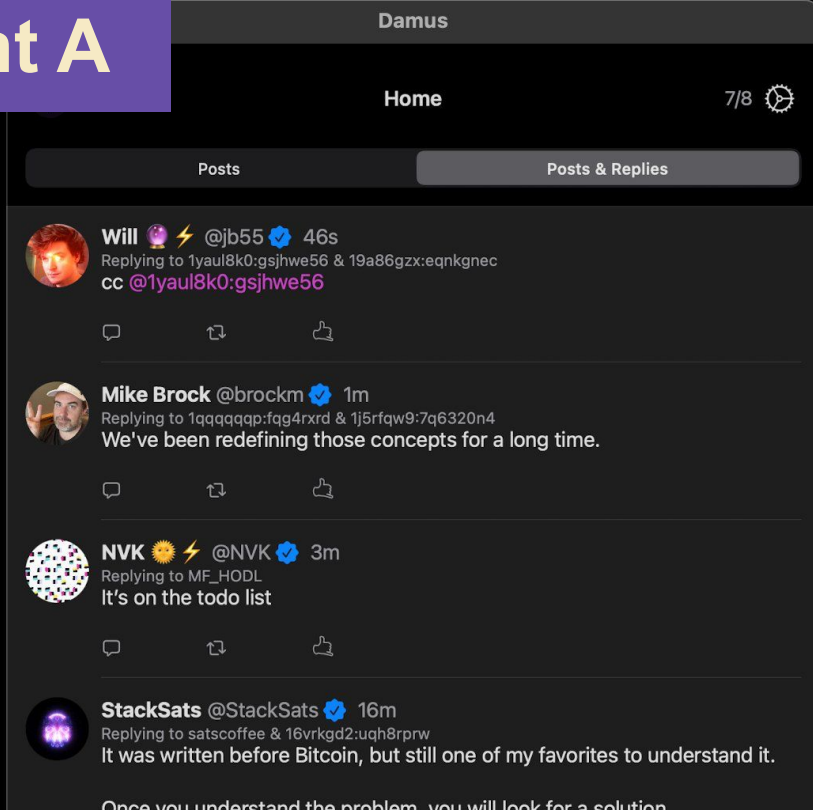
Mobile  
(iOS, Android)

Users interact with the nostr protocol through a 'client'.

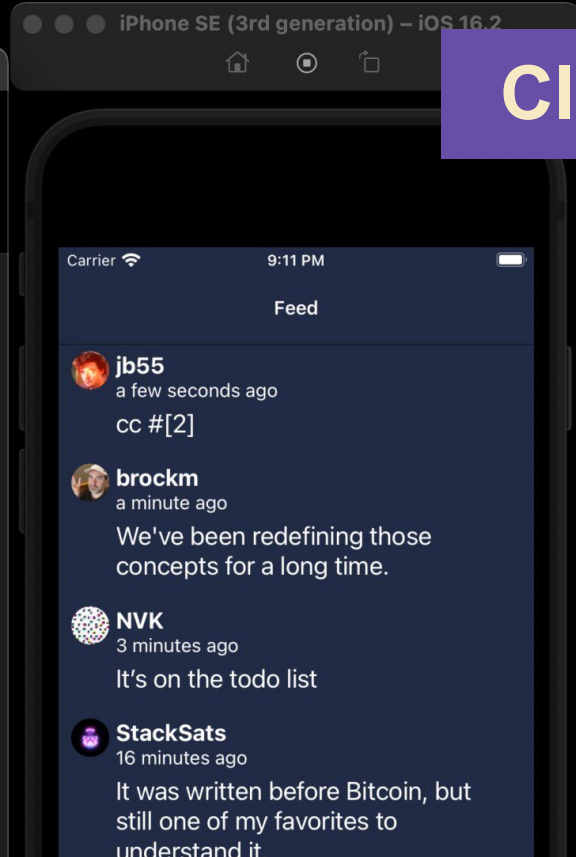


You can use **any** client you wish or even build your own.

Client A



Client B



# SPEED OF INNOVATION

Permissionless innovation benefits from the collective contributions of many (hive mind), far exceeding what a single company could achieve.



The image shows a screenshot of a Nostr post by a user named Mr.Hodl. The post includes a profile picture of a person in a hood, a lightning bolt emoji, a yellow circle emoji, a popcorn emoji, the acronym 'B.R.E.A.M.', an orange circle emoji, and two thumbs up emojis. The text of the post says 'Tell me this doesn't look pretty.' followed by 'It's barley been a month since I've joined and it has improved 100x in that time. Everyday it seems to get better. #nostr'. Below the post is a screenshot of the Nostr interface showing the user's profile, navigation tabs (FEED, NOTIFICATIONS, MESSAGES, SETTINGS), and a list of posts. The profile section shows the user's name 'MrHodl', handle '@nostrpurple.com', and bio 'Bitcoin @MrHodl on Twitter'. The posts list shows a recent post from MrHodl about uploading pictures from a phone, and a reply to another post.

**Mr.Hodl** ⚡️ 🟡 🍿 B.R.E.A.M. 🟠 👍 👍 @MrHodl · 1d

Tell me this doesn't look pretty.

It's barley been a month since I've joined and it has improved 100x in that time. Everyday it seems to get better. [#nostr](#)

**MrHodl**  
@nostrpurple.com  
npub198au...t0p3g  
Bitcoin  
@MrHodl on Twitter

FEED NOTIFICATIONS MESSAGES SETTINGS

POSTS FOLLOWERS RELAYS

search posts

npub198au...t0p3g  
**MrHodl** @nostrpurple.com  
Soon as i can upload pictures from my phone I'll be all set.

npub198au...t0p3g  
**MrHodl** @nostrpurple.com  
in reply to [note1v7yd...9wdvd](#)  
Siiliick

search profiles

**follows**

- jack**  
npub1sg6p...uf63m
- NVK** @nvk@nvk.org  
npub1az9x...am8y8
- cameri** @wfw's space  
npub1qqqq...0n47m
- shadowysuperstore**  
npub102al...xnsr5
- jason** @jason@nostrplebs.com  
npub1et6z...fp3g5
- satcap\_io**  
npub1z806...5adzc
- Nico** @nico@nostrplebs.com  
npub1qqqq...lsu7e
- damus**  
npub18qz76...qp655

# INTEROPERABILITY

Nostr is an open protocol and **interoperable** with other open protocols.  
*Nostr 🤝 Lightning Network*



**Will** 🌟 ⚡

jb55@jb55.com ✓

NIP-57: Lightning Zaps

<https://github.com/nostr-protocol/nips/pull/224>



68.51K



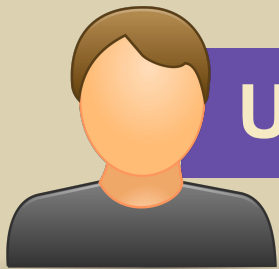
225



60



**Kieran** and 6 others zapped



**USER**

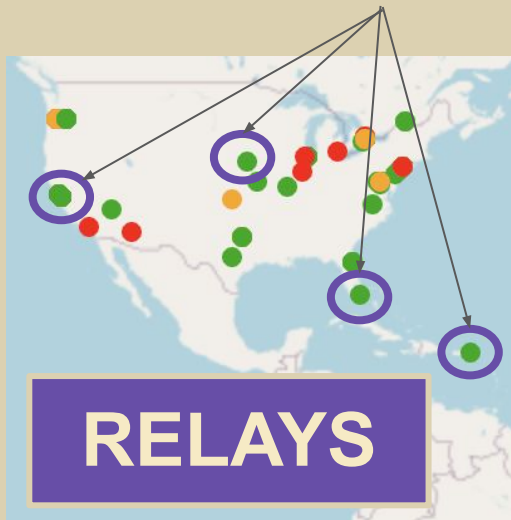
*generate  
key pair*



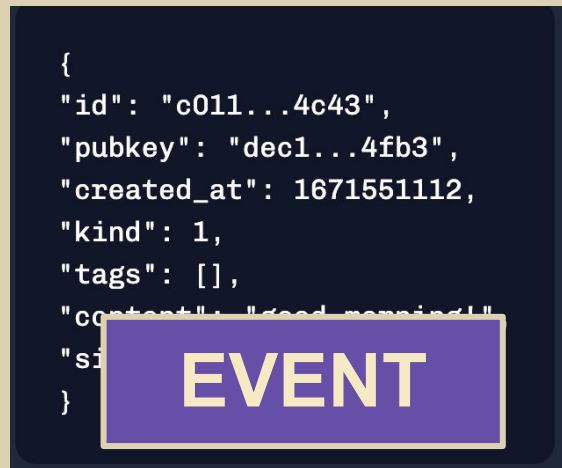
*pick a client*



*connect to relays*



*create content  
& sign w/ priv key*



# OTHER EXAMPLE USE CASES

The screenshot shows a forum page on the nostr platform. At the top, there's a navigation bar with a profile icon, the word "Topic", a menu icon, "Login", "Start", and a search bar. The main content area features three posts. Each post includes a user profile picture, a name, a star rating, a number of likes, and a timestamp. The first post is by "rademaker" (1 like, 4 days ago) and discusses "Version 1.0" and "Apple's TOS". The second post is by "Andrew" (2 likes, 4 days ago) and asks about "Apple micro-manages". The third post is by "jb55" (7th, 2 likes, 4 days ago) and says "this is what I am being told". Below it, a post by "dean" (2 likes, 4 days ago) links to "1.2 User Generated Content" guidelines. Each post has a set of interaction icons: up/down arrows, a reply icon, a tip icon, a permalink icon, an astral.ninja icon, a quote icon, and a remember icon. The word "Forum" is written in a large, bold, italicized font on the right side of the page.

The screenshot shows a chess game lobby on the nostr platform. At the top, there's a navigation bar with "jester beta", "Active Game", "Lobby", a search icon, and a settings icon. The main area features a chessboard with pieces. To the right of the board, there's a "Black" player profile with a question mark icon and the word "Games" in a large font. Below that, it says "White to move" and "You are in watch-only mode". There are two buttons: "LOGIN" and "NEW IDENTITY". At the bottom right, there's a "White" player profile with a purple robot icon and the text "(you)".

The screenshot shows a "nosbin" welcome page. At the top, there's a navigation bar with the "nosbin" logo. The main content area features a large "Welcome to nosbin" heading. Below it, there's a sub-heading "The decentralized pasting platform, built on [nostr](#)". A warning icon and text says "THIS APP IS A WORK IN PROGRESS". Below that, there are three lines of text: "Generated Pubkey: none", "Generated Private Key: none", and "Current Relay: wss://nostr.chaker.net". At the bottom, there's a "Generate" button, a "README.md" button, and a text input field with the placeholder "Write your post...". The word "Pastebin" is written in a large, bold, italicized font on the right side of the page.

The screenshot shows a chat interface on the nostr platform. At the top, there's a navigation bar with "View your profile", "Global", and a search icon. The main area features a list of channels: "Manage wallet" (0 sats), "Manage channels" (Find/create/remove channels), "Global" (Yes that may be it. When I look at the DMs, they ...), and "Nostr" (Good night). Below the list, there's a chat window with a green background and a pattern of icons. The chat window shows a message from "tymathews" (Unknown) that says "This post is a reply to a message that could not be found". Below that, there's a message from "npub1vn2ea2hq8y..." (hi). At the bottom, there's a message from "8TCapsule" (Unknown) that says "This post is a reply to a message that could not be found". The word "Chat" is written in a large, bold, italicized font on the right side of the page.





# ANIL

@anilsaidso 



[npub14hn6p34vegy4ckeklz8jq93mendym9asw8z2ej87x2wuwf8werasc6a32x](https://www.linkedin.com/company/npub14hn6p34vegy4ckeklz8jq93mendym9asw8z2ej87x2wuwf8werasc6a32x)