Lightning payments for Albycalypse 4th December 2024

- Nostr
  - Lightning address in profile
    - zap receipts (signed nostr events)
    - lightning address can map to cashu tokens
  - Experimenting with sending cashu directly (through message)
  - Experimenting with sending monero (on chain, ouch)
- Podcasting 2.0 value tag
  - Currently keysend with tag/values
- Types of lightning wallets
  - Non-custodial
    - Always online
      - Own node
        - Btcpayserver
    - Semi-online
      - Mobile wallets
        - Phoenix
    - Online when you want to do payment
  - Custodial
    - One centralized service
      - Wallet of Satoshi
      - Alby (original)
    - Open source uncle Jim
      - Cashu
      - LnBits
- Way forward
  - Payer side
    - More than anything, I think podcast players want something where they don't have to deal with lightning directly and use something existing - that was why they were using Alby in the first place
    - keysend is not as widely supported
      - everyone was using alby, which supported it, but most other easy to integrate client apps don't support it
    - people need to move away from alby
    - it would be cool to integrate with esp. web podcast players through an API
      - Blockstream Greenlight + Breez SDK for apps works
      - Cashu mints can pay BOLT-11 invoices
        - Still custodial (like alby hub), but you can integrate with it through API (Cashu protocol is just a REST API)
        - Super easy to integrate
        - Users can choose their own mint (not relying on one provider such as Alby)
        - Still need a way to get the bolt-11 invoice
          - lnurl / lnaddress / ...
      - Nostr Wallet Connect
        - Not really very Nostr related, it uses relays to communicate
        - It is a way to turn any wallet into an API-controllable wallet without directly exposed webservers
        - Unfortunately, mostly supported by Alby / Albyhub, Mutiny (deprecated), ...
          - NWC _wallet_ side is not supported even by btcpayserver (it can use other NWC wallet in a store though)
        - Usable from web players
    - BOLT-12 is getting traction on the payer side, many end user wallets already support it
      - For players, it needs to be automated, it's not like Nostr when you can zap by opening an external wallet, that would work for boosts, but not for streaming sats
    - Fountain / Breez have integrated wallets, they don't really have a problem to do mostly anything
  - Receiver / creator side
    - BOLT-12 offers would be easiest
      - If there is a node to receive the invoice, it can also provide BOLT12 offer => invoice
      - Not much more chatty
      - Does not rely on DNS / HTTPS
      - Still not super widely supported, so fallback would be good for transition
    - Do we need to support keysend?
      - Depends on what will users switch to after albycalypse, maybe not
    - Maybe different options?
      - If we are dealing with multiple players, it might make sense that the receiving side supports multiple ways of paying
      - For each valueRecipient, define multiple ways to pay?
    - LNURL might work for value4value podcasts, but it will not work for Nostr
      - RSS feed is already hosted somewhere, so there is a webserver
      - ...but what if it is a hosted third party service? podcasterwallet tries to mitigate this, but still it's a different thing to put podcast:value tag to an RSS feed and be able to interactively generate invoices
      - Maybe a service?
    - lnaddress
      - cashu delivered over nostr (like npub.cash) might be the best way to do this
        - custodial, but choose your own custodian
          - (or run the mint)
        - delivery over Nostr
- Types of lightning payments
  - keysend
  - invoice-based
    - BOLT-11 invoice is one-time invoice (expiration, can be paid once)
    - How to get the invoice?
      - Someone sends it to me as a string
        - Not really usable for v4v/nostr
      - Request it through a web service
        - lnurl
        - lnaddress
          - a .well-known way to resolve a username@domain to a lnurl (mainly)
          - lnurl gets the payer the invoice
      - Request it through Lightning network
        - Bolt-12 offer
  - other protocol that is changeable to lightning
    - Cashu
- relationship to v4v
  - keysend seems the best, you don't need an invoice
    - node has to be always online
    - need to use tags
    - does not work that well in modern wallets, it's older, tags are not very standardized, many wallets can't pay it
    - it is still chatty (just payment going through is 4 messages back and forth between nodes, this happens for all the nodes on the path)
      - For a payment with 3 hops, it's 21 messages if I count correctly
  - lightning address and lnurl requires a domain
    - It relies on running webserver accessible from the internet (no home router, or you need port forwarding/tunnels)
      - For both the .well-known part and lnurl part
    - That means it relies on domain name system
      - Domains can be cancelled/blocked/seized
      - They cost money (but for payment, you really only need a key, no registration needed)
    - There still needs to be a node somewhere on the lightning network, accessible through p2p gossip network
  - The BOLT-12 string is "ugly"
    - ...but we write it once in the profile (nostr) or RSS feed (static string, not read by humans)
    - BIP-353 DNS TXT based bolt offers
      - https://github.com/bitcoin/bips/blob/master/bip-0353.mediawiki
      - matt.user._bitcoin-payment.mattcorallo.com. 1800 IN TXT "bitcoin:?lno=lno1qsgr30k45jhvkfqxjqheaetacu4guyxwqttfrvqu0f5sneckep3lkwdut7mmhhpcyjmlmnjn4hze8ed7pq88xqkxt2dcw5mlxhz644fms82f7k4ymfxs2ehhpjtxwxly0w5k8xdtlvpqyd8xzdq4tq8lgupnueshgydr330lc3j5kdcqh54gt7jdg9n68j4eqqeu7ts8uh0qxameee6ndj37tc6mzgejthvvjqj96p8dz2h" "rsh5z5n27qfk6svjz5pmkh0smq26k0j2j4q36xgq3r5qzet9kuhq4lydpen5mskxgjdvs5faqgv8pmj7cfd7ny84djksqpqk9ky6juc7fpezecxvg7sjx05dckyypnv9tmvfp6tkpehmtaqmvuupetxuzqf4t0azddjdcpasgw6hxuz9g"
    - BOLT-12
    - BOLT-12 payments need chatting on the p2p network
      - Which we'll eventually need to do anyway to pay the invoice (even for keysend)
    - Not super widely supported, but it is getting better
      - lnd
        - https://github.com/lndk-org/lndk
    - https://github.com/urza/payto