Push Notifications
Infrastructure (not just) for Plasma Mobile

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Push Notifications

- Made for applications that occasionally receive a message from their server, and where timely reception matters
- Part of the platform infrastructure and thus also works when the application isn’t even running
- Abuse potential, but crucial for certain applications (chat, weather/emergency alerts, etc)
Proprietary push notifications

- Part of proprietary mobile platforms:
  - Google: Firebase Cloud Messaging (FCM)
  - Apple push notifications
  - Windows Notification Service
- Lock-in to platform vendor infrastructure
- Not available on other platforms
- You know where this is going, we need to build this ourselves...
UnifiedPush

- Standardizes interface between client and server parts of an application and push infrastructure
  - D-Bus on Linux/FreeBSD
  - Broadcast Receiver API on Android
  - REST API for the server
UnifiedPush Architecture
UnifiedPush – Existing Components

- Push providers
  - Ntfy
  - NextPush
  - Gotify
- Android distributors, FCM bridge
- D-Bus distributors mostly at a proof-of-concept stage
KUnifiedPush

- Connector API for use by applications
  - Implements UnifiedPush D-Bus interface on Linux/FreeBSD
  - Partial Android support

- Distributor (D-Bus only)
  - Implements Ntfy, NextPush and Gotify protocols
  - Provides KCM for configuration and listing registered applications
Push Notifications

**Online**
Connected to the push notification server and operational.

Push provider: Ntfy

Url: https://ntfy.sh

Applications

- **Public Alerts**
  Weather and emergency alert notifications.

- **NeoChat**
  Receiving Matrix messages
curl -X POST https://ntfy.sh/upkAkademy2022 -d "Hello!"
Do we really need this?

- Matrix/NeoChat
- Mastodon?
- Weather/emergency alerts
  - Continuation of a 2021 KWeather SoK
  - Covers ~90 countries
But it’s all working, isn’t it?

- Self-hosted infrastructure has to be supported, but we cannot rely on that for the majority of our users
- We would need a generally usable publicly and freely hosted push provider without the need of user registration
- Could we host that?
Push provider legal/privacy/operational risks

- Holds a network connection to every active client
- Can see push message payload (encryption needs to be done on the application level and is not standardized)
- Push messages might have to be stored for some time before the client can retrieve them
- No authentication on either side
- Can thus be abused for storing (small amounts) of arbitrary user content...
Conclusion

- We basically have all building blocks for a free push notification infrastructure
- The main challenge is hosting the push provider server
- Can and do we want to do that?
Questions?

BoF: TBD if there is interest
References

- UnifiedPush: https://unifiedpush.org/
- Ntfy: https://ntfy.sh/
- NextPush: https://github.com/UP-NextPush/server-app
- Gotify: https://gotify.net/
- KUnifiedPush: https://invent.kde.org/libraries/kunifiedpush
- NeoChat demo: https://invent.kde.org/network/neochat/-/tree/work/pushnotifications
- Emergency/weather alert demo: https://invent.kde.org/vkrause/kpublicalerts/