



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

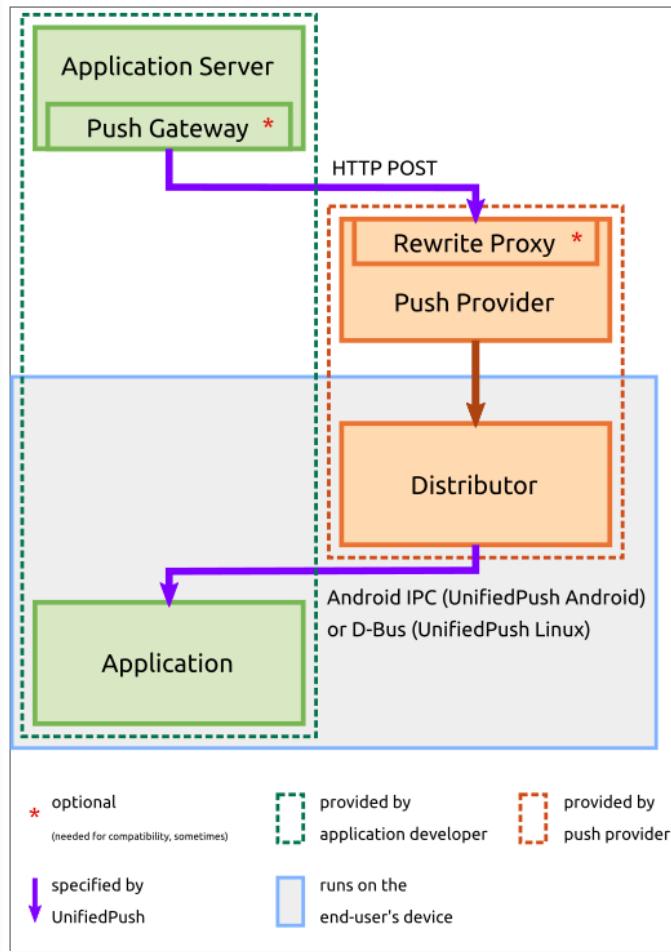
- Part of proprietary mobile platforms:
 - Google: Firebase Cloud Messaging (FCM)
 - Apple push notifications
 - Windows Notification Service
- Lock-in to platform vendor infrastructure
- Not available on other platforms
- You know where this is going, we need to build this ourselves...



- 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



- 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



KUnifiedPush Distributor

Push Notifications

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

Push provider: ▼

Url:

Applications

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

 **NeoChat**
Receiving Matrix messages ✖



KUnifiedPush Demo

```
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/>