Passwordless authentication in GDM

Joan Torres Lopez <joantolo@redhat.com>

Iker Pedrosa <ipedrosa@redhat.com>

Who are we?

Iker Pedrosa

Software Engineer at Red Hat

Focus on Identity Management

- SSSD
- shadow
- Linux-PAM

ipedrosa@redhat.com

ikerpedrosa

Who are we?

Joan Torres Lopez

Software Engineer at Red Hat

GNOME desktop

joantolo@redhat.com

gitlab.gnome.org/joantolo

Agenda

1. Passwordless authentication
2. GDM authentication
3. Limitations
4. Solution
5. Conclusion

1. Passwordless authentication

What is passwordless?

- A way to authenticate a user without using a password
- Usually involves MFA and SSO
- It strengthens security and improves user experience

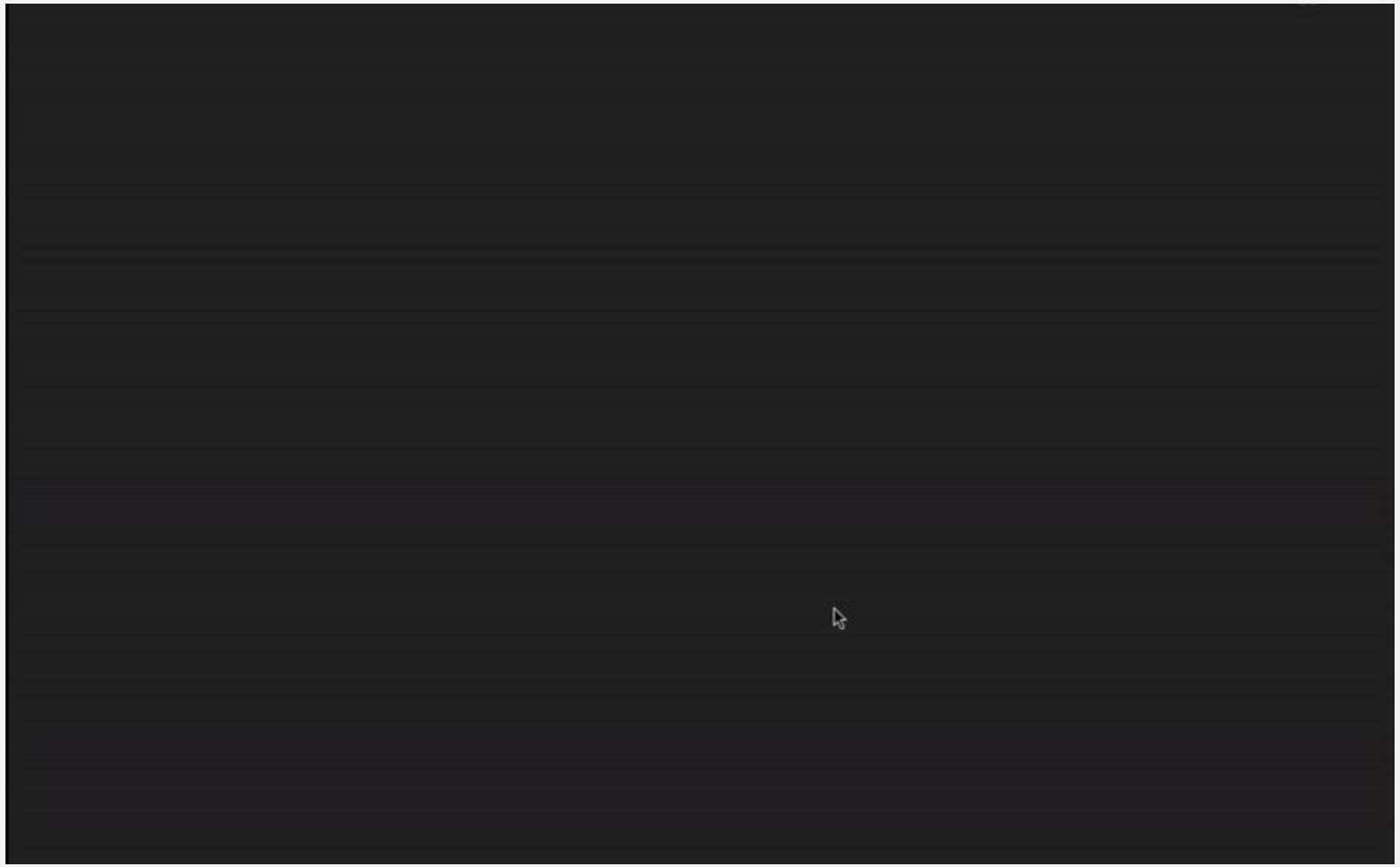
Passwordless mechanisms

Available mechanisms for centrally managed users in FreeIPA and SSSD

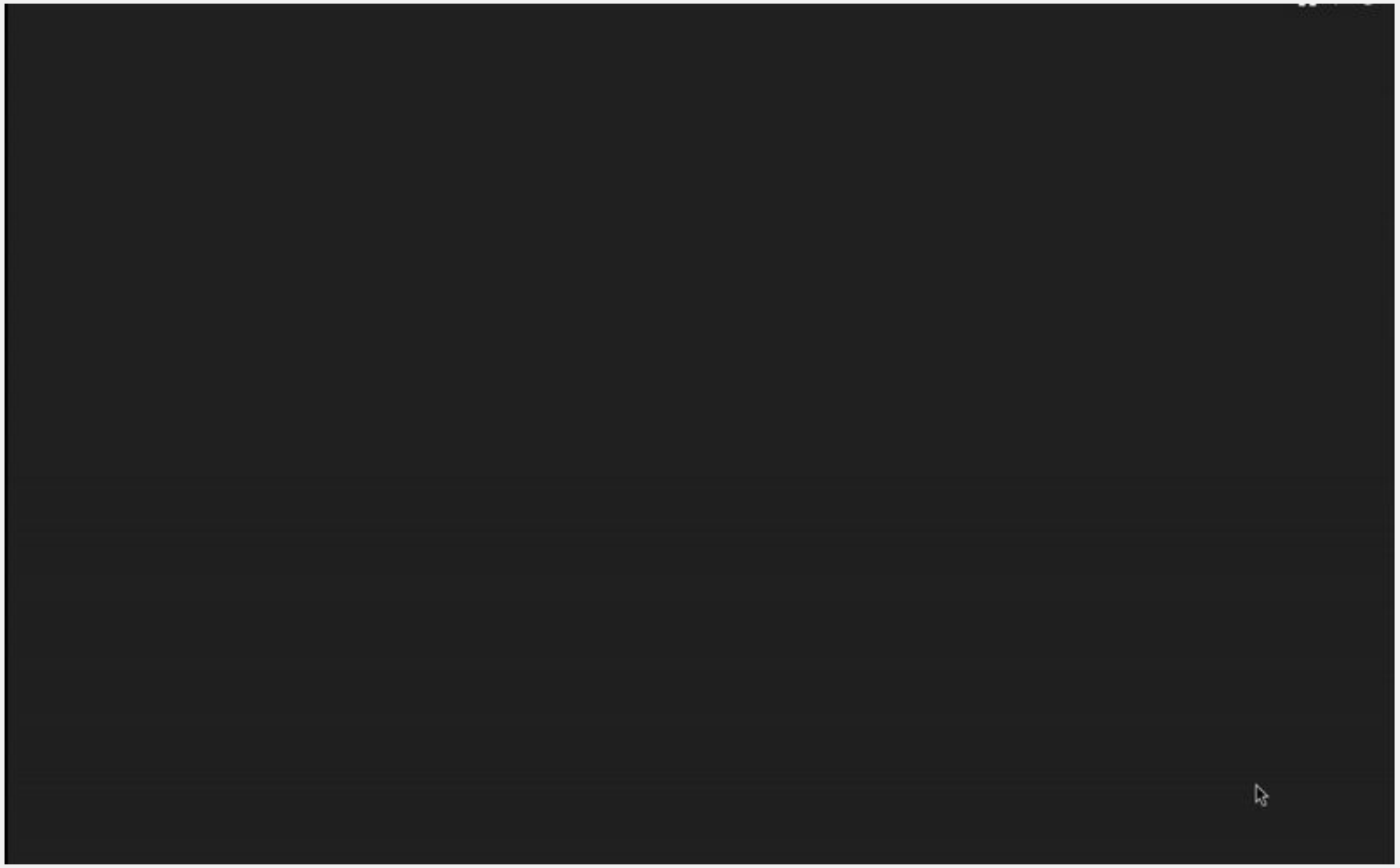
- Passkey
- Smartcard
- External Identity Provider

2. GDM authentication

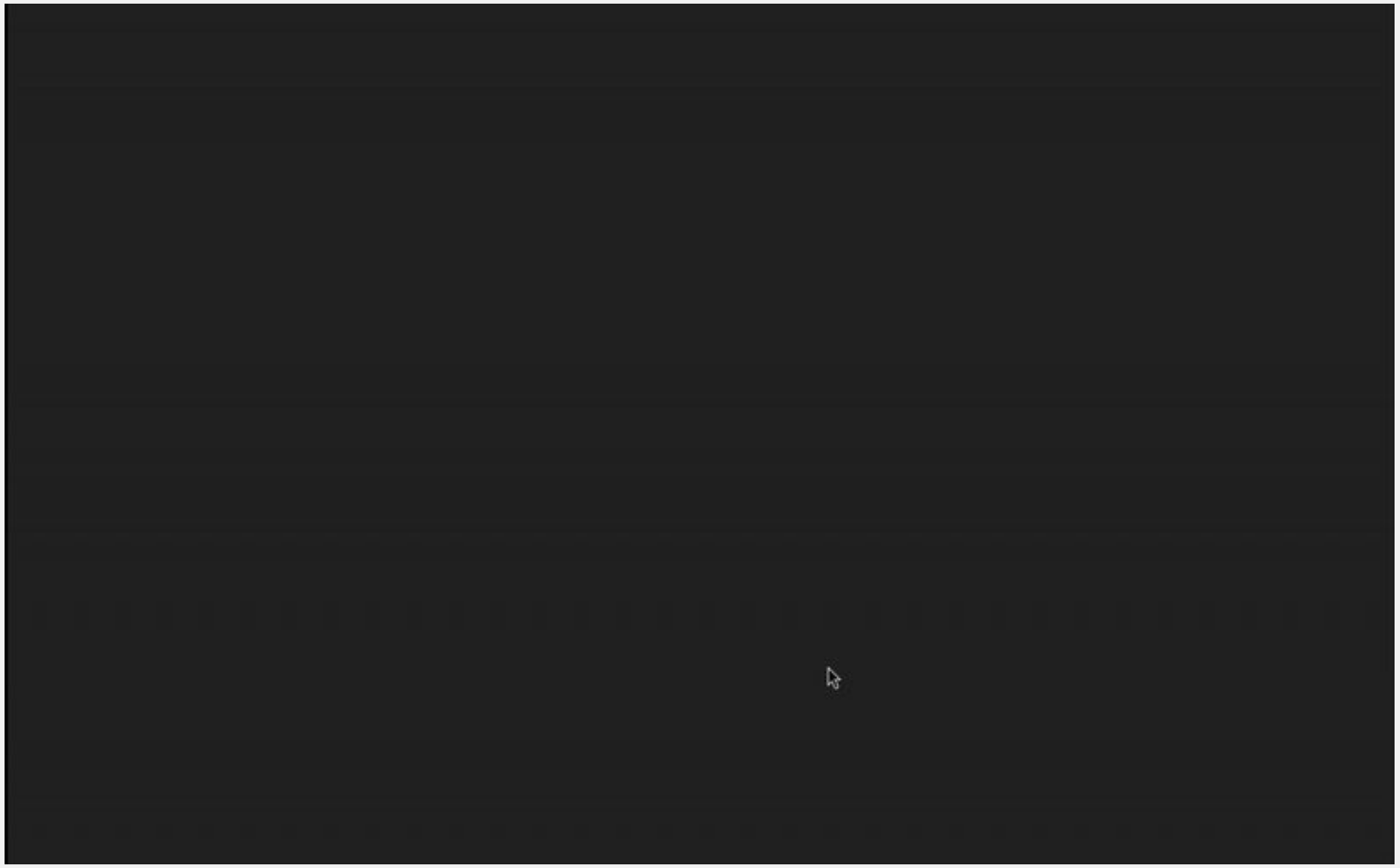
Password authentication



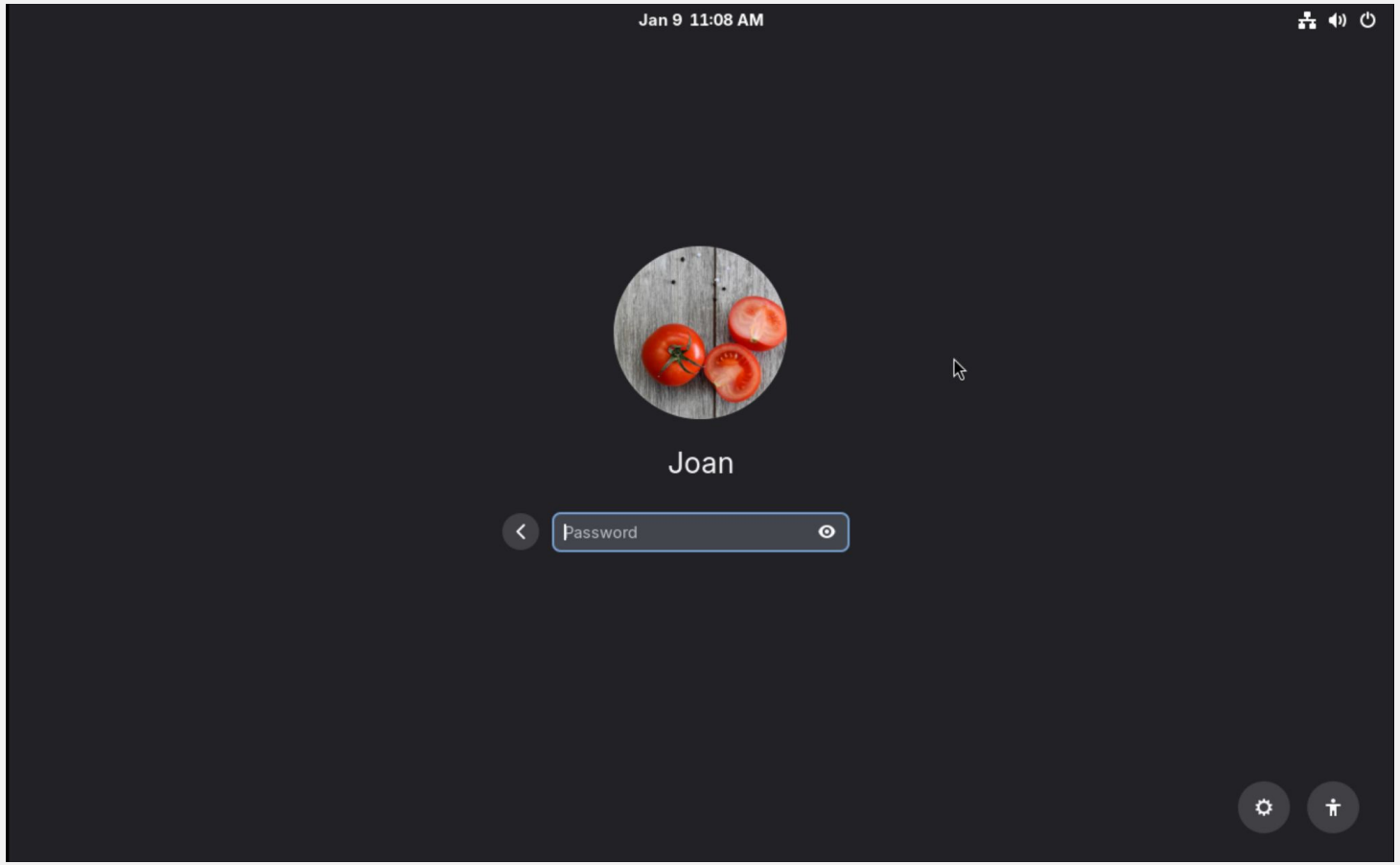
Smartcard authentication



Fingerprint authentication



How’s authentication done?



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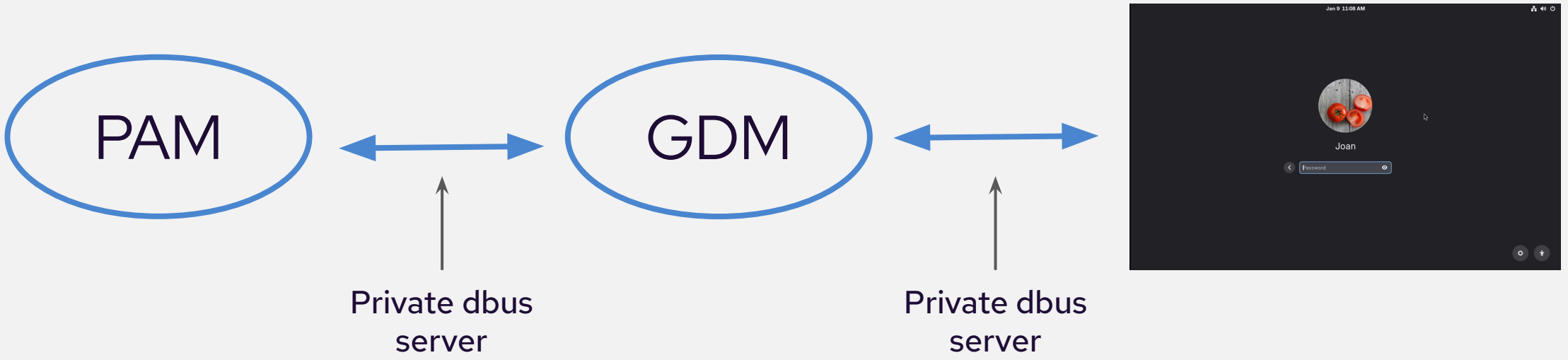
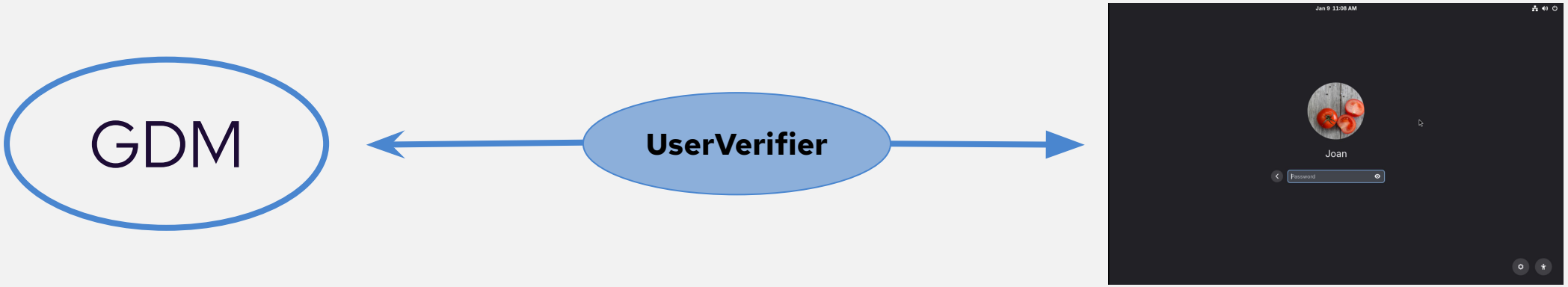


How’s authentication done?



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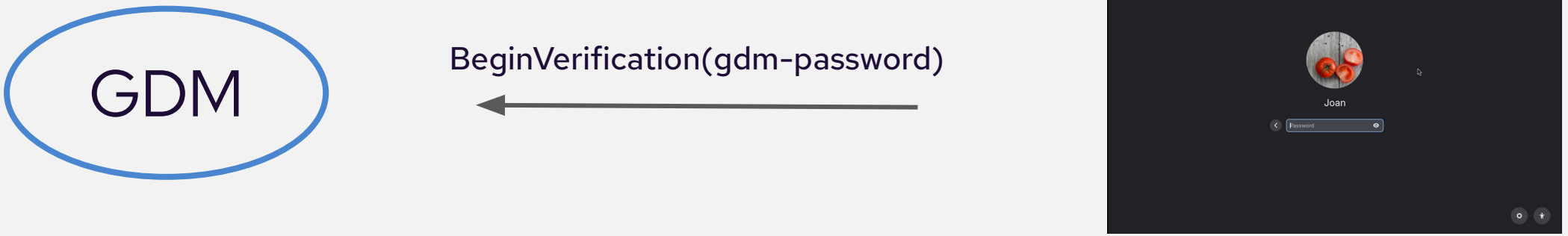

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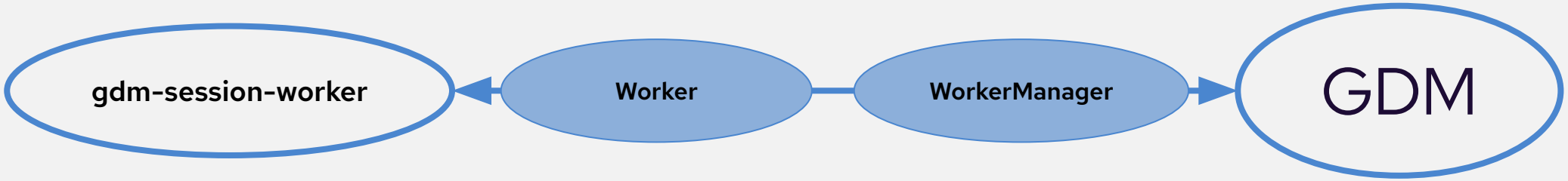

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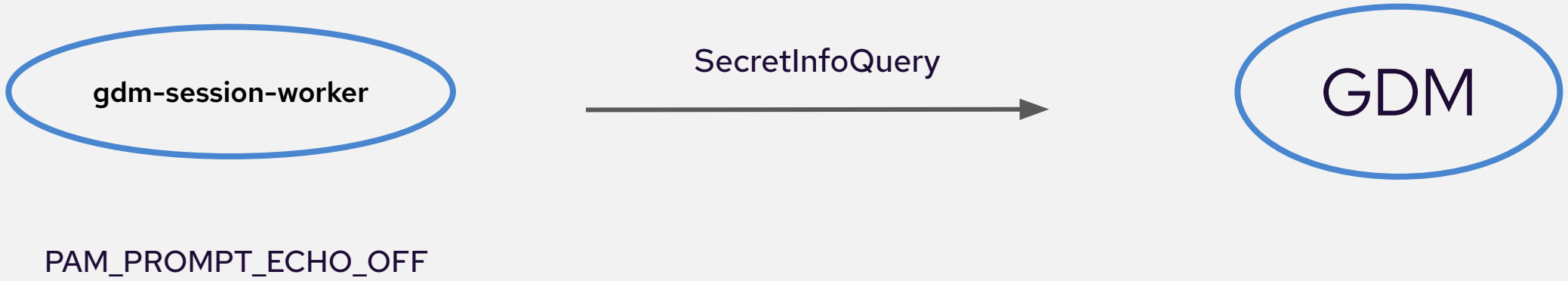


3. Limitations

Problem statement

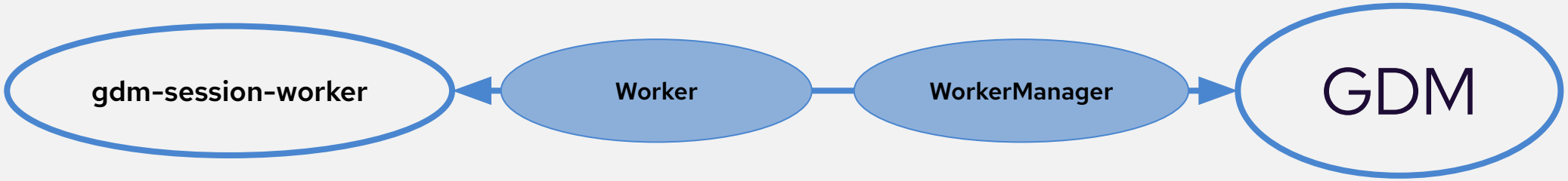
- Conversation very rigid (only supports text exchange)
- Doesn’t support “Touch device” or “WebView” PAM requests
- Can’t advertise available authentication methods
- Poor UX experience
- No ZTA support

4. The solution

New PAM extension

- With msg_type = PAM_BINARY_PROMPT
- New extensions to messages
- New extension: “CustomJSON”

New PAM extension



New PAM extension

New PAM extension

- Supported by sssd and authd
- sssd: **gdm-switchable-auth**
- authd: **gdm-authd**

JSON message format

- Request

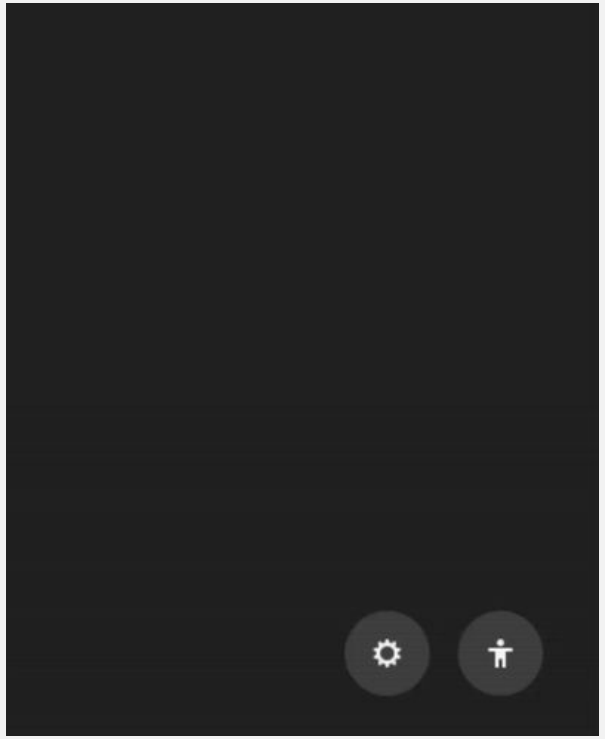
```
{
  "authSelection": {
    "mechanisms": {
      "$mech1": {
        "name": "$name1",
        "role": "$role1",
        "msg1": "$msg1"
      },
      "$mech2": {
        "name": "$name2",
        "role": "$role2",
        "msg1": "$msg2",
        "msg2": "$msg3"
      }
    }
  }
}
```

- Reply

```
{
  "authSelection": {
    "status": "$status",
    "mech": {
      "data1": "$data1",
      "data2": "$data2"
    }
  }
}
```

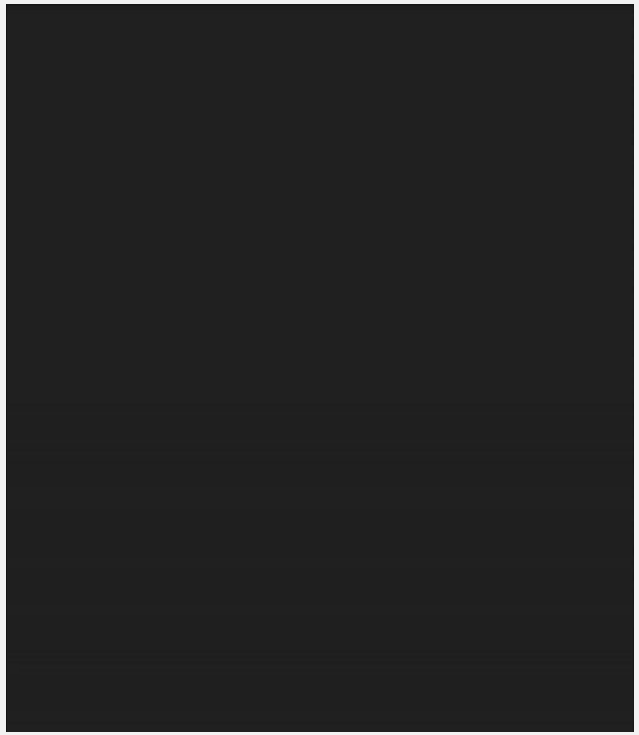
GDM changes

- Mechanisms are selectable



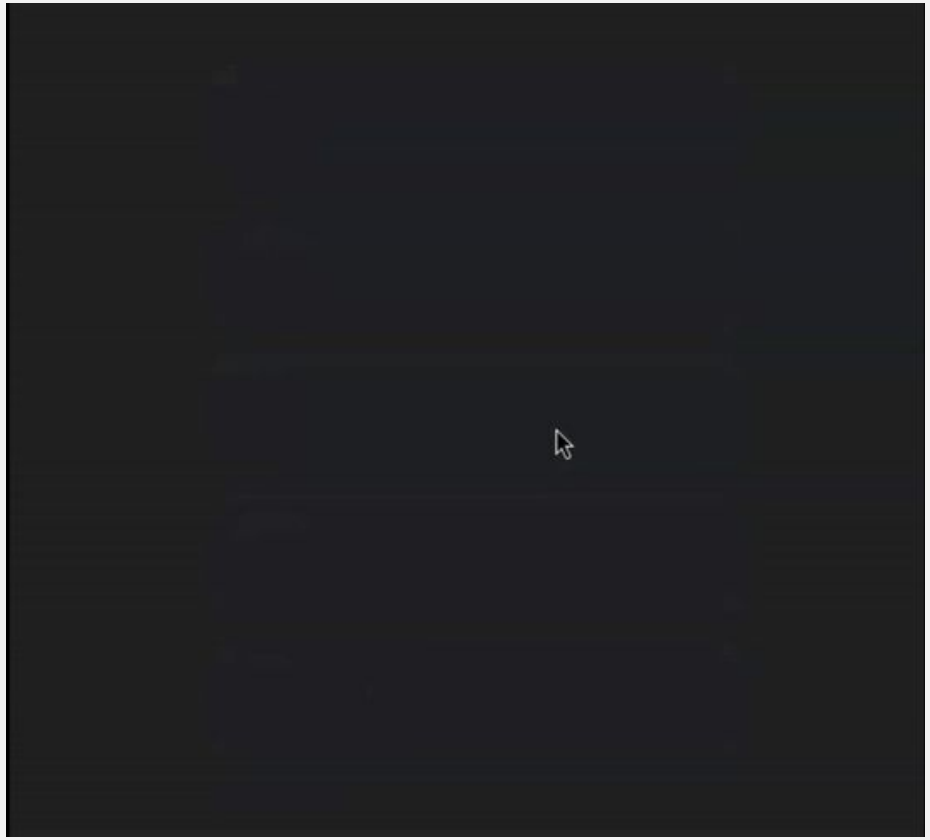
GDM changes

- Smartcard UI updated



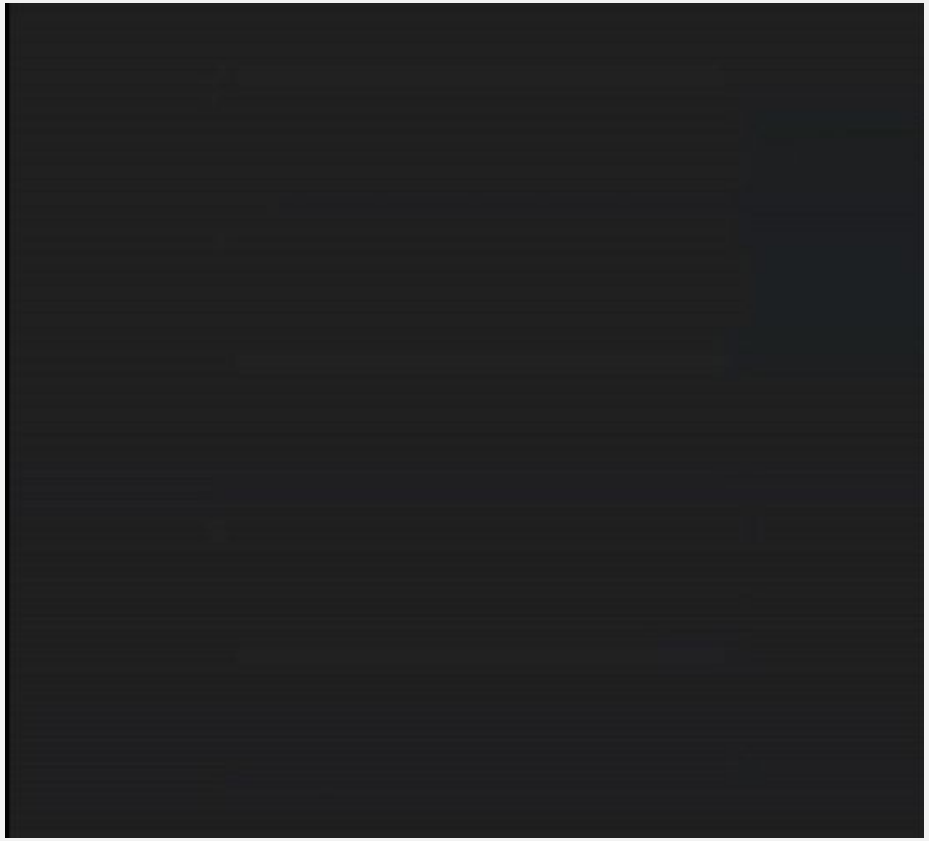
GDM changes

- New Passkey mechanism



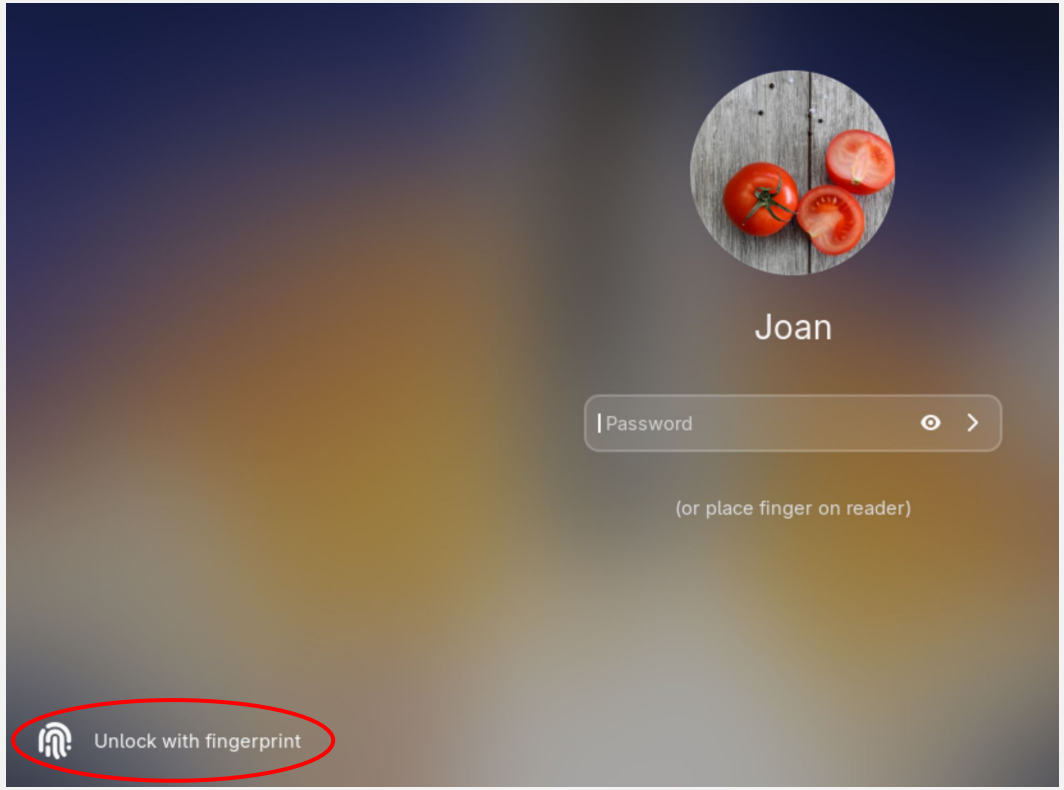
GDM changes

- New Web Login mechanism



GDM changes

- Fingerprint only on lockscreen



Live demo

5. Conclusion

Feature availability

- sssd 2.12.0
- GNOME 50 (tentative) <- MR#3212 and MR#185

Future enhancements

- Embedded webview
- PAM conversation through fd
- Move GDM into systemd (live discussion)

Reference links

- SSSD-GDM interface design
- Blog post: Enhancing PAM communication
- COPR repository

Credits

- Ray Strode <rstrode@redhat.com>
- Marco Trevisan (Treviño) <mail@3v1n0.net>

Thank you!