FOSDEM'24

fedora

Empowering FreeIPA: a dive into the modern WebUI

4 February 2024 | Brussels, Belgium

Francisco Triviño <**ftrivino@redhat.com**>

CC BY SA

FreeIPA
Open Source Identity Management Solution

Agenda

- Introduction on FreeIPA WebUI
- Motivations for the change
- Modernizing the WebUI
- Demo
- Future roadmap

Source:
Insert source data here
Insert source data here

Red Hat

Introduction on FreeIPA

Historical context

- FreeIPA is an integrated security information management solution
- Aims to provide a centrally managed Identity, Policy, and Audit (IPA) system
- Software components: Linux (Fedora), 389 Directory Server, MIT Kerberos, NTP, DNS, Dogtag (Certificate System), SSSD and other open-source components
- Management through CLI and web interface (WebUI)
- First version released on **Aug. 1st 2007**

Source:
Insert source data here
Insert source data here

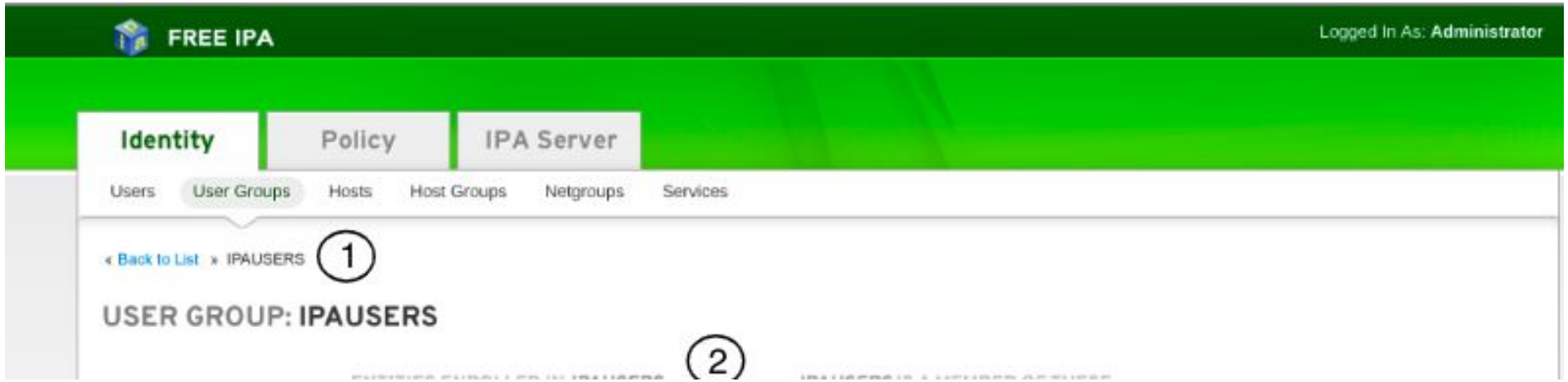
Red Hat

Introduction on FreeIPA WebUI

Historical context

First versions:

- Goal: to have parity between the UI and CLI
- Based on TurboGears
- Tech stack: C++, Python, JavaScript (JQuery). Basically, a single page application built with vanilla JavaScript
- Problems: it was needed to optimize the number of HTTP requests and minimize the JavaScript file sizes (the WebUI used a lot of JS files)



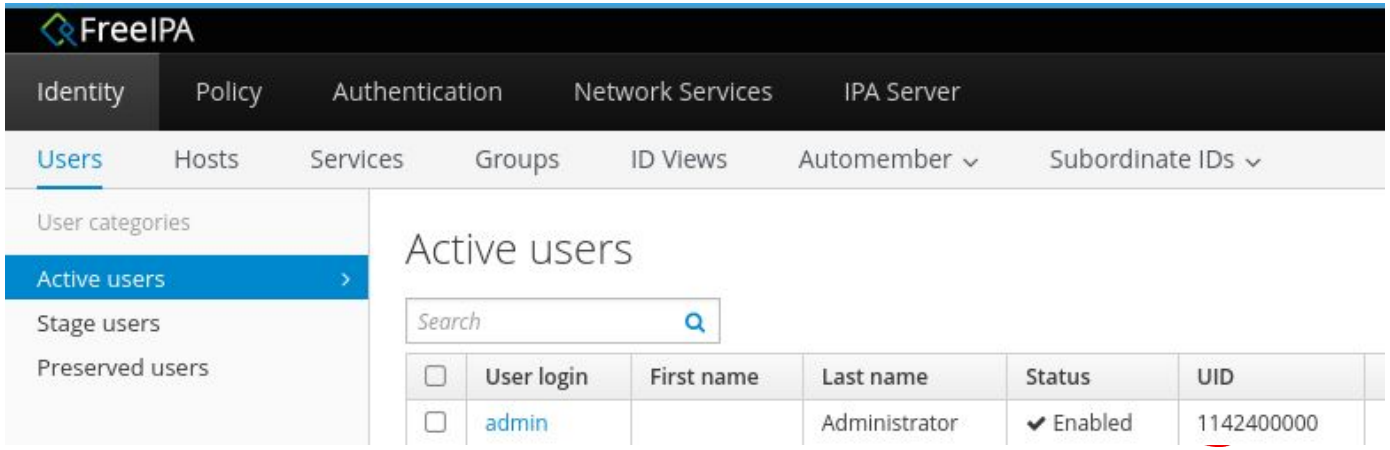
Source:
Insert source data here
Insert source data here

Introduction on FreeIPA WebUI

Historical context

Current WebUI:

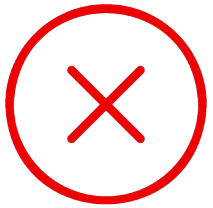
- Dojo library was used to provide modules, build, and router functionality
- Improvement: Transforming FreeIPA JavaScript packages into AMD modules to build them into a single file → This would reduce the number of JS files to be processed
- WebUI directory structure changed to better adapt to this transformation
- 2014: The styles and code were changed to match RCUE (Red Hat common user environment) → Which later became PatternFly



Source:
WebUI build: https://www.freeipa.org/page/V3/WebUI_build

Motivations for the change

Why



PatternFly 2 unsupported

Fixing/evolving the webUI is difficult with no active PF2 community of developers

PatternFly 5 supported

Better accessibility, an active toolkit community, and portfolio alignment

React to replace Dojo

Modern, secure, popular, and can use with specific framework-related libraries

Persistent problems

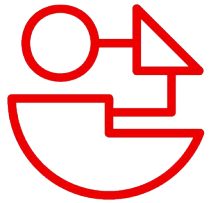
Accessibility / responsiveness issues, data limits, requests blocked by current implementation

Source:
Announcement: [FreeIPA WebUI moving to PatternFly 4]

Red Hat

Motivations for the change

How



Revisited architecture

Coding best practices, updating communication layer, and QE testing

Targeted enhancements

Make the application better to use, while minimizing disruption for current users

Better documentation

Enhance the documentation sources to be accessible for upcoming contributors

Upstream engagement

Increased communications, gather feedback, share new updates with the community

Source:

Red Hat

Introduction on FreeIPA WebUI

Technical Stack Transition

Current WebUI:

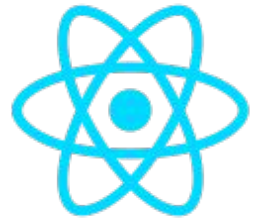
PatternFly (v2)

dojo

pytest

Modern WebUI:

PATTERNFLY (v5)

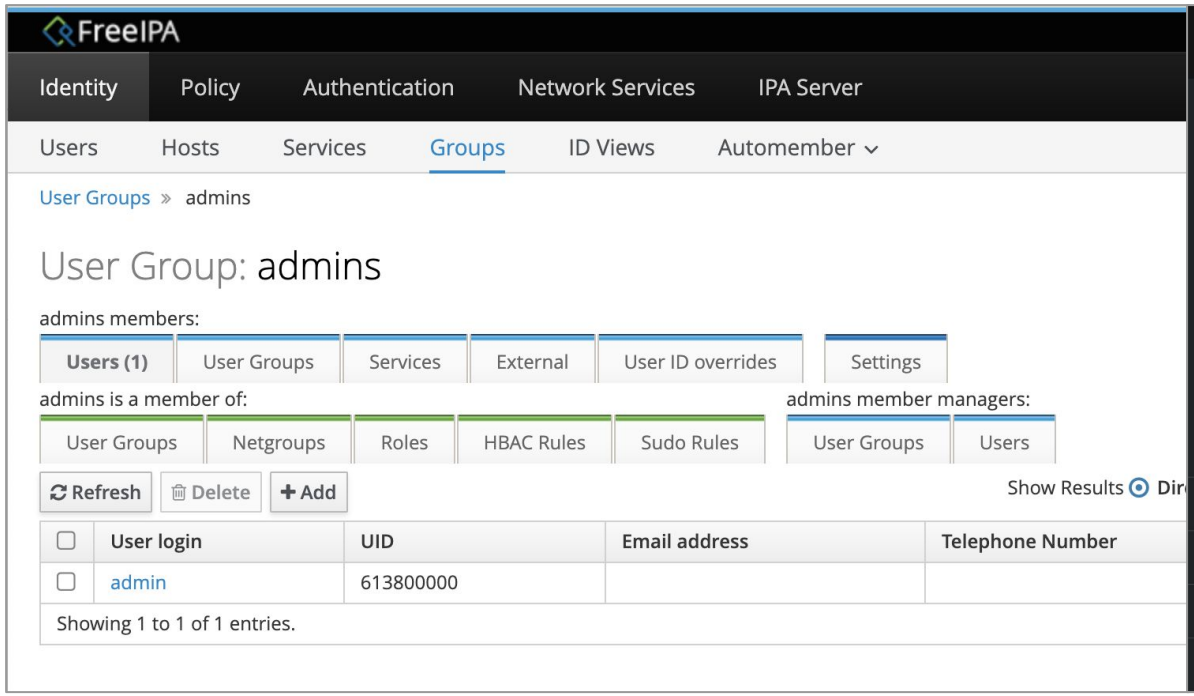


cucumber

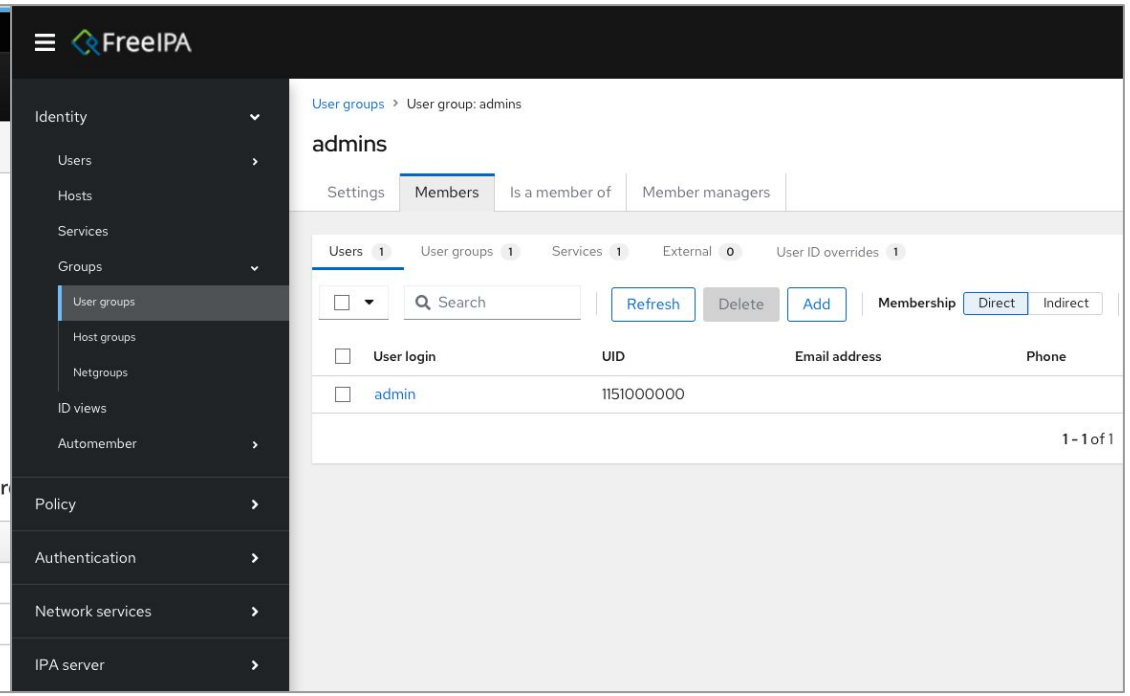
Source:
PatternFly: https://www.patternfly.org/
Dojo: https://dojotoolkit.org/
React: https://react.dev/
Cypress: https://www.cypress.io/
Cucumber: https://cucumber.io/

Modernizing the WebUI

Current vs Modern



Navigation - Current (PF2)



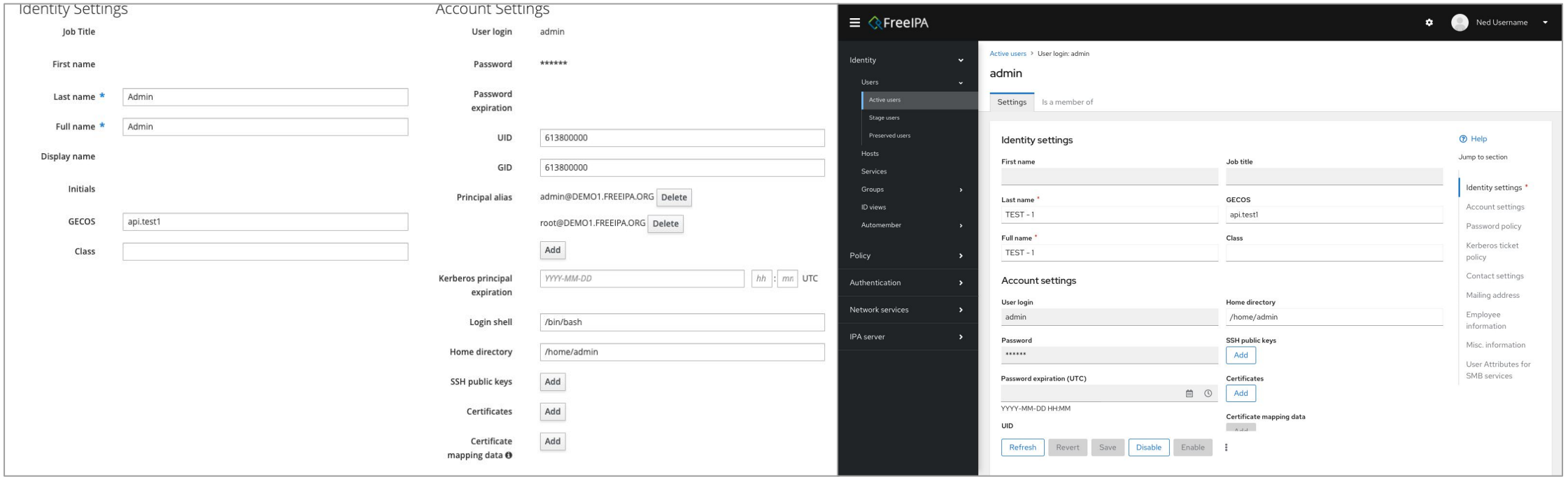
Navigation - New (PF5)

Source:
* Mockups: https://github.com/freeipa/freeipa-webui/tree/main#mock-ups

Red Hat

Modernizing the WebUI

Current vs Modern



Settings form - Current (PF2)

Settings form w/jump links - New (PF5)

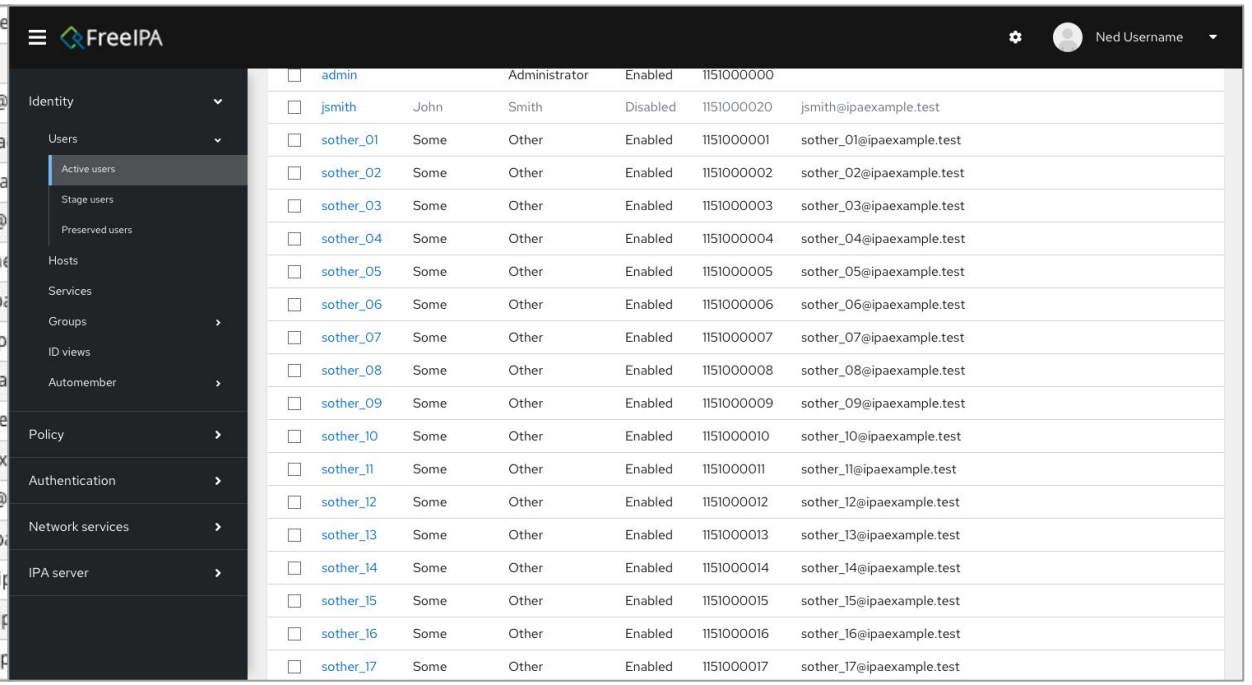
Source:
* Mockups: https://github.com/freeipa/freeipa-webui/tree/main#mock-ups

Red Hat

Modernizing the WebUI

Current vs Modern

abrick	A	Brick	✔ Enabled	1151000007	abrick@ipae
admin		Administrator	✔ Enabled	1151000000	
bcarnivale	B	Carnivale	✔ Enabled	1151000008	bcarnivale@
cdriver	C	Driver	✔ Enabled	1151000009	cdriver@ipa
deverly	D	Everly	✔ Enabled	1151000010	deverly@ipa
eferguson	E	Ferguson	✔ Enabled	1151000011	eferguson@
fgrape	F	Grape	✔ Enabled	1151000012	fgrape@ipae
ghowell	G	Howell	✔ Enabled	1151000013	ghowell@ipa
hinglalls	H	Inglalls	✔ Enabled	1151000014	hinglalls@ip
hlowell	Hugh	Lowell	✔ Enabled	1151000006	hlowell@ipa
ijones	I	Jones	✔ Enabled	1151000015	ijones@ipae
jkrall	J	Krall	✔ Enabled	1151000016	jkrall@ipaex
kloughton	K	Loughton	✔ Enabled	1151000017	kloughton@
lmedley	L	Medley	✔ Enabled	1151000018	lmedley@ipa
mnorton	M	Norton	✔ Enabled	1151000019	mnorton@ip
norleans	N	Orleans	✔ Enabled	1151000020	norleans@ip
opowers	O	Powers	✔ Enabled	1151000021	opowers@ip



Scrolling - Current (PF2)

Scrolling - New (PF5)

Source:
* Mockups: https://github.com/freeipa/freeipa-webui/tree/main#mock-ups

Red Hat

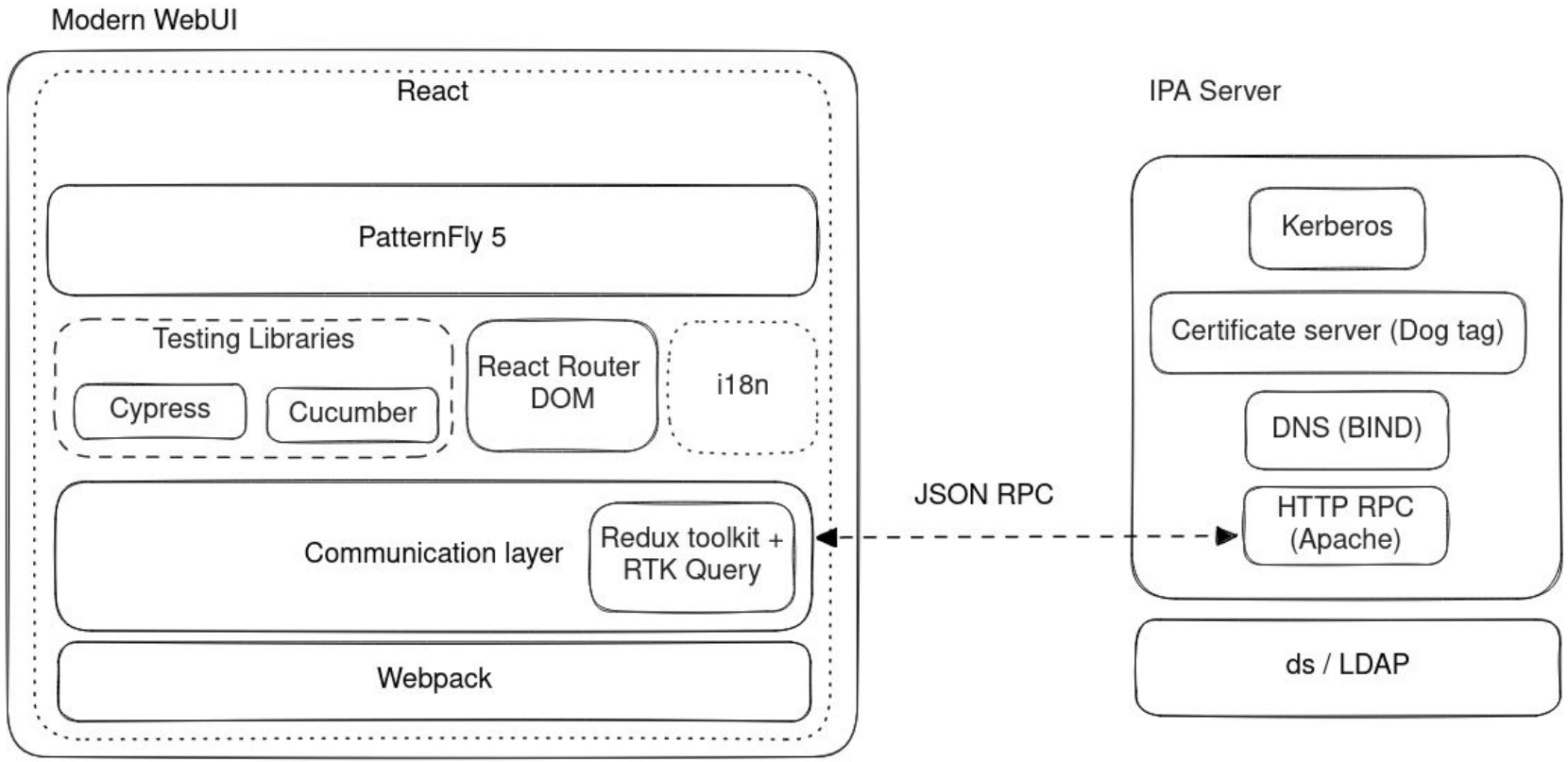
Modernizing the WebUI

Source:
Communication layer - Design doc: https://github.com/freeipa/freeipa-webui/blob/main/doc/designs/webui-communication-layer.md
RTK Query library: https://redux-toolkit.js.org/rtk-query/overview

Red Hat

Modernizing the WebUI

Architecture



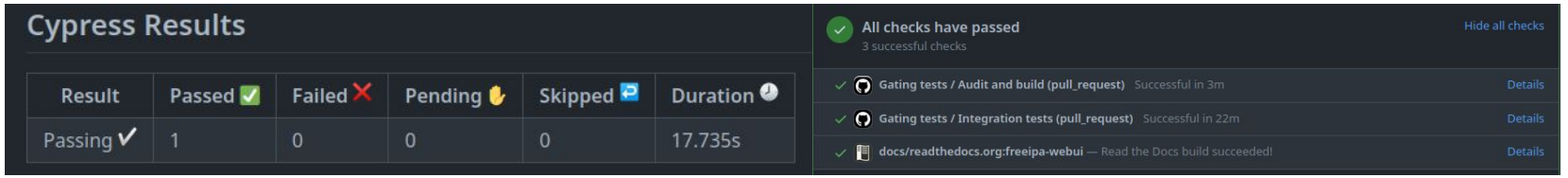
Source:
Communication layer - Design doc: https://github.com/freeipa/freeipa-webui/blob/main/doc/designs/webui-communication-layer.md
RTK Query library: https://redux-toolkit.js.org/rtk-query/overview

Red Hat

Modernizing the WebUI

New testing infrastructure

- BDD with Gherkin/Cucumber/Cypress
- Running in GitHub Actions, server provisioned with Vagrant
- Executed for every PR
- In case of failure, screenshots and step-by-step video are stored as artifacts
- Easy local debugging with Cypress built-in graphical debugger - shows state for each step of the test execution



Source:
*

Red Hat

Modernizing the WebUI

Old and new - equivalent test case comparison

```
self.init_app()

self.add_record(user.ENTITY, user.DATA, navigate=False)
self.navigate_to_record(user.PKEY)
```

```
ENTITY = 'user'

PKEY = 'itest-user'
DATA = {
    'pkey': PKEY,
    'add': [
        ('textbox', 'uid', PKEY),
        ('textbox', 'givenname', 'Name'),
        ('textbox', 'sn', 'Surname'),
    ],
    'add_v': [
        ('textbox', 'givenname', 'Name'),
        ('textbox', 'sn', 'Surname'),
        ('label', 'uid', PKEY),
    ],
    'mod': [
        ('textbox', 'givenname', 'OtherName'),
        ('textbox', 'sn', 'OtherSurname'),
        ('textbox', 'initials', 'NOS'),
        ('textbox', 'loginshell', '/bin/csh'),
        ('textbox', 'homedirectory', '/home/alias'),
        ('multivalued', 'telephonenumber', [
            ('add', '123456789'),
            ('add', '987654321'),
        ]),
        ('multivalued', 'mail', [
            ('add', 'one@ipa.test'),
```

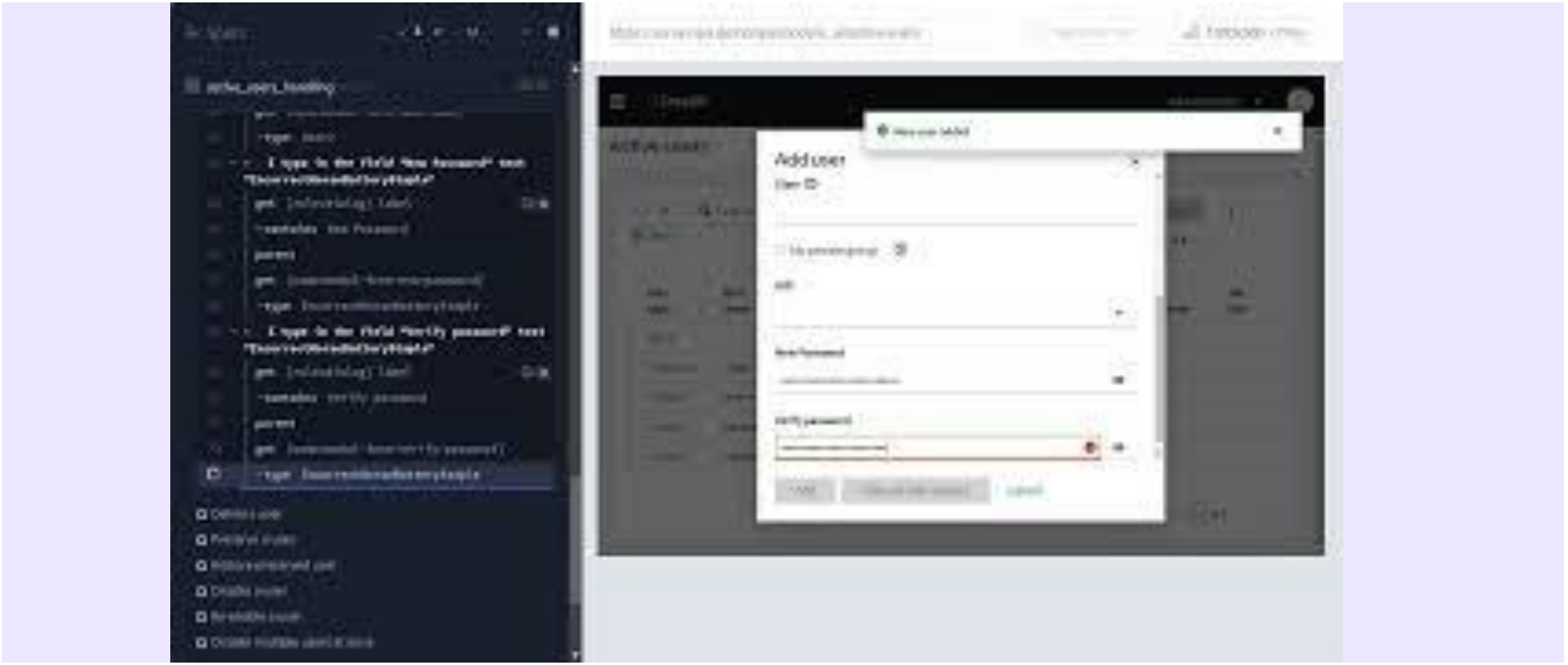
```
Scenario: Add a new user
  Given I open the side menu
  * I click on "Active users" tab
  * I close the side menu
  * there is only admin user active
  When I click on "Add" button
  * I type in the field "User login" text "testuser1"
  * I type in the field "First name" text "Arthur"
  * I type in the field "Last name" text "Dent"
  * I type in the field "New Password" text "ILoveKlingonPoetry42"
  * I type in the field "Verify password" text "ILoveKlingonPoetry42"
  * in the modal dialog I click on "Add" button
  Then I should see "testuser1" entry in the data table
```

Source:
*

Red Hat

Modernizing the WebUI

Old and new - equivalent test case comparison



Source:
*

Red Hat

Modernizing the WebUI

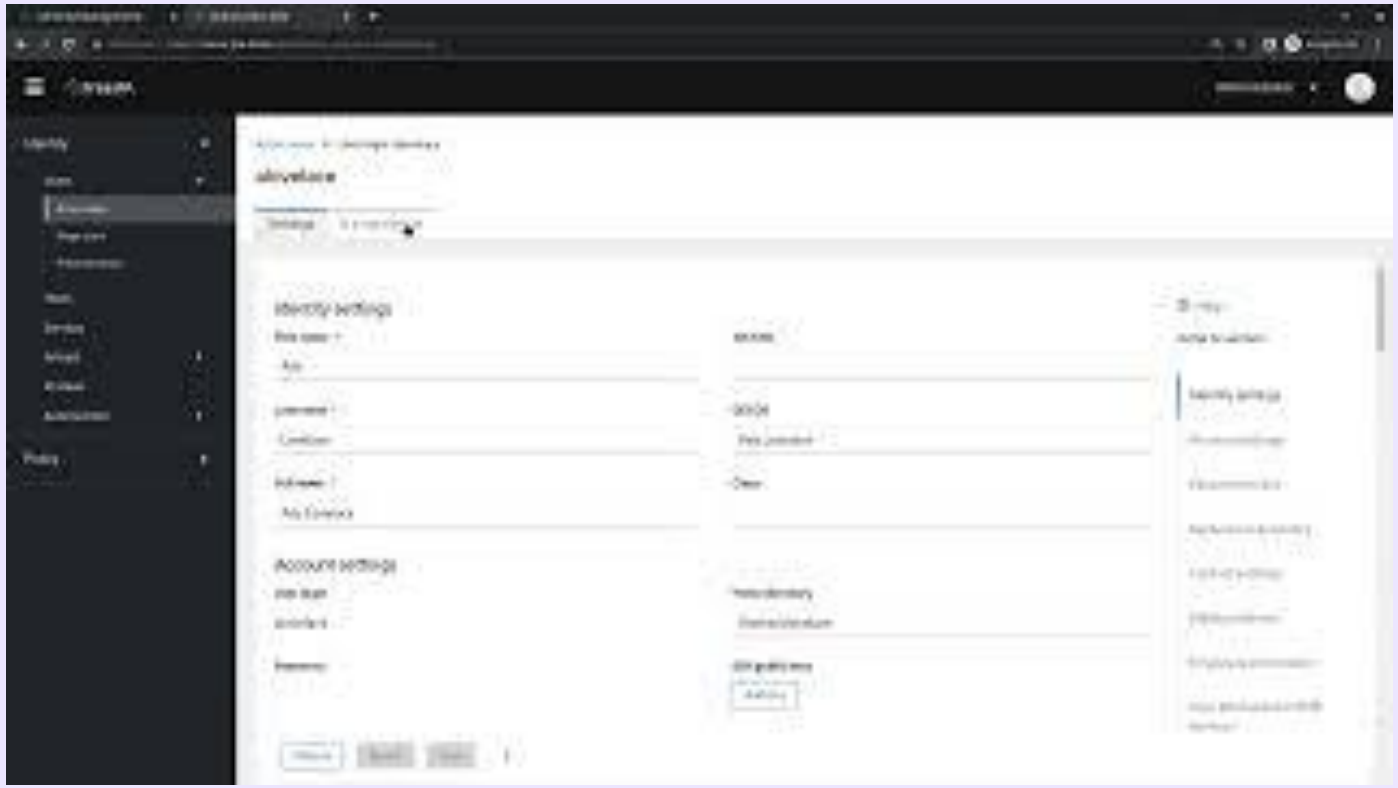
Modern WebUI live instance

1. Log into the current WebUI live instance
    a. https://ipa.demo-modernui.freeipa.org/ipa/ui
    b. Credentials: *admin* | *Secret123*
2. Access into the modern WebUI site
    a. https://ipa.demo-modernui.freeipa.org/ipa/modern_ui

Source:
* Modern WebUI live instance: https://ipa.demo-modernui.freeipa.org/ipa/ui/

Red Hat

Modernizing the WebUI



Source:
* Video: https://youtu.be/9bW1OJ6r18A

Red Hat

Future roadmap

What's next?

- Keep implementing new pages and functionality
- Improve routing → Adding direct links to pages
- Enhance potential performance issues with a lot of records
- Add internationalization (i18n) functionality
- Login page and authentication experience
- Adapt external plugins
- Engagement and more external collaboration

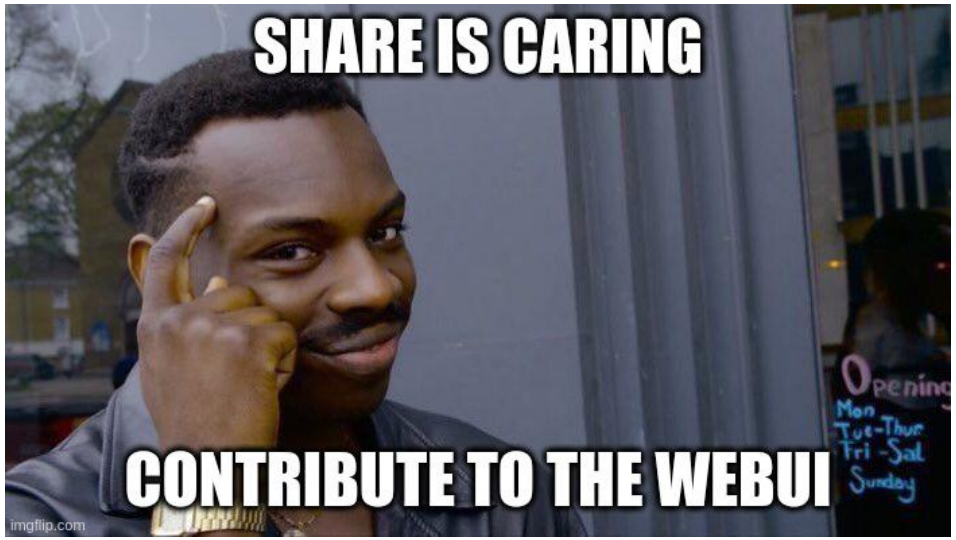
Source:
*

Red Hat

Do you want to contribute?

Modern WebUI - Upstream repository

- Configure your WebUI local instance
- Check issues
- Open a discussion and don't hesitate to ask questions
- Enjoy learning!



Source:
*

Red Hat

Q&A

WebUI Main Contributors

Carla Martinez (Dev, carlmart@redhat.com)

Michal Polovka (QE, mpolovka@redhat.com)

Mark Reynolds (Dev, mreynolds@redhat.com)

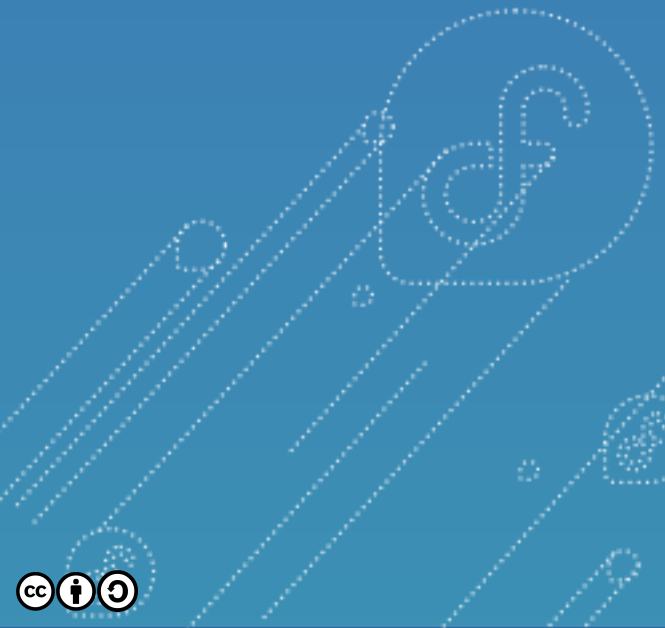
Louise McGarry (Doc, lmcgarry@redhat.com)

Peter Vobornik (Dev, pvobornik@redhat.com)

Brian Dellascio (UX, bdellasc@redhat.com)

Red Hat

Thank you



CC BY SA