

Google Summer of Code 2020 results

Samba AD DC Cockpit UI

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A starting note

- Google Summer of Code: Samba edition
- Goals
- Results and demo
- Future

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- About me
 - Samba Team member
 - Engineer at Red Hat
 - Focused on identity management and interoperability

- [Projects and resources](#)

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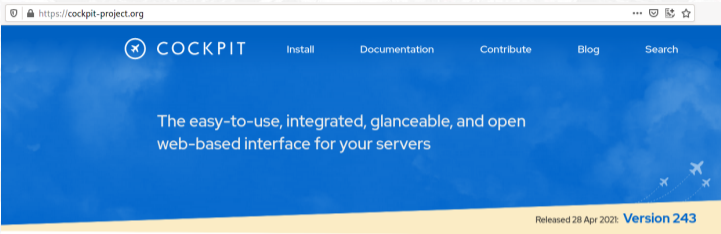
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- we decided to go with a Cockpit UI proposal
 - GSoC is an effort for both a student and mentors

What is Cockpit?



Introducing Cockpit

Cockpit is a web-based graphical interface for servers, intended for everyone, especially those who are:

- **new to Linux**
(including Windows admins)
- **familiar with Linux**
and want an easy, graphical way to administer servers
- **expert admins**
who mainly use other tools but want an overview on individual systems

Thanks to Cockpit intentionally using system APIs and commands, a whole team of admins can manage a system in the way they prefer, including the command line and utilities right alongside Cockpit.

Take a look

A picture is worth a thousand words. Click a thumbnail to see screenshots of Cockpit in action.



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 - New to Linux, new to Samba

The GSoC program has several goals:

- Inspire young developers to begin participating in open source development
- Help open source projects identify and bring in new developers
- Get more open source code written and released for the benefit of all
- Provide students the opportunity to do work related to their academic pursuits during the summer: “flip bits, not burgers.”
- Give students more exposure to real-world software development (for example, distributed development and version control, software licensing issues, testing, and communication best practices)

Samba GSoC goals

- Understand how can we bring “Samba world” and “Web world” together
- Explore open source communities ways of working
- Improve over a previous prototype done in 2018
- Learn how to do continuous integration and delivery for Linux



From my previous talk at sambaXP
2018

How complex is it to manage Samba?

- Five main server roles:
 - Standalone server
 - Domain member server
 - Classic primary domain controller
 - Classic backup domain controller
 - Active Directory domain controller
- File share configuration
 - Applies to all five roles
 - allows 133 different options per share
- Global configuration
 - 339 different options

That was just `smb.conf` configuration

- Databases beyond `smb.conf`
 - identity information backend
 - secrets database
 - account policy database
 - SMB identity to POSIX group mapping
 - NetBIOS browsing details database
 - Kerberos keytabs
- Utilites
 - `net`
 - `samba-tool`
 - `smbcontrol` (an instant messaging app)
 - ...



Back to GSoC 2020

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- Present information already available in the system
- Make Linux discoverable, don't add additional layers

- Samba AD primary tool is `samba-tool`
- Manual steps needed for deployment

root@
dc1.samba.test

Search

System

Overview

Logs

Storage

Networking

Accounts

Services

Tools

Applications

Samba AD DC

SELinux

Software Updates

Terminal

Help

Computer Management

List Computers Create Computer Delete Computer Show AD Object Move Computer

Domain Management

Domain Info Backup Offline Backup Online Backup Rename Backup Restore

Create Trust Delete Trust List Trusts Namespaces Show Trust

Validate Trust Classic Upgrade Promote DC Demote DC Join Domain

Contact Management

Contacts List Create Contact Delete Contact Show Contact Move contact

User Management

List Users Create User Delete User Enable User Disable User Move User Show User Attributes

Change Password Set Expiry Reset Password

Group Management

List Groups Create group Delete group Show AD Object Move Group List Members Remove Members

The screenshot displays the Cockpit Samba AD UI interface. On the left is a dark sidebar with a search bar and a list of system components: System, Overview, Logs, Storage, Networking, Accounts, Services, Tools, Applications, Samba AD DC (highlighted), SELinux, Software Updates, and Terminal. The main window shows a 'Computer management' header with buttons for 'List Groups', 'Create group', 'Delete group', 'Show AD Object', 'Move Group', 'List Members', and 'Remove Members'. A 'Join Domain' dialog box is open in the center, containing the following fields: 'DNS Domain', 'Role' (set to 'DC'), 'Parent Domain', 'Admin Pass', 'Server', 'Site', 'DNS Backend', 'Machine Pass', 'Backend Store', 'Backend Store Size', and 'Target Dir'. At the bottom of the dialog are 'Join' and 'Cancel' buttons. The top right of the main window features a 'Help' icon and a user profile icon.

What was that?

- Cockpit management console for Fedora 35 (Rawhide)
- Samba AD Cockpit application
 - prototype based on the GSoC results
 - deploys Samba AD domain controller
 - manages Samba AD domain
 - or shows its state

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 - prototype based on the GSoC results
 - deploys Samba AD domain controller
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 - or shows its state
- Behind the (web) interface
 - Runs samba-tool commands
 - Parses output
 - Presents the results in UI

- React-based JavaScript application
- Uses existing Cockpit APIs to integrate in the UI
- Part of Cockpit app, socket-activated and authenticated
- Cockpit session is like an SSH session
 - Properly authenticated, can use sudo, if required
 - All you can do in SSH session can be done by a Cockpit app
 - even to a remote Cockpit server

- Result of GSoC: https://wiki.samba.org/index.php/GSOC_cockpit_samba_ad_dc

- Continuous CI
 - GitLab to host the project
 - OSBS to create automated builds (RPM and DEB)
- Automating NPM builds without internet access
- Documentation hurdles
- Parsing free text output from `samba-tool`
- Development against moving targets

- How to productise GSoC results?
- Keep in sync with Samba development
- Produce playbooks for common tasks

Final thoughts

- Samba is used by people
- And robots
- Robots increasingly consume Samba artefacts
- Parsing human-oriented output is a waste of resources for robots
- We can do better (for robots and humans)
- A little magic can help both



Thanks!
