



Migration of 6,300+ Hosts to GNU/Linux

DevOps Milestones & Automation Achievements

Based on gcoop & Banco Credicoop Infrastructure Project (2018–2022)



Project Scope & DevOps Objective

- **Scale:** 300 bank branches ~6,300+ workstations & servers
- **Goal:** Zero-downtime migration from legacy *W2K* to *GNU/Linux*
- **DevOps Approach:** Infrastructure as Code (*IaC*), Centralized Orchestration, *CI/CD* Pipelines, Automated Inventory & Compliance



Phase 1: Lab & Proof of Concept (6 months)

- Validated *FreeIPA / ActiveDirectory* integration for unified *SSO/auth*
- Proved *PXE netboot* → *Debian NetInstall* → *Proxmox* automation via *AWX*
- Defined target architecture: 1 bare-metal server + 10 KVM VMs per branch



Phase 2: Development & IaC (1 year)

- Built `>200` *Git* repositories (*playbooks, roles, AWX* configs)
- Automated server lifecycle: *iDRAC* control → *PXE* boot → *Proxmox* → *VM* provisioning
- Workstation strategy: Factory base image + *AWX*-driven config sync & enrollment
- Centralized inventory & job templates managed entirely via code (no GUI drift)



Phase 3: Staging & Validation (87 days)

- Full production simulation in a single branch with real hardware/traffic
- Validated peripheral compatibility (*scanners*, ticket printers, *POS* devices)
- Identified login concurrency bottleneck → implemented cache sync + *API* gateway
- Established deployment limits per branch to prevent *network/API* saturation



Phase 4: Production Rollout (347 days)

- Migrated 300 branches overnight (06:00–09:00 maintenance window)
- Zero manual provisioning; fully automated from *AWX* → target nodes
- Implemented *GitLab CI/CD* pipeline: *Dev* → *Staging* → *Production* (JSON template sync)
- Firewall/rule validation integrated via *JIRA* requests + *Ansible* compliance checks



Key Challenges & *DevOps* Solutions

Challenge	Solution
Dynamic <i>IP</i> /Network changes	<i>NetworkManager</i> Dispatcher + <i>SNMP</i> auto-updates <i>MAC/IP/host</i> in <i>AWX</i> inventory
Auth bottlenecks (2k+ simultaneous logins)	In-memory cache sync + <i>API gateway</i> → roadmap to <i>FreeIPA</i> cluster
Scale & parallelism	Dynamic job limits per branch; retry-on-failure with idempotent <i>playbooks</i>
Compliance & Auditability	100% <i>Git</i> versioning; <i>AWX</i> execution <i>logs</i> ; immutable infrastructure pattern



Tech Stack & Automation Pipeline

- **Provisioning:** *PXE, Debian NetInstall, Proxmox VE, KVM*
- **Orchestration:** *Ansible + AWX (Central HQ Hub)*
- **Identity:** *FreeIPA / ActiveDirectory sync (SSSD)*
- **CI/CD & IaC:** *GitLab CI, AWX REST API/CLI, JSON template export*
- **Inventory/Monitoring:** *SNMP traps, NetworkManager Dispatcher, Dynamic AWX inventory plugins*



Impact & Current State

- 99% automated migration; 1% manual intervention post-rollout
- Consistent, auditable, and reproducible infrastructure across all branches
- Open-sourced >30 Ansible roles & tools via gcoop (*GitHub/GitLab*)
- Ongoing: *FreeIPA* cluster deployment, *CI/CD* hardening, continuous improvement



References & Resources

- Site: <https://filiales-gnu-linux.g.coop.ar/>
- Code: <https://gitlab.com/gcoop-libre> | <https://github.com/gcoop-libre>
- Story: <https://www.gcoop.coop/experiencia-exitosa/infraestructura-como-codigo-en-el-banco-credicoop>

2022-10-20 HowTo Migrate 6300 hosts to GNU/Linux using Ansible and AWX

- Video: <https://www.youtube.com/embed/3hjQwbqCUP4>
- Transcription: <https://osiux.com/2022-10-20-howto-migrate-6300-hosts-to-gnu-linux-using-ansible-and-awx.html>