



PVE Promox Virtualization Platform

DevOps Milestones in Branch Virtual Infrastructure

Ansible-driven Promox VE cluster automation across 285+ branch locations

2022-10-22 -> 2026-07-07



Platform Overview

Metric	Value
Total Releases (since 2022-10-22)	17
Playbooks	box-all / box-pve / box-vms / pve-update / vms-*
Target Hypervisor	Promox VE (Debian-based)
Key Roles	Promox / ACSI / auditd / nut / cloud-init



FreeIPA Server Migration Automation

Automating srep host migration between *FreeIPA* domains with zero downtime:

- `v0.9.1` (`2026-06`): Full playbook to migrate a srep from old -> new *FreeIPA* server
- `v0.9.0` (`2026-05`): `cloud-init` configuration for new *FreeIPA* domain bootstrap
- Fix vulnerabilities detected in "**Copy Fail**" and "**Dirty Tags**" compliance scans
- Automated *DNS* record updates during *IPA* migration lifecycle



ACSI Compliance & Security Auditing

Continuous security compliance automation for *Promox* hosts:

- `v0.8.2` (`2026-04`): Updated *ACSI* role + auditd integration for security auditing
- `v0.8.1` (`2025-07`): Bumped *ACSI* role to v0.4.14 -- latest compliance ruleset
- `v0.6.1` (`2025-05`): *ACSI* role v0.4.9 deployment across *PVE* cluster
- `v0.5.5/4` : *ACSI* `v0.4.2` + auditd role name fix for requirements.yml
- Automatic audit rule generation and compliance report pipeline



Kernel & Boot Stack Management

Automated kernel updates with safe initramfs regeneration:

- **initramfs regeneration:** Added task for safe initramfs rebuild after kernel updates
- Fix lint errors in regenerate-initramfs -- ensures idempotent execution
- Control flow added to skip regenerate on lint failures -- prevents broken boot images
- Safe upgrade path for *PVE* kernel without manual intervention per host



PVE Box Image & Repository Infrastructure

Building and maintaining standardized *PVE* base images with correct repositories:

- **box-pve playbook**: Creates standardized *PVE* box images for *VM* deployment
- **box-all / box-vms**: Unified image generation across all *PVE* cluster nodes
- **tower-cli fix** (v0.5.4): Corrected *Promox* repository source in box-pve config
- **box wfw playbook** (v0.5.3): Implemented workflow for automated box creation pipeline
- Repository pinning ensures consistent *PVE* package versions across deployments



VM Lifecycle & Cluster Management Playbooks

Comprehensive virtual machine management automation:

- **vms-delete-sans** (v0.7.0/v0.8.0): Automated *VM* cleanup -- delete sans VMs without git tracking
- **vms-delete-sgit**: Git-safe *VM* removal with automated resource reclamation
- **vms-backup-disk**: Cross-node *VM* backup disk orchestration
- **vms-startup-order**: Configurable *VM* startup sequence for cluster boot ordering
- **pve-kvm-state**: Real-time KVM *VM* state monitoring and reporting
- **pve-update**: Main playbook -- *PVE* host updates with NUT (UPS) integration



Hardware Compatibility & Network Infrastructure

Expanding supported hardware and network stack automation:

- *Dell* R350 compatibility(v0.2.3/v0.5.2): Full support for *Dell PowerEdge* R350 servers
- **Nut role integration** (v0.5.1): *UPS* monitoring and graceful shutdown automation
- **Cloud-init roles**: Automated *VM* provisioning with cloud-init metadata injection
- Network stack hardening alongside *Promox* package updates



APT Source Configuration & Maintenance

Ensuring reliable package management across all *PVE* hosts:

- **Valid-Until fix** (v0.5.7): Handled apt indexes with Valid-Until attributes
- **Release info change** (v0.5.6): Fixed apt update to allow --allow-releaseinfo-change
- **Backports fix**: Corrected backports apt source in box-pve -- prevents package pinning issues
- Ensures *PVE* hosts stay updated without manual apt configuration intervention



Timeline at a Glance

Period	Version Range	Key Achievements
Mid 2023	v0.2.3-v0.5.1	<i>Dell</i> R350 compat, <i>Nut UPS</i> integration, <code>cloud-init</code> roles
Early 2024	v0.5.2-v0.5.7	Box image pipeline, <code>apt</code> Valid-Until fix, <code>tower-cli</code> correction
Mid 2025	v0.6.0-v0.8.1	ACSI compliance chain, backports fix, VM delete playbooks
2026	v0.8.2-v0.9.1	<code>initramfs</code> mgmt, <code>auditd</code> integration, <i>FreeIPA</i> migration automation



Core Playbook Modules (ansible_proxmox)

Playbook	Purpose
<code>box-pve</code>	Create standardized <i>PVE</i> base box image
<code>box-all</code>	Generate box images across all cluster nodes
<code>box-vms</code>	<i>VM</i> template generation from <i>PVE</i> box
<code>pve-update</code>	Main <i>PVE</i> host update with NUT <i>UPS</i> integration
<code>vms-backup-disk</code>	Cross-node <i>VM</i> backup disk orchestration
<code>vms-delete-sans</code>	Automated sans <i>VM</i> cleanup (no git tracking)
<code>vms-delete-sgit</code>	Git-safe <i>VM</i> removal with resource reclamation
<code>vms-ipa-migrate</code>	Proxmox-side <i>FreeIPA</i> server migration
<code>vms-startup-order</code>	<i>VM</i> startup sequence configuration
<code>pve-kvm-state</code>	Real-time KVM <i>VM</i> state monitoring



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>