KVM / DR

TECHNICAL WHITE PAPER

Migrating to KVM Is an Ecosystem Decision

Why a successful move to oVirt, RHV, or OLVM depends on far more than the hypervisor — and why backup, disaster recovery, and operational tooling decide whether the migration actually sticks.

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A VENDOR-NEUTRAL GUIDE FOR INFRASTRUCTURE AND PLATFORM TEAMS

EXECUTIVE SUMMARY

The hypervisor migrates in months. The ecosystem is the real project.

A large share of the enterprise is re-platforming its virtualization estate, and KVM-based platforms — oVirt, Red Hat Virtualization (RHV), and Oracle Linux Virtualization Manager (OLVM) — are a primary destination. Teams leading these projects quickly learn an uncomfortable truth: swapping the hypervisor is the straightforward part.

On their previous platform, those teams sat inside a deep, decades-old ecosystem — backup, replication, disaster recovery, monitoring, and automation, all built to work together. Moving to KVM means leaving most of that ecosystem behind. The hypervisor has a clear equivalent; the surrounding tooling often does not.

This paper argues that migration readiness should be measured by the ecosystem, not the hypervisor. It examines which supporting capabilities a production estate depends on, why backup and disaster recovery are the highest-risk gaps, and how to plan a migration that remains operable years after cut-over. It is written to be useful regardless of which tools a team ultimately selects.

THE WAVE

A forced, one-time re-platforming

For years, KVM was viewed as a cost-saving or developer-centric choice. That perception is out of date. Open virtualization stacks have matured into credible platforms for production estates, and a wave of organizations are migrating onto them after a decade or more of stability on a single proprietary vendor.

The catalyst is well known: significant changes to VMware's licensing and packaging following its acquisition by Broadcom prompted a broad re-evaluation of virtualization strategy. The result is a rare, industry-wide re-platforming event — and KVM-based platforms are catching much of that migrating workload.

> *The hypervisor decision is usually made in the first month. The ecosystem decisions — what protects, monitors, and recovers the estate — are what the project actually lives or dies on.*

THE GAP

A platform is more than a hypervisor

When teams compare VMware to KVM feature-by-feature at the hypervisor layer, the two look close enough. The gap only appears one layer up — in the ecosystem of tools that made the old platform safe to run in production.

That ecosystem was never one product. It was an accumulated stack of specialized tooling, much of it from third parties, that quietly handled the operational realities of running mission-critical workloads. On KVM, several of those layers are thin, fragmented, or absent — and each missing layer becomes a risk the migrating team now owns directly.

ECOSYSTEM LAYER	WHAT IT PROVIDES	TYPICAL MATURITY ON KVM
Backup	Point-in-time copies for retention, compliance, and granular restore.	Emerging; coverage varies by platform and vendor.
Disaster recovery	Continuous replication, orchestrated failover/failback, recovery testing.	The largest gap — rarely native, often missing entirely.
Monitoring	Health, capacity, and performance visibility across the estate.	Workable via open tooling, but requires assembly.
Automation	Provisioning, configuration, and lifecycle orchestration.	Strong primitives; integration effort falls on the team.
Vendor support	Accountable support path and a predictable product lifecycle.	Depends heavily on the platform and partner chosen.

Of these, **backup and disaster recovery carry the most risk**. They are the layers that protect the business when something goes wrong — and the layers a team is least able to improvise during an incident. A monitoring gap is an inconvenience discovered gradually. A DR gap is discovered all at once, on the worst possible day.

THE REQUIREMENTS

What a complete KVM platform needs

A production-ready KVM estate is a set of capabilities working together, not a single hypervisor. The following layers should be planned for explicitly, before cut-over — not discovered afterward.

1. **Backup with granular, verified restore.** Periodic, retained copies that can be restored at file and VM granularity — and are routinely test-restored, because an unverified backup is an assumption, not a guarantee.

2. **Disaster recovery, not just backup.** Near-continuous, changed-block replication to a recovery site; orchestrated failover and failback across interdependent workloads; and non-disruptive recovery testing while replication keeps running. This is the layer most often missing on KVM.

3. **Monitoring and observability.** Unified visibility into health, capacity, and performance so problems surface early rather than during an outage.

4. **Automation and orchestration.** Repeatable provisioning and configuration so the estate scales without proportional operational headcount, and so recovery actions are codified rather than manual.

5. **Ransomware resilience.** Immutable, tamper-proof recovery copies with defined retention, plus early detection of anomalous change patterns — so a known-good restore point survives a targeted attack.

6. **Agentless operation and a clear support path.** Tooling that uses native KVM/QEMU interfaces rather than per-guest agents, backed by an accountable support and lifecycle model.

> *A protection strategy is only as good as its last successful, verified recovery — not its last successful backup. Migration is the moment to design that in.*

PUTTING IT TOGETHER

Planning a migration that lasts

A durable KVM migration treats the ecosystem as a first-class part of the plan. The sequence below holds whatever platform and tooling a team ultimately chooses.

- **Inventory the old ecosystem first.** List every backup, DR, monitoring, and automation capability relied on today — then map each to its KVM replacement before moving a single workload.
- **Set objectives per workload tier.** Not every VM needs the same RPO and RTO. Tier them, and size replication, retention, and backup accordingly.
- **Prefer agentless, native designs.** Tooling built on the platform's own virtualization interfaces avoids installing software inside every guest, reducing operational drag and lock-in.
- **Plan capacity for the full footprint.** Account for a replica, a retention journal, long-term archive, and staging space for recovery testing — not just the running VMs.
- **Validate DR before, not after, cut-over.** Prove failover and recovery on the new platform while the old one is still available as a fallback.

MIGRATION READINESS CHECKLIST

Ecosystem capabilities to confirm before cut-over

- ✓ Backup with granular, test-verified restore across all tiers
- ✓ Near-continuous, changed-block replication with a low, configurable RPO
- ✓ Orchestrated failover and failback across consistency groups
- ✓ Non-disruptive recovery testing while replication keeps running
- ✓ Immutable recovery points and ransomware-anomaly detection
- ✓ Agentless operation using native KVM/QEMU tooling
- ✓ Native support for oVirt, RHV, and OLVM, with a clear support path

CONCLUSION

Migrate the platform. Don't leave the safety net behind.

The move to KVM is real, and for many organizations it is the right one. But the migrations that succeed are the ones that treat the hypervisor as the starting point, not the finish line.

The ecosystem — backup, disaster recovery, monitoring, automation — is what made the old platform safe to run in production. Rebuilding that ecosystem on KVM is the actual work of the project, and the layer most likely to be underestimated is the one that matters most under pressure: disaster recovery. Teams that design it in from the start inherit a platform they can trust. Teams that defer it inherit a gap they discover during an incident.