Infrastructure Management and Linux Storage Operations

This body of work documents hands-on infrastructure and systems administration tasks performed within a VMware vSphere enterprise environment and a CentOS Stream 9 guest system. The tickets collectively cover virtual machine lifecycle management, hardware configuration, storage planning, Linux Logical Volume Manager (LVM) operations, and post-change validation at both the hypervisor and operating system levels.

Work begins at the virtualization layer, where a CentOS-based application virtual machine is managed within a clustered vSphere environment using vCenter. Administrative access is exercised to review system state, adjust virtual hardware, and confirm proper integration with networking, storage, and VMware Tools. Resource allocation is intentionally lightweight and aligned with development workloads, reflecting deliberate capacity planning rather than default provisioning.

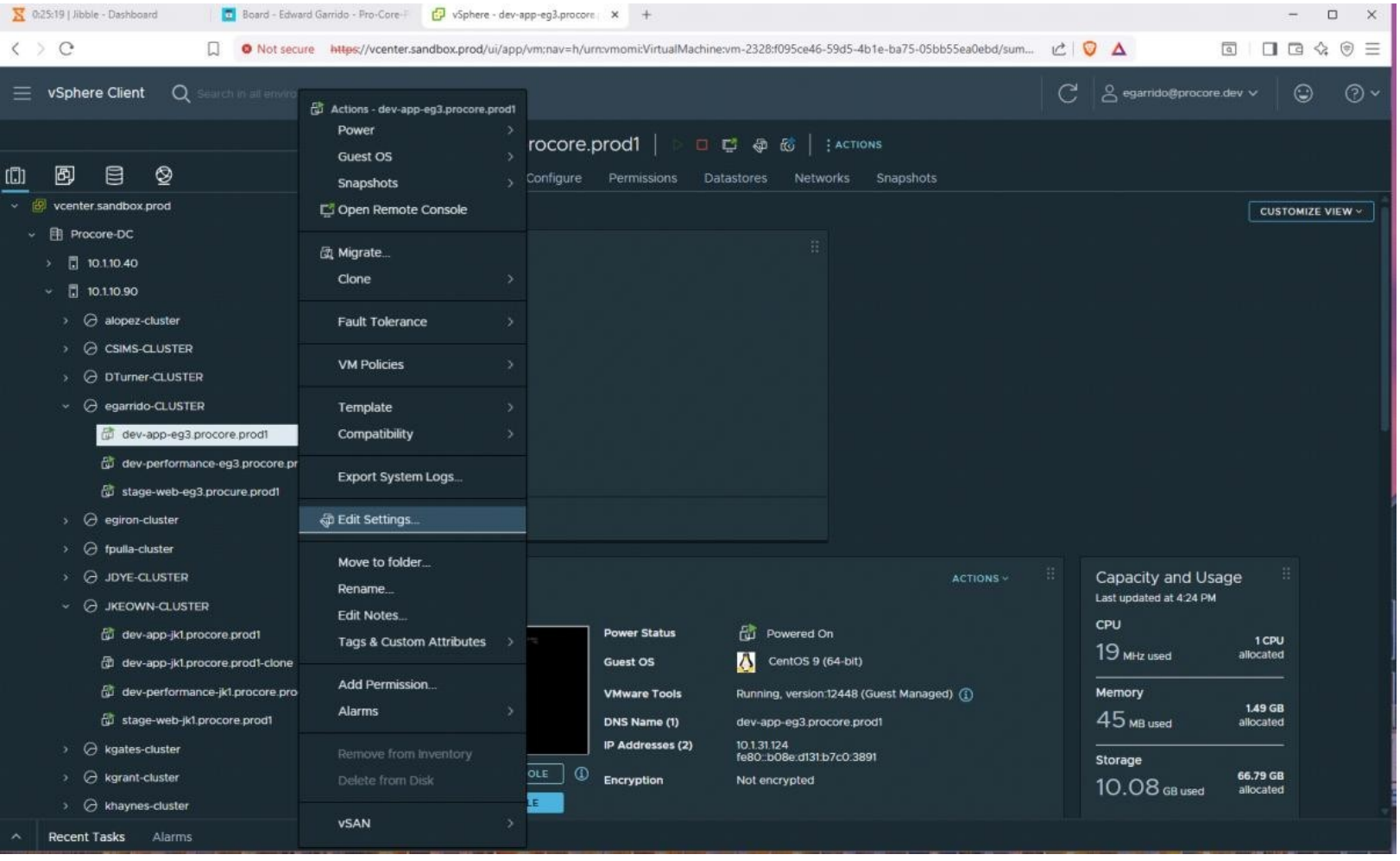
Storage configuration is handled using multiple virtual disks mapped to distinct roles within the operating system. Disk layouts are verified using standard Linux tooling to confirm partitioning, logical volume assignments, and mount points. Application logs are isolated onto a dedicated filesystem backed by its own volume group and logical volume, ensuring separation from the root filesystem and reducing operational risk related to log growth.

During storage expansion, permission and device-mapper related errors are encountered while attempting to modify the logs volume. These issues are resolved through proper privilege escalation and corrective LVM commands, resulting in a successful logical volume extension. Filesystem capacity is validated immediately after the change to confirm that the new space is available and mounted correctly without disruption to existing system volumes.

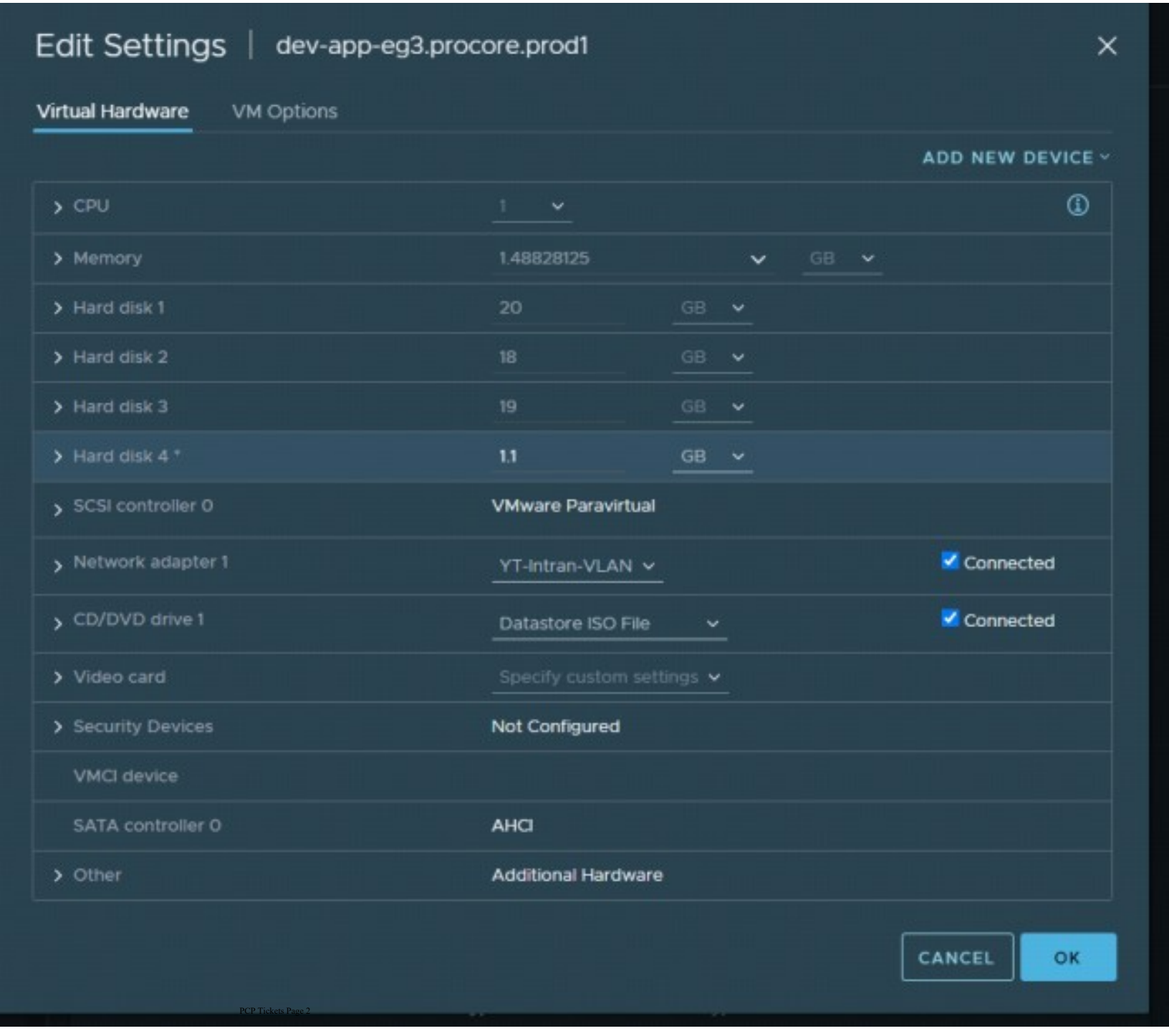
Final validation steps confirm a clean and stable storage state, with unchanged root and boot filesystems and an expanded logs filesystem showing healthy utilization. Across these tickets, the work demonstrates practical experience with virtualization management, Linux storage architecture, troubleshooting under real constraints, and disciplined verification of changes in an enterprise-style environment.

This view reflects active management of a Linux virtual machine within a clustered VMware vSphere environment using vCenter. The system is a CentOS 9 (64-bit) virtual machine that is powered on, running VMware Tools, and fully integrated with DNS and network configuration. Full administrative access is available, enabling changes to virtual hardware, networking, storage, snapshots, migration options, and VM policies as part of routine lifecycle management.

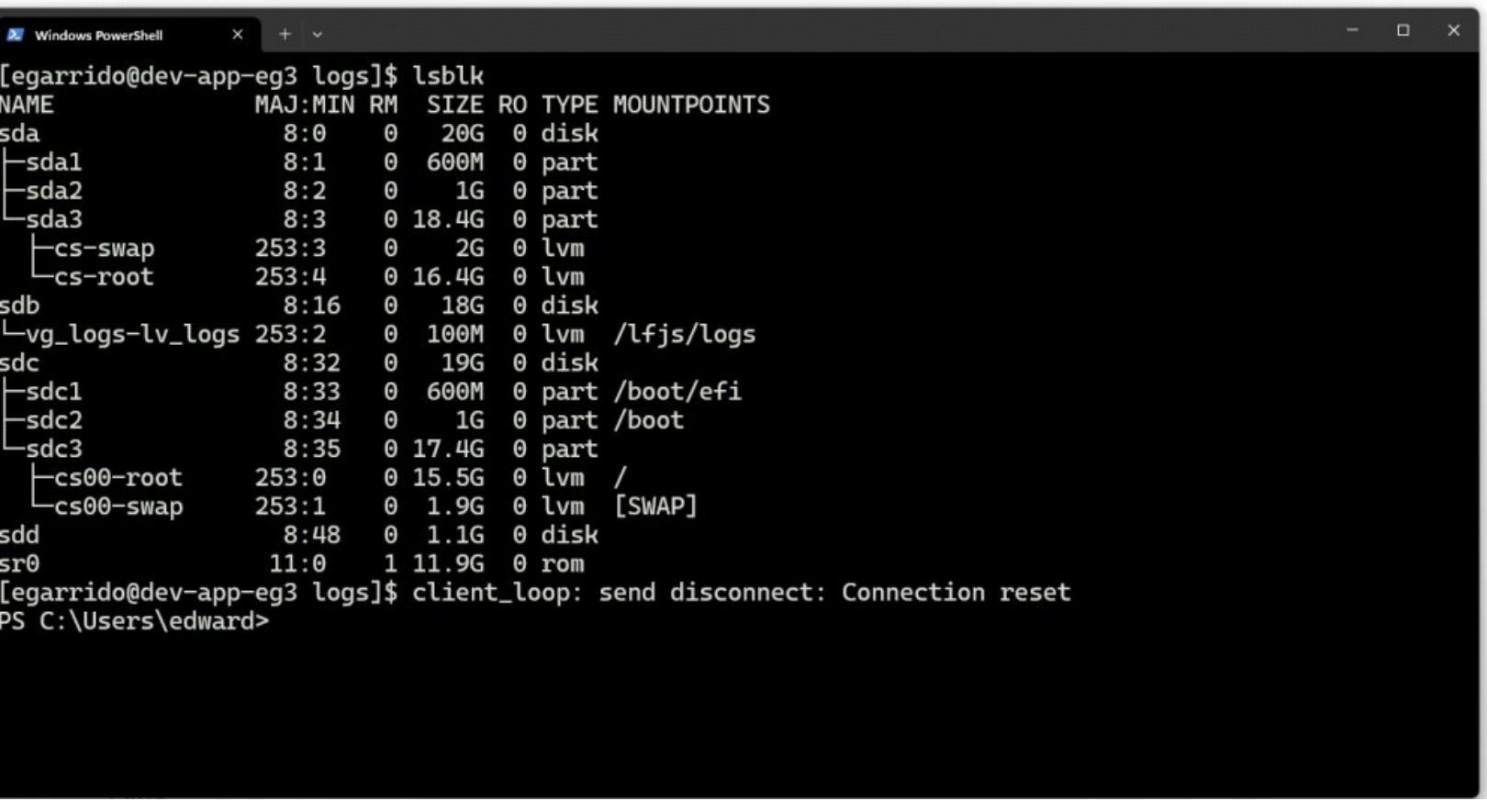
The virtual machine is operating under light load with low CPU and memory utilization, indicating a stable state appropriate for development or application workloads. Resources are intentionally allocated with sufficient capacity, and storage usage reflects planned provisioning rather than overcommitment. This environment demonstrates hands-on experience managing enterprise virtualization infrastructure, maintaining Linux guest systems, and performing operational tasks through centralized vCenter management.



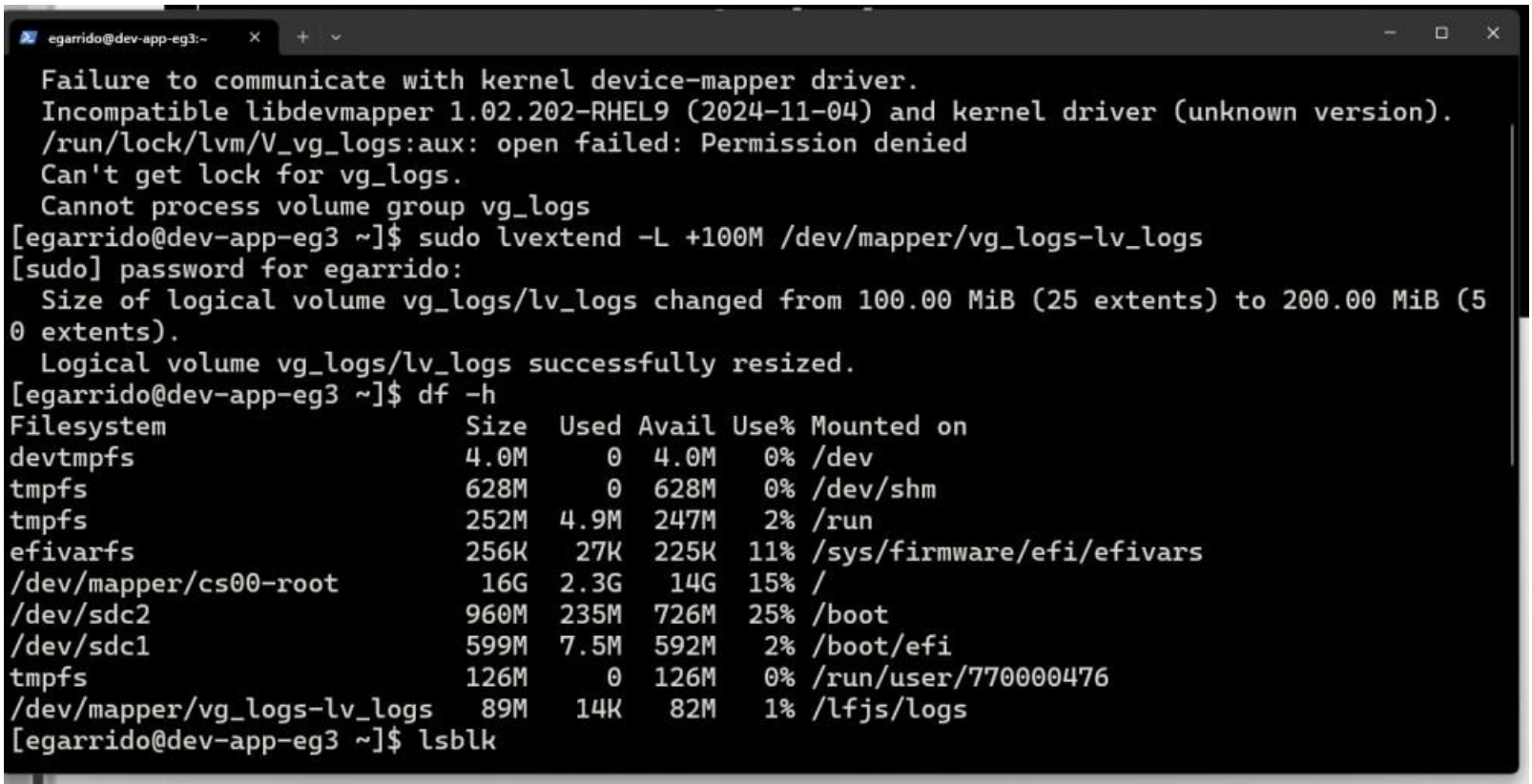
Virtual hardware is configured to support a lightweight application workload, with CPU and memory allocated conservatively and multiple virtual disks attached for segmented storage. Disks are presented through a VMware paravirtual SCSI controller to optimize performance and efficiency. Network connectivity is provided through an internal VLAN, and a virtual CD/DVD device remains available for ISO-based maintenance or recovery tasks. The configuration reflects intentional resource planning and standard enterprise virtualization practices.



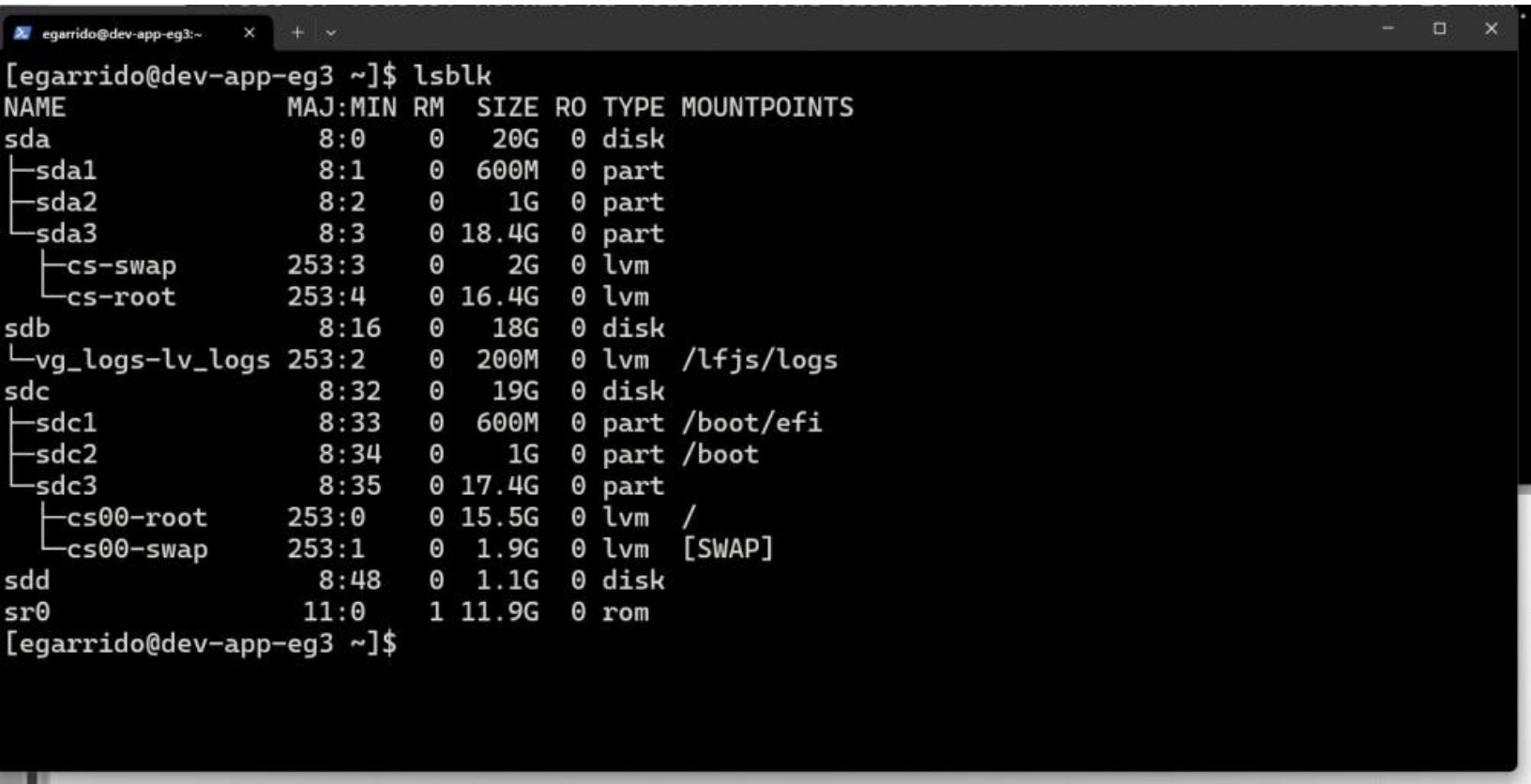
Block device layout confirms multiple virtual disks attached and in use, with storage segmented across standard partitions and LVM volumes. The primary system disk hosts the operating system, swap, and root logical volume, while an additional disk is dedicated to log storage and mounted separately to isolate application logging from the OS filesystem. Boot and EFI partitions are provisioned on a separate disk, and a small auxiliary disk is present for targeted expansion or future use. This layout reflects intentional disk separation, LVM usage for flexibility, and structured filesystem design aligned with enterprise Linux storage practices.



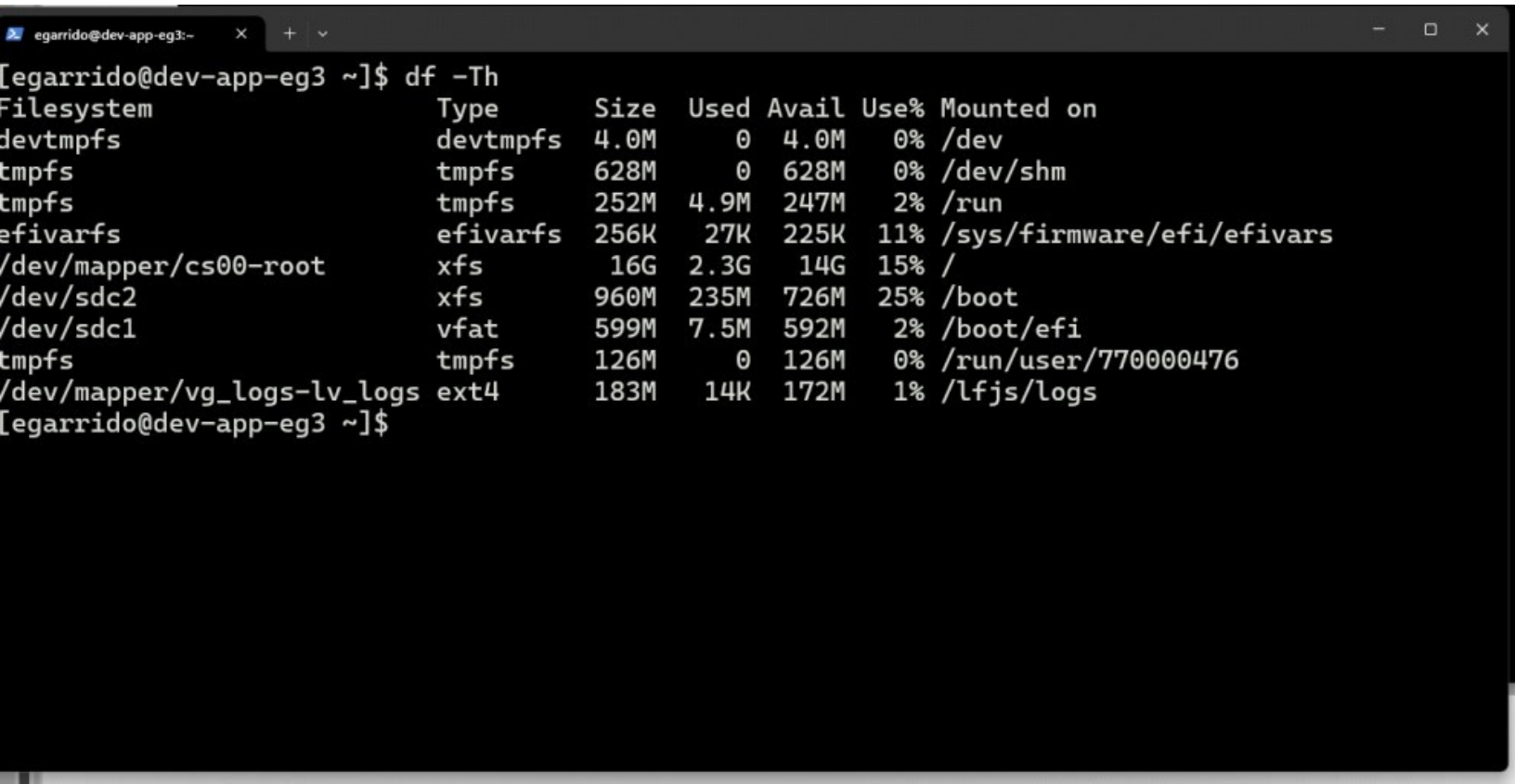
An attempt to extend a logical volume initially encounters device-mapper and permission-related errors, preventing access to the vg_logs volume group. After escalating privileges, the logical volume backing the logs filesystem is successfully expanded using LVM, doubling its size. Filesystem output confirms the updated capacity and available space at the dedicated logs mount point, demonstrating corrective troubleshooting, proper use of LVM commands, and validation of storage changes at the OS level.



Block device output confirms the updated storage layout after the logical volume expansion. The dedicated logs volume is now provisioned at the increased size and correctly mounted, while the operating system, swap, and boot partitions remain unchanged. This validates that the LVM resize was applied successfully without impacting core system volumes, maintaining a clean separation between application logging and the root filesystem.



Filesystem usage output verifies the final state of the storage configuration after the resize operation. The root filesystem and boot partitions remain stable with healthy free space, while the dedicated logs filesystem shows the increased capacity and minimal utilization. This confirms that the logical volume and filesystem expansion was completed successfully and that log storage is properly isolated without affecting core system filesystems.



The last six tickets document end-to-end management of a Linux virtual machine in an enterprise VMware vSphere environment, covering system configuration, storage design, troubleshooting, and validation. Work includes reviewing and adjusting virtual hardware, confirming network and guest OS integration, and implementing deliberate disk separation to isolate application logs from core system filesystems.

Storage tasks focus on validating existing disk layouts, managing LVM volume groups and logical volumes, and expanding a dedicated logs filesystem to support application growth. During the expansion process, permission and device-mapper issues are identified and resolved through proper privilege escalation and corrective commands, ensuring changes are applied safely without impacting the root or boot volumes.

Final verification confirms the successful resize, stable filesystem usage, and clean separation of system and application storage. Together, these tickets demonstrate practical experience with virtualization operations, Linux storage management, problem resolution under real conditions, and disciplined post-change validation in a production-like environment.