Title: SOP-02 - Expanding Logical Volumes on Linux Servers Project: denim's life **Version:** 1.5 **Last Updated:** September 5, 2025

1. Objective To provide a safe and standardized procedure for extending a logical volume (LV) when a "Disk Space Low" alert (<15% free) is received from the monitoring system (Datadog).

2. Pre-Requisites

- An approved Change Request ticket in Jira.
- The new physical disk or SAN LUN has been attached to the VM/server by the VMware/Cloud team.
- This procedure must be performed during a low-traffic or approved maintenance window.

3. Procedure

- **Step 1: Run Pre-Check Validation**
  - On the target server (e.g., `DL-APP-PROD-01`), navigate to `/opt/it-automation/storage/`.
  - Execute the validation script to identify the new, unpartitioned disk.
  - **Syntax:** `./validate_disk_state.sh --pre`
  - The script will output current `df -h`, `lsblk`, and `vgs` information. Confirm the new disk (e.g., `/dev/sdc`) is visible and has no partitions.
- **Step 2: Extend the Volume Group (Manual Commands)**
  - Initialize the new disk as a physical volume (PV): `pvcreate /dev/sdc`
  - Identify the Volume Group (VG) to extend from the pre-check script's output (e.g., `app_vg`).
  - Extend the VG with the new PV: `vgextend app_vg /dev/sdc`
  - Verify the VG size has increased: `vgs`
- **Step 3: Extend the Logical Volume (Manual Commands)**
  - Identify the Logical Volume (LV) path to extend (e.g., `/dev/mapper/app_vg-data_lv`).
  - Extend the LV to use 100% of the newly added free space: `lvextend -l +100%FREE /dev/mapper/app_vg-data_lv`
- **Step 4: Resize the Filesystem (Manual Commands)**
  - For EXT4 filesystems: `resize2fs /dev/mapper/app_vg-data_lv`
  - For XFS filesystems: `xfs_growfs /path/to/mountpoint` (e.g., `/data`)
- **Step 5: Run Post-Check Validation**
  - Execute the validation script again in post-check mode.
  - **Syntax:** `./validate_disk_state.sh --post`
  - The script will run `df -h` and confirm the filesystem size has increased.
  - Copy the pre- and post-check logs into the Jira Change Request ticket and close it.