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Thread: [Complete Guide: Formatting Linux to Linux While Preserving Everything](#)

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Complete Guide: Formatting Linux to Linux While Preserving Everything

? WARNING: Always create backups before proceeding. This guide involves system-level operations that could result in data loss if performed incorrectly or your Linux distro is a total mess :)

The tutorial includes specific commands for different Linux distributions (Debian/Ubuntu, Fedora/Red Hat, Arch Linux) and covers multiple desktop environments (GNOME, KDE, XFCE).

This approach essentially creates a complete snapshot of your system that can be restored after formatting, making it appear as though no format occurred at all - you'll have all your files, settings, tweaks, and even browser sessions exactly as they were before.

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1. Pre-Format Preparation

1.1 System Information Gathering

Before starting, document your current system:

Code # Get system information

```
uname -a
lsb_release -a
df -h
lsblk
lscpu
lshw -short
lspci
lsusb
```

1.2 Create a Bootable USB

Create installation media for your target Linux distribution:

Code # Using dd (replace /dev/sdX with your USB device)
 sudo dd if=linux-distro.iso of=/dev/sdX bs=4M status=progress

Or use a GUI tool like Etcher, Rufus, or GNOME Disks

2. Data Backup Strategy

2.1 Home Directory Backup

Method 1: Complete Home Backup

Code # Create compressed backup of entire home directory
 sudo tar -czpvf /backup/home-backup-\$(date +%Y%m%d).tar.gz /home/

Alternative: Using rsync for incremental backup

```
rsync -avH --progress /home/ /backup/home/
```

Method 2: Selective Backup

Code # Backup specific directories

```
mkdir -p /backup/{documents,pictures,videos,music,downloads,desktop}
cp -r ~/Documents/* /backup/documents/
cp -r ~/Pictures/* /backup/pictures/
cp -r ~/Videos/* /backup/videos/
cp -r ~/Music/* /backup/music/
cp -r ~/Downloads/* /backup/downloads/
cp -r ~/Desktop/* /backup/desktop/
```

2.2 Hidden Files and Configurations

Code # Backup hidden configuration files

```
cd ~
```

```
tar -czf /backup/dotfiles-$(date +%Y%m%d).tar.gz \  
  .bashrc .bash_profile .profile .zshrc .vimrc .gitconfig \  
  .ssh/ .gnupg/ .config/ .local/ .cache/ .mozilla/ .thunderbird/
```

List all hidden files for reference

```
ls -la ~ > /backup/hidden-files-list.txt
```

2.3 Application Data Backup

Code # Common application data locations

```
mkdir -p /backup/app-data
```

Browser data

```
cp -r ~/.mozilla/ /backup/app-data/mozilla/
```

```
cp -r ~/.config/google-chrome/ /backup/app-data/chrome/
```

Email clients

```
cp -r ~/.thunderbird/ /backup/app-data/thunderbird/
```

Development environments

```
cp -r ~/.vscode/ /backup/app-data/vscode/
```

```
cp -r ~/.local/share/JetBrains/ /backup/app-data/jetbrains/
```

Gaming

```
cp -r ~/.steam/ /backup/app-data/steam/
```

```
cp -r ~/.local/share/Steam/ /backup/app-data/steam-local/
```

3. Configuration Preservation

3.1 System Configuration Files

Code # Backup system configuration files

```
sudo mkdir -p /backup/system-config
```

```
sudo cp -r /etc/ /backup/system-config/etc/
```

Important system files to specifically backup

```
sudo cp /etc/fstab /backup/system-config/
```

```
sudo cp /etc/hosts /backup/system-config/
```

```
sudo cp /etc/hostname /backup/system-config/
```

```
sudo cp /etc/passwd /backup/system-config/
```

```
sudo cp /etc/group /backup/system-config/
```

```
sudo cp /etc/shadow /backup/system-config/
```

```
sudo cp -r /etc/NetworkManager/ /backup/system-config/
```

3.2 Installed Packages List

For Debian/Ubuntu:

Code # Export installed packages

```
dpkg --get-selections > /backup/installed-packages.txt
```

```
apt-mark showauto > /backup/auto-installed-packages.txt
```

Export repository sources

```
sudo cp -r /etc/apt/ /backup/system-config/apt/
```

For Red Hat/Fedora:

Code # Export installed packages

```
rpm -qa > /backup/installed-packages.txt
```

```
dnf history list > /backup/dnf-history.txt
```

Export repository configuration

```
sudo cp -r /etc/yum.repos.d/ /backup/system-config/yum.repos.d/
```

For Arch Linux:

Code # Export installed packages

```
pacman -Qqe > /backup/installed-packages.txt
```

```
pacman -Qqm > /backup/aur-packages.txt
```

3.3 Service Configuration

Code # List enabled services

```
systemctl list-unit-files --state=enabled > /backup/enabled-services.txt
```

Backup service configurations

```
sudo cp -r /etc/systemd/system/ /backup/system-config/systemd/
```

4. Session and Environment Backup

4.1 Desktop Environment Settings

GNOME:

Code # Export GNOME settings

```
dconf dump / > /backup/gnome-settings.dconf
```

```
gsettings list-schemas > /backup/gnome-schemas.txt
```

KDE Plasma:

Code # Backup KDE configuration

```
cp -r ~/.config/plasma* /backup/app-data/
```

```
cp -r ~/.config/kwin* /backup/app-data/
```

```
cp -r ~/.config/systemsettings* /backup/app-data/
```

```
cp -r ~/.local/share/plasma* /backup/app-data/
```

XFCE:

Code # Backup XFCE configuration

```
cp -r ~/.config/xfce4/ /backup/app-data/xfce4/
```

4.2 Terminal and Shell Configuration

Code # Backup shell configurations and history

```
cp ~/.bashrc ~/.bash_profile ~/.bash_history /backup/
```

```
cp ~/.zshrc ~/.zsh_history /backup/
```

```
cp ~/.profile /backup/
```

Custom aliases and functions

```
cp ~/.bash_aliases /backup/ 2>/dev/null || true
```

```
cp ~/.zsh_aliases /backup/ 2>/dev/null || true
```

4.3 Cron Jobs and Scheduled Tasks

Code # Backup user crontab

```
crontab -l > /backup/user-crontab.txt 2>/dev/null || echo "No user crontab"
```

Backup system crontabs

```
sudo cp -r /etc/cron* /backup/system-config/  
sudo cp -r /var/spool/cron/ /backup/system-config/ 2>/dev/null || true
```

5. Hardware and Driver Information

5.1 Hardware Documentation

```
Code # Document hardware configuration  
lshw -html > /backup/hardware-info.html  
lspci -v > /backup/pci-devices.txt  
lsusb -v > /backup/usb-devices.txt  
cat /proc/cpuinfo > /backup/cpu-info.txt  
cat /proc/meminfo > /backup/memory-info.txt
```

```
# Graphics information  
nvidia-smi > /backup/nvidia-info.txt 2>/dev/null || echo "No NVIDIA GPU"  
glxinfo > /backup/opengl-info.txt 2>/dev/null || echo "No OpenGL info available"
```

5.2 Driver and Kernel Module Information

```
Code # List loaded kernel modules  
lsmod > /backup/loaded-modules.txt
```

```
# List installed kernel versions  
ls /boot/vmlinuz-* > /backup/kernel-versions.txt
```

```
# Graphics driver information  
modinfo nvidia > /backup/nvidia-driver-info.txt 2>/dev/null || true  
modinfo amdgpu > /backup/amd-driver-info.txt 2>/dev/null || true  
modinfo i915 > /backup/intel-driver-info.txt 2>/dev/null || true
```

6. Fresh Installation Process

6.1 Pre-Installation Checklist

Verify all backups are complete and accessible
Test backup integrity by extracting a few files
Ensure backup storage is not on the drive being formatted
Have installation media ready and tested
Document current partition scheme if replicating

6.2 Installation Guidelines

Quote:Partition Recommendations:

- Keep the same partition structure if possible
- Use the same mount points (/home, /var, etc.)
- Consider LVM if not already using it for easier future management
- Maintain separate /home partition if you had one

Installation Notes:

- Use the same username to avoid permission issues
- Choose the same timezone and locale settings
- Install the same desktop environment initially

6.3 Post-Installation Initial Setup

```
Code # Update system first
sudo apt update && sudo apt upgrade # Debian/Ubuntu
# OR
sudo dnf update # Fedora
# OR
sudo pacman -Syu # Arch Linux
```

```
# Install essential tools for restoration
sudo apt install rsync git curl wget # Debian/Ubuntu
sudo dnf install rsync git curl wget # Fedora
sudo pacman -S rsync git curl wget # Arch Linux
```

7. Data Restoration

7.1 Home Directory Restoration

```
Code # Method 1: Full restore from tar backup
cd /
sudo tar -xzipvf /backup/home-backup-YYYYMMDD.tar.gz
```

```
# Method 2: Selective restore using rsync
rsync -avH --progress /backup/home/ /home/username/
```

```
# Fix ownership if needed
sudo chown -R username:username /home/username/
```

7.2 Hidden Files and Configuration Restoration

```
Code # Restore dotfiles
cd ~
tar -xzf /backup/dotfiles-YYYYMMDD.tar.gz

# Restore SSH keys with correct permissions
chmod 700 ~/.ssh/
chmod 600 ~/.ssh/id_* ~/.ssh/authorized_keys
chmod 644 ~/.ssh/id_*.pub ~/.ssh/known_hosts
```

7.3 Application Data Restoration

```
Code # Restore browser data
cp -r /backup/app-data/mozilla/ ~/.mozilla/
cp -r /backup/app-data/chrome/ ~/.config/google-chrome/
```

```
# Restore development environments
cp -r /backup/app-data/vscode/ ~/.vscode/
cp -r /backup/app-data/jetbrains/ ~/.local/share/JetBrains/
```

```
# Fix permissions
find ~/.mozilla ~/.config/google-chrome ~/.vscode -type d -exec chmod 755 {} \;
find ~/.mozilla ~/.config/google-chrome ~/.vscode -type f -exec chmod 644 {} \;
```

8. Configuration Restoration

8.1 Package Installation

Debian/Ubuntu:

Code # Restore package selections

```
sudo dpkg --set-selections < /backup/installed-packages.txt
```

```
sudo apt-get dselect-upgrade
```

Or use apt directly

```
sudo apt install $(cat /backup/installed-packages.txt | cut -f1)
```

Fedora:

Code # Install packages from list

```
sudo dnf install $(cat /backup/installed-packages.txt)
```

Arch Linux:

Code # Install official packages

```
sudo pacman -S --needed $(cat /backup/installed-packages.txt)
```

Install AUR packages (requires yay or similar AUR helper)

```
yay -S --needed $(cat /backup/aur-packages.txt)
```

8.2 System Configuration Restoration

Code # Restore system configurations (be careful with these)

```
sudo cp /backup/system-config/hosts /etc/hosts
```

```
sudo cp /backup/system-config/hostname /etc/hostname
```

Restore network configurations

```
sudo cp -r /backup/system-config/NetworkManager/ /etc/NetworkManager/
```

Restore service configurations

```
sudo systemctl disable --now $(systemctl list-unit-files --state=enabled | grep enabled | cut -d' ' -f1)
```

```
sudo systemctl enable $(cat /backup/enabled-services.txt | grep enabled | cut -d' ' -f1)
```

8.3 Desktop Environment Restoration

GNOME:

Code # Restore GNOME settings

```
dconf load / < /backup/gnome-settings.dconf
```

Restart GNOME Shell (Alt+F2, type 'r', press Enter)

Or logout and login again

KDE Plasma:

Code # Restore KDE configurations

```
cp -r /backup/app-data/plasma* ~/.config/
```

```
cp -r /backup/app-data/kwin* ~/.config/
```

```
cp -r /backup/app-data/systemsettings* ~/.config/
```

Restart Plasma

```
kquitapp5 plasmashell && kstart5 plasmashell
```

9. Verification and Testing

9.1 Data Integrity Check

Code # Check file counts and sizes

```
find /home/username -type f | wc -l
```

```
du -sh /home/username
```

```
# Compare with pre-format numbers
# Verify important files exist
ls -la ~/Documents/
ls -la ~/.ssh/
ls -la ~/.config/
```

9.2 Application Testing

Test web browsers with saved bookmarks and passwords
Verify email client settings and accounts
Check development environment configurations
Test multimedia applications and codecs
Verify gaming platforms and saved games
Check VPN and network connections

9.3 System Functionality Check

```
Code # Test system services
sudo systemctl status
systemctl --user status
```

```
# Check network connectivity
ping -c 3 8.8.8.8
curl -I https://google.com
```

```
# Test hardware functionality
alsamixer # Audio
xrandr    # Display
```

10. Troubleshooting Common Issues

10.1 Permission Problems

```
Code # Fix common permission issues
sudo chown -R username:username /home/username
chmod 755 /home/username
chmod 700 ~/.ssh
chmod 600 ~/.ssh/id_rsa ~/.ssh/config
chmod 644 ~/.ssh/id_rsa.pub ~/.ssh/authorized_keys
```

```
# Fix executable permissions for scripts
find ~/bin -type f -name "*.sh" -exec chmod +x {} \;
```

10.2 Desktop Environment Issues

Quote:GNOME not loading properly:

- Reset GNOME settings: Code `dconf reset -f /org/gnome/`- Check for conflicting extensions
- Verify display manager is running

KDE Plasma issues:

- Clear Plasma cache: Code `rm -rf ~/.cache/plasma*`- Reset Plasma configuration: Code `mv ~/.config/plasma* ~/.config/plasma-backup/`- Restart Plasma Shell

10.3 Application-Specific Issues

Browser issues:

```
Code # Clear browser cache if needed
```

```
rm -rf ~/.cache/mozilla/  
rm -rf ~/.cache/google-chrome/
```

Reset browser profile (last resort)

```
firefox -ProfileManager
```

```
google-chrome --user-data-dir=/tmp/chrome-temp
```

SSH connection issues:

Code # Regenerate host keys if needed

```
sudo ssh-keygen -A
```

```
sudo systemctl restart ssh
```

Fix SSH client permissions

```
chmod 700 ~/.ssh
```

```
chmod 600 ~/.ssh/*
```

```
chmod 644 ~/.ssh/*.pub
```

Final Verification Checklist

- ? All personal files accessible and intact
- ? Applications launch and work correctly
- ? Network connections functional
- ? Audio/video working properly
- ? Printers and external devices recognized
- ? Development environments configured
- ? Gaming platforms operational
- ? Email and browser accounts logged in
- ? System performance satisfactory
- ? Backup cleanup completed

??Congratulations! Your Linux system has been successfully formatted and restored with all your data, configurations, and tweaks intact.

Pro Tips for Future Formats: Consider using automated backup scripts

Maintain a separate /home partition for easier reinstalls

Document custom configurations in a personal wiki

Use configuration management tools like Ansible for system setup

Keep regular incremental backups of important data

Remember: This process requires careful attention to detail. Always test your backups before proceeding, and consider practicing on a virtual machine first.