Dual Boot Setup Guide

For Microsoft Windows and Linux



Section 1 – Introduction

Due to the ongoing popularity of Windows based operating systems, and the increasing popularity of various version of Linux operating systems, some users might find it useful to have a system that is able to boot two different operating systems as opposed to just one. The purpose of this whitepaper is to explain how to set up a ThinkStation or ThinkPad system with a dual operating system boot configuration.

Prerequisites:

- Windows installation media
- Linux installation media

Section 2 – Shrink Windows Partition

Assuming the user already has Windows installed on the system, please refer the following instructions on installation of Linux alongside Windows operating system.

Step 1: Right click on the start icon and select "Disk Management".

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|----------------------------|----------|
| Apps and Features | THE. |
| Power Options | |
| Event Viewer | |
| System | Ast Hall |
| Device Manager | e la la |
| Network Connections | |
| Disk Management | |
| Computer Management | |
| Windows PowerShell | |
| Windows PowerShell (Admin) | |
| Task Manager | |
| Settings | |
| File Explorer | |
| Search | |
| Run | |
| Shut down or sign out | |

<u>Step 2</u>: The Disk Management utility enables the user to view and manage the disk drives.

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| Disk 0 Basic 1769,84 GB Online | 260 MB Healthy (EFI S | iystem Partitio | n) | Windows (C: 1768.61 GB NT Healthy (Boot, |) FS Page File, Crash | Dump, Primai | ry Partition) | | | WinRE DRV 1000 MB NTFS Healthy (OEM Partiti | on) | | |
| Unallocated | Primary partition | n | | | | | | | | | | | |
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<u>Step 3</u>: Shrink volume C in order to make space for Linux. Right click on volume C and select "Shrink Volume".

| 📅 Disk Management | | | | | | | | | | - 0 | × |
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| File Action View | / Help | | | | | | | | | | |
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| Volume | Layout | Туре | File System | Status | Capacity | Free Sp | % Free | | | | |
| - (Disk 0 partition 1) |) Simple | Basic | | Healthy (E | 260 MB | 260 MB | 100 % | | | | |
| - Windows (C:) | Simple | Basic | NTFS | Healthy (B | 1768.61 GB | 1730.56 | 98 % | | | | |
| WinRE_DRV | Simple | Basic | NTFS | Healthy (| 1000 MB | 483 MB | 48 % | | | | |
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| - Disk 0 | | | | | | | | | | | |
| 1769.84 GB | 260 MB | | | Windows (C: 1768.61 GB N |) TES | | | | | WinRE_DRV 1000 MB NTES | |
| Online | Healthy (EFI S | System Partitic | on) | Healthy (Boot, | Page File, Cras | h Dump, Prima | ary Partition) | | Open | Healthy (OEM Partition) | |
| | | | | | | | | | Explore | | |
| | | | | | | | | | Mark Partition as Active | | |
| | | | | | | | | | Change Drive Letter and Paths | | |
| | | | | | | | | | Format | | |
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| | | | | | | | | - - f | Extend Volume | | |
| | | | | | | | | | Shrink Volume | - | |
| | | | | | | | | | Delete Volume | | |
| | | | | | | | | | Properties | | |
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<u>Step 4</u>: Enter the amount of space you would like to free for the second operating system in MB and hit "Shrink".

| File Action Vie Action Vie Colume Colisk 0 partition Windows (C:) WinRE_DRV | t Help Help Layout 1) Simple Simple Simple | Type Basic Basic Basic | File System NTFS NTFS | Status Healthy (Healthy (Healthy (| Capacity Free Sp % Free LE 260 MB 200 % 88 JBa 1768.66 98 % 98 % L | | | - 0 X |
|--|---|---------------------------------|-----------------------------|---|--|---|--------------|--|
| | | | | | Shrink C: Total size before shrink in MB: Size of available shrink space in MB: Enter the amount of space to shrink in MB: Total size after shrink in MB: | × 1611057 1772038 886000 \$25057 | | |
| Disk 0 Basic 1769.84 GB Online | 260 MB Healthy (EFI S | ystem Partiti | ion) | Windows 1768.61 G Healthy (B | You cannot shrink a volume beyond the point: See the "defing" event in the Application log for operation when it has completed. See "Shrink a basic volume" in Disk Managem | where any unmovable files are located. r detailed information about the ant help for more information | | WinRE_DRV 1000 MB NTFS Healthy (OEM Partition) |
| Unallocated | Primary partition | 1 | | | | Shrink Cancel | | |
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<u>Step 5</u>: Verify the newly created unallocated space once the shrinking is complete.

| Disk Managemer File Action Vie | nt w Help | 3 | | | | | | | | - | 0 | × |
|---|---|---------------------------------|--|---|--|--|--|--------------------------|---|--|---------------|---|
| Volume (Disk 0 partition Windows (C) WinRE_DRV | Layout 1) Simple Simple Simple | Type Basic Basic Basic | File System NTFS NTFS | Status Healthy (E Healthy (B Healthy (| Capacity 260 MB 903.38 GB 1000 MB | Free Sp 260 MB 865.34 GB 483 MB | % Free 100 % 96 % 48 % | | | | | |
| - Disk 0 Basic 1769.84 GB Online | 260 MB Healthy (EFI S | System Partitio | Windows (C 903.38 GB N1 Healthy (Boo | :) FS t, Page File, Cras | sh Dump, Prin | nary Partition) | | 865.24 GB Unallocated | 5 | WinRE_DRV 1000 MB NTFS Healthy (OEM Partit | ion) | |
| Unallocated | Primary partition | n | | | | | | | | | | |
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<u>Step 6</u>: Reboot the system.

| Lenovo | |
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| To interrupt normal startup, press Enter | |

Section 3 – Linux Distro Installation

<u>Step 7</u>: Insert Linux boot key into the system and press F12. Select the Linux bootable media from the boot menu.

| Γ. | Boot Menu App Menu |
|----|---|
| | Red Hat Enterprise Linux ubuntu Windows Boot Manager NVMe0: SAMSUNG MZVLB512HBJQ-000L7 USB HDD: ADATA USB Flash Drive ► PXE BOOT LENOVO CLOUD: Intel(R) Gigabit 0.0.19-IPv4 |
| | |
| | [14]-Move [++]-Collapse/Expand [Enter]-Select [ESC]-Exit [Tab]-Switch Menu |

Step 8: Select "Install CentOS 7" and press enter.



CENTOS 7 INSTALLATION CentOS 🕅 us Help! WELCOME TO CENTOS 7. What language would you like to use during the installation process? English (United Stares) English (United Kingdom) English (India) English (India) English (Canada) English (Canada) English (New Zealand) English (New Zealand) English (Negoria) English (Negoria) English (Negoria) English (Canada) English (Zambia) English (Canada) English (Canada) English Afrikaans Afrikaans Amharic አ*ግር*ኛ Arabic Assumese Asturian Belarusian Bengali Bonian Czech Welsh German Greek Spanish Estonian Basque Persian Finnish Firnish Galician العربية অসমীয়া Asturianu Беларуская Български বাংলা Bosanski Català Čeština Cymraeg Dansk Deutsch Ελληνικά Español Eesti Euskara فارسی Suomi Français Galego ગુજરાતી हિન્વી Gujarati Hindi Ð Quit Gant

<u>Step 10</u>: Adjust the "Date & Time", "Keyboard" and "Language Support" accordingly by selecting each one.

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Step 9: Select the appropriate language and press "Continue".

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| | | English (United States) | | | | | |
| | | SOFTWARE | | | | | |
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| | | | | | N | Ar won't touch your disks until you cl | ck Begin Installation. |
| | A Hease complete items marked v | ith this icon before continuing to the rest step. | | | | | |

<u>Step 12</u>: In this example, "Development and Creative Workstation" was selected for the "Base Environment" and all "Add-Ons" were selected. Once done selecting, click "Done" in the top left corner.



Step 13: Select "Installation Destination".

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| | | 0 | INSTALLATION SOURCE | í | 4 | SOFTWARE SELECTION Development and Creative Workstation | | | | |
| | | SYSTEM | | | | | | | | |
| | | 9 | INSTALLATION DESTINATION No disks selected | (| 2 | KDUMP Kdump is enabled | | | | |
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<u>Step 14</u>: Select the device on where to install the operating system and select "I will configure partitioning" under other storage options. Click "Done" once done.

| INSTALLATION DESTINATION | S I S I S I S I S I S I S I S I S I S I | | | | CENTOS 7 INS | STALLATION Help! |
|---|---|--|---------|----------------|-------------------------------------|------------------------|
| Device Selection | | | | | | |
| Select the device(s) you'd like to in | nstall to. They will be left untouch | ed until you click on the main menu's "Begin Installation" b | outton. | | | |
| | | | | | | |
| 1769.86 GIB | 14.45 GIB | | | | | |
| -0 | | | | | | |
| BIOS RAID set (mirror) | USB 3.0 USB Flash Drive | | | | | |
| Volume0_0 / 865.24 GiB free | sdc / 1007 KiB free | | | | | |
| Specialized & Network Disks | | | | | Disks left unselected here will n | not be touched. |
| Add a disk | | | | | | |
| | | | | | Disks left unselected here will n | not be touched. |
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| Full disk summary and boot loader | | | | 1 disk selecte | J; 1769.86 GiB capacity; 865.24 GiB | 8 free <u>Refresh.</u> |

Step 15: Under manual partitioning section select "Click here to create them automatically".

| MANUAL PARTITIONING | | | CENTOS 7 INSTALLATION |
|---|--|----------------------------------|---|
| New CentOS 7 Installation | Volume0_0p1 | | |
| You have based and a constrained a force (2005 7 Instillation yet, You care Code the second and points by clicking the + button. Code new mount points by clicking the + button. Code new mount points we institute partitions after selecting them below. New mount points will use the following partitioning scheme: LVM | Mount Point: Desired Capacity: 260 MB | Device(s): | |
| | | BIOS RAD set (mirror) (Volume00) | |
| | | Modify | |
| | Device Type: Standard Partition File System: EFI System Partition Reformat | | |
| | Labet: SYSTEM | Name: Volume0.0p1 | |
| + - C | | | Update Settings Note: The settings you make on this screen will not be applied until you click on the main mends Begin installation? button. |
| ASS.24 GIB 1769.86 GIB | | | Reset All |

<u>Step 16</u>: You can view the automatically created disk partitions inside the new operating system. Click "Done" once done viewing.

| MANUAL PARTITIONING Desc | | | | CENTOS 7 INSTALLATION ⊞ us He¢ |
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| New CentOS 7 Installation DATA //home cento-home | 806.54 GiB | Volume0_0p1 Mount Point; | Device(s): | |
| SYSTEM /boot Volume0.0p5 (hume1.49 | 1024 MiB | Desired Capacity: 260 MiB | | |
| / JUOU en / Voimet. 0p1 / centos most | 260 MiB 50 GiB | | | |
| <pre></pre> | 260 MiB > | | BIOS RAID set (mirror) (Volume0_0) | |
| Volume3.0p1 Unknown Volume3.0p2 ntfs | 16 MiB 903.38 GiB | | | |
| VolumeJ.0p3 ntfs VolumeJ.0p4 | 1000 MIB | | Modify | |
| | | Device Type: Standard Partition File System: EPI System Partition Reformat | | |
| | | Label: SYSTEM | Name: Volume0_0p1 | |
| + - C | | | | Update Settings Note: The settings you make on this screen will not be applied until you click on the main mend's 'Begin installation' button. |
| Avalant Sector 2014,5 KIB 1759,36 GIB 1storage device selected | | | | Reset All |

Step 17: Verify the summary of changes and select "Accept Changes".

| MANUAL PARTITIONING | | | | CENTOS 7 INSTALLATIO? |
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| * New CentOS 7 Installation DATA /bome cetasylame | 806.54 GIB > | centos-home Mount Paint: | Device(s); | |
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| svora entrice analy. *Ucharown //boot.defi VolumeN.op.1 Unknown WalameN.op.2 mtfs WalameN.op.3 mtfs WalameN.op.3 WalameN.op.3 | SUMMARY OF CHANCES Your customizations and result, in the following dangee Order: Arctics Type Device 1. Create Device particles Volum 2. Create Device particles Volum 3. Create Device particles Volum 4. Create Terms: Synch Volum 5. Create Device Jump 6. Create Device Jump 7. Create Format swap Centor 8. Create Device Jump 9. Create Format swap Centor 10. Create Device Jump | taking effect after you return to the Name Mount point 40.0p5 40.0p5 40.0p6 40. | nam meru and begin installation (0 E fore) + Name: Name: | |
| + - 0 | | | | Update Settings Note: The settings you make on this screen will not be applied until you click on the main mends' Begin kertaltation button. |
| 2014.5 KIB 1769.86 GIB | | | | Reset All |

<u>Step 18</u>: Select "Begin Installation" in the bottom right.

| ** | INSTALLATION SUMMARY | | | | | | CENTOS 7 INSTALLATION |
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| | | | STALLATION SOURCE | 6 | SOFTWARE SELECTION Development and Creative Workstation | | |
| | | SYSTEM | | | | | |
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| | A Warning Processor has Simultan | eous Multithreading (SM | (T) enabled. <u>Glick for details.</u> | | | | |

Step 19: Select "Root Password".

| CentOS | | CENTOS 7 INSTALLATION Helpi |
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| | Setting up the installation end-connect CentOS Core SIG Produces the CentOS Linux Distribution. waterease and end the two before set do not | |

Step 20: Enter a root password in both boxes below and select "Done" in top left corner.

| ROOT PASSWORD | | | | CENTOS 7 INSTALLATIO | N I |
|--|--|--|---|----------------------|--------|
| | The root account is used for admini | istering the system. Enter a password for the root user. | | | |
| | Root Password: | ••••• | | | |
| | | Weak | | | |
| | Confirm: | ••••• | | | |
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| Δ . The password you have provided is weak. The password fails the dictionary check - it is too simplifyic/system | atic You will have to press Done twice | to confirm it | | | |

Lenovo

<u>Step 21</u>: Select "User Creation" and fill in the appropriate details. Select "Done" from the top left corner once done.



Step 22: Once the installation completes, select "Reboot".

| CentOS | CONFIGURATION | USER SETTINGS | | | | CENTOS 7 INSTALLATION |
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| | | ROOT PASSWORD Root password is set | i i i i i i i i i i i i i i i i i i i | USER CREATION Administrator leno | vo will be created | |
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| | | Complete | | | | |
| | | | | | Centrus is now successfully initialed and ready for you to use Go ahead and Reboot | |
| | $\underline{\dot{\mathbf{A}}}$. Use of this product is subject | to the license agreement found at /usr/share/centos-reisase/EU | LA | | | |

<u>Step 23</u>: Log in by using the login credentials created above.



Step 24: Linux Desktop screen.



Section 4 – Switching Between Operating Systems

Users can switch operating systems to boot from the boot menu.

<u>Step 25</u>: Boot into the boot menu by pressing the function F12 key at the "Lenovo" splash screen and select the appropriate operating system.

| SATA 1: Intel VolumeO UEFI: CentOS UEFI: Windows Boot Manager UEFI: CentOS |
|---|
| UEFI: CentOS L UEFI: Windows Boot Manager L UEFI: CentOS |
| └── UEFI: Windows Boot Manager └── UEFI: CentOS |
| |
| |
| Network 1: |
| Legacy: IBA CL Slot 00FE v0110 |
| UEFI: PXE IPV4 Intel(R) Ethernet Connection (H) I219–LM |
| UEFI: PXE IPV6 Intel(R) Ethernet Connection (H) I219–LM |
| Network 2: |
| Legacy: IBA GE Slot 0400 v1555 |
| UEFI: PXE IPV4 Intel(R) I210 Gigabit Network Connection |
| 🖵 UEFI: PXE IPV6 Intel(R) I210 Gigabit Network Connection |
| Enter Setup |

↑ and ↓ to move selection

Section 5 – Revision History

| Version | Date | Author | Changes/Updates |
|---------|------------|--------------|------------------------|
| | | | |
| 1.0 | 01/15/2020 | Sayali Pawar | Initial launch release |