## Multi-Boot USB Disk

# We present how to create a **FULL** multi-boot USB disk with three Linux partitions with network update each of the partitions.

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## Introduction

- There are times that having a portable disk to boot the Linux operating system for running diagnostics on a PC would be a good thing to do.
- Because the Intel based PCs can come in 64-bit as well as 32-bit processors, it would be nice to have both versions of Linux on a single disk in case the PC has only 32-bit processors.
- Because the USB interface is so pervasive, there are disks and disk enclosures that have a USB interface.
- There are partitioning utilities to partition a disk for Linux and swap devices.
  - There are live and network installation CDs and DVDs Linux, especially for Fedora and Ubuntu.

# **Disk Partitioning**

- Plug in the USB disk into the PC.
- Linux has several disk partitioning programs: fdisk and gparted. Run this program on the USB device: fdisk /dev/sdb.
- Delete all existing partitions on the USB disk.
- Create an extended partition to encompass the whole disk.
- Create a partition for the 64-bit version of Linux in the extended partition #1. This will be /dev/sdb1.
- Because this Linux installation is a full installation, a swap device will have to be created. This size should be about twice the size of the available RAM. Put this swap device in the extended partition #2. This will be /dev/sdb2.
- Create a partition for the 32-bit version of Linux in the primary partition #3. This will be /dev/sdb3.
- Create a swap partition in partition #4. This will be /dev/sdb4.
- Create a partition for the 64-bit version of Ubuntu Linux in the extended partition #4. This will be /dev/sdb5.

Create a swap partition. This will be /dev/sdb6.

ave and exit the partitioning program.

#### **Delete All Partitions**

• After deleting all partitions, gparted should appear like:

		/dev/sub -	GParted		
GParted Edit	View Device Par	tition Help		1	
	2   🖣 🏙   🤇	⇒ 🗸		/dev/sdl	b (149.05 Gil
		unalloc 149.05	ated 5 GiB		
Partition	File System	Size	Used	Unused	Flags
unallocated	📕 unallocated	149.05 GiB			
3 Delete /dev	ı∕sdb2 (linux-swap, 4	.00 GiB) from /dev/sdb			
<ul> <li>Delete /dev</li> <li>Delete /dev</li> <li>Delete /dev</li> </ul>	//sdb2 (linux-swap, 4 //sdb3 (ext4, 45.00 ( //sdb4 (linux-swap, 4	.00 GiB) from /dev/sdb GiB) from /dev/sdb .00 GiB) from /dev/sdb			



#### **Create Extended Partition**

• Create an extended partition over the whole disk

		Create r	new Partition	/dev/s	db (14	9.05 G	в) ∨
	•						
Partition	Minimum size	e: 1 MiB	Maximum size	: 152627 MiB	_	Flags	
unallocate	Free space preceding (MiB):	1	Create as:	Extended Partition	~		
	New size (MiB):	152627 🗘	File system:	extended	-		
	Free space following (MiB):	0 🗘	The system				
	Align to:	MiB ~	Label:	linux			
				Cancel A	dd		
-	dev/cdb2 (linux-swap / 00 (sit	3) from /dev/s	db			_	



#### Create Fedora 64-bit Partition

• Create a partition for 64-bit Fedora partition.

		Creat	e ne	w Partition	/dev/so	ab (149	9.05 GI	5)
artition	Minimum size	e: 1 MiB		Maximum size	:: 152626 MiB		Flag	\$ 
New Part	Free space preceding (MiB):	1	* ~	Create as:	Logical Partition	~		
	New size (MiB):	50871	*	File system:	ext4			
	Free space following (MiB):	101755	~					
	Align to:	MiB	~	Label:	fedora64			
					Cancel A	dd		
Delete /d	lev/sdb3 (ext4, 45.00 GiB) fro	m /dev/sdb	2					



## Create Swap for Fedora 64-bit Partition

• Create a swap file for the above Fedora 64-bit partition:

		Creat	e ne	w Partition					
r" 2									
tition	Minimum size	e: 1 MiB		Maximum size	: 101753 MiB			Flag	s
ew Part	Free space preceding (MiB):	1	* ~	Create as:	Logical Partit	on	~		
unalloc	New size (MiB):	4	^ v	File system:	extA		~		
	Free space following (MiB):	101749	\$	r ne system	CALL				
	Align to:	MiB	~	Label:	swapFedora64	4			
					Cancel	Add			



#### Create Fedora 32-bit Partition

• Create a partition for 32-bit Fedora partition.

r 4		Creat	e new Partition			
Partition	Minimum size	e: 1 MiB	Maximum size	e: 101748 MiB		Flags
New Part	Free space preceding (MiB):	1	Create as:	Logical Partition	~	
New Pa	New size (MiB):	50871	File system:	ext4	~	
unalloc	Free space following (MiB):	50877	*			
	Align to:	MiB	Label:	fedora32		
				Cancel Add		



## Create Swap for Fedora 32-bit Partition

• Create a swap file for the above Fedora 32-bit partition:

		/dev/s	sdb – GParted			۵	×
GParted Ec	lit View Device Partition	Help					
8	21   🖳 💼   🥱 🖌	1		/dev	v/sdb (149	.05 GiB	) ~
N 4		Create	new Partition				
Partition	Minimum siz	e: 1 MiB	Maximum siz	e: 50876 MiB	- 1	Flag	s
New Part New P:	Free space preceding (MiB):	1	Create as:	Logical Partition	~		
New Pa	New size (MiB):	4	File system:	linux-swap	~		
New Pa	Free space following (MiB):	50872	~				
unalloc	Align to:	MiB	↓ Label:	swapFed32			
				Cancel	Add		
Create Lo	ogical Partition #2 (ext4, 49.6	8 GiB) on /di	ev/sdb				
Create Lo	ogical Partition #3 (ext4, 4.00 ogical Partition #4 (ext4, 49.6	MiB) on /de 8 GiB) on /de	v/sdb ev/sdb				
8 operations	pending						



#### Create Ubuntu 64-bit Partition

• Create a partition for 64-bit Ubuntu partition.

		Creat	te ne	w Partition	/dev/s	ab (149	.05 GIB	,~
4 Partition	Minimum siz	ze: 1 MiB		Maximum size	e: 50871 MiB		Flag	
New Part	Free space preceding (MiB): New size (MiB):	1	< > < >	Create as:	Logical Partition	~		
New Pa	Free space following (MiB): Align to:	3 MiB	< > >	File system: Label:	ext4 ubuntu64	~		
unalloc	,				Cancel A	dd		



## Create Swap for Ubuntu 64-bit Partition

• Create a swap file for the above Ubuntu 64-bit partition:

					1		1-1-		
N		Cre	ate ne	w Partition					1
4									
artition	Minimum	size: 1 M	liB	Maximum	size: 3 MiB			Flags	
New Pa	Free space preceding (MiB):	1	\$	Create as:	Logical Partit	ion	~		
New Pa	New size (MiB):	3	^	Eile en et en er	linus nume				
New Pa	Free space following (MiB):	0	^	rite system:	unux-swap				
New Pa	Align to:	MiB	~	Label:	swapUbuntu6	54			
unalloc					Cancel	Add			
Create La	ogical Partition #4 (ext4, 49.6	8 GIB) on	/dev/	sdb			-		



## **Completed Disk Partitioning**

#### • At the end of the disk partitioning:

~		/dev/sdb – GParted					×
GParted Edit View	v Device Part	ition Help					
🕑 🛞   🖗	5 B   4	a d		l.	/dev/sd	b (149.05	GiB) ~
	/dev/sdb5 49.68 GiB	/dev/sdb7 49.68 GiB		/d 49	ev/sdb9 9.67 GiB		
Partition	File System	Mount Point	Label	Size	Used	Unused	Flags
unallocated	📕 unallocated			2.00 MiB			
🗏 /dev/sdb1 🖘	extended			149.05 GiB		C112	
/dev/sdb5 🧠	ext4	/run/media/jharbold/fedora64	fedora64	49.68 GiB	5.89 GiB	43.79 GiB	boot
/dev/sdb6	📕 linux-swap			4.00 MiB	0.00 B	4.00 MiB	
/dev/sdb7 =8	ext4	/run/media/jharbold/fedora32	fedora32	49.68 GiB	4.78 GiB	44.89 GiB	
/dev/sdb8	📕 linux-swap			4.00 MiB	0.00 B	4.00 MiB	
/dev/sdb9 🤜	ext4	/run/media/jharbold/661a7f86-b1f4-4fce-8995-bbe331c5b630		49.67 GiB	4.74 GiB	44.94 GiB	
/dev/sdb10	linux-swap			3.00 MiB	0.00 B	3.00 MiB	

# Ubuntu Linux DVD OS Installation

- Goto Ubuntu home page: <u>http://www.ubuntu.com</u>
- Get the DVD installation ISO image put it in the DVD drive.
- Reboot the computer.
- Push the appropriate function key to bring up the boot menu.
- Select the DVD drive.
- When booted, follow the instruction to install Ubuntu Linux.
  - Make sure to select network to get the latest updates.

# Fedora Linux Network OS Installation

- Goto Fedora homepage: <u>https://getfedora.org/</u>
- Get the CD network installation ISO image put it in the DVD drive.
- Reboot the computer.
- Push the appropriate function key to bring up the boot menu.
- Select the DVD drive.
- When booted, follow the instruction to install Fedora Linux.
  - Make sure to select network to get the latest updates.

# Updating a Linux Partition

- Because the Linux partitions installed are full installations, they can be updated with new kernels and applications.
- For Fedora partitions, bringup a terminal window.
- Login as root: su -
- Update the partition's software: dnf update
- Install new application: dnf install Blorf!
- Lastly, re-install GRUB2 to be able to boot new kernel: grub2-install