Application Note AN-117

Using GParted Reach Technology, Inc. 01/07/2016

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1 Overview

This application note describes how to create an additional partition, or extend/resize an existing partition, on the SD card of a G2 Display Module using the Linux GParted utility.

This application note assumes familiarity with using the Linux VM, and with using terminal-level commands within the VM.

2 Quick Steps

2.1 Add a partition

- Start the VM, insert the SD card into a USB SD card reader attached to the host system.
- From the VM menu bar, select: VM->Removable Devices-><Your USB Storage Device>->Connect (Disconnect from Host).
- Open a Terminal session (click the Terminal icon on the Desktop).
- Install gparted with the following command in the Terminal session (when prompted, the root password in the VM is "password" without the double-quotes):
 - \$ sudo apt-get install gparted
- Launch gparted with the following command in the Terminal window:
 \$ sudo gparted
- Select device /dev/sdb from the drop-down list on the right.
- Click on the unallocated section.
- From the top menu, select Partition->New.
- To create a new partition that uses all of the remaining free space, leave all the defaults.
- On G2H2, select File System of ext4. On G2C1, select File System of ext3.
- Optionally add a Label.
- Click Add.
- Click Apply All Operations.
- When prompted, click Apply to apply all pending operations.
- When operation is complete, click Close.
- From the top menu, select GParted->Quit.
- From the terminal menu, select File->Close Window.

2.2 Extend/Resize a partition

- Start the VM, insert the SD card into a USB SD card reader attached to the host system.
- From the VM menu bar, select: VM->Removable Devices-><Your USB Storage Device>->Connect (Disconnect from Host).
- Open a Terminal session (click the Terminal icon on the Desktop).
- Install gparted with the following command in the Terminal session (when prompted, the root password in the VM is "password" without the double-quotes):
 - \$ sudo apt-get install gparted
- Launch gparted with the following command in the Terminal window:
 \$ sudo gparted
- Select device /dev/sdb from the drop-down list on the right.
- Click on the partition to extend.
- From the top menu, select Partition->Resize/Move.
- Drag the black arrow in the slider to the far-right side to extend the partition to the maximum available space.
- Click Resize.
- **Click** Apply All Operations.
- When prompted, click Apply to apply all pending operations.
- The operation may take a while to complete. When operation is complete, click Close.
- From the top menu, select GParted->Quit.
- From the terminal menu, select File->Close Window.

3 Detailed Steps

3.1 Add a partition

- Start the Linux VM.
- Once the VM is up and running, install the SD card into a USB card reader attached to the host system.
- If opened, close any new browser windows to the new mount points.
- You will see new 'Volume' icons on the desktop for each partition currently on the SD card.
- Open a Terminal session by clicking on the Terminal icon on the desktop.

Install and launch Gparted by running the following commands in the Terminal window. When ٠ prompted, the root password in the VM is "password", without the double-quotes.

```
$ sudo apt-get install gparted
$ sudo gparted
```

(Start-up screen for gparted.)	

▼ /dev/sda - GParted (as superuser) - + × GParted Edit View Device Partition Help									
/dev/sda1 99.00 GiB									
Partition	File System	Mount Point	Size	Used	Unused	Flags			
/dev/sda1	ext4	1	99.00 GiB	9.69 GiB	89.31 GiB	boot			
✓ /dev/sda2	extended		1021.00 MiB						
/dev/sda5	linux-swap		1021.00 MiB	264.00 KiB	1020.74 MiB				
unallocated	unallocated		1.00 MiB						
unallocated unallocated 1.00 MiB									

• Select /dev/sdb from the drop list on the right, and click on the unallocated section.

▼ /dev/sda - GParted (as superuser) - + × GParted Edit View Device Partition Help									
₽ × →									
	/dev/sdb	(3.69 GiB)							
Partition	File System	Mount Point	Size	Used	Unused	Flags			
/dev/sda1 👔	ext4	/	99.00 GiB	9.69 GiB	89.31 GiB	boot			
✓ /dev/sda2	extended		1021.00 MiB						
/dev/sda5 👔	linux-swap		1021.00 MiB	276.00 KiB	1020.73 MiB				
unallocated	unallocated		1.00 MiB						
unallocated 1.00 MiB									

- + x /dev/sdb - GParted (as superuser) GParted Edit View Device Partition Help D New /dev/sdb (3.69 GiB) 🔻 Ð **I** × × Delete Delete Resize/Move /dev/sdb2 /dev/sdl unallocated 512.00 MiB 2.68 GiB **516.00** Copy Paste Ctrl+V Flags Partition File Sys Used Size Unused 🗟 Format to /dev/sdb1 unk 11.00 MiB Mount /dev/sdb2 512.00 MiB 221.38 MiB ext: 106.62 MiB Manage Flags /dev/sdb3 516.00 MiB ext3 170.79 MiB 345.21 MiB Check Label New UUID Information 0 operations pending
- From the top menu, select Partition->New.

- To create a new partition that uses all of the remaining free space, leave all the default settings.
- On G2H2, select File System of ext4. On G2C1, select File System of ext3.
- Optionally add a Label.
- Click Add.

v	/dev/sdl	b - GParted (as superuser))	- + ×
GParted Edit	View Device Partition Help				
р×∣⇒				/dev/sdb	(3.69 GiB) 🔻
/dev/sdb2 512.00 MiB	/dev/sdb3 516.00 MiB Creat	e new Partit	unal 2.68 ion (as superu	located GiB Iser) ×	
Partition					Flags
/dev/sdb1					
/dev/sdb2	Minimum	size: 1 MiB	Maximum size: 2	2742 MiB	В
/dev/sdb3 unallocated	Free space preceding (MiB): New size (MiB): Free space following (MiB): Align to:	0 4 2742 7 0 4 MiB •	Create as: File system: Label:	Primary Partition ext4 data Cancel	
0 operations per	nding				

(After clicking Add. Note pending operations.)

/dev/sdb - GParted (as superuser)										
GParted Edit View Device Partition Help										
↓ ★ ↓ </td										
/dev/sdb2 512.00 MiB	/dev/sdb3 516.00 MiB	New Partition #1 2.68 GiB								
Partition	File System	Mount Point	Label	Size	Used	Unused	Flags			
/dev/sdb1	👥 📃 unknown			11.00 MiB						
/dev/sdb2	<u>)</u> 📠 🔤 ext3	/media/reach/disk		512.00 MiB	221.38 MiB	106.62 MiB				
/dev/sdb3	🚛 🔤 ext3	/media/reach/disk1		516.00 MiB	170.79 MiB	345.21 MiB				
New Partition #1	ext4		data	2.68 GiB						
Create Primary Pa	artition #1 (ext4, 2.6	8 GiB) on /dev/sdb								
1 operation pending										
1 operation pending										

• Click Apply All Operations.

<pre>v /dev/sdb - GParted (as superuser) - + x</pre>									
GParted Edit View De	vice Partition	Help							
↓ ↓									
/dev/sdb2 512.00 MiB /dev/sdb3 516.00 MiB 2.68 GiB									
Partition	File System	Mount Point	Label	Size	Used	Unused Fl	ags		
/dev/sdb1	🕒 🔲 unknown	l.		11.00 MiB					
/dev/sdb2 🔛	ext3	/media/reach/disk		512.00 MiB	221.38 MiB	106.62 MiB			
/dev/sdb3	ext3	/media/reach/disk1		516.00 MiB	170.79 MiB	345.21 MiB			
New Partition #1	ext4		data	2.68 GiB					
		,							
Create Primary Partitio	on #1 (ext4, 2.6	38 GiB) on /dev/sdb							
1 operation pending									

- /dev/sdb GParted (as superuser) + X GParted Edit View Device Partition Help /dev/sdb (3.69 GiB) 🔻 × **H** B 43 10 /dev/sdb2 /dev/sdb3 New Partition #1 512.00 MiB 516.00 MiB 2.68 GiB Partition File System Mount Point Label Size Used Unused Flags /dev/sdb1 Ð Apply operations to device (as superuser) ____ × /dev/sdb2 106.62 MiB 1 Are you sure you want to apply /dev/sdb3 the pending operations? 345.21 MiB 18 New Partition #1 Editing partitions has the potential to cause LOSS of DATA. ----You are advised to backup your data before proceeding. Cancel Apply Create Primary Partition #1 (ext4, 2.68 GiB) on /dev/sdb 1 operation pending
- When prompted, click Apply to apply all pending operations.

• Wait for the operation to complete.

GParted Edit View Device Partitio	/dev/sdb - GParted (as sup	eruser)		- + ×					
	به . ب		/dev/sdb	(3.69 GiB) 🔻					
/dev/sdb2 512.00 MiB 516.00 MiB		New Partition #1 2.68 GiB							
Partiti T A	pplying pending operation	s (as superuser)		× gs					
/de Depending on the number an	d type of operations this might tal	ke a long time.							
/de /de	/de /de /de								
create new ext4 file system									
Completed Operations:	0 of 1 operations com	nleted							
▶ Details		pieceu							
			C	ancel					
1 operation pending									

• When the operation is complete, click Close.

GParted Edit View Device Part	/dev/sdb - GParted (as superuser) ition Help	- + >	×
₽ × → 0 6	4 م <u>ر</u>	/dev/sdb (3.69 GiB)	•
/dev/sdb2 512.00 MiB 516.00 MiB	New Partition #1 2.68 GiB		
Partit	Applying pending operations (as superuser)	×gs	
/de Depending on the number	and type of operations this might take a long time.		
/de Completed Operations:			
Ne	All operations successfully completed		
> Details			
D CI	Sa	ve Details Close	۲
1 operation pending			

• Operation complete.

▼ /dev/sdb - GParted (as superuser) - + ×									
						/dev/sdb (3	3.69 GiB) 🔻		
/dev/sdb2 512.00 MiB	/dev/sdb3 516.00 MiB		/dev/sdb4 2.68 GiB						
Partition	File System	Mount Point	Label	Size	Used	Unused	Flags		
/dev/sdb1 り	unknown			11.00 MiB					
/dev/sdb2 <u>り</u> 🏢	ext3	/media/reach/disk		512.00 MiB	221.38 MiB	106.62 MiB			
/dev/sdb3	ext3	/media/reach/disk1		516.00 MiB	170.79 MiB	345.21 MiB			
/dev/sdb4	ext4		data	2.68 GiB	111.13 MiB	2.57 GiB			
0 operations pending	l								

- From the top menu, select GParted->Quit.
- From the terminal menu, select File->Close Window.

3.2 Extend/Resize a partition

- Start the Linux VM.
- Once the VM is up and running, install the SD card into a USB card reader attached to the host system.
- If opened, close any new browser windows to the new mount points.
- You will see new 'Volume' icons on the desktop for each partition currently on the SD card.
- Open a Terminal session by clicking on the Terminal icon on the desktop.

• Install and launch Gparted by running the following commands in the Terminal window. When prompted, the root password in the VM is "password", without the double-quotes.

```
$ sudo apt-get install gparted
$ sudo gparted
```

/dev/sda - GParted (as superuser) - + ×										
GParted Edit View Device Partition Help										
Д × ⇒	□ ★ ↓ □ ↑ ↓ </td									
/dev/sda1 99.00 GiB										
Partition	File System	Mount Point	Size	Used	Unused	Flags				
/dev/sda1	ext4	1	99.00 GiB	9.69 GiB	89.31 GiB	boot				
✓ /dev/sda2	extended		1021.00 MiB							
/dev/sda5	linux-swap		1021.00 MiB	264.00 KiB	1020.74 MiB					
unallocated	unallocated		1.00 MiB							
0 operations pending	I									

• Select /dev/sdb from the drop list on the right.

<pre>/dev/sda - GParted (as superuser)</pre>								
GParted Edit View	Device Partitio	on Help						
₽ × +								
					/dev/sdb	(3.69 GiB)		
			/dev/sda1 99.00 GiB					
Partition	File System	Mount Point	Size	Used	Unused	Flags		
/dev/sda1	ext4	1	99.00 GiB	9.69 GiB	89.31 GiB	boot		
✓ /dev/sda2	extended		1021.00 MiB					
/dev/sda5	linux-swap		1021.00 MiB	276.00 KiB	1020.73 MiB			
unallocated	unallocated		1.00 MiB					
0 operations pending								

• Click on the partition to extend.

GParted Edit View	Device Partitio	/dev/sdb - GPart	ed (as superus	er)		- + ×
					/dev/sdb	(3.69 GiB) 🔻
/dev/sdb2 512.00 MiB	/dev/sdb3 516.00 MiB		u 2	nallocated .68 GiB	·	
Partition	File System	Mount Point	Size	Used	Unused	Flags
/dev/sdb1 🔛	unknown		11.00 MiB			
/dev/sdb2 <u>り</u> 📠	ext3	/media/reach/disk	512.00 MiB	221.38 MiB	106.62 MiB	
/dev/sdb3 🏻 👔	ext3	/media/reach/disk1	516.00 MiB	170.79 MiB	345.21 MiB	
unallocated	unallocated		2.68 GiB			
0 operations pending						

			/dev/sdb -	GParted	(as superus	er)		- + ×
GParted Edit View	Device	Par	tition Help					
	o e	Ω	New	Insert			/dev/sdb (3.69 GiB) 🔻
		ж	Delete	Delete				
/dev/sdb2	/dov/sdl	ا∢	Resize/Move			nallocated		
512.00 MiB	516.00	D	Сору	Ctrl+C	2.68 GiB			
┍┛┖──────────────────		0	Paste	Ctrl+V				
Partition	File Sys	02	Format to	▶	Size	Used	Unused	Flags
/dev/sdb1 🔛	unk 🔤		i onnac co		11.00 MiB			
/dev/sdb2 🚺 🎼	ext3		Unmount		512.00 MiB	221.38 MiB	106.62 MiB	
/dev/sdb3 👔	ext3		Manage Flags		516.00 MiB	170.79 MiB	345.21 MiB	
unallocated	una		Check	[2.68 GiB			
			Label					
			New UUID					
		P	Information					
0 operations pending								

• From the top menu, select Partition->Resize/Move.

- Drag the black arrow in the slider to the far-right side to extend the partition to the maximum available space.
- When done, click Resize.



(After clicking Resize. Note pending operations.)

	69 GiB) 🔻
/dev/sdb2 512.00 MiB 3.18 GiB	
Partition File System Mount Point Size Used Unused	Flags
/dev/sdb1 🚺 unknown 11.00 MiB	
/dev/sdb2 💭 📠 🔳 ext3 /media/reach/disk 512.00 MiB 221.38 MiB 106.62 MiB	
/dev/sdb3 🚛 ext3 /media/reach/disk1 3.18 GiB 166.79 MiB 3.02 GiB	
➡I Grow /dev/sdb3 from 516.00 MiB to 3.18 GiB 1 operation pending	

• Click Apply All Operations.

GParted Edit View	Device Par	/ dev/sdb - GP tition Help	arted (as super	user)		- + ×		
□ × →	0 6		perations		/dev/sdb	(3.69 GiB) 🔻		
/dev/sdb2 512.00 MiB	Apply All Operations /dev/sdb3 3.18 GiB							
Partition	File System	Mount Point	Size	Used	Unused	Flags		
/dev/sdb1 🚺	unknown		11.00 MiB					
/dev/sdb2 <u>)</u> 📠	ext3	/media/reach/disk	512.00 MiB	221.38 MiB	106.62 MiB			
/dev/sdb3 🎼	ext3	/media/reach/disk1	3.18 GiB	166.79 MiB	3.02 GiB			
Crow /dow/sdb2.ft								
Grow /dev/sab3 h	rom 516.00 M	IIB TO 3.18 GIB						
1 operation pending								

• When prompted, click Apply to apply all pending operations.

	GParted Edit View [/dev/sdb - Gi v Device Partition Help	Parted (as super	user)			- + ×
/dev/sdb2 /dev/sdb3 512.00 MiB 3.18 GiB	₽ × → @	0 6 × 4			R	/dev/sdb	(3.69 GiB) 🔻
	/dev/sdb2 512.00 MiB		/dev/si 3.18 G	db3 SiB			
Partition File System Mount Point Size Used Unused Flag	Partition Fil	File System Mount Point	Size	Used		Unused	Flags
/dev/sdb1 Image: marked state state /dev/sdb2 Image: marked state /dev/sdb3 Image: marked state /dev/sdb3 Image: marked state Image: marked state Are you sure you want to apply the pending operations? Image: marked state Image: marked state Image: marked state Imag	/dev/sdb1	ex ex ex ex ex ex ex ex ex ex ex ex ex e	ions to device (a re you want to a g operations? ons has the potential d to backup your dat Ca	s superuser) apply to cause LOSS of D ta before proceeding ancel Apply	× pATA. g.	 106.62 MiB 3.02 GiB	
Grow /dev/sdb3 from 516.00 MiB to 3.18 GiB	 Grow /dev/sdb3 from operation pending 	from 516.00 MiB to 3.18 GiB					

• The operation may take a while to complete.

Ŧ		/dev/sdb - GParted (as superuser)		- + ×
GParte	d Edit View	Device Partition Help		
Ð	x →	0 0 × ~	/dev/sdb	(3.69 GiB) 🔻
/c 5	lev/sdb2 12.00 MiB	/dev/sdb3 3.18 GiB		
Partiti	Ŧ	Applying pending operations (as superus	er)	×s
/de	Depending o	n the number and type of operations this might take a long time.		
/de	Grow /dev/s	db3 from 516.00 MiB to 3.18 GiB		
/46				
	grow file syst	tem to fill the partition		
	Completed	Operations:		
		0 of 1 operations completed		
	Details			
⇒l Gr				ancei
1 oper	ation pending			

• When operation is complete, click Close.

GParte	d Edit View	/dev/sdb - GParted (as superuser)		- + ×
-	× →		/dev/sdb	(3.69 GiB) 🔻
/d 51	ev/sdb2 12.00 MiB	/dev/sdb3 3.18 GiB		
Partiti	T	Applying pending operations (as superuser)		×s
/de	Depending on	the number and type of operations this might take a long time.		
/de	Completed O	perations:		
		All operations successfully completed		
	▶ Details			
⇒l Gr		Sa		lose
1 opera	ation pending			

• Operation complete.

/dev/sdb2 /dev/sdb2 /dev/sdb2 /dev/sdb1 Image: State of the state of t	GParted Edit View	Device Part	/dev/sdb - GP	arted (as super	user)		- + ×
/dev/sdb2 /dev/sdb3 512.00 MiB File System Partition File System /dev/sdb1 unknown 11.00 MiB /dev/sdb2 ext3 /dev/sdb3 ext3 /dev/sdb3 ext3 /dev/sdb3 ext3			~ ~			/dev/sdb	(3.69 GiB) 🔻
Partition File System Mount Point Size Used Unused Flags /dev/sdb1 unknown 11.00 MiB (dev/sdb2 iii) ext3 /media/reach/disk 512.00 MiB 221.38 MiB 106.62 MiB /dev/sdb3 ext3 /media/reach/disk1 3.18 GiB 210.83 MiB 2.97 GiB 	/dev/sdb2 512.00 MiB			/dev/so 3.18 G	lb3 iB		
/dev/sdb1 🔛 ■ unknown 11.00 MiB /dev/sdb2 🔛 📻 ■ ext3 /media/reach/disk 512.00 MiB 221.38 MiB 106.62 MiB /dev/sdb3 📻 ■ ext3 /media/reach/disk1 3.18 GiB 210.83 MiB 2.97 GiB	Partition	File System	Mount Point	Size	Used	Unused	Flags
/dev/sdb2 <u> iii</u> ext3 /media/reach/disk 512.00 MiB 221.38 MiB 106.62 MiB /dev/sdb3 iii ext3 /media/reach/disk1 3.18 GiB 210.83 MiB 2.97 GiB	/dev/sdb1 👥	unknown		11.00 MiB			
/dev/sdb3 📠 🖿 ext3 /media/reach/disk1 3.18 GiB 210.83 MiB 2.97 GiB	/dev/sdb2 👥 📊	ext3	/media/reach/disk	512.00 MiB	221.38 MiB	106.62 MiB	
	/dev/sdb3	ext3	/media/reach/disk1	3.18 GiB	210.83 MiB	2.97 GiB	
0 operations pending	0 operations pending	a					

- From the top menu, select GParted->Quit.
- From the terminal menu, select File->Close Window.