SWAP Partitions

Creating a Swap Partition:

Swap space in Linux is used when the amount of physical memory (RAM) is full. If the system needs more memory resources and the RAM is full, inactive pages in memory are moved to the swap space. While swap space can help machines with a small amount of RAM, it should not be considered a replacement for more RAM. Swap space is located on hard drives, which have a slower access time than physical memory.

Recommended System Swap Space:

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Amount of RAM in the System	Recommended Amount of Swap Space
4GB of RAM or less	a minimum of 2GB of swap space
4GB to 16GB of RAM	a minimum of 4GB of swap space
16GB to 64GB of RAM	a minimum of 8GB of swap space
64GB to 256GB of RAM	a minimum of 16GB of swap space
256GB to 512GB of RAM	a minimum of 32GB of swap space

The Basic Rule for the Size of SWAP:

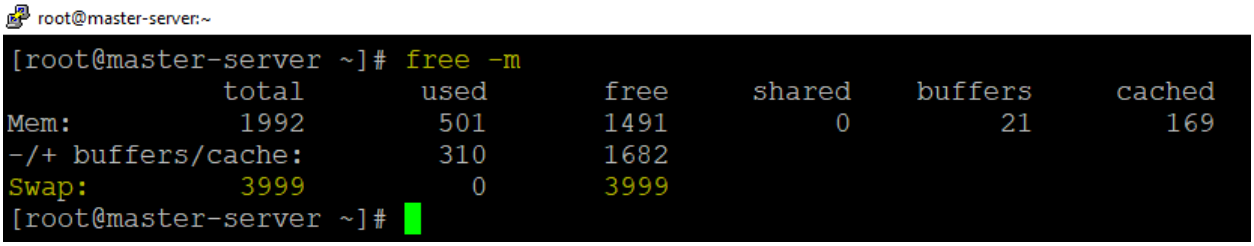
Apart from the above recommendation a basic rule is applied to create the swap partitions

- ➔ if the size of the RAM is **less than or equal to 2GB,** then size of **SWAP=2 X RAM SIZE**
- ➔ If the size of the RAM is **more than 2GB**, then size of **SWAP= 2GB + size of the RAM**

Swap space is compulsory to be created at the time of installation. But, additional swap spaces can be created and deleted at any point of time, when it is required. Sometimes we need to increase the swap space, so we create additional swap spaces which will be added to the existing swap space to increase the size.

Commands to be used in maintaining Swap spaces:

- ➔ To see the memory size and the swap space size #free –m



- ➔

➔ To see the swap usage use #swapon –s

root@master-server:~

```
[root@master-server ~]# swapon -s
Filename                                Type            Size    Used    Priority
/dev/dm-1                               partition       4095992 0       -1
[root@master-server ~]#
```

➔ To format the partition with swap file system use #mkswap <partitionName>

➔ To activate the swap space use #swapon <partitionname>

➔ To deactivate the swap space use #swapoff <paritionname>

Creating a Swap partion:

➔ Create a normal partition using fdisk and change hex code to make it swap partition.

➔ The hex code for SWAP is 82. (To change the use t in fdisk and list all the hex code use l)

➔ Update the partition table using partx –a command

root@master-server:~

```
Command (m for help): t
Selected partition 1
Hex code (type L to list codes): L

 0  Empty           24  NEC DOS         81  Minix / old Lin bf  Solaris
 1  FAT12           39  Plan 9          82  Linux swap / So c1  DRDOS/sec (FAT-
 2  XENIX root      3c  PartitionMagic  83  Linux           c4  DRDOS/sec (FAT-
 3  XENIX usr       40  Venix 80286     84  OS/2 hidden C:  c6  DRDOS/sec (FAT-
 4  FAT16 <32M      41  PPC PReP Boot   85  Linux extended  c7  Syrinx
 5  Extended        42  SFS             86  NTFS volume set da  Non-FS data
 6  FAT16           4d  QNX4.x          87  NTFS volume set db  CP/M / CTOS / .
 7  HPFS/NTFS       4e  QNX4.x 2nd part 88  Linux plaintext de  Dell Utility
 8  AIX             4f  QNX4.x 3rd part 8e  Linux LVM       df  BootIt
 9  AIX bootable    50  OnTrack DM      93  Amoeba          e1  DOS access
 a  OS/2 Boot Manag 51  OnTrack DM6 Aux 94  Amoeba BBT      e3  DOS R/O
 b  W95 FAT32       52  CP/M            9f  BSD/OS          e4  SpeedStor
 c  W95 FAT32 (LBA) 53  OnTrack DM6 Aux a0  IBM Thinkpad hi eb  BeOS fs
 e  W95 FAT16 (LBA) 54  OnTrackDM6      a5  FreeBSD         ee  GPT
 f  W95 Ext'd (LBA) 55  EZ-Drive        a6  OpenBSD         ef  EFI (FAT-12/16/
10  OPUS            56  Golden Bow      a7  NeXTSTEP        f0  Linux/PA-RISC b
11  Hidden FAT12    5c  Priam Edisk     a8  Darwin UFS      f1  SpeedStor
12  Compaq diagnost 61  SpeedStor       a9  NetBSD          f4  SpeedStor
14  Hidden FAT16 <3 63  GNU HURD or Sys ab  Darwin boot     f2  DOS secondary
16  Hidden FAT16    64  Novell Netware  af  HFS / HFS+      fb  VMware VMFS
17  Hidden HPFS/NTF 65  Novell Netware  b7  BSDI fs         fc  VMware VMKCORE
18  AST SmartSleep  70  DiskSecure Mult b8  BSDI swap       fd  Linux raid auto
1b  Hidden W95 FAT3 75  PC/IX           bb  Boot Wizard hid fe  LANstep
1c  Hidden W95 FAT3 80  Old Minix       be  Solaris boot    ff  BBT
1e  Hidden W95 FAT1
Hex code (type L to list codes): 82
Changed system type of partition 1 to 82 (Linux swap / Solaris)

Command (m for help):
```

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```
Disk /dev/sdb: 21.5 GB, 21474836480 bytes
255 heads, 63 sectors/track, 2610 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x392d37ba

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1               1         132     1060258+  82  Linux swap / Solaris

Command (m for help): n
Command action
   e   extended
   p   primary partition (1-4)
p
Partition number (1-4): 2
First cylinder (133-2610, default 133):
Using default value 133
Last cylinder, +cylinders or +size{K,M,G} (133-2610, default 2610): +1G

Command (m for help):
```

➔

root@master-server:~

```
[root@master-server ~]# fdisk -l /dev/sdc

Disk /dev/sdc: 2147 MB, 2147483648 bytes
255 heads, 63 sectors/track, 261 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0xac305668

   Device Boot      Start         End      Blocks   Id  System
/dev/sdc1               1         132     1060258+  82  Linux swap / Solaris
[root@master-server ~]#
```

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➔ Format the partition with swap file system #mkswap /dev/sdc1

root@master-server:~

```
[root@master-server ~]# mkswap /dev/sdc1
Setting up swapspace version 1, size = 1060252 KiB
no label, UUID=d1fee669-d9b8-4ccf-b17f-98d964697374
[root@master-server ~]#
```

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Turn on the newly created swap space and verify it.

To turn on the swap space the syntax is

#swapon /dev/sdc1

```
[root@master-server ~]# swapon /dev/sdc1
[root@master-server ~]#
```

root@master-server:~

```
[root@master-server ~]# swapon -s
Filename                                Type            Size    Used    Priority
/dev/dm-1                               partition       4095992 0       -1
/dev/sdc1                               partition       1060248 0       -2
[root@master-server ~]#
```

Making the Newly Created SWAP Partition to mount after reboot.

- ➔ In order to make the swap partition mount automatic after reboot, we need to make an entry in /etc/fstab file.

#vim /etc/fstab

root@master-server:~

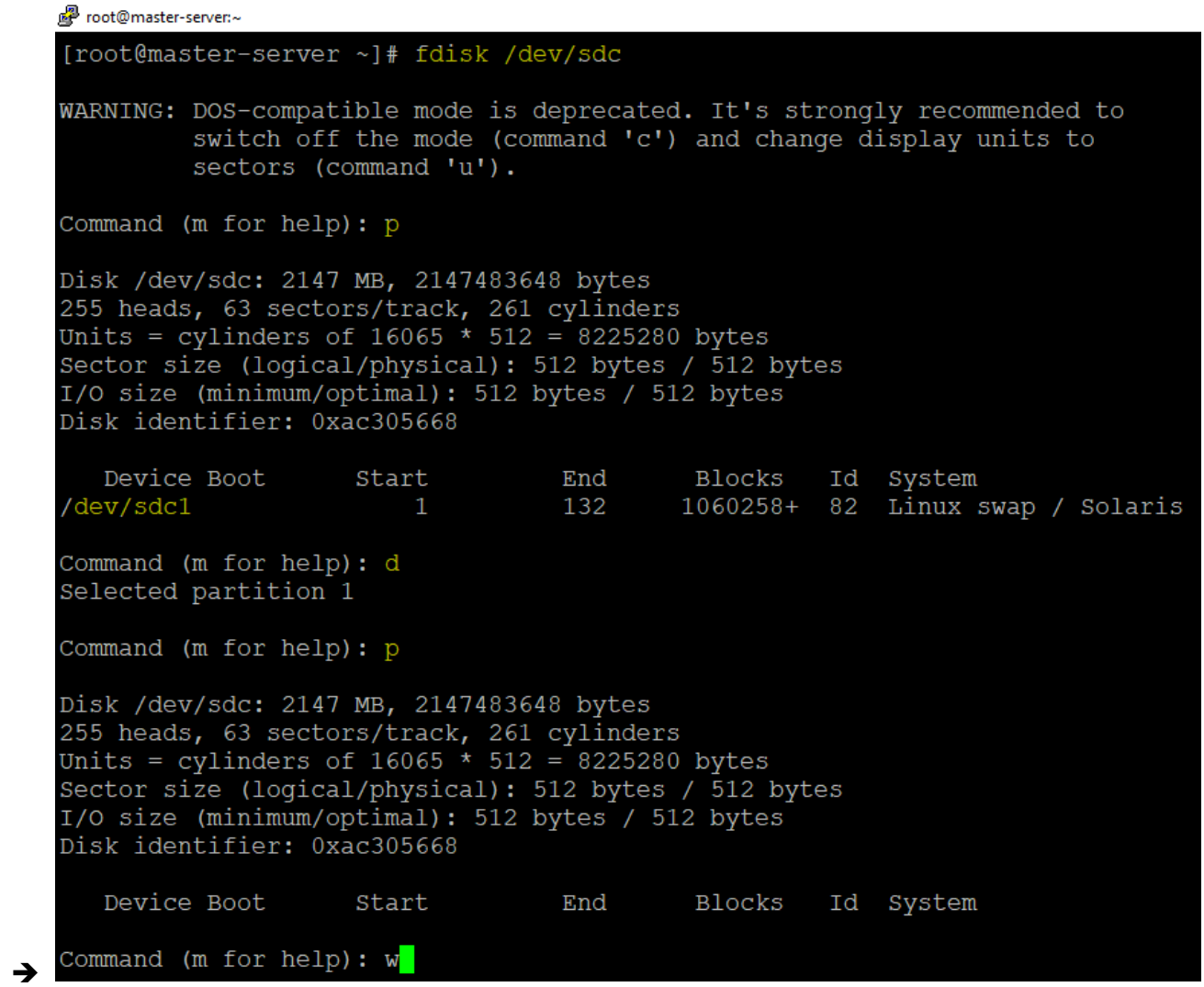
```
[root@master-server ~]# tail -1 /etc/fstab
/dev/sdc1               swap                    swap    defaults        0 0
[root@master-server ~]#
```

Removing the SWAP Partition:

- ➔ Deactivate the swap partition #swapoff <devicename>

```
[root@master-server ~]# swapoff /dev/sdc1
[root@master-server ~]# swapon -s
Filename                                Type            Size    Used    Priority
/dev/dm-1                               partition       4095992 0       -1
[root@master-server ~]#
```

- ➔ Remove the entry from /etc/fstab.
- ➔ Delete the partition through fdisk


root@master-server:~
[root@master-server ~]# fdisk /dev/sdc
WARNING: DOS-compatible mode is deprecated. It's strongly recommended to
switch off the mode (command 'c') and change display units to
sectors (command 'u').
Command (m for help): p
Disk /dev/sdc: 2147 MB, 2147483648 bytes
255 heads, 63 sectors/track, 261 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0xac305668
Device Boot Start End Blocks Id System
/dev/sdc1 1 132 1060258+ 82 Linux swap / Solaris
Command (m for help): d
Selected partition 1
Command (m for help): p
Disk /dev/sdc: 2147 MB, 2147483648 bytes
255 heads, 63 sectors/track, 261 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0xac305668
Device Boot Start End Blocks Id System
Command (m for help): w