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AWS 95: Partition Limit In A/UX and Workaround (3/95)

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TOPIC ----------

I have the following question about the Apple Workgroup Server (AWS) 95:

I need to be able to create more than 12 UNIX partitions on a drive attached to an AWS 95. My company makes large external RAID drives, in the range of 40 GB. I need to put 20 to 30 partitions on a drive, so the partition sizes are small enough to be usable by AppleShare and the Finder. The AWS 95 sees the array as a single SCSI device.

Within HDSC setup, I can create 12 Free UNIX slices, numbered 3-14. If I try to create any more, the following error: "The setup program cannot create/display any more partitions." This error would be expected, as HDSC Setup seems limited to 12 UNIX slices.

The only way I can see to create more than 12 UNIX slices would be to use "dp" and "newfs" to create the number of slices needed, and put filesystems on them. Will this work? Are "dp", "newfs", or "mount" restricted in the number of partitions they can work with? I believe there is a hard limit of about 25 UNIX slices on a drive. Is that correct?

DISCUSSION ----------

We have been able to verify your symptoms with HDSC Setup and the "dp" utility under A/UX 3.1. By default, 15 is the maximum number of disk partitions allowed on a drive before seeing the error message, "Invalid partition number. Range 0 <= n < 15", while adding more than 15 partitions in a drive under "dp".

"newfs" has nothing to do with the number of disk partitions in a drive, it creates a filesystem according to the information provided in the dpm (disk partition map). Also the "mount" command has nothing to do with the number of disk partitions in a drive, the number of mountable filesystems, however, is defined by the kernel NMOUNT parameter, which is tunable via "kconfig". The

default value of NMOUNT is 32 in A/UX 3.1.

Workaround

With the "dp" program, the "U" (Uninitializes the map) command, and the "i" (Initialize the map) command under the "Command" mode allow you to change the number of disk partition map entries (dmpe) in a drive. The "U" command cleans up ALL existing partition maps including Apple_Driver and Apple_HFS partitions. The "i" command prompts you for the "Number of dpme's", which at this point you can enter the desired number, for example 32 instead of the default which is 15. Also 32 slices (logical units for the file systems) are the total allowed on a drive. Then, use the "a" (adds a partition) command to created a partition for an UNIX file system.

Care should be taken while issuing the "U" and the "a" commands. The "U" command wipes out all existing partition maps, and the "a" command ONLY creates partitions for UNIX filesystems (type of "Apple_UNIX_SVR2").

WARNING: Do NOT attempt this on the hard drive containing your startup software because it will be lost. "dp" cannot create Mac OS HFS or Apple_Driver partitions.

Below is an example of "Uninitialize", "initialize", and "adds" of a new partition on the drive, /dev/rdsk/c103d0s31

```
# dp /dev/rdsk/c103d0s31
Command? U
Command? i
Number of dpme's: 32
Command? a
Partition number ('*' for any): 17
Physical start (block #) [0]: 2900096
Physical length (blocks) [0]: 200000
Name[]: Free\ UNIX\ slice\ 15
Default type? y
Logical start (block #) [0]: 0
Logical length (blocks) [0]: 200000
Cluster # [0]: 0
FS type (1=UNIX, 2=EFS, 3=SFS) [?]: 1
Root file system? n
Usr file system? n
Command? w
Command? q
```

If you plan on using the workaround above, be aware that no Mac OS HFS partition can be created under "dp", and be sure to backup you Mac OS HFS partition before issuing the "U" command. Also, all commands entered under "dp" will not take effect until a "w" command is entered.

FYI: If you have more than 15 partitions in a drive and try to re-partition or display with HDSC Setup, it will complain with the following:

Customizing the partitions failed.

There are too many partitions on the disk for the setup program to display.

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31 Mar 1995 - Made minor changes.

Support Information Services

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