NAME

sformat − SCSI disk formatting/partitioning/analysis/repair utility

SYNOPSIS

sformat [options] target lun [scsibus]
sformat [options]

The first form will select the named disk directly. Have a look at the chapter about **Following The Main Thread** for more details.

The second form will scan all SCSI busses and enter a selection menu. Have a look at the chapter about **The SCSI Selection Menu** for more details.

Sformat will never destroy or modify any data unless explicitly confirmed just before the (possibly) destructive action. Have a look at the chapter about **How To Answer Questions** first.

DESCRIPTION

Sformat is the first SCSI disk formatting utility that runs under *SunOS*. Long before Sun decided that formatting and partitioning a disk from a stand alone program is less convenient than doing this job from a running UNIX, **sformat** has been available.

Sformat leads the beginner through a thread menu and allows the experienced user to do more things than he could do with other disk maintenance programs. All partitioning jobs can be done without the need for a desc calculator.

If you want to do more than simple things, you should carefully read the whole manual. It contains many tips and tricks that will help you to recover disks that would have to be sent back to the manufacturer for repair otherwise. **Sformat** includes the competence of more than ten years in disk handling and will be able to repair more disks than other disk maintenance programs. **Sformat** offers special maintenance tests to find the reason for complex disk failures.

Disk Database Entries

Be nice to other users of **sformat**. Create database (sformat.dat) entries for disks that are not in the data base using the −**Proto** flag and mail them to the author. This helps other users and you too. See section on **Creating Disk Database Entries** below.

OPTIONS

−help, −h	Print a summary of the most important options for **sformat**.
−xhelp	Print a summary of less frequently used options for **sformat**.
−ask	Ask again at certain critical sections. This will currently prompt before modifying the disk when in repair mode.
−auto, −a	autoformat mode (for production systems). When this option is in effect, **sformat** will not ask whether to modify the format and partition parameters and will only format disks that are known in the data base. There will be only one question to answer. This will immediately start the formatting process. The −**auto** option enables certain additional verifications that will guarantee that the disks have a known firmware release and will inform the user that the disk is bad if certain quality tests failed. The disk will not be formatted if the signature code in the data base is bad. This option has not been verified during the last three years. If you need this mode ask the author for additional verification of the code.
Cveri=#,C=#	Number of blocks/verify. **Sformat** normally will try to verify 1000 sectors with one SCSI command. Some old disk firmware may not able to deal with a number that will imply to read a number of sectors that will not fit in the local memory of

the disk.

CWveri=#,CW=# Number of blocks/write-verify. The limitation noted with the **Cveri** option applies here again and even on newer disks.

data=name Name of disk database file (default: 'sformat.dat'). Use this option to force **sformat** to use a different disk database than the default. In any case, **sformat** will search in the current directory first. If no file of the appropriate name was found in the current directory, **sformat** looks in the following path:
/opt schily/etc, /etc, /usr/etc.

debug=#,-d Set the misc debug value to # (with debug=#) or increment the misc debug level by one (with -d). If you specify *-dd,* this equals to **debug=2.**

kdebug=#,kd=# Tell the **scg**-driver to modify the kernel debug value while SCSI commands are running.

xdebug=#,xd=# Set the debug level for the parser of the external disk database.

−defmodes Get default mode parameters from disk. Normally **sformat** retrieves the default modes parameters from the disk by default when the disk is unformatted or has no sun label and the current mode parameter if the disk has a valid sun label. This option tells **sformat** retrieve the default mode parameters in any case.

−dmdl Do not use manufacturer defect list when formatting a disk. This implies that a disk that is formatted with this option will have bad blocks. However some disks that may not be formatted because the manufacturer defect list is broken may become usable again when this option is in effect.

ESDI=# Pass ESDI command # to the drive and print the result. This will only work if an EMULEX MD21 SCSI/ESDI bridge controller is present.

−force Force to continue at certain errors. This will currently prompt after the format command fails.

−greassign Reassign blocks. This is the guru mode, don't use this. Read the description for the −*reassign* option for more details. This option will simply prompt for block numbers and then reassign them regardless of if they need to be reassigned or not. On some disks the block may seem to be defective even after reassigning it because the old data is copied to the new location without recomputing the CRC. On other disk the old data will be lost. These problems will not arise if you use the −*reassign* option instead.

−ign_not_found Ignore record not found errors while verifying the disk. This option is useful when trying to repair disks with many defects (see *maxbad* option). Some disk errors may cause the whole track to appear bad. If the reported error in these cases is **record not found**, You should first try to repair as many blocks as possible with this option in effect and then repair the remaining blocks without this option.

−inq Retrieve and print SCSI inquiry data for any type of device. This is useful even on tape drives and scanners.

maxbad=# When **sformat** is doing a surface analysis after formatting the disk, it collects a number of bad blocks (usually up to 1023), then reassigns them and then reformats the disk to guarantee that the disk speed will not be reduced by mapped bad blocks. Some disks with many defective blocks will seem to have more defective blocks than they really have, but these false defective blocks need not to be reassigned. This case may be triggered if a defective block directly follows the index. In this case the whole track seems to be bad. If you tell sformat to reformat the disk after repairing one bad block (maxbad=1), this problem will go away.

−modes Intercative modesense/modeselect. Each mode page exists in 4 versions:

default (PROM), current (RAM), saved (DISK) and changeable (BITMASK).
You may currently view any page if you specify the page number. **This is currently under construction.**

−noformat Force not to format disk even when formatting of the disk has been confirmed. This option may be used to modify mode parameters without formatting the disk.

−nomap Do not map SCSI address to logical disk name. WARNING: If you use this option, **sformat** is not able to check whether the disk has mounted partitions. This may damage mounted file systems.

−noparity Try to disable parity checking on all SCSI commands that are sent by **sformat.** This may not be possible in all implementations of the *scg*-driver.

−nowait Do not wait after formatting the disk. Normally, **sformat** will prompt for a modification of the disk label and partition table before starting to verify the disk. If this option is in effect, **sformat** will immediately start to verify the disk after formatting.

−no_defaults Do not set heuristic defaults. If this option is in effect, all disk parameters must be either retrievable from disk or, if not available, provided by the user.

−prdefect Get and print defect data. This may be used to print the manufacturer and grown defect list that is stored on the disk.

−prgeom Get and print geometry data. This is an old option but it is useful to get all mode pages that are supported by this disk.

−prcurgeom Get and print geometry data. This is basically the same as −*prgeom* except that −prgeom will obtain the default mode pages, −prcurgeom will report the current values.

−Proto This option will cause **sformat** to generate a data base entry for the current disk. Make sure that this data base entry will be generated with the correct format time. **Sformat** is able to compute a format time from the disk geometry, but newer disks seem to need more time than computed. If the format time is too short, the formatting may be aborted and the disk will not be accessible until formatted again completely.

−r reformat only mode (gives less messages on label menu)

−randrw The random read/write test is a method to find problems that may be a result of first seeking to a new place on disk and then writing data to it as it is frequently done by the unix file system. This is usually caused by an inode or super block update. The above problems may be a result of bad bearings in the disk. If the disk does not produce errors while this test is running, there will no harm to the data on disk. However, if you assume that the disk is bad, the data on disk may get corrupted. To minimize the risk of data loss, the first block containing the disk label (partition) and the last block containing the sinfo data (a **sformat** specific area) will never be written to.

−reassign Reassign a list of blocks **sformat** will prompt for. This is the preferred command when trying to repair a block or a list of blocks with already known block addresses. If you don’t know the address of a defective block, use the −*repair* option. **Sformat** will first try to read the old content of the defective block and then try to refresh the data by writing the old data to the block. If it fails to write to the block, **sformat** will reassign the defective block. If the block does not cause errors after rewriting the data in it, **sformat** will ask if the block should be reassigned anyway. NOTE: there are many cases in which a block seems to be defective but actually is not. If for any reason, the disk will be powered off during writing or if there is electro magnetic noise the CRC for a block may get

corrupted without any physical harm to the magnetic media. These cases can be repaired by writing again to the block.

−refresh_only **Sformat** will not try to reassign a block that still fails after rewriting (refreshing) the data in it. This option is useful in conjunction with the −*reassign* and the −*repair* option.

−repair This is a combination of the −*verify* and −*reassign* option. **Sformat** will first verify the disk and then use the list of bad sectors found to repair the disk.

RW=# Number of random R/W loops that is used with the −*randrw* option. The default is the number of physical sectors / 100. This will not last too long and is enough to cover every cylinder of the disk.

−scsi_compliant Be as SCSI-compliant as possible. This will some old disk cause to fail in reporting mode pages correctly and may be used to see if a disk has these problems.

−seek Do *random* or *full stroke* seek tests on the disk. This is done by reading data; trying to do *full stroke* seek tests my be impossible because of the cache of the disk.

−setmodes Do a SCSI modeselect with all parameters, that would have been necessary for a format, but do not format the disk. This allows to modify the mode pages of a disk without reformatting it. If the −**smp** option is used in conjunction with −**setmodes** the mode parameters will not be saved. In this case, the mode parameters of the disk will return to their old values if a reset or a power cycle occurs.

−silent, −s Do not print out the status of failed commands.

−smp Do not try to save mode parameters when setting them. This option is useful if a nearly totally damaged disk must be reformatted. Some disk controllers, in this case will reject to format the disk if the area on disk where this data will be stored is not accessible before formatting the disk.

−start Send a SCSI START UNIT command to the device. This will normally spin up the spindle motor of a disk.

−stop Send a SCSI STOP UNIT command to the device. This will normally spin down the spindle motor of a disk.

timeout=# This option will set the default kernel timeout for all SCSI commands that are send by sformat to # seconds. The default value is 20 seconds. This option does not affect the timeout for the format command.

−tr, −t This is an option that is only useful with old **Adaptec** SCSI bridge controllers. These controllers are not able to deal with logical sector numbers in some cases. Therefore these numbers have to be translated to the *cylinder/head/bfi* form before. This is done by seeking to the named block and reading the sector header. It may fail if the block has a bad sector header.

V=# Set the number of verify passes that are done after formatting a disk to #. The default value is 5. In write verify mode, this number is doubled because **sformat** will alternate write verify and read verify passes in this case.

−verbose, −v be verbose. This options tells **sformat** to dump all SCSI command descriptor blocks and all data that is transferred to/from the target in hexadecimal form.

−verify This options starts **sformat** in verify disk (surface analysis) mode. Verifying a disk is a method that allows to scan for defects without modifying data on the disk. In this mode, the controller will read the disks without transferring data to the computer while all error recovery is disabled.

Vstart=# Set the first block for the −*verify*, −*repair*, −*randrw* or the −*seek* option to #. This is recommended when doing a surface analysis on large disks where is is

known that the bad sector is near the end of the disk.

Vend=# Set the last block for the *−verify*, *−repair*, *−randrw* or the *−seek* option to #. This is recommended when doing a surface analysis on large disks where is is known that the bad sectors are not at the end of the disk.

−wrveri If this option is used in while formatting a disk, it tells **sformat** to write verify the disk instead of only read verifying it after formatting. If it is used in combination with the *−verify* option, **sformat** will write verify the disk without prior formatting. In both cases, the old data on disk will be damaged. Write verifying a disk is recommended if the disk is older than two years or has unusual defects. Usual defects in this context are recovered read errors and defects that disappear when simply writing to the defect sector.

How To Answer Questions

There are four types of questions.

- Questions that can be answered with *yes* or *no*. Yes may be abbreviated with 'y' or 'Y'. These questions are always assumed to be answered with *no* if you simply enter *carriage return*. NOTE: the latter is always a *safe* answer. All questions that request confirmation for actions that may damage or modify data on disk are formed in such a way that answering them with *no* or *carriage return* will not harm any data. All answers to this type of questions except *[y]es* or *[Y]ES* are interpreted as if *no* has been entered.
- Questions that need a string as input. If you simply enter *carriage return* to this type of question, no modification of the default string will be done.
- Questions that need a word selected from a list of valid words as input. If you enter '?', you will get a list of possible input to that question. Each word is on a separate line an (in some cases) is followed by a explanation how to use it.
- Questions that need a number within a certain range. For this type of questions, **sformat** displays the current value and the valid range in parenthesis. The default radix for numbers is ten. If you need to enter a hexadecimal number precede it with *0x* if you need to enter an octal number, precede it with *0*.

  ^ Entering an accent circumflex '^' will set the value to the smallest possible

  $ Entering an dollar sign '$' will set the value to the greatest possible

  \+ Entering a *plus sign* will increment the current value by one.

  \- Entering a *minus sign* will decrement the current value by one.

  <CR> Entering a *carriage return* will not modify the current value. If the default value is -1, you need to supply a valid value to be allowed to leave the question menu.

All questions that do not request a simple string (second type of question) will accept a question mark '?' to display online help.

The SCSI Selection Menu

When **Sformat** is started without or with insufficient parameters, the SCSI menu mode is entered. A typical output in this case looks like:

```
sparky joerg > sformat
sformat SCSI format/analysis/repair utilities
Release 3.1, Copyright J. Schilling

scg0 at esp0 initiator id 7
scg1 at esp1 initiator id 7
```

```
scsibus0:
c0t0d0          0) 'Quantum ' 'XP34300         ' 'F76D' Disk
c0t1d0          1) 'SEAGATE ' 'ST11200N        ' '8334' Disk
                2) *
c0t3d0          3) 'TOSHIBA ' 'MK537FB/        ' '6258' Disk
                4) 'WANGTEK ' '5150ES SCSI-36  ' 'ESB6' Removable Tape
                5) 'EXABYTE ' 'EXB-8500-85QUE  ' '0428' Removable Tape
                6) 'TOSHIBA ' 'XM-3401TASUNSLCD' '3593' Removable CD-ROM
                7) HOST ADAPTOR
scsibus1:
c1t0d0,c1t0d1   10) 'EMULEX  ' 'MD21/S2     ESDI' 'D00 ' Disk
                11) *
c1t2d0          12) 'Maxoptix' 'T3-1304        ' '1.1c' Removable Disk
                13) *
                14) *
                15) *
                16) *
                17) HOST ADAPTOR
Select target -1 (0 - 12)/<cr>:
```

The line:

```
c0t0d0          0) 'Quantum ' 'XP34300         ' 'F76D' Disk
```

shows the canonical logical disk name (in this case **c0t0d0**), the menu number, the SCSI inquiry string and a description of the device type that was found on this SCSI target. The menu number is directly related to the SCSI target id of the device and the SCSI bus number. Number 3 is SCSI target # 3 on SCSI bus # 0. Number 12 is SCSI target # 2 on SCSI bus # 1. **Sformat** is currently not able to deal with more than 8 targets on a bus.

When selecting a target (.e.g. # 0), a logical unit selection menu will be displayed.

```
Select target -1 (0 - 6)/<cr>:0
scsibus0 target 0:
c0t0d0          0) 'Quantum ' 'XP34300         ' 'F76D' Disk
                1) 'Quantum ' 'XP34300         ' 'F76D' unsupported
                2) 'Quantum ' 'XP34300         ' 'F76D' unsupported
                3) 'Quantum ' 'XP34300         ' 'F76D' unsupported
                4) 'Quantum ' 'XP34300         ' 'F76D' unsupported
                5) 'Quantum ' 'XP34300         ' 'F76D' unsupported
                6) 'Quantum ' 'XP34300         ' 'F76D' unsupported
                7) 'Quantum ' 'XP34300         ' 'F76D' unsupported
Select lun -1 (0 - 7)/<cr>:
```

The logical unit menu has the same structure as the SCSI target menu. If the device description contains the word *unsupported*, the controller is not able to support a logical unit of this number. If the device description contains the word *unit not present*, the controller is able to support a logical unit of this number but there is actually no device connected.

When selecting a specific logical unit, the main thread is entered as if a complete SCSI target specification has been entered from the command line.

Following The Main Thread

If the main formatting thread is entered, the following stages are encountered:

Mapping and checking The first thing **sformat** does, is to map the SCSI target/lun/busid triplet into a logical disk name and to check if some part of the disk is currently mounted. This mapping will be skipped if the *−nomap* options is specified. If the disk is

mounted, the user will be asked if it is ok to continue.
Note: this is currently the one and only question.

Inquiry
: The second action is getting the inquiry data from the device. The device type is determined from this data.

Test if device is ready
: The next action is to test whether the device is ready and to wait for the device to become ready. When the device is ready, it is recalibrated.

Exit for wrong device type
: When the device is not a disk, a worm media or optical memory, **sformat** terminates.

Read sinfo data
: When the device is a disk, **sformat** tries to read the **sinfo** data from the disk. This allows the user to see if the device has been formatted with **sformat** before. If so, **sformat** will print out the number of reformats and the date of the first and last format. **Sinfo** is .B sformat specific data that is hold on the last block of the disk.

Process special commands
: If options tell **sformat** to take special actions (like *−start* or *−prdefect*), they are done here. **Sformat** terminates after processing them.

The formatting procedure starts
: The next actions are in preparation for formatting the disk. Several other things can be done from this thread. Modifying the disk label will be one example. You need not to be in fear that following this thread will modify or harm data on the disk. There will be extra questions that secure this case.

Test whether the disk is formatted
: Several procedures differ if the disk is already formatted and has a valid label.

The next parts of the main thread will give you some questions to answer. You may skip most of the questions if you do not want to modify anything.

If some data that is definitely needed by **sformat** can not be determined from the disk or the data base, **sformat** will force you to answer all questions of a group. **Sformat** will only ask question for parameters that are definitely needed or may be changed on the current disk. The content of the menus differ from disk to disk.

Read mode data
: Several mode pages of the disk are read. This data and the inquiry data is used to search in the disk data base.
Sformat asks:
Ignore database disk parameters from 'sformat.dat'?
If you don't want the data from the data base to be used, negotiate the appropriate question. Some disks cannot be determined from the fetchable data. This are mainly disks that are connected to a bridge controller e.g. a controller from ESDI to SCSI. **Sformat** is able to detect the right data in the data base for disks with changeable media e.g. optical disks that support different media with different capacity and geometry. If there is more than one possible entry for this disk in the data base,
sformat asks:
Select alternate disk type?
If the disk type menu is entered, all possible data base entries are displayed. The current entry is marked with '∗', the default entry is marked with '+' and the entry most similar to the current disk is marked with '~'. A matching factor is displayed in parenthesis. Higher values are indicating a better match.

Read in label data
: If the disk is already formatted, **sformat** reads in the label and ask whether to remember this

data.
Sformat asks:
Ignore old disk Label?
I you confirm this question and reformat the disk, the old partitioning information will be lost.

Disk Parameters Menu
If you want to modify some disk parameters answer the next question with 'y'.
Sformat asks:
Modify Disk Geometry Parameters?
This enables to modify basic data on geometry, the interleaving factor and the defect management system. If you want to do spindle synchronization, activate it here.

Error Recovery
Error recovery parameters include read/write retry count and similar.
Sformat asks:
Modify Error recovery Parameters?

Disconnect Parameter
Disconnect parameters are buffer full/empty ratio and bus inactivity limit.
Sformat asks:
Modify Disconnect Parameters

Alternate Label
If you want to use an alternate label that may be in the data base go into the next menu.
Sformat asks:
Select alternate Label?
The current entry is marked with '*', the default entry is marked with '+'.

Logical Label Geometry
Sformat uses an abstract geometry in the label. This allows to have one label for a group of disks. The label geometry menu allows to modify this abstract geometry.
Sformat asks:
Modify Label Geometry Parameters?

SCSI Parameters
This menu contains questions about command queuing, defect list format and similar. Some disks do not support the default block defect list format. Specify another format in this case here. If the disk does not support the SCSI write-verify command, **sformat** allows to split this into a SCSI write and a SCSI verify command. The data cannot be compared in this case. If the disk type is generally flaky a data base entry can be set up to do write verify as default after formatting. If the disk will not handle 1000 blocks per verify command because of a firmware bug, a smaller value may be specified here.
Sformat asks:
Modify SCSI Parameters?

Grown Defect List
If a disk has not been formatted before or has been refurbished, you should clear the old grown defect list to get a clean start. If the disk has bad blocks, **sformat** will find them after formatting while doing the surface analysis. If the disk has known defects you should negotiate the next question to keep the defect list.
Sformat asks:
Clear old grown defect list?

Mode pages
If you want to format the disk, you need to set the mode pages before.
Sformat asks:
Set mode pages (needed for format)?
However, if you do not want to format the disk, you may negotiate this question and will be

lead to the label modification menu.

Formatting the disk

The next question is the last one you will be asked before starting to format the disk. If formatting has started, you will see the progress of this process indicated in the used up percentage of the estimated time.
Sformat asks:
Format Disk destroys all Data. Really?
If you only want to set the mode pages, you may this question with 'n'.

Creating and modifying the disk label

After the disk has been formatted or if the formatting has been denied, the label menu is entered.
Sformat asks:
Print disk label?
If you want to see the current layout of the disk label, enter 'y'.
Sformat asks:
Modify disk label?
If you want to modify the disk label enter 'y'.

Inside the label modification menu

Sformat asks:
Label: <Quantum XP34300> change ?
If you want to retain the old label name, enter <CR>, else enter 'y'. **Sformat** will ask for the new Label name.
Sformat asks:
Enter disk label: Quantum XP34300
You are left in the tty line edit mode and may modify the input line (see termio(7) manual page).
Sformat asks:
Volume Name: <> change ?
If you want to retain the old label name, enter <CR>, else enter 'y'. **Sformat** will ask for the new Volume name.
Sformat asks:
Change partition table?
If you want to change the partition table enter 'y'.
Sformat asks:
Part Tag Flag Cylinders Startsec # of Sec Size Blocks
0 root wm 0 - 30 0 67580 32.99MB (31/0/0)
Change ?
If you want to modify this partition enter 'y', otherwise enter <CR> until **sformat** asks for the partition you want to change.
Sformat asks:
Enter partition id Tag [root]:
Enter <CR> if the partition tag is ok for this partition, otherwise enter '?' to get a list of valid partition tags or enter the new partition tag.
Sformat asks:
Enter partition permission Flags [wm]:
Enter <CR> if the partition flag is ok for this partition, otherwise enter '?' to get a list of valid partition flags or enter the new partition flag.
Sformat asks:
Enter starting cylinder 0 (0 - 3851)/<cr>:
Enter <CR> if the starting cylinder is ok for this partition, otherwise enter '?' to get a list of possible input. XXX
Sformat asks:

Enter number of blocks 67580, 31/0/0 (0 - 8395180)/<cr>:
Enter <CR> if the size is ok for this partition, otherwise enter '?' to get a list of possible input. XXX
Sformat asks:
Part Tag Flag Cylinders Startsec # of Sec Size Blocks
0 root wm 0 - 30 0 67580 32.99MB (31/0/0)
Ok ?
Enter <CR> if you still want to modify the partition record. You then will be asked again for all parameters of this partition. Enter 'y' if this partition is now ok.

If all partitions are cycled through, **sformat** will display the current label.
Sformat asks:
Use this label?
If you enter 'y', **sformat** will update the label on disk and go into the verify mode. Anything else will put you into the label modification mode again.

Disk Verification

In disk verification mode, **sformat** will do a surface analysis. If a bad block is encountered, **sformat** will reassign this bad block. XXX

How To Format A Disk

The number of defects that SCSI disks can handle depends on the defect mapping system they use. There are several possible systems:

The mapping system depends on the # of tracks per zone in the SCSI disk parameters. Mapping area in this table means spare location.

1) One mapping area at the end of the disk. (tpz == 0)

2) One mapping area per track. (tpz == 1)

3) One mapping area per cylinder. (tpz == nhead)

4) Some mapping areas on on the disk (tpz > nhead)

If all the space in the defect spare locations above is used up, there still may be an additional mapping area at the end of the disk. This is controlled by the alternate tracks per volume parameter.

If your disk says *no defect spare location,* you may be able to get extra space by going into the disk parameter menu of sformat and change a value. Note: some disks tell you that some of the values are changeable (there is a range in parenthesis) but actually ignore the new value. You will have to read the values after formatting to see if the new parameters are in effect.

How To Modify A Label

Remember, don't panic. You need no desc calculator to create or modify a partition table.

The alternate cylinders are historic relics. In good old days (1982) when SMD disks that were not able to do defect mapping have been used, these alternates were added to do the defect mapping in the driver. In these days the space occupied by these spare cylinders really has been used as alternate (spare) space.

Currently they are only used for some copies of the primary disk label and an outdated copy of the defect list is only able to hold 127 defects :-(.

The label geometry cannot be changed in the partition menu. It must be set before from the **Label Parameters** menu.

Print disk label? If this question is answered with 'y', the label and partitioning info will be displayed.

Modify disk label? If this question is answered with 'y', the label modification menu will be entered.

Label: <Toshiba 1015MB> change ?
If this question is answered with 'y', the name of the label nay be modified.

Volume Name: <5.3> change ? If this question is answered with 'y', the system V volume name may be altered.

Change partition table? If this question is answered with 'y', a partition menu will be displayed.

Use this label?

Graphical Label Display

When printing the label or partition data, **sformat** uses a simple ASCII graphical display to visualize the layout of the partitions. The symbols used in this graphic display are described below.

Example:

```
a I--/
b    /-----------/
c I-----------------------------------------------------------------------I
d partition not defined
e             <--/
f                /--------/
g                                        <-------------------------------I
h                         /----------------------------------------------I
WARNING:
part 'e' has unaligned start.
part 'g' has unaligned start.
```

Used symbols:

I Used to mark the start end the end of the disk (no error).

X Partition starts before zero or exceeds end of disk.

/ Partition has an adjacent start or end with another partition (no error).

+ Two or mode partitions have the start or the end at the same position on the disk but no other partition connects to this point. This is an error that indicates that there may be unused space on the disk.

< This partition does not connect to another partition on it's beginning. This is an error that indicates that there may be unused space on the disk.

> This partition does not connect to another partition on it's end. This is an error that indicates that there may be unused space on the disk.

* Internal error in the check routines (should never happen).

Errors:

ends behind lncyl Partition is bigger than possible.

One or more parts are not within range of part 'c'!
Partition 'c' (2) should be the whole disk. This warning indicates a disk that deviates from this rule.

Warnings:

unaligned start The partition starts not in conjunction to another partition.

unaligned end The partition ends not in conjunction to another partition.

space before start	There is no partition that uses the space between the beginning of the disk and the beginning of this partition.
space after end	There is no partition that uses the space between the end of this partition and the end of the disk.

Creating Disk Database Entries
EXAMPLES
FILES
SEE ALSO
DIAGNOSTICS
NOTES
BUGS

This is a draft of the manual changes may be daily.

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