NAME

gvinum - Logical Volume Manager control program

DEPRECATION NOTICE

gvinum and associated geom(4) kernel support is deprecated, and may not be available in FreeBSD 14.0 and later. Users are advised to migrate to gconcat(8), gmirror(8), gstripe(8), graid(8), or zfs(8). More information is available at *https://wiki.freebsd.org/DeprecationPlan/gvinum*.

SYNOPSIS

gvinum [*command*] [**-options**]

COMMANDS

attach *plex volume* [**rename**]

attach *subdisk plex* [*offset*] [**rename**]

Attach a plex to a volume, or a subdisk to a plex. If offset is specified, the subdisk will be attached to the given offset within the plex. If rename is specified, the subdisk or plex will change name according to the object it attaches to.

checkparity [**-f**] *plex*

Check the parity blocks of a RAID-5 plex. The parity check will start at the beginning of the plex if the **-f** flag is specified, or otherwise at the location of the parity check pointer, the first location at which plex's parity is incorrect. All subdisks in the plex must be up for a parity check.

concat [**-fv**] [**-n** *name*] *drives*

Create a concatenated volume from the specified drives. If no name is specified, a unique name will be set by **gvinum**.

create [**-f**] [*description-file*]

Create a volume as described in *description-file*. If no *description-file* provided, opens an editor and provides the current **gvinum** configuration for editing. The **-f** flag will make gvinum ignore any errors regarding creating objects that already exists. However, in contrast to vinum, objects that are not properly named in the *description-file* will not be created when the **-f** flag is given.

detach [**-f**] [*plex* | *subdisk*]

Detach a plex or subdisk from the volume or plex to which it is attached.

grow *plex device*

Grow a plex by creating a gvinum drive and subdisk on device and attach it to the plex. If

required by the plex organization, it will be put into the growable state.

help Provides a synopsis of **gvinum** commands and arguments.

l | **list** [**-rvV**] [*volume* | *plex* | *subdisk*]

ld [**-rvV**] [*drive* ...]

ls [**-rvV**] [*subdisk* ...]

lp [**-rvV**] [*plex* ...]

lv [**-rvV**] [*volume* ...]
List information about the relevant object(s). The **-r** flag provides recursive display, showing each object's subordinate objects in proper relation. The **-v** and **-V** flags provide progressively more detailed output.

mirror [**-fsv**] [**-n** *name*] *drives*
Create a mirrored volume from the specified drives. It requires at least a multiple of 2 drives. If no name is specified, a unique name will be set by gvinum. If the **-s** flag is specified, a striped mirror will be created, and thus requires a multiple of 4 drives.

move | **mv -f** *drive subdisk* [...]
Move the subdisk(s) to the specified drive. The **-f** flag is required, as all data on the indicated subdisk(s) will be destroyed as part of the move. This can currently only be done when the subdisk is not being accessed.

If a single subdisk is moved, and it forms a part of a RAID-5 plex, the moved subdisks will need to be set to the "stale" state, and the plex will require a **start** command. If multiple subdisk(s) is moved, and form part of a RAID-5 plex, the moved disk(s) will need to be set to the "up" state and the plex will require a **rebuildparity** command. If the subdisk(s) form part of a plex that is mirrored with other plexes, the plex will require restarting and will sync once restarted. Moving more than one subdisk in a RAID-5 plex or subdisks from both sides of a mirrored plex volume will destroy data. Note that parity rebuilds and syncing must be started manually after a move.

printconfig
Write a copy of the current configuration to standard output.

quit Exit **gvinum** when running in interactive mode. Normally this would be done by entering the EOF character.

raid5 [**-fv**] [**-s** *stripesize*] [**-n** *name*] *drives*
Create a RAID-5 volume from the specified drives. If no name is specified, a unique name will be set by **gvinum**. This organization requires at least three drives.

rename [**-r**] *drive* | *subdisk* | *plex* | *volume newname*
Change the name of the specified object. The **-r** flag will recursively rename subordinate objects.

Note that device nodes will not be renamed until **gvinum** is restarted.

rebuildparity [**-f**] *plex*
Rebuild the parity blocks of a RAID-5 plex. The parity rebuild will start at the beginning of the plex if the **-f** flag is specified, or otherwise at the location of the parity check pointer. All subdisks in the plex must be up for a parity check.

resetconfig [**-f**]
Reset the complete **gvinum** configuration.

rm [**-r**] *volume* | *plex* | *subdisk*
Remove an object and, if **-r** is specified, its subordinate objects.

saveconfig
Save **gvinum** configuration to disk after configuration failures.

setstate [**-f**] *state volume* | *plex* | *subdisk* | *drive*
Set state without influencing other objects, for diagnostic purposes only. The **-f** flag forces state changes regardless of whether they are legal.

start Read configuration from all vinum drives.

start [**-S** *size*] *volume* | *plex* | *subdisk*
Allow the system to access the objects. If necessary, plexes will be synced and rebuilt. If a subdisk was added to a running RAID-5 or striped plex, gvinum will expand into this subdisk and grow the whole RAID-5 array. This can be done without unmounting your filesystem. The **-S** flag is currently ignored.

stop [**-f**] [*volume* | *plex* | *subdisk*]
Terminate access to the objects, or stop **gvinum** if no parameters are specified.

stripe [**-fv**] [**-n** *name*] *drives*
Create a striped volume from the specified drives. If no name is specified, a unique name will be

set by **gvinum**. This organization requires at least two drives.

DESCRIPTION

The **gvinum** utility communicates with the kernel component of the GVinum logical volume manager. It is designed either for interactive use, when started without command line arguments, or to execute a single command if the command is supplied on the command line. In interactive mode, **gvinum** maintains a command line history.

OPTIONS

The **gvinum** commands may be followed by an option.

-f The **-f** ("force") option overrides safety checks. It should be used with extreme caution. This option is required in order to use the **move** command.

-r The **-r** ("recursive") option applies the command recursively to subordinate objects. For example, in conjunction with the **lv** command, the **-r** option will also show information about the plexes and subdisks belonging to the volume. It is also used by the **rename** command to indicate that subordinate objects such as subdisks should be renamed to match the object(s) specified and by the **rm** command to delete plexes belonging to a volume and so on.

-v The **-v** ("verbose") option provides more detailed output.

-V The **-V** ("very verbose") option provides even more detailed output than **-v**.

ENVIRONMENT

EDITOR The name of the editor to use for editing configuration files, by default vi(1) is invoked.

FILES

/dev/gvinum directory with device nodes for **gvinum** objects

EXAMPLES

To create a mirror on disks /dev/ada1 and /dev/ada2, create a filesystem, mount, unmount and then stop **gvinum**:

```
gvinum mirror /dev/ada1 /dev/ada2
newfs /dev/gvinum/gvinumvolume0
mount /dev/gvinum/gvinumvolume0 /mnt
...
unmount /mnt
gvinum stop
```

To create a striped mirror on disks /dev/ada1 /dev/ada2 /dev/ada3 and /dev/ada4 named "data" and create a filesystem:

```
gvinum mirror -s -n data /dev/ada1 /dev/ada2 /dev/ada3 /dev/ada4
newfs /dev/gvinum/data
```

To create a raid5 array on disks /dev/ada1 /dev/ada2 and /dev/ada3, with stripesize 493k you can use the raid5 command:

```
gvinum raid5 -s 493k /dev/ada1 /dev/ada2 /dev/ada3
```

Then the volume will be created automatically. Afterwards, you have to initialize the volume:

```
gvinum start myraid5vol
```

The initialization will start, and the states will be updated when it's finished. The list command will give you information about its progress.

Imagine that one of the drives fails, and the output of 'printconfig' looks something like this:

```
drive gvinumdrive1 device /dev/ada2
drive gvinumdrive2 device /dev/???
drive gvinumdrive0 device /dev/ada1
volume myraid5vol
plex name myraid5vol.p0 org raid5 986s vol myraid5vol
sd name myraid5vol.p0.s2 drive gvinumdrive2 len 32538s driveoffset 265s
plex myraid5vol.p0 plexoffset 1972s
sd name myraid5vol.p0.s1 drive gvinumdrive1 len 32538s driveoffset 265s
plex myraid5vol.p0 plexoffset 986s
sd name myraid5vol.p0.s0 drive gvinumdrive0 len 32538s driveoffset 265s
plex myraid5vol.p0 plexoffset 0s
```

Create a new drive with this configuration:

```
drive gdrive4 device /dev/ada4
```

Then move the stale subdisk to the new drive:

```
gvinum move gdrive4 myraid5vol.p0.s2
```

Then, initiate the rebuild:

```
gvinum start myraid5vol.p0
```

The plex will go up form degraded mode after the rebuild is finished. The plex can still be used while the rebuild is in progress, although requests might be delayed.

Given the configuration as in the previous example, growing a RAID-5 or STRIPED array is accomplished by using the grow command:

```
gvinum grow myraid5vol.p0 /dev/ada4
```

If everything went ok, the plex state should now be set to growable. You can then start the growing with the **start** command:

```
gvinum start myraid5vol.p0
```

As with rebuilding, you can watch the progress using the **list** command.

For a more advanced usage and detailed explanation of gvinum, the handbook is recommended.

SEE ALSO

geom(4), geom(8)

HISTORY

The **gvinum** utility first appeared in FreeBSD 5.3. The **vinum** utility, on which **gvinum** is based, was written by Greg Lehey.

The **gvinum** utility was written by Lukas Ertl. The **move** and **rename** commands and documentation were added by Chris Jones through the 2005 Google Summer of Code program. A partial rewrite of gvinum was done by Lukas Ertl and Ulf Lilleengen through the 2007 Google Summer of Code program. The documentation have been updated to reflect the new functionality.

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BUGS

Currently, **gvinum** does not rename devices in */dev/gvinum* until reloaded.

The **-S** initsize flag to **start** is ignored.

Moving subdisks that are not part of a mirrored or RAID-5 volume will destroy data. It is perhaps a bug to permit this.

Plexes in which subdisks have been moved do not automatically sync or rebuild parity. This may leave data unprotected and is perhaps unwise.

Currently, **gvinum** does not yet fully implement all of the functions found in **vinum**. Specifically, the following commands from **vinum** are not supported:

debug Cause the volume manager to enter the kernel debugger.

debug *flags*
Set debugging flags.

dumpconfig [*drive* ...]
List the configuration information stored on the specified drives, or all drives in the system if no drive names are specified.

info [**-vV**]
List information about volume manager state.

label *volume*
Create a volume label.

resetstats [**-r**] [*volume* | *plex* | *subdisk*]
Reset statistics counters for the specified objects, or for all objects if none are specified.

setdaemon [*value*]
Set daemon configuration.