NAME
> **chio** - medium changer control utility

SYNOPSIS
> **chio** [**-f** *changer*] *command* [**-<flags>**] *arg1 arg2* [*arg3* [...]]

DESCRIPTION
> The **chio** utility is used to control the operation of medium changers, such as those found in tape and optical disk jukeboxes.

> The options are as follows:

> **-f** *changer*
>> Use the device *changer* rather than the default device */dev/ch0*.

> A medium changer apparatus is made up of *elements*. There are five element types: *picker* (medium transport), *slot* (storage), *portal* (import/export), *drive* (data transfer), and *voltag* (select by volume identifier). The *voltag* pseudo-element type allows the selection of tapes by their volume tag (typically a barcode on the tape).

> In this command description, the shorthand *ET* will be used to represent an element type, and *EU* will be used to represent an element unit. For example, to represent the first robotic arm in the changer, the *ET* would be "picker" and the *EU* would be "0".

SUPPORTED COMMANDS
> **move** *<from ET> <from EU> <to ET> <to EU>* [**inv**]
>> Move the media unit from *<from ET/EU>* to *<to ET/EU>*. If the optional modifier **inv** is specified, the media unit will be inverted before insertion.

> **exchange** *<src ET> <src EU> <dst1 ET> <dst1 EU>* [*<dst2 ET> <dst2 ET>*] [**inv1**] [**inv2**]
>> Perform a media unit exchange operation. The media unit in *<src ET/EU>* is moved to *<dst1 ET/EU>* and the media unit previously in *<dst1 ET/EU>* is moved to *<dst2 ET/EU>*. In the case of a simple exchange, *<dst2 ET/EU>* is omitted and the values *<src ET/EU>* are used in their place. The optional modifiers **inv1** and **inv2** specify whether the media units are to be inverted before insertion into *<dst1 ET/EU>* and *<dst2 ET/EU>* respectively.

>> Note that not all medium changers support the **exchange** operation; the changer must have multiple free pickers or emulate multiple free pickers with transient storage.

> **return** *<from ET> <from EU>*

Return the media unit to its source element. This command will query the status of the specified media unit, and will move it to the element specified in its source attribute. This is a convenient way to return media from a drive or portal to its previous element in the changer.

position *<to ET>* *<to EU>* [**inv**]

Position the picker in front of the element described by *<to ET/EU>*. If the optional modifier **inv** is specified, the media unit will be inverted before insertion.

Note that not all changers behave as expected when issued this command.

params

Report the number of slots, drives, pickers, and portals in the changer, and which picker unit the changer is currently configured to use.

getpicker

Report which picker unit the changer is currently configured to use.

setpicker *<unit>*

Configure the changer to use picker *<unit>*.

ielem [*<timeout>*]

Perform an *INITIALIZE ELEMENT STATUS* operation on the changer. The optional *<timeout>* parameter may be given to specify a timeout in seconds for the operations. This may be used if the operation takes unusually long because of buggy firmware or the like.

voltag [**-fca**] *<ET>* *<EU>* [*<label>*] [*<serial>*]

Change volume tag for an element in the media changer. This command is only supported by few media changers. If it is not supported by a device, using this command will usually result in an "Invalid Field in CDB" error message on the console.

If the **-c** flag is specified, the volume tag of the specified element is cleared. If the **-f** flag is specified, the volume tag is superseded with the specified volume tag even if a volume tag is already defined for the element. It is an error to not specify the **-f** flag when trying to set a label for an element which already has volume tag information defined.

The command works with the primary volume tag or, if the **-a** flag is given, with the alternate volume tag.

status [**-vVsSbIa**] [*<type>*]

Report the status of all elements in the changer. If *<type>* is specified, report the status of all

elements of type *<type>*.

-v   Print the primary volume tag for each loaded medium, if any. The volume tag is printed as "<LABEL:SERIAL>".

-V   Print the alternate volume tag for each loaded medium, if any.

-s   Print the additional sense code and additional sense code qualifier for each element.

-S   Print the element source address for each element.

-b   Print SCSI bus information for each element. Note that this information is valid only for drives.

-I   Print the internal element addresses for each element. The internal element address is not normally used with this driver. It is reported for diagnostic purposes only.

-a   Print all additional information (as in **-vVsSba**).

The status bits are defined as follows:

FULL Element contains a media unit.

IMPEXP
        Media was deposited into element by an outside human operator.

EXCEPT
        Element is in an abnormal state.

ACCESS
        Media in this element is accessible by a picker.

EXENAB
        Element supports passing media (exporting) to an outside human operator.

INENAB
        Element supports receiving media (importing) from an outside human operator.

ENVIRONMENT
    CHANGER The default changer may be overridden by setting this environmental variable to the desired changer device.

FILES

    /dev/ch0 default changer device

EXAMPLES

    chio move slot 3 drive 0

           Move the media in slot 3 (fourth slot) to drive 0 (first drive).

    chio move voltag VOLUME01 drive 0

           Move the media with the barcode VOLUME01 to drive 0 (first drive).

    chio return drive 0

           Remove the tape from drive 0 (first drive) and return it to its original location in the rack.

    chio setpicker 2

           Configure the changer to use picker 2 (third picker) for operations.

SEE ALSO

    mt(1), mount(8)

HISTORY

    A **chio** utility appeared in NetBSD 1.3. **chio** first appeared in FreeBSD 2.2.

AUTHORS

    The **chio** program and SCSI changer driver were written by Jason R. Thorpe *<thorpej@and.com>* for And Communications, *http://www.and.com/*.

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