Red Hat Enterprise Linux Release 9.2 Manual Pages on 'iprconfig.8' command

$ man iprconfig.8

IPRCONFIG(8)   System Manager's Manual   IPRCONFIG(8)

NAME

   iprconfig - IBM Power RAID storage adapter configuration/recovery util?

   ity

SYNOPSIS

   iprconfig [-e editor] [-k dir] [-c command]

   iprconfig --version --debug --force

DESCRIPTION

   iprconfig is used to configure IBM Power RAID storage adapters, display

   information about them, and to perform adapter and disk unit recovery.

   The menu options are:

   1. Display hardware status.

   This option can be used to display various information regarding the

   IBM Power RAID adapters attached to the system and the disk units con?

   trolled by them. For each adapter and disk unit, their /dev name, phys?

   ical location, description, vendor/product ID, and hardware status will

   be available. Beside each resource is an OPT field. By entering a 1 be?

   side any resource, detailed information about that resource can be ob?

   tained. For an adapter resource, this will display the adapter firmware

   version and the physical location amongst other things.

   2. Work with Disk Arrays

   This option will present a second menu containing disk array related

   commands.

Display disk array status is used to display the status of disk arrays on the system.

Create a disk array is used to create a disk array.

Delete a disk array is used to delete disk arrays. Selecting this op‐tion will provide you with a list of disk arrays which can be deleted.

Add a device to a disk array is used to include devices of similar ca‐pacity into an existing disk array. This function is currently only supported for RAID 5 and RAID 6 disk arrays.

Format device for advanced function is used to format disks to 522 bytes/sector so that they may be used in a disk array. Only disks which are not formatted for advanced function or are formatted for advanced function but are not known to be zeroed will be available for selection for this function.

Format device for JBOD function (512) is used to format disks to 512 bytes/sector so that they may be used as standalone disks. Only disks which are not formatted for JBOD function or are formatted for JBOD function and are in the Format Required state will be available for this function.

Work with hot spares is used to create a hot spare which designates a device as a dedicated hot spare. It is also used to delete a hot spare which unconfigures a previously configured hot spare.

Work with asymmetric access is used to select which path of a disk ar‐ray will be the primary path in a dual controller environment. Asym‐metric Access must be enabled on the adapter first. Not all adapters support asymmetric access and adapters that do provide support may re‐quire updated microcode.

Force RAID Consistency Check is used to force a consistency check on a RAID array. All ipr adapters continually perform background consistency checking when idle. This option can be used to force a consistency check to be performed.

Migrate disk array protection is used to change the RAID protection level for an array to another supported level. In some cases, this will require adding more disks to the array. In other cases, disks

will be freed.

3. Work with disk unit recovery is used to perform the following disk unit recovery actions:

Concurrent add device is used to concurrently add a new disk to a run?ning system. This feature is only supported with SES (SCSI Enclosure Services) packaging.

Concurrent remove device is used to concurrently remove a disk from a running system. This feature is only supported with SES (SCSI Enclo?sure Services) packaging.

Initialize and format disk unit is used to issue a SCSI format command to attached devices. A format unit command has special meaning to the adapter and is used as a service action for certain error conditions. Formatting a disk unit will lose all data on that drive. If the disk is attached to an ipr adapter that does not support RAID, the drive will be formatted to 512 bytes/sector. If the disk is attached to an ipr RAID adapter, the block size will not be changed. To change the block size, use the format menu options under the disk arrays menu.

Reclaim IOA cache storage is used to repair cache error conditions. ATTENTION: Use this option with care. This is used to discard data from the cache and may result in data loss. This option is designed to be used by authorized IBM hardware customer engineers.

Rebuild disk unit data is generally used following concurrent mainte?nance. Select this option after a failing array member device has been replaced to reconstruct the device as an active array member.

Work with resources containing cache battery packs is used to display information regarding rechargeable cache battery packs and to force rechargeable cache battery packs into an error state so that they can be replaced prior to failure. ATTENTION: Once an error has been forced on a rechargeable cache battery pack write caching will be disabled un?til the battery pack is replaced.

4. Work with SCSI bus configuration is used to change configurable SCSI bus attributes, such as maximum SCSI bus speed, SCSI initiator ID, etc.

5. Work with driver configuration is used to change driver configurable

attributes, such as log_level.

6. Work with disk configuration is used to change configurable disk at?

tributes, such as queue depth.

7. Work with adapter configuration is used to change configurable

adapter attributes, such as dual adapter settings. Refer to the fol?

lowing command line options: primary, secondary, query-ha-mode, set-ha-

mode, set-ioa-asymmetric-access and set-array-asymmetric-access for

more information regarding these settings.

8. Download microcode is used to download microcode to ipr adapters and

attached SCSI disks.

9. Analyze Log is an option available to analyze /var/log/messages*

files. By default it will use vi as the editor to open the concatenated

error log files. This can be changed by using option 6 on the Kernel

Messages Log menu. Selecting option 1 on the Kernel Messages Log menu

will display only the most recent errors logged by the ipr device

driver and may be useful to filter out some of the clutter. Option 2

will display all recorded errors logged by the ipr device driver. Op?

tion 3 will display all kernel messages. Option 4 will display errors

logged by the iprconfig utility. This may be useful for debugging prob?

lems. Option 5 can be used to change where the tool looks to find the

kernel messages files. The default is to look in /var/log.

OPTIONS

-e editor

Default editor for viewing error logs. The default editor is vi,

but can be changed with this parameter.

-k directory

Kernel messages root directory. Root directory to look for ker?

nel messages. Default is /var/log.

-c command

Command line, non-interactive commands. Currently supported com?

mands include:

show-config

Show ipr configuration.

show-alt-config

    Show alternate ipr configuration information.

show-ioas

    Show all ipr adapters.

show-arrays

    Show all ipr arrays.

show-battery-info [IOA]

    Show cache battery information for specified IOA. Exam?

    ple:

    iprconfig -c show-battery-info sg5

show-details [device]

    Show device details for specified device. Example:

    iprconfig -c show-details sda

show-hot-spares

    Show all configured hot spares.

show-af-disks

    Show disks formatted for Advanced Function that are not

    configured in an array or as a hot spare.

show-all-af-disks

    Show all disks formatted for Advanced Function

show-jbod-disks

    Show all disks formatted for JBOD Function.

show-slots

    Show all disks slots available on the system.

status [device]

    Show the status of the specified device. This is the same

    status as which shows up in the last column of the Dis?

    play hardware status menu. Can specify either a /dev/sdX

    name or a /dev/sgX name. Example:

    iprconfig -c status /dev/sda

alt-status [device]

    Show the status of the specified device. This is the same

    status as above with the exception of when a long running

command is executing to the device, in which case the percent complete for the long running command is printed.

query-raid-create [IOA]

Show all devices attached to the specified IOA that are candidates for being used in a RAID array. Example:

iprconfig -c query-raid-create sg5

query-raid-delete [IOA]

Show all RAID arrays attached to the specified IOA that can be deleted.

iprconfig -c query-raid-delete sg5

query-hot-spare-create [IOA]

Show all devices attached to the specified IOA that are candidates for being hot spares.

query-hot-spare-delete [IOA]

Show all hot spares attached to the specified IOA that can be deleted.

query-raid-consistency-check

Show all RAID arrays that are candidates for a RAID con?sistency check.

query-format-for-jbod

Show all disks that can be reformatted for JBOD function.

query-reclaim

Show all IOAs that may need a reclaim cache storage.

query-arrays-raid-include

Show all RAID arrays that can have disks included in them to increase their capacity.

query-devices-raid-include [array]

Show all disks that can be added to the specified array to increase its capacity.

query-supported-raid-levels [IOA]

Show all RAID levels supported by the specified adapter.

query-include-allowed [IOA] [raid level]

Some RAID levels allow for adding additional disks to ex?

isting disk arrays to increase their capacity. Prints
"yes" to stdout if the specified RAID level supports this
function, else prints "no".

query-max-devices-in-array [IOA] [raid level]

Print the maximum number of devices allowed in a RAID ar?
ray of the specified RAID level for the specified RAID
adapter.

query-min-devices-in-array [IOA] [raid level]

Print the minimum number of devices allowed in a RAID ar?
ray of the specified RAID level for the specified RAID
adapter.

query-min-mult-in-array [IOA] [raid level]

Print the minimum multiple of devices required in a RAID
array of the specified RAID level for the specified RAID
adapter.

query-supp-stripe-sizes [IOA] [raid level]

Print all supported stripe sizes supported for RAID ar?
rays of the specified RAID level on the specified RAID
adapter. Stripe sizes are printed in units of KB.

query-recommended-stripe-size [IOA] [raid level]

Print the default/recommended stripe size for RAID arrays
of the specified RAID level on the specified RAID
adapter. Stripe size is in units of KB.

query-recovery-format

Show all disks that can be formatted for error recovery
purposes.

query-raid-rebuild

Show all disks in RAID arrays that can be rebuilt.

query-format-for-raid

Show all disks that can be formatted such that they can
be used in a RAID array or as a hot spare.

query-ucode-level [device]

Show the microcode level that is currently loaded on the

specified device. Note: The device specified may be the
sg device associated with an IOA, in which case the IOA's
microcode level will be shown.

ssd-report [device]

Display information about Read Intensive SSD devices in
the system.

show-ucode-levels

Show the microcode level that is currently loaded for ev?
ery device and adapter in the system. If newer microcode
is available on the filesystem than what is loaded on the
device, an * chararacter will be displayed next to the
device.

query-format-timeout [device]

Show the current format timeout to be used when format?
ting the specified disk. This value is only applicable
when the device is currently in Advanced Function format.

query-qdepth [device]

Show the queue depth currently being used for the speci?
fied disk.

query-tcq-enable [device]

Print 1 to stdout if tagged queuing is enabled for the
specified device, else print 0 to stdout.

query-log-level [IOA]

Print the current log level being used for the specified
IOA. Can be a number from 0 to n.

query-add-device

Show all empty disk slots that can have a disk concur?
rently added.

query-remove-device

Show all disk slots which are either empty or have disks
in them which can be concurrently removed from the run?
ning system.

query-initiator-id [IOA] [busno]

Show the current SCSI initiator ID used by the IOA for
the specified SCSI bus.

query-bus-speed [IOA] [busno]

Show the current maximum SCSI bus speed allowed on the
specified SCSI bus.

query-bus-width [IOA] [busno]

Show the current SCSI bus width in units of bits for the
specified SCSI bus.

query-path-status [IOA]

Show the current dual path state for the SAS devices at?
tached specified IOA.

query-path-details [device]

Show the current dual path details for the specified SAS
device.

query-arrays-raid-migrate

Show the arrays that can be migrated to a different pro?
tection level.

query-devices-raid-migrate [array]

Show the AF disks that are candidates to be used in a mi?
gration for a given array.

query-raid-levels-raid-migrate [array]

Show the protection levels to which the given array can
be migrated.

query-stripe-sizes-raid-migrate [array] [raid level]

Given an array and a protection level, show the valid
stripe sizes to which the array can be migrated.

query-devices-min-max-raid-migrate [array] [raid level]

Show the number of devices that will be removed for a mi?
gration to a protection level that requires fewer de?
vices. Or, show the minmum number of devices required,
the maximum number of devices allowed and the multiple of
the number of devices required for a migration that re?
quires more devices.

query-ioas-asymmetric-access

> Show the IOAs that support asymmetric access.

query-arrays-asymmetric-access

> Show the disk arrays that are candidates for setting
> their asymmetric access mode to Optimized or Non-Opti?
> mized.

query-ioa-asymmetric-access-mode [IOA]

> Show the current asymmetric access mode for the given
> IOA.

query-array-asymmetric-access-mode [array]

> Show the current asymmetric access mode for the given
> disk array.

query-ioa-caching [IOA]

> Show whether or not the user requested caching mode for
> the given IOA is set to default or disabled.

query-array-label [label]

> Show the device name of the array with the specified la?
> bel. Label must have been specified when creating the
> RAID array. See raid-create command.

query-array-rebuild-rate [IOA]

> Show the array rebuild rate for the given IOA.

query-array-rebuild-verify [IOA]

> Show whether array rebuild verification is enabled for
> the given IOA.

query-array [location]

> Show the device name of the array of which one of the
> disks in the array has the specified platform location
> code.

query-device [location]

> Show the device name of the disk that has the specified
> platform location code.

query-location [device]

> The device specified can be either the device name of a

disk or the device name of a single disk RAID 0 array. If the specified device name is a disk, the platform loca?
tion code will be displayed. If the specified device name is a single device RAID 0 array, the platform location of the disk which is a member of the specified array will be displayed.

query-write-cache-policy [device]

Show the current write cache policy for [device].

raid-create [-r raid_level] [-s stripe_size_in_kb] [-l label]
[--skip-format] [-c cache_policy] [devices...]

Create a RAID array. RAID level can be any supported RAID level for the given adapter, such as 0, 10, 5, 6. Cur?
rently supported stripe sizes in kb include 16, 64, and 256. If raid_level is not specified, it will default to RAID 5. If stripe size is not specified, it will default to the recommended stripe size for the selected RAID level. Available cache policies are the same that can be passed to set-write-cache-policy command. If none is specified, write back is assumed. Devices are specified with their full name, either the /dev/sd name or the /dev/sg name is acceptable. On some RAID adapters, a la?
bel can also be specified. Example array creation:

iprconfig -c raid-create -r 5 -s 64 /dev/sda /dev/sdb
/dev/sdc

This would create a RAID 5 array with a 64k stripe size using the specified devices.

raid-delete [RAID device]

Delete the specified RAID array. Specify either the /dev/sd name or the /dev/sg name. Only 1 array can be deleted with a single command. Example:

iprconfig -c raid-delete /dev/sda

This would delete the disk array represented by /dev/sda

raid-include [array] [disk] ... [disk]

Add the specified devices to the specified disk array to
increase its capacity. Example:

iprconfig -c raid-include sda sg6 sg7

raid-migrate -r raid_level [-s stripe_size_in_kb] array [disk]
... [disk]

Migrate an existing RAID array to a new RAID protection
level.   Optionally, a new stripe size can be given. In
some cases one or more new disks must be added for the
migration to succeed. Example:

iprconfig -c raid-migrate -r 10 -s 64 sda sg5 sg6

format-for-raid [disk] ... [disk]

Format the specified disks for Advanced Function so they
can be used in a RAID array or as a hot spare.

format-for-jbod [disk] ... [disk]

Format the specified disks for JBOD Function so they can
be used as standalone disks.

recovery-format [disk] ... [disk]

Format the specified disks as directed by the reference
guide for error recovery purposes.

hot-spare-create [disk]

Create a hot spare using the specified Advanced Function
disk.

hot-spare-delete [disk]

Delete the specified hot spare.

disrupt-device [disk]

Force the specified Advanced Function device failed.

reclaim-cache [IOA]

Reclaim the specified IOA's write cache. ATTENTION: Use
this option with care. This is used to discard data from
the cache and may result in data loss. This option is de?
signed to be used by authorized IBM hardware customer en?
gineers.

reclaim-unknown-cache [IOA]

Reclaim the specified IOA's write cache and allow unknown data loss. ATTENTION: Use this option with care. This is used to discard data from the cache and WILL result in data loss. This option is designed to be used by autho‐ rized IBM hardware customer engineers.

raid-consistency-check [array]

Force a full RAID consistency check on the specified ar‐ ray. This command will return before the RAID consistency check has completed. Use the status command to check the status of the command.

raid-rebuild [disk]

Following a disk replacement for a failed disk in a RAID array, use this command to rebuild the failed disk's data onto the new disk and return the disk array to the Active state.

update-ucode [device] [microcode file]

Update the microcode on the specified device (IOA or disk) with the specified microcode file. ATTENTION: Lim‐ ited checking of the microcode image is done. Make sure the specified microcode file is the correct file for the specified device.

update-all-ucodes

Update the microcode of every device with the latest ver‐ sion found in the system.

set-format-timeout [disk] [timeout in hours]

Set the format timeout to be used when formatting the specified disk.

set-qdepth [device] [queue depth]

Set the queue depth for the specified device or disk ar‐ ray.

set-tcq-enable [device] [0 = disable, 1 = enable]

Enable/disable tagged command queueing for the specified device.

set-log-level [IOA] [log level]

      Set the error logging verbosity to use for the specified

      IOA. Default is 2.

set-write-cache-policy [device] [writeback|writethrough]

      Set the write cache policy for [device]. Available poli?

      cies are writeback and writethrough. This command sup?

      ports JBOD disk (write cache) and Volume Sets (vset write

      cache). Example:

      iprconfig -c set-write-cache-policy sdp writeback

identify-disk [disk] [0 = turn off identify LED, 1 = turn on

identify LED]

      Turn on/off the disk identify LED for the specified disk.

      This function may or may not be available depending on

      the hardware packaging.

identify-slot [location] [0 = turn off identify LED, 1 = turn on

identify LED]

      Turn on/off the disk identify LED for the specified loca?

      tion. This function may or may not be available depending

      on the hardware packaging. Example:

      iprconfig -c identify-slot 0000:d8:01.0/0:1:1: 1

remove-disk [disk] [0 = turn off identify LED, 1 = turn on iden?

tify LED]

      Turn on/off the disk remove identify LED for the speci?

      fied device. When 1 is specified as the second argument,

      the specified disk is set to the remove state. When in

      this state, the disk may be removed. Once the disk has

      been physically removed, iprconfig must be invoked again

      with the second argument set to 0. This turns off the

      slot identifier light and logically removes the disk from

      the host operating system.

remove-slot [location] [0 = turn off identify LED, 1 = turn on

identify LED]

      Turn on/off the disk remove identify LED for the speci?

fied location. When 1 is specified as the second argu?

ment, the specified location is set to the remove state.

When in this state, the disk may be removed. Once the

disk has been physically removed, iprconfig must be in?

voked again with the second argument set to 0. This turns

off the slot identifier light and logically removes the

disk from the host operating system. Example:

iprconfig -c remove-slot 0000:d8:01.0/0:1:1: 1

add-slot [location] [0 = turn off identify LED, 1 = turn on
identify LED]

Turn on/off the disk insert identify LED for the speci?

fied location. When 1 is specified as the second argu?

ment, the specified location is set to the insert state.

When in this state, the disk may be inserted. Once the

disk has been physically inserted, iprconfig must be in?

voked again with the second argument set to 0. This turns

off the slot identifier light and logically adds the disk

to the host operating system. Example:

iprconfig -c add-slot 0000:d8:01.0/0:1:1: 1

set-initiator-id [IOA] [busno] [initiator id]

Set the IOA's SCSI initiator ID for the specified bus.

Must be a value between 0 and 7 and must not conflict

with any other device on the SCSI bus.

set-bus-speed [IOA] [busno] [speed in MB/sec]

Set the maximum SCSI bus speed allowed on the specified

SCSI bus.

set-bus-width [IOA] [busno] [bus width in # bits]

Set the SCSI bus width to use for the specified SCSI bus.

Example:

iprconfig -c set-bus-width sg5 0 16

primary [IOA]

Set the adapter as the preferred primary adapter. This is

used in dual initiator RAID configurations to indicate

which adapter should be the primary adapter. The primary

adapter should be the adapter receiving the majority of

the I/O. Example:

iprconfig -c primary sg5

secondary [IOA]

Set the adapter to indicate it is not the preferred pri?

mary adapter. See the notes for the preferred primary for

additional information. Example:

iprconfig -c secondary sg5

set-all-primary

Set all attached ipr adapters as the preferred primary

adapter. This can be used when running a dual initiator

RAID HA configuration.   This command can be run on the

primary system to quickly enable the preferred primary

mode for all attached adapters. Refer to /etc/ha.d/re?

source.d/iprha for an example of how this might be used.

Example:

iprconfig -c set-all-primary

set-all-secondary

Set all attached ipr adapters to indicate they are not

the preferred primary adapter. Example:

iprconfig -c set-all-secondary

query-ha-mode [IOA]

When an adapter is configured in a highly available dual

adapter configuration, it may be able to be configured in

one of two ways. The default mode is Normal.   This mode

is used for all SCSI adapters and many SAS adapters.

Some SAS adapters also support a JBOD dual adapter con?

figuration. This mode is to be used when the dual adapter

configuration is to consist of JBOD disks rather than

RAID arrays. If the adapter is NOT going to be used in a

dual adapter configuration, this mode MUST be set to Nor?

mal. Example:

iprconfig -c query-ha-mode sg5

set-ha-mode [IOA] [Normal | RAID]

    Used to set the high-availability mode of the adapter.

    Refer to the query-ha-mode command for more information

    regarding these settings. Example:

    iprconfig -c set-ha-mode sg5 Normal

set-array-asymmetric-access-mode [array] [Optimized | Non-Opti?

mized]

    Used to set the asymmetric access mode of the disk array.

    Example:

    iprconfig -c set-array-asymmetric-access-mode sda Opti?

    mized

set-ioa-asymmetric-access-mode [IOA] [Enabled | Disabled]

    Used to set the asymmetric access mode of the IOA.

    Example:

    iprconfig -c set-ioa-asymmetric-access-mode sg5 Enabled

set-ioa-caching [IOA] [Default | Disabled]

    Used to set the requested caching mode of the IOA.

    Example:

    iprconfig -c set-ioa-caching sg5 Disabled

set-array-rebuild-verify [IOA] [enable | disable | default]

    Used to define whether to perform verification during an

    array rebuild.   Enabling this can affect performance.

    The default value is disabled.

    Example:

    iprconfig -c set-array-rebuild-rate sg5 disable

set-array-rebuild-rate [IOA] [Rebuild Rate | default]

    Used to set the rebuilt rate ratio of the IOA. [Rebuild

    Rate] must be in range 10..100. If 'default' is used, the

    IOA will reset to the implementation default rate.   The

    value actually configured may not be the exact rate con?

    figured by the user, but an approximation to the closest

    rate supported by the IOA.

Example:

iprconfig -c set-array-rebuild-rate sg5 10

get-live-dump [IOA]

Dump the IOA's implementation unique critical informa?

tion. The dump data will be saved in the /var/log/ direc?

tory with the pattern ipr-CCIN-PCI_ADDRESS-dump-TIME?

STAMP.

Example:

iprconfig -c get-live-dump sg5

dump   Display detailed hardware and system information on stan?

dard output. In case a report file is needed, the iprsos

command will create one at /var/log/iprsos.log.

Example:

iprconfig -c dump

--version

Print version number of iprconfig

--debug

Enable additional error logging. Enabling this will result in

additional errors logging to /var/log/messages.

--force

Disable safety checks. Use this to disable safety checks in

iprconfig. This will allow you to format devices that are not

at the appropriate code levels. Only use this option if you re?

ally know what you are doing.

AUTHOR

Brian King <brking@us.ibm.com>

NOTES

Notes on using under iSeries 5250 telnet

Only use this utility across 5250 telnet when there are no other op?

tions available to you. Since there may be occasions when 5250 telnet

is your only option to access your iSeries Linux console, every attempt

has been made to make this utility usable under 5250 telnet. By follow?

ing a few guidelines, you can make your 5250 telnet experience more

productive and much less frustrating.

1. First of all, it will be helpful to know how the keys are mapped un?

der 5250 telnet. From the 5250 telnet window, hit ESC. This will get

you to the Send TELNET Control Functions menu. Take option 6 to display

the keyboard map. Take note of how TAB, ESC, CTLC, and SENDWOCR are

bound. They will be useful in the future.

2. When selecting menu options, enter the menu number, followed by the

enter key, same as usual.

3. When typing single character commands (eg. r=Refresh), type the sin?

gle character followed by the SENDWOCR key (F11 by default).

4. When on a device/array/IOA selection screen (eg. Display Disk Unit

Details), do NOT use the arrow keys to navigate. Instead use the TAB

key (F7 by default) to navigate these screens.

5. Beware of the backspace and delete keys. As a rule do NOT use them.

6. When editing the root kernel message log directory or the default

editor, you may use the arrow keys, but not the backspace and delete

keys. Use the space bar to remove already typed characters.

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