Linux LUN_discovery tool set

https://github.com/Hitachi-Data-Systems/LUN_discovery

Allart Ian Vogelesang ian.vogelesang@hds.com

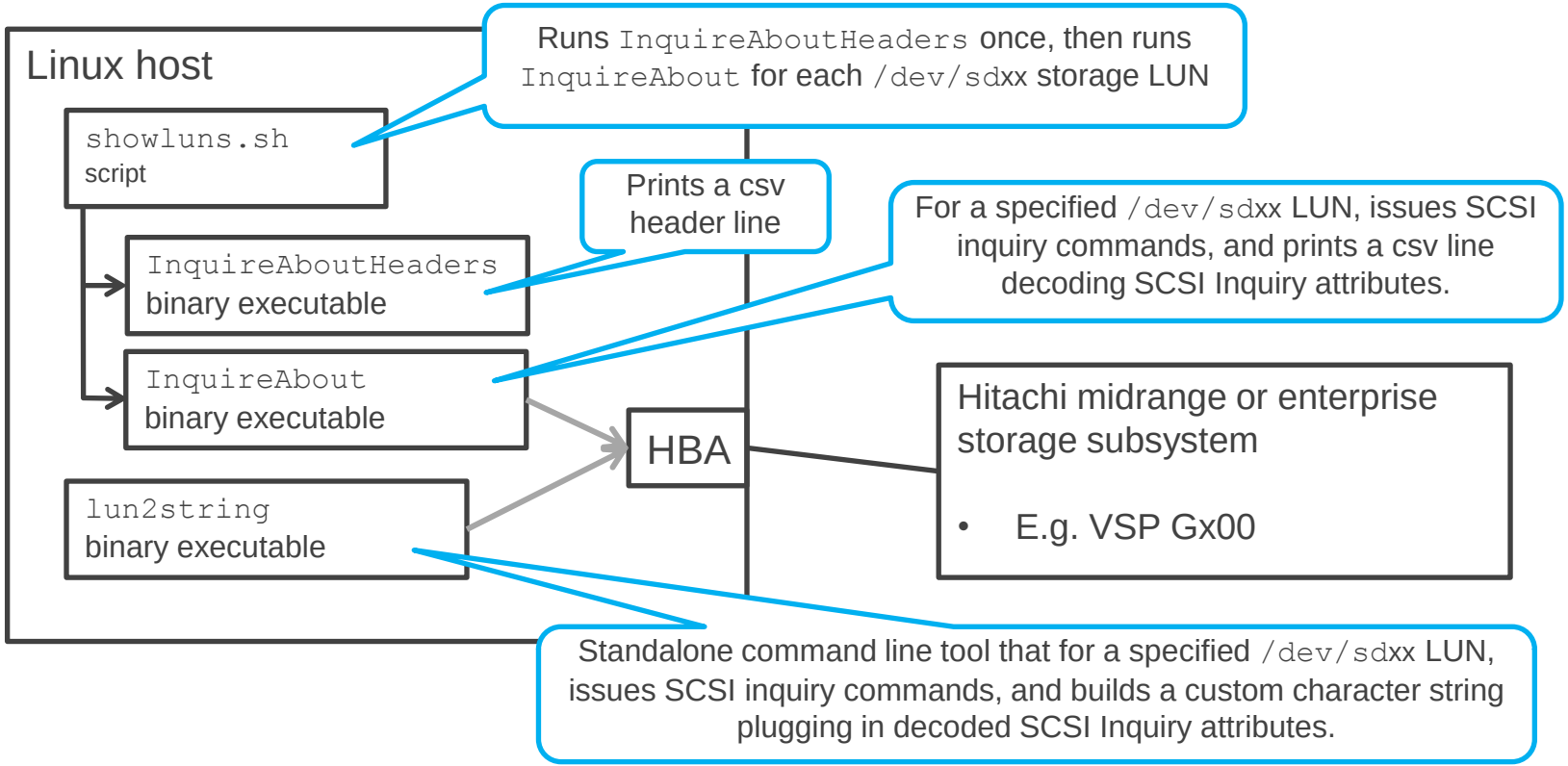
2016-05-24

LUN_discovery tool set

HITACHI
Inspire the Next

- A script, and 3 Linux command line executables to discover storage LUNs, and to use SCSI Inquiry commands to retrieve and decode attribute values for those LUNs.
- For all vendors' LUNs, obtain & print the standard SCSI Inquiry attributes
  - Vendor, Product, Product Revision
- For Hitachi RAID subsystems, obtain & print Hitachi vendor-specific attributes
  - E.g. Port, subsystem serial number, LDEV, LDEV type, CLPR, etc.

Linux LUN Discovery tool suite – 4 components



Sample output from `showluns.sh`

HITACHI
Inspire the Next

Line printed by `InquireAboutHeaders`

```
hostname,SCSI Bus Number (HBA),LUN Name,Hitachi Product,HDS Product,Serial
Number,Port,LUN 0-255,LDEV,Nickname,LDEV type,RAID level,Parity Group,Pool ID,CLPR,Max
LBA,Size MB,Size MiB,Size GB,Size GiB,Size TB,Size TiB,Vendor,Product,Product
Revision,SCSI_IOCTL_PROBE_HOST
```

Line printed by `InquireAbout`

```
blg37,1,/dev/sdf,HM800,VSP Gx00,410329,2C,4,00:10,,cmd dev,RAID-6,1-13,,CLPR0,-1,-
1.000000,-1.000000,-1.000000,-1.000000,-1.000000,-1.000000,HITACHI ,OPEN-V-CM
,8301,Emulex LPe16002B-M6 PCIe 2-port 16Gb Fibre Channel Adapter on PCI bus 03 device
00 irq 32 port 0 Log
```

Line printed by `InquireAbout`

```
blg37,1,/dev/sdb,HM800,VSP Gx00,410329,2C,0,00:6B,,DP-Vol,DP-
Vol,,1,CLPR0,2147483647,1099511.627776,1048576.000000,1099.511628,1024.000000,1.099512,
1.000000,HITACHI ,OPEN-V          ,8301,Emulex LPe16002B-M6 PCIe 2-port 16Gb Fibre
Channel Adapter on PCI bus 03 device 00 irq 32 port 0 Log
```

Line printed by `InquireAbout`

```
blg37,1,/dev/sdc,HM800,VSP Gx00,410329,2C,1,00:6C,,DP-Vol,DP-
Vol,,1,CLPR0,2147483647,1099511.627776,1048576.000000,1099.511628,1024.000000,1.099512,
1.000000,HITACHI ,OPEN-V          ,8301,Emulex LPe16002B-M6 PCIe 2-port 16Gb Fibre
Channel Adapter on PCI bus 03 device 00 irq 32 port 0 Log
```

Line printed by `InquireAbout`

```
blg37,0,/dev/sda,,,,,0,,,,,,,,584843263,299439.751168,285568.000000,299.439751,278.8750
00,0.299440,0.272339,LSI     ,MR9266-8i       ,3.15,LSI SAS based MegaRAID driver
```

LUN_discovery and "ivy"

HITACHI
Inspire the Next

- The LUN_discovery tool set is generally useful for Linux users.
  - It is expected that the LUN_discovery will be much more widely used than "ivy".
- "ivy" is a block storage synthetic load generator & benchmarking system
  - https://github.com/Hitachi-Data-Systems/ivy
  - The LUN_discovery tool set is not part of ivy, however ivy invokes the showluns.sh script on each test host to obtain a list of the LUNs available on that host.
  - Each LUN discovery column header (like LDEV, Port, or Pool ID) automatically becomes selectable in ivy.
  - For any other vendor, to provide support in "ivy" for that vendor's architecture & terminology, all that is necessary is to provide a similar SCSI Inquiry tool that produces a csv file with a header line defining attribute names, and a detail line for each LUN showing attribute values.

Usage

Invoking `showluns.sh`

HITACHI
Inspire the Next

- Just type "`showluns.sh`" – no operands
- Csv file with header line and detail line for each /dev/sdxx LUN is printed to standard output.

Invoking `InquireAboutHeaders`

HITACHI
Inspire the Next

- Just type "`InquireAboutHeaders`" – no operands
- Csv file header line is printed to standard output.

Invoking `InquireAbout`

HITACHI
Inspire the Next

- `InquireAbout` [`-showall`] <device_name>

  - For example

```
InquireAbout /dev/sdc
```

    Or

```
InquireAbout -showall /dev/sdc
```

- **Note**: `InquireAbout` must run as "root" in order to have the privilege to run SCSI Inquiry commands. This is accomplished by having it owned by root and marked "setuid".

Invoking `lun2string`

HITACHI
Inspire the Next

- `lun2string` [any sequence of one or more of the options below] <device_name>

- Options: `-comma -space -noseparator -name -subsystemtype -hitachitype -serialnumber -ldev -ldev_no_colon -port -lun -scsi_id -maxLBA -sizeBytes -sizeMB -sizeMiB -sizeGB -sizeGiB -sizeTB -sizeTiB`

  `"-comma"` changes the separator between fields from space to comma.
  `"-space"` changes it back to a space.
  `"-noseparator"` sets the separator to the empty string.

- A command line token that comes in starting and ending with double quotes will have its contents between the double quotes echoed to output. This lets you build strings with LUN attributes inserted. In bash, you can back-quote a double quote this way \"

- To make it easier to build strings with spaces, etc. you can URLencode the double-quoted token to avoid problems with the bash command line tokenizer.

- **Note**: `lun2string` must run as "root" in order to have the privilege to run SCSI Inquiry commands. This is accomplished by having it owned by root and marked "setuid".

lun2string examples

HITACHI
Inspire the Next

- For example,

```
lun2string -noseparator %22port%3D%22 -port /dev/sdd
```

could print

```
port=1A
```

- `lun2string` is useful to prepare vdbench parmfile "sd" statements.

For example,

```
lun2string -noseparator \"sd=sd\" -ldev_no_colon \"_\"
     -port %22%2C%20lun%3D%22 -name -space \"#\"
     -subsystemtype -serialnumber -port -ldev /dev/sdl
```

when used on 3 different luns generated:

```
sd=sd0002_2A, lun=/dev/sdd # AMS2100 83011234 2A 0002
sd=sdFFFF_6D, lun=/dev/sdk # HUS VM 210123 6D FF:FF
sd=sd0009_1A, lun=/dev/sdl # VSP 65123 1A 00:09
```

HITACHI

Inspire the Next