

Contents

Purpose: 2

Requirements/Notes: 2

Revision Notes: 3

Usage: 4

Examples: 7

 Example 1 - basic usage: 7

 Example 2 - more usage:..... 8

 Example 3 – mash-ups: 9

 Example 4 – summary table:..... 10

Purpose:

The heatmap script allows you to generate heatmaps of various metrics over time from NAR files generated from EMC Clariion/VNX arrays.

Requirements/Notes:

- This script was developed and tested using Strawberry Perl (v5.12.3), but there is no reason it won't work with other flavours or versions of Perl, but it is possible that other perl modules other than the one listed below may need to be installed
- It requires the Text::CSV module for Perl. Available here → <http://search.cpan.org/CPAN/authors/id/M/MA/MAKAMAKA/Text-CSV-1.21.tar.gz>, if you can get cpan working (run "cpan Text::CSV") it will be easy to install, otherwise you'll have to do it manually ...
 - Unzip the files into eg C:\Text-CSV-1.21 and run the following commands
 - C:\Text-CSV-1.21>perl Makefile.PL
 - C:\Text-CSV-1.21>dmake
 - C:\Text-CSV-1.21>dmake test
 - C:\Text-CSV-1.21>dmake install
- The script uses the Microsoft tool logparser.exe to manipulate various CSV files available here <http://www.microsoft.com/download/en/details.aspx?displaylang=en&id=24659>
- The script uses navisecli to convert the NAR files into CSV files.
- At the moment the script will only run on a windows server/PC due to its reliance on the logparser tool, if people are interested I will investigate other tools available in the Linux/Unix worlds.
- The default min/max figures that I am using may be unrealistic, I am by no means an expert in analysing the performance of an array, any feedback is welcome.

Revision Notes:

0.3

- Change heatmap array in javascript to be comma seperated array
- Remove style attributes from each cell and place in style definition

0.3.001

- Add more advanced command line processing

0.3.002

- Add command line options to allow for different attributes

0.3.003

- Add functionality to display multiple attributes

0.3.004

- Add ability to report on different object types disk, sp, etc

0.3.005

- Cleanup report format
- Add commandline options
- Add more SP metrics

0.3.006

- Add Summary option - display max, min and avg for each metric type
- Add mash-up and mash-up only options
- Fix metric names

0.3.007

- Change heatmap array formatting

0.3.008

- Add options to allow naviseccli to query array for drive types

0.3.009

- Add drive details option
- Display drive Type / Size / RAID Group / Pool
- Allow drive groups to be selected and highlighted

0.3.010

- Config file

0.3.011

- Add LUN reporting
- Allow querying of specific types of LUNs
- Fix mashup calculations
- Stop displaying mashups alongside attributes when only one attribute is displayed
- Move control buttons to top of screen

Usage:

The following are the command line options available for the script

--logparser <path\filename>

--naviseccli <path\filename>

These options allow you to set the location of the various 3rd party binaries that the script relies on

--avg_interval <seconds>

The interval that the analyser stats are averaged down to, ie 1800 seconds will set the average interval to 30 minutes

--nar_file <filename>

The input NAR file(s), more than one NAR file can be specified

--out <filename>

The filename of the generated HTML output file, the default is HEATMAP.HTML

--array_name <name>

The name of the array, this is for reporting purposes only

--summary

Generate a summary for each attribute type, displaying minimum, average and maximum figures for each metric

Metric	Min	Max	Avg
Disk Utilization (%)	0.27	97.38	8.16
Disk Total Throughput (IO/s)	0.72	309.06	23.03
SP Utilization (%)	38.03	61.11	49.78
SP Total Throughput (IO/s)	5588.70	25693.24	10088.56

--mash

--mashonly

This generated a mash table for each metric type (currently only Storage Processor and Disk), averaging each of the metrics for each type down into a single table, allowing you to combine multiple metrics into a single table.

The --mash option will display the mash-up table alongside the selected metrics, and the --mashonly options will only display the mash-up tables.

--get_drive_type

--array_ip <ip address>

This option allows you to query the array (as it is currently configured) to determine drive types (currently only SATA II, FIBRE CHANNEL, and SATA II SSD), currently this options only affects the IOPS calculations for drives.

--user_id <user id>

--pwd <password>

--scope <0|1>

These options are only used in conjunction with the --get_drive_type option, if you have cached credentials for the array configured then these options should not be necessary.

--display_drive_type

This option is only used in conjunction with the --get_drive_type option, it will display another drive table, and allow you to view the different drive type, drive size, pool and RAID Group layouts.

--disk_highlight

This option is only used in conjunction with the --get_drive_type and --display_drive_type options, it will highlight the corresponding disks in the other heatmaps, it will also allow you to select all of the drives that have the same attributes as displayed by the --display_drive_type option.

--config_file <filename>

--generate_config <filename>

These options allow you to generate a configuration file, using the --generate_config option, this will generate a config file with all of the default attributes, and to use a configuration file using the --config_file option.

--lun_type <type>

This option allows to only display heatmap information about particular LUN types, multiple types can be specified

all - Display stats for all LUNs

lun - Display stats for all RAID group based LUNs

meta - Display stats for all MetaLUNs

private - Display stats for all Private LUNs - MetaLUN components and other reserved LUNs

host - Display stats for all LUNs with host IO

thin - Display stats for all thin LUNs

pool - Display stats for all Pool LUNs

--help

This option will display the following help information.

Heatmap Generator

Usage: heatmap.3.011.pl <options>

Where options can be the following:

```
--logparser <path\filename> - The path to the logparser executable (c:/Program Files/Log Parser
2.2/LogParser.exe)
--naviseccli <path\filename> - The path to the naviseccli executable (c:/Program
Files/EMC/Navisphere CLI/Naviseccli.exe)
--avg_interval <seconds> - The interval in seconds that the stats are averaged at (1800
seconds)
--nar_file <filename> - NAR input file(s) this option can be specified multiple times
--out <filename> - The output filename (heatmap.html)
--array_name <name> - Set the name of the array in the report
--summary - Displays a summary of each metric
--mash - Creates a mash-up of each metric per object type, and displays
alongside other metrics
--mashonly - Creates a mash-up of each metric per object type, and only displays
the mash-ups
--get_drive_type - Query Array to get drive type information
--array_ip <ip address> - Set the IP address of the array
--user_id <user id> - Set the user ID to log into the array
--pwd <password> - Set the user password of the array
--scope <0|1> - Set the Scope of the array account
--display_drive_type - Display the drive types in the charts
--disk_highlight - Highlight drives on mouse over
--config_file <filename> - Use a configuration file to set attribute min/maxes
--generate_config <filename> - Generate a configuration file using the defined defaults
--lun_type <type> - Which LUN types to query, multiple types can be specified
    all - Display stats for all LUNs
    lun - Display stats for all RAID group based LUNs
    meta - Display stats for all MetaLUNs
    private - Display stats for all Private LUNs - MetaLUN components and other
reserved LUNs
    host - Display stats for all LUNs with host IO
    thin - Display stats for all thin LUNs
    pool - Display stats for all Pool LUNs
--help - This help
--attrib <attribute> - Set the attribute to graph, where attribute can be the following
    d_utilization - display stats based on disk utilization (%)
    d_iops - display stats based on disk Total Throughput (IOPS)
    d_r_iops - display stats based on disk read IOPS
    d_w_iops - display stats based on disk write IOPS
    d_queue - display stats based on disk Queue Length
    d_b_queue - display stats based on disk Average Busy Queue Length
    d_response - display stats based on disk Response Time
    d_service - display stats based on disk Service Time
    d_bandwidth - display stats based on disk Total Bandwidth
    d_r_bandwidth - display stats based on disk Read Bandwidth
    d_w_bandwidth - display stats based on disk Write Bandwidth
    d_r_size - display stats based on disk Read Size
    d_w_size - display stats based on disk Write Size
    d_seek - display stats based on disk Average Seek Distance
    s_utilization - display stats based on SP utilization
    s_response - display stats based on SP Response Time
    s_bandwidth - display stats based on SP Total Bandwidth
    s_iops - display stats based on SP Total Throughput (IOPs)
```

```
s_b_queue      - display stats based on SP Average Busy Queue Length
s_service      - display stats based on SP Service Time
s_c_dirty      - display stats based on SP Cache Dirty Pages (%)
s_c_flush      - display stats based on SP Cache Flush Ratio
s_c_flush_mb   - display stats based on SP Cache MBs Flushed (MB/s)
s_c_hw_flush   - display stats based on SP Cache High Water Flush On
s_c_i_flush    - display stats based on SP Cache Idle Flush On
s_c_lw_flush   - display stats based on SP Cache Low Water Flush Off
s_wc_flush     - display stats based on SP Write Cache Flushes/s
s_fc_dirty     - display stats based on FAST Cache Dirty Pages (%)
s_fc_flush_mb  - display stats based on FAST Cache MBs Flushed (MB/s)

l_utilization  - display stats based on LUN utilization (%)
l_queue        - display stats based on LUN Queue Length
l_b_queue      - display stats based on LUN Average Busy Queue Length
l_response     - display stats based on LUN Response Time
l_service      - display stats based on LUN Service Time
```

Running the script without any --nar_file options will result in the script prompting the user to supply NAR file(s)

