SNA Lab - Storage & Monitoring

Choice 0 - HOT GROW HOT SHRINK

(Discussed during the lecture)

Create a guest with whatever virtualization engine. Install a guest system which uses LVM by default.

Change the size of its virtual disk. Grow the Logical Volume and file-system without a reboot. Note you may need to rescan the SCSI bus for the VM to reconsider what it thinks it has as a disk.

Then do the reverse: shrink the file-system then the Logical Volume.

Choice 1 - Compatible scripts

- Choose an incident monitoring tool e.g. Nagios XI
- Define an alert on ping against a node and validate it
- Then write your own compatible script to monitor something *(Hint: as for Nagios, it is about exit codes)*

Choice 2 - Performance graphs

Play e.g. with M/Monit, Zabbix or Nagios XI to display performance graphs. The goal is either

- to get the four main resources discussed during the lecture, on board,
- or to stress a service[1] and display the resulting activity

Choice 3 - DIY alerting

(Discussed during the lecture)

- Setup outgoing emails on a remote server and check that you receive those (`date | mail -s $(uname -n) root`)
- Create a small fake disk, a file-system on it and mount it
- From a monitoring station, check that you can run a script remotely with SSH, ClusterIt[2] or any other remote - ideally distributed - shell
- Then run the remote DIY monitoring script as a cron job
- Fill the small fake file-system with DD and and check that you receive an email alert
- *Bonus: monitor something else than disk usage*

Choice 4 - DIY performance graphs (two weeks)

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- Gather data e.g. selected output from `iostat` into a text file or Time-series DB
- Do the performance graphs yourself with e.g. `spark.c` or Highcharts
- Eventually make it happen LIVE (chart updates while the data arrives)

[1] Apache HTTP server benchmarking tool https://httpd.apache.org/docs/2.4/programs/ab.html
[2] ClusterIt http://www.garbled.net/clusterit.html

Choice 5 - Linux DM Multipath (experimental)

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- Setup a storage node as an iSCSI target
- Setup two physical VLANS (access/untagged) or switches for the LUNs to go through
- Setup a server node with two NICs and two iSCSI initiators
- Check if you get two different pathes for the same LUN
- Eventually setup multipathd

Choice 6 - DRBD

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- Setup two nodes with an additional disk on each
- Setup DRBD v8 or v9 for the second disk to be synchronized
- Show the status of the networked RAID-1 array
- Allow dual-primaries
- Check the performance when there is only one primary versus dual-primaries with e.g. hdparm −Tt

Bonus as two weeks lab: play with FreeBSD HAST instead of Linux DRBD

Choice 7 - Linbit SDS (two weeks)

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Try DRBD v9 with Linbit SDS

Choice 8 - KVM metrics

& quick presentation

Try to compete with the great xentop tool from XEN. Enable a GNU/Linux host to do KVM virtualization and start a few guests (VMs). Get performance data sets of the host and guests - ideally the four types of resources - without installing any agent in the guests. Where and how to obtain resource metrics from the KVM hypervisor?

Choice 9 - HBAs

one person

There are different network topologies for Fibre Channel. One of those allows to link an HBA directly to another. You will get access to that kind of hardware. Validate it.