Nagios tests for DMF servers

Custom plugins to allow Nagios to monitor DMF & tapes

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Overview

- From https://www.nagios.org :

  Nagios Is The Industry Standard In IT Infrastructure Monitoring

  Nagios offers complete monitoring and alerting for servers, switches, applications, and services

- Released as NetSaint in 1999

- Two types of tests
  - - server-side
  - - client-side, using nrpe (a heavily locked down ssh-like utility)

- Plugin architecture, allowing locally written tests to be added easily

DMF tests

check_copan	Checks for offline/disconnected shelves and those with hot spares in use
check_dmf	• Check that the appropriate DMF processes are running • Check for VGs without free volumes • Measure dmfdaemon responsiveness • Report unusual DMF processes in case there's a correlation with any observed problems
check_dmfman	Check DMFMAN processes are running (Not very smart; we don't use DMFMAN)
check_tapes	Check availability of unused data & STK cleaning tapes

TMF tests

check_tmf_drives	Check for drives whose status hasn't changed in 10 minutes or are down
check_tmf_hammer	Check for tapes (DMF or otherwise) being used excessively, even if they move to a different drive
check_tmf_msgs	Check for TMF messages, such as those stemming from a library malfunction

OpenVault tests

check_ov	• Check that the appropriate OpenVault processes are running, both for tape and Copan MAID • Look for downed drives. • Check if all drives are in use

Other related tests

check_filesystems	Filesystem fullness • DMF-managed ones can be tied to the DMF settings • For hybrid SSD/HDD filesystems, the inode area is monitored as well as the data area • Can issue "wall" messages to users and can update MOTD
check_stk_library	Check that ACSLS is responding and that all rails in the library are online

check_xfsdump	Provide a status line while backups are running, and raise an alert if they are running during prime time
	
	• Supported xfsdump-based backup scripts are:
	  • CSIRO Internal Backups (int_backup)
	  • SGI backup to disk (do_xfsdump_disk.py)
	  • SGI integrated-backup (do_xfsdump.py)
	
	• Not supported (yet) is:
	  • SGI backup to tape (do_xfsdump.sh)

Screen shot

Host	Service	Status	Last Check	Duration	Attempt	Status Information
ruby	Backups - External	OK	2016-01-29 09:31:00	0d 14h 32m 31s	1/4	External backups not running
	Backups - Internal	CRITICAL	2016-01-29 09:31:00	0d 0h 22m 31s	4/4	Internal backup is running, 1 to go - Backup2: 24.1% data 64% files done
	Backups - Testing integrated backup	OK	2016-01-29 09:33:00	0d 23h 42m 33s	1/4	Integrated Backup - not running
	Backups - remote	OK	2016-01-29 09:33:00	0d 23h 44m 33s	1/4	Remote backup to raijin - not running
	DMF	OK	2016-01-29 09:30:00	0d 15h 28m 31s	1/4	(xfsdump running)
	DMFMAN	WARNING	2016-01-29 09:33:22	0d 0h 0m 9s	1/4	DMFMAN is down! (dmfman_server not running)
	Filesystems	OK	2016-01-29 09:33:00	0d 23h 44m 20s	1/4	All filesystems OK
	Free memory	OK	2016-01-29 09:33:00	0d 23h 44m 33s	1/4	7019 GB remains available
	HTTP	OK	2016-01-29 09:33:00	0d 23h 44m 34s	1/4	HTTP OK: HTTP/1.1 200 OK - 7235 bytes in 0.036 second response time
	Library in Black Mtn	OK	2016-01-29 09:33:00	0d 23h 44m 33s	1/4	LSMs OK
	Library in Clayton	OK	2016-01-29 09:33:00	0d 23h 44m 33s	1/4	LSMs OK
	Load	OK	2016-01-29 09:33:00	0d 23h 41m 33s	1/4	OK - load average: 344.49, 344.16, 349.89
	Misc Procs	OK	2016-01-29 09:33:00	0d 23h 42m 33s	1/4	Miscellaneous processes all running
	NFS Daemons	OK	2016-01-29 09:33:00	0d 23h 42m 33s	1/4	NFS daemons are now OK
	PCP	OK	2016-01-29 09:33:00	0d 23h 42m 33s	1/4	PCP is running
	Ruby-ACSLS	OK	2016-01-29 09:32:57	0d 23h 40m 34s	1/4	Ping OK,
	Ruby-Raijin	OK	2016-01-29 09:33:00	0d 23h 44m 33s	1/4	Ping OK,
	Ruby-Raijin ssh	OK	2016-01-29 09:33:00	0d 23h 44m 33s	1/4	SSH OK - OpenSSH_5.3 (protocol 2.0)
	SLURM	OK	2016-01-29 09:33:00	0d 23h 42m 34s	1/4	OK
	TMF	OK	2016-01-29 09:33:00	0d 23h 42m 33s	1/4	OK
	Tape Numbers	WARNING	2016-01-29 09:31:50	0d 0h 1m 41s	1/4	T1 low (33), for the end of week
	Tape drives	WARNING	2016-01-29 09:33:00	0d 23h 44m 32s	4/4	Drive bm32b is down:
	Tape hammer	OK	2016-01-29 09:33:00	0d 9h 40m 31s	1/4	Tape usage seems OK
	hpn-ssh	OK	2016-01-29 09:33:00	0d 23h 44m 33s	1/4	SSH OK - OpenSSH_6.6p1-hpn14v5 (protocol 2.0)
	ssh	OK	2016-01-29 09:33:00	0d 23h 44m 33s	1/4	SSH OK - OpenSSH_6.2 (protocol 2.0)

Plugin architecture

Program or shell script using:

- Exit code to provide state:

0	OK	All OK
1	WARNING	First level of alert
2	CRITICAL	Second level of alert
3	UNKNOWN	Undefined • frequently timeouts or aborts due to bugs, permission problems, etc
4	DEPENDENT	??

- Standard output to provide text for web page and for notifications (email and SMS)

CSIRO plugin configuration file

- /etc/nagios/local_plugin.cfg contains per-test configuration data, to avoid embedding this in the plugins. This allows us to run the same plugins on multiple machines.

- Organized as a sequence of stanzas:

```
[check_dmf]
stall_mins='120'   # non-mig reqs over this cause "stall" msg
overload_mins='60' # non-mig reqs over this cause "overload" msg
extra_scripts='run_merge_mgr.sh /usr/local/dmf-
  tasks/run_maid_mgr.sh'
```

CSIRO plugin library

/usr/local/nagios/check.inc library containing ksh/bash functions

- Helpers:
  - _plural number singular-text
  - _is_office_hours
- For simply checking the existence of certain processes and/or counting them:
  - _count_running service proc pgrep-pars user
  - _check_running flag service procs pgrep-pars user fail-state
- A more complicated set allowing the result to be assembled a piece at a time:
  - _check_begin
  - _check_crit text
  - _check_warn text
  - _check_note text
  - _check_perf text
  - _check_unknown text
  - _check_general type text
  - _check_exit prefix

Plugin example (part 1)

```
#!/bin/ksh
#
#       check_dmoper - see if DMF has something to say
#
# Test with
#       dmalertnew -p 4 -s "OpenVault" -c "OPER_IMPORT_RQ" \
#          -k "vg:C00_vg0,ls:vtl_ls,lib:C00,vsn:C00F1H"  "test msg"
# Clear with
#       dmalertack -i whateverthenumberwas

PATH=$PATH:/usr/local/sbin:/usr/local/nagios/
. check.inc
_check_begin
```

Plugin example (part 2)

```
dmoper_out=$(/usr/local/bin/dmoper)      # a setuid wrapper script
[[ -z $dmoper_out ]] && _check_unknown No dmoper output

op=$(print "$dmoper_out" | tail -n +2)
c=$(print "$dmoper_out" | wc -l)

# The output lines from dmoper are pretty long,
# so for a real plugin you'd condense $op here...

if [[ -n $op ]]; then
   _check_crit $op
else
   _check_note Nothing to say
fi

_check_perf "Total alerts: $(( c - 1 ))"
_check_exit "no worries..."
#end check_dmoper
```

Thank you

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