

Shmon – Solaris Host Monitoring

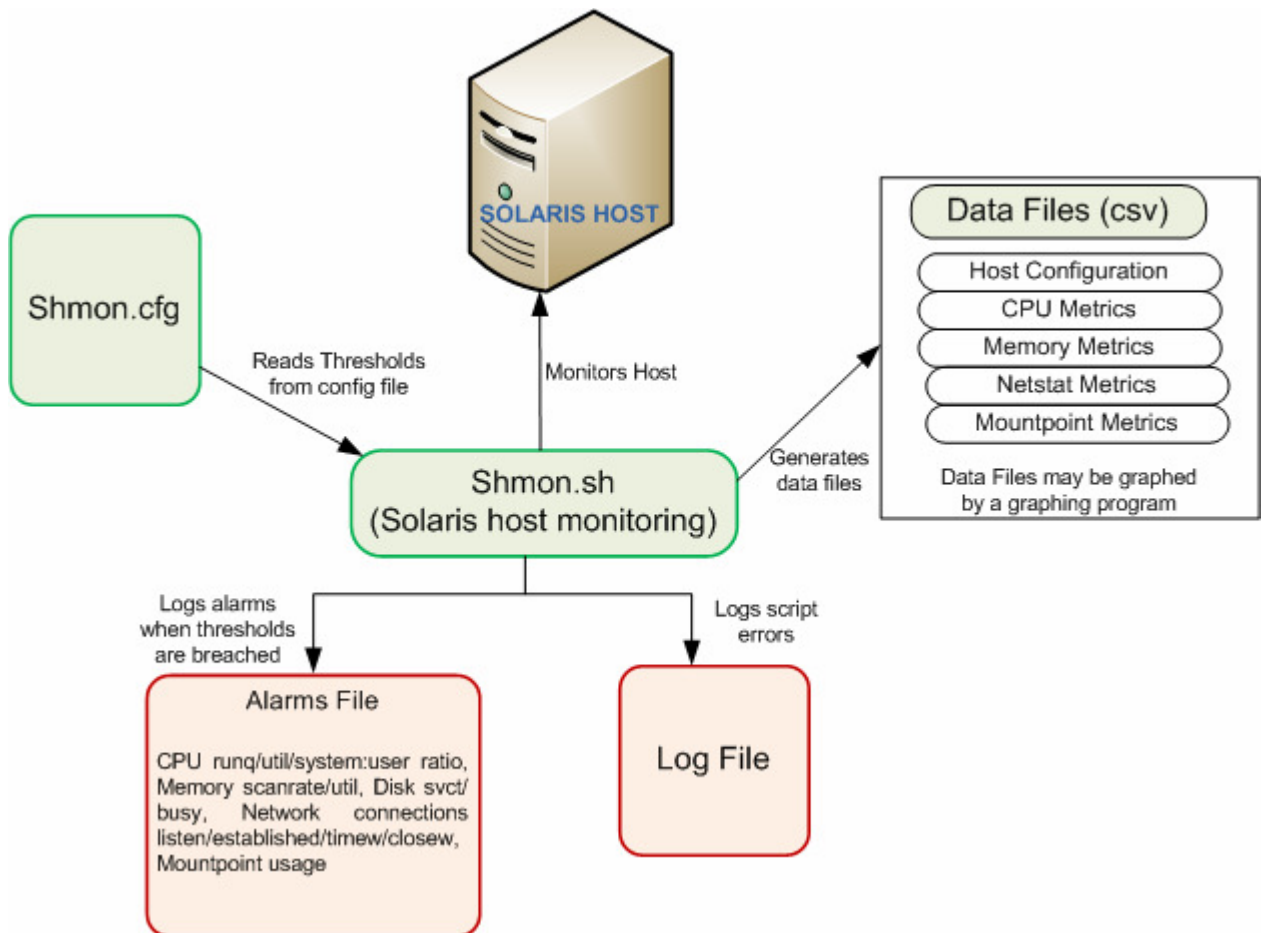
Version 1.0

1. What is Shmon?

Shmon is a bash script (which uses a teeny weeny bit of perl) that **monitors a Solaris host**. When executed as a cron job, Shmon provides basic, but vital monitoring of key system parameters.

2. How does Shmon work?

The diagram below illustrates how Shmon works:



3. Supported Solaris Platforms

Shmon has been tested on the following Solaris platforms:

SunOS 5.8 (Solaris 8) / SPARC
SunOS 5.9 (Solaris 9) / SPARC
SunOS 5.10 (Solaris 10) / SPARC
SunOS 5.10 (Solaris 10) / x86

NOTE: Some utilities which Shmon uses (prtdiag, psrinfo, isainfo) are not in the default PATH (/usr/bin) on Solaris 10 (unlike earlier versions). So, for Solaris 10, the SHMON_PATH variable must be set in Shmon.cfg to include the

path for these utilities (typically /usr/sbin on Solaris10). Also, restrictions placed by your System Administrator could prevent you from using such utilities (prtdiag, etc.). In such cases, only the host configuration data will not be generated, whereas other metrics will be generated as Shmon uses standard utilities like vmstat, iostat, etc.

4. Installation

- Download the Shmon_v1.0.tar.gz.
- Unzip and extract the tar file as follows (there are many ways to do this):

```
gunzip Shmon_v1.0.tar.gz; tar xvf Shmon_v1.0.tar
```

After implementing the above steps, you will see the following directory structure:

```
Shmon_v1.0
|_____Shmon.sh
|_____Shmon.cfg
|_____Shmon_v1.0_UserGuide.pdf
```

NOTE: Ensure Shmon.sh has execute permission for your user and configure Shmon as per details in the next section.

5. Configuration

Shmon's configuration (parameter thresholds and other variables) are stored in Shmon_<hostname>.cfg.

A Shmon.cfg template is provided, but you must rename that file or create a config file with the name Shmon_<hostname>.cfg where <hostname> is the output of the hostname command, if you want to define thresholds and receive alarms. If no config file is detected, then no alarms will be raised.

The table below explains the configuration parameters:

SL#	CONFIGURATION PARAMETER	DESCRIPTION
1.	SHMON_PATH	Must contain PATH of binaries such as prtdiag, psrinfo, isainfo, vmstat, iostat if they're not present in the default PATH. NOTE: The \$PATH variable must not be assigned to SHMON_PATH. <i>Example:</i> If prtdiag is in /usr/sbin and all other binaries are in the default path, then SHMON_PATH=/usr/sbin
2.	DATAFILE_RETENTION	The number of days to retain data files. Default = 30
3.	LOGFILE_SIZE	The size of the logfile in bytes at which it will be rotated. Default = 5,000,000 bytes (~ 5 MB)
4.	ALARMFILE_SIZE	The size of the alarmfile in bytes at which it will be rotated. Default = 5,000,000 bytes (~ 5 MB)

5.	MONITORING_INTERVAL	The Interval in seconds over which cpu and memory metrics are monitored. The default is 30 seconds. This parameter had a direct bearing on the overall execution time of Shmon. <i>Example:</i> If the default interval is used, Shmon typically takes around 33 secs to execute on a moderately loaded Sun V490.
6.	CPU_RUNQ_AMBERTHRESHOLD	The WARNING threshold for the cpu run queue. <i>Recommendation:</i> Thrice the number of on-line cpus.
7.	CPU_RUNQ_REDTHRESHOLD	The CRITICAL threshold for the cpu run queue <i>Recommendation:</i> Five times the number of on-line cpus.
8.	CPU_UTIL_THRESHOLD	The WARNING threshold for total CPU utilization
9.	CPU_SYSUSER_THRESHOLD	The WARNING threshold for the cpu system/user time ratio. For example, if this threshold is set to 3, then an alarm will be raised when system cpu time >= thrice the user cpu time and total cpu util >= 50%
10.	MEM_SCANRATE_THRESHOLD	The CRITICAL threshold for Memory scanrate. <i>Recommendation:</i> On Solaris 8 and later, scanrate should be 0. This parameter is a very good indicator of memory shortage.
11.	DISK_SVCTIME_AMBERTHRESHOLD	The WARNING threshold for Disk service time. <i>Recommendation:</i> 30 ms
12.	DISK_SVCTIME_REDTHRESHOLD	The CRITICAL threshold for Disk service time. <i>Recommendation:</i> 50 ms
13.	DISK_BUSY_THRESHOLD	The WARNING threshold for Disk %busy time. <i>Recommendation:</i> 20%
14.	NET_LISTEN_THRESHOLD	The WARNING threshold for number of LISTEN sockets (just to warn you of abnormal behaviour)
15.	NET_ESTABLISHED_THRESHOLD	The WARNING threshold for number of ESTABLISHED connections (just to warn you of abnormal behaviour)
16.	NET_CWAIT_THRESHOLD	The WARNING threshold for number of ESTABLISHED connections (just to warn you of abnormal behaviour)
17.	NET_TWAIT_THRESHOLD	The WARNING threshold for number of ESTABLISHED connections (just to warn you of abnormal behaviour)
18.	MP_WATCH	The list of mountpoints (separated by blankspace and list enclosed within double quotes) to be monitored with thresholds. Note that data will be generated for all mountpoints. So, if you have 5 mounpoints, but wish to raise alarms only for mountpoints / and /logs, then set MP_WATCH as MP_WATCH="/ /logs"
19.	MP_DISKUTIL_AMBERTHRESHOLD	The WARNING threshold for mountpoint disk utilization <i>Recommendation:</i> 85
20.	MP_DISKUTIL_REDTHRESHOLD	The CRITICAL threshold for mountpoint disk utilization <i>Recommendation:</i> 95

Compound alarms:

In order to minimize false alarms, some alarms are raised based on more than one thresholds being breached. Details below:

SL#	COMPOUND ALARM	THRESHOLDS
1.	CPU : WARNING	CPU_RUNQ_AMBERTHRESHOLD and CPU_UTIL_THRESHOLD
2.	CPU : CRITICAL	CPU_RUNQ_REDTHRESHOLD and CPU_UTIL_THRESHOLD
3.	CPU_SYS : WARNING	CPU_UTIL >= 50 and CPU_SYSUSER_THRESHOLD
4.	DISK : WARNING	DISK_SVCTIME_AMBERTHRESHOLD and DISK_BUSY_THRESHOLD
5.	DISK : CRITICAL	DISK_SVCTIME_REDTHRESHOLD and DISK_BUSY_THRESHOLD

Some recommendations above are based on Adrian Cockcroft's "Sun Performance and Tuning" book. A lot has changed in software and hardware since Adrian's book was published, but certain recommendations still hold. Also, all systems do not behave identically and so you must set thresholds based on your system configuration, load, disk space, etc.