

NETWORK'S SERVER MONITORING AND ANALYSIS USING MONIT

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ABSTRACT

Each IT Corporation always needs a quick and powerful network tracking system that notifies the network administrator as speedy as a network difficulty happens. When network falls, clients and staffs are unable to engage, staffs are unable to get admission to crucial records or use fundamental print or electronic mail centers, leading in loss of productivity and loss of earnings. Server monitoring is the approach of surveillance system resources consisting of CPU utilization, memory usage, I/O, network, disk utilization, bandwidth etc. A server can be monitored through many tools. Network observance software package tools cut back network outages and permit businesses to control additional fluently, cut costs, and stop revenue loss. The network observance tools and solutions out there don't seem to be solely costly however additionally troublesome to put in, configure, administer, and maintain. And for the ones which might be tiny and unable to think about a network surveillance software program finances, a higher answer is initially open supply and freeware network monitoring device that saves the time and money spent on network management. Small businesses have wonderful requirements and expediencies for network control due to the fact there is constrained technical information and personnel. They want low-cost, clean-to-installation and use units, and rich capabilities. The aim of this paper is to test and implement for common use a free supervisory system for monitoring of computer networks. In this paper, server tracking is completed the use of Monit, which is an open source tool. Numerous nodes are delivered to the network, tracking the network's output and standing. The statistics are gathered and statistics are supplied in actual time and the network overall performance is evaluated. The primary cause is to warn the network administrator in case of any network failure the usage of strategies such as email. This facilitates to secure the network through actual-time alerting of prospective problems. Monit is a free, clean-to-setup, and very beneficial tool that automatically monitors and manages server strategies, files, directories, checksums, permissions, file systems and centers together with Apache, Squid, MySQL, FTP, SSH, Sendmail and so forth in UNIX / Linux-based systems and gives system administrators with first-rate and beneficial surveillance features.

KEYWORDS

Network Monitoring, Monit, memory, cpu, system status

1. INTRODUCTION

The phrase network monitoring is used to outline a scheme that is beneficial in usually surveillance the topology of the network and discovers if there is any jamming-system slowdown or factor failure and notifies the network supervisor instantly. Network tracking offers with information series to provide statistics in real time and to assess network performance. The community administrator ought to be recommended when an outage or failure occurs within the community. The community should be secured earlier than they emerge as a giant trouble by way of alerting potential problems. The methods including SMS,

Email and Pager may be used to warn the community administrator approximately the network failure. Except the ideal gadgets are tracked, network tracking is found to be of no standard regions which might be monitored. Server tracking is a giant factor of any structure tracking data center, but too regularly it becomes an important approach to construct a holistic tracking platform effectively. Server tracking consists of tracking the running time, CPU wait time, used memory, loose memory, disk queue period, disk utilization, network collisions, adapter transmission charge, and so on.

Network tracking is a method used to display a computer network system and notify the administrator of the network in the occasion of any outages. The troubles that would lead to network failure or irregularity need to be recognized and mentioned. It is also possible to screen the efficiency and use of a network. Tracking of the network can be accomplished as a server and monitoring of packages. Monit is easy to put in and a tool for managing and tracking Unix systems is tiny and open supply. Monit plays computerized maintenance and repair and in error scenarios can perform giant causal actions. If it is not working, Monit has a tool to begin a process, restart a system if it isn't always reacting, and if it makes use of heavy funds, prevent a method. Monit can monitor server running daemon methods or comparable programs. Monit keeps its personal log record and warns of any critical errors occasions.

On this paper, a technique is offered to screen the devices inside the network. A tool named Monit is used to screen the server and the applications that run within the network. The tool can monitor the reputé of the network and can perform reputation take a look at and notifies whilst there takes place any trouble within the network. Monit is designed as a self-sustaining system and does now not rely upon plugins nor any special libraries to run. As a substitute it really works right out of the field and can make use of current infrastructure already at the system. Section 2 includes the related works of different authors and their proposals. Section 3 includes the network monitoring techniques and widespread operations through monit. Section 4 deals with the information about the tool and the methodology used for server monitoring. Section 5 indicates the results and graphs acquired. Section 6 deliver the belief that may be executed to this work.

2. RELATED WORK

Network server tracking enables us apprehend the useful resource utilization of the system that may assist enhance capability planning and providing better overall performance for end-users.

Fung Po Tsoa et al. (2016) submitted a server and network useful resource management observe. The research additionally entails virtual system distribution and management to beautify physical server usage and price performance. The writer used networking concepts defined by software and addressed the difficulties and opportunities of converging resource management [1].

Sihyung Lee et al. (2014) addressed the open network tracking issues and proposed steering for the destiny network monitoring system. The author evaluated the mixing of contemporary systems with all network surveillance sports and also targeting network surveillance techniques [2].

Rafiullah Khan et al. (2013) proposed an open and automobile network tracking device for surveillance network switches and informing the administrator while switching down. The network monitoring machine submitted can without difficulty understand the network problems, its effect and is located to be effective in presenting entire community manipulate [3].

Ahmed D. Kora et al. (2012) supplied an open and adaptable platform that promotes fault and configuration control for next-generation networks and additionally affords extra characteristics for application and management functions to permit simple and low cost control of new structures and offerings [4].

Antonis Papadogiannakis et al. (2012) supplied an approach to enhance runtime overall performance in passive monitoring systems for a massive magnificence of CPUs and memory in depth. In this activity, enhancing the place of code and data access be completed to enhance the performance of packet processing. The author brought a sparkling strategy referred to as locality buffering to enhance the performance of a large elegance of CPU and memory-in depth passive monitoring programs [5].

3. NETWORK SERVER MONITORING BY MONIT

Monit is particularly valuable for observing daemon forms such as those begun at */etc/ init.d/* framework boot time, such as *sendmail*, *sshd*, *apache* and *mysql*. Not at all many surveillance schemes, Monit can behave if an error scenario occurs, for example; if *sendmail* is not running, it can monitor *sendmail* or if *apache* uses too many resources (for example, if a DoS attack is running). Monit can stop or restart *apache* and send an alert message. Monit can also monitor process features such as; whether a process has become a zombie and how much memory or *cpu* cycles a process uses. Monit can monitor *localhost* files, directories and file systems as well. Monit can monitor modifications to these products, such as modifications in timestamps, changes in checksum or changes in size. For safety purposes, this is also helpful and can monitor the *md5* checksum of records that should not be changed. First and foremost, Monit is a tool for monitoring and mending *localhost* services, but if a service is dependent on a remote service, such as a database server or an application server, it may also be useful to test a remote host. It can screen the general framework wide assets, for example, CPU utilization, memory and burden normal. The monit has easy to use web interface that can legitimately see the framework status and arrangement up procedures utilizing local HTTP(S) web server or by means of the order line interface. This implies must have web server like *Apache* or *Nginx* introduced on the framework to access and view monit web interface [6].

Monit can be utilized to screen organize affiliations with distinctive servers, either on *localhost* or on inaccessible host. TCP, UDP and Unix Space Attachments are maintained. Framework tests can be performed on tradition level; Monit has worked in test for the internet traditions, for illustration, HTTP, SMTP and so on. The server can still be tested even in the event that a convention isn't supported as the administrator can arrange Monit to send any data and test the server response. Monit can be utilized to test programs or scripts at minutes comparable to *cron*, but it can moreover test a program's exit esteem and execute an activity or send an alarm on the off chance that the exit esteem appears a botch [7].

4. METHODOLOGY

The determination of a particular program primarily depends on the administrations that are being observed and the objectives for checking. Monit is found to have wide run of

clients and offers higher usefulness than other open source apparatuses. The computer program is found to have a great history of dynamic improvement, a large and active client community and a critical number of included and client contributed expansions. Since of the adaptability of the flexibility of the software design that employments a plug-in engineering, benefit checks for library-specific applications can be actualized. The network administrator must guarantee whether the server is working legitimately. In the event that the border router or Web association goes down, Monit will be incapable to convey e-mail cautions to administrator. This permits an administrator to quickly start exploring the issue and get the essential Monit server back online.

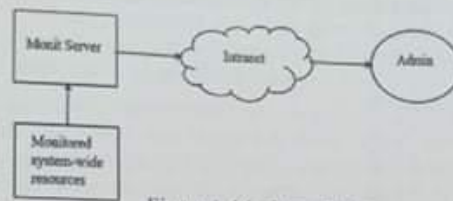


Figure 1. Monit monitoring

Figure 1 clarifies the method of Monit checking where the status of the monitored system-wide assets is collected by the server and the notices are sent to the administrator through intranet. The tool is introduced in Linux. The accreditation ought to be provided in arrange to get to Monit. Utilizing Mail server, web server and Monit server can be effectively observed. At first, the setup wizard needs to be transferred and overseen in core configuration manager.

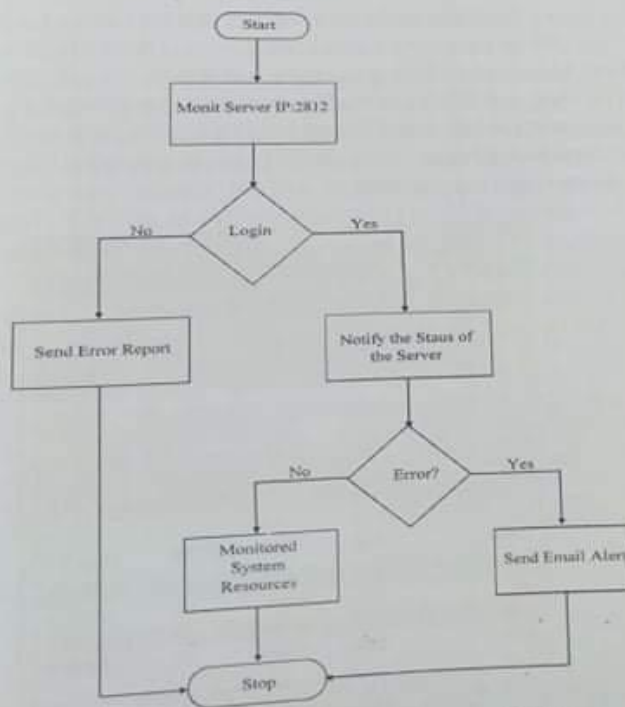


Figure 2. The flow chart of server monitoring

Figure 2 clarifies the flow chart of server checking handle drained Monit tool. The network administrator must overhaul the system and introduce Monit. After the administrator has begun Monit, must point the browser to `http://server ip: 2812` and log in with the username and secret word since the verification accreditation utilized to login to the essential Monit web interface is provided. And after that, Monit consequently checks and screens server handle, records, registries, checksums, authorizations, record frameworks and administrations. In case the exit esteem shows a blunder, send a caution. The tool is arranged in such a way that the mistake notice is send through email. The SMTP address, IMAP address and the mail address of the network administrator has got to be indicated for mail alarm to happen. The email address of the network administrator is given and caution mail is gotten when the server is basic.

5. RESULT AND DISCUSSION

The authors would like to thank everyone, just everyone! Monit is an open source utility that provides different framework observing highlights that are profoundly valuable to the system administrators. Monit can be promptly introduced in most Linux flavours with the bundle supervisor. Sometime recently introducing CentOS / RHEL, clients must permit epel store in this plot. Clients can promptly introduce Mint for Ubuntu / Debian / Linux. Monit is exceptionally straightforward to set up, in reality the setting records are created to form them easier to examine and less demanding for clients to comprehend. It is planned to screen the administrations running in each two minutes and keep the logs in `/var / log / monit.` Monit encompasses a web interface that employments a web server on port 2812. The essential monitor arrangement record is arranged for Ubuntu / Debian / Linux Mint at `/etc / monit.conf` beneath RedHat / CentOS / Fedora and `/etc / monit / monitrc`. The port 2812 will start and can only be accessed from a local host. Enter the name and password of the client. As the bundle is accessible on the official repository, the administrator can effectively introduce the Monit. At that point, it can be begun by utilizing this command `systemctl begin monit.service`. Monit setup record is `/etc / monitrc`, it is set to confirm the facilities at an interim by default. Monit will utilize for setup the `monitrc` control record in this folder. The record is arranged to start the http server of Monit. After have started monit, point the browser to `http://127.0.0.1:2812/` and log in with the username and password.

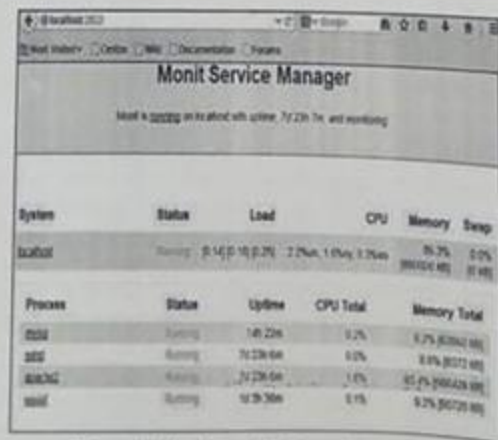


Figure 3. Monit monitoring system

In this area, we discuss the results obtained when network's server was monitored in Linux. The translation to the results about gotten is additionally discussed. Monit was at first introduced and designed and the taking after comes about were gotten. Monit was at first utilize the server 192.168.104.55. It can be utilized to screen remote hosts. The remote host address can be indicated as a hostname string or as an IP-address string on a dotted decimal format. Username and password are given to login to Monit web interface. The software was designed in such a way that the whole network is checked for each two minutes. The checking is done at customary interim. After including all process for observing. Figure 3 outlines the host up status and the status of processes and services on Monit web interface. The status of server and processes that are in alright condition is represented as green colour. Apache2, mysql, sshd, squid are monitored in this system. Apache2 is utilized as the web server in this monitoring system. The status is represented as green colour when the apache2 web server is running in this system, as appeared in Figure 3.

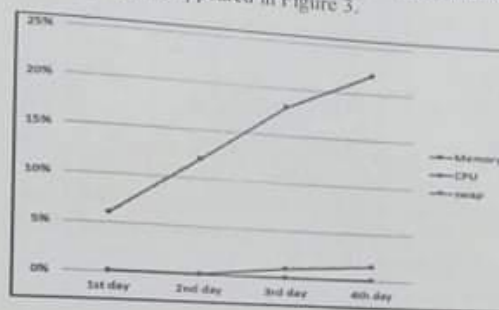


Figure 4. Monit monitoring system

Figure 4 appears the system-wide assets of the server inside four days. This incorporates CPU status, memory and swap and their utilization. On the off chance that infections, malware or other malevolent programs influence the computer, it'll utilize more CPU or memory assets. Other factors can cause this issue: upgrading windows, total occasion log record, other programs, window services. Indeed, in case there are no applications running the computer, it utilizes as well numerous CPU or RAM resources. Any program's resources are specifically corresponding to the sum of handling it does. So, the CPU and memory resources in Figure 4 are rising within the fourth day. A swap record in Fig. 4 could be a space utilized as the virtual memory expansion of the genuine memory (RAM) of a computer on a hard disk. Having a swap record empowers the working system of the computer to imagine that it has more RAM than it does.

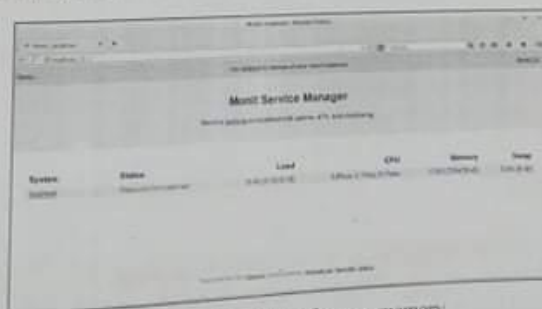


Figure 5. The status of server memory

When the service is inaccessible or if there is any mistake within the server it is represented as red colour. In Fig. 5, the status of server shows that the limit of resources is reached since the memory utilization surpasses 10 percent of this system's overall memory. With this check, the system's overall memory utilization was set at 10%. In case since there was a failure within the system the network administrator gets the notice mail as appeared in Fig. 6.

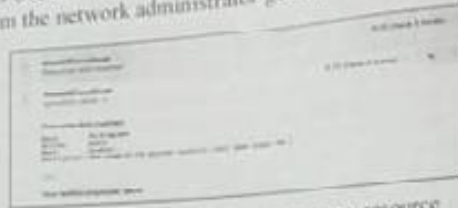


Figure 6. Email notification of memory resource

Monit will raise an alert in the following situations:

- A service does not exist (e.g. process is not running)
- Cannot read service data (e.g. cannot get filesystem usage)
- Execution of a service related script failed (e.g. start failed)
- Invalid service type (e.g. if path points to directory instead of file)
- Custom test script returned error
- Ping test failed
- TCP/UDP connection and/or port test failed
- Resource usage test failed (e.g. cpu usage too high)
- Checksum mismatch or change (e.g. file changed)
- File size test failed (e.g. file too large)
- Timestamp test failed (e.g. file is older than expected)
- Permission test failed (e.g. file mode doesn't match)
- An UID test failed (e.g. file owned by different user)
- A GID test failed (e.g. file owned by different group)
- A process' PID changed out of Monit's control
- A process' PPID changed out of Monit control
- Too many service recovery attempts failed
- A file content test found a match
- File system flags changed
- A service action was performed by administrator
- A network link failed
- A network link capacity changed
- A network link saturation failed
- A network link upload/download rate failed
- Monit was started, stopped or reloaded

With Monit we get:

- Automatic process maintenance in a lightweight package.
- Capability to act on out-of-bounds values for CPU, RAM, disk, file size, age and more.

- Monitoring of running services, and the ability to start, kill or restart.
- Automatic email alerts sent at event triggers.
- Web interface for status monitoring.
- Availability from main package repositories.

The results show that Monit monitoring can be easily done to the server and remote hosts that are connected to the network topology and notifications are sent via e-mail to the network administrator in case if there is any network outage. However, Nagios is a common alternative and Monit competitor. Nagios is complete server, switch, application, and service monitoring and alerting. Nagios is a GNU (General Public License) host/ service/ network surveillance program published in C. Some of Monit's characteristics are: Responsive UI, Remote Control Services, Services Monitoring modes. The all nodes within local area network can be monitored by Monit, not entire infrastructure. On the other side, the following main characteristics are provided by Nagios: monitoring the entire IT infrastructure, spot issues before they happen, knowing instantly when issues arise. And although setting up and extreme overkill for monitoring one server is complicated for Nagios. So, in this paper, I was presented with Monit as it was comparatively simple to set up and seems to satisfy network administrator requirements. Monit can monitor and manage distributed computer systems, conduct automatic maintenance and repair and execute meaningful causal actions in error situations. In each case, Monit's default action is to send an email alert if the condition is met that the service has stopped. An optional external Monit server can also be used for remote monitoring of a web application or other services.

6. CONCLUSION

In this paper, a network checking system is presented that advises the network administrator in case of any failure within the network topology. Network checking was worn out Linux. Server checking was given more significance and the server metrics like CPU status, Memory utilization and stack time were persistently observed and their comparing status was checked at normal interim. The tool has been designed to empower the network administrator to get email when system disappointment happens. For the server being administered, execution results were accomplished. It ought to be simple to uphold arrange administration and cost-effective. This paper given a straightforward and automatic network monitoring and administration conspire that quickly reports in case of any issue to the network administrator. Monit was set up to monitor the server's overall system resources and facilities. It has the capacity to restart fizzled administrations. Monit is hence greatly compelling and offers total network control. The practical result of this paper is the implementation of the Monit monitoring system for an unnamed company, which will certainly be a great benefit for the company. The only initial investment of the open-source Monit product is its installation and configuration. The time spent on its launch will however quickly return in the form of a solid system for monitoring of computer networks from one central point.

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