Placement Empowerment Program

Cloud Computing and DevOps Centre

Day 06-Log File Monitor&Alert Script

Create a script to monitor log files(e.g.,/var/log/syslog) In real-time and alert when specific keyword like “error”or “failed”appear

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Introduction

In system administration, log monitoring is essential to **detect issues in real-time**. This Proof of Concept (PoC) uses Linux commands to track the system log file **(/var/log/syslog)** and alert the user when specific keywords are detected.

Overview

This PoC demonstrates how to monitor Linux log files in real-time and trigger alerts when specific critical keywords such as **"error", "failed",** or **"critical"** appear.

Using a simple shell script with tools like **tail, grep, and echo**, system administrators can quickly detect abnormal system behavior and take immediate action. This solution is lightweight, efficient, and ideal for early detection of issues in production or development environments.

Key steps in this PoC:

✅**Open Terminal**

Launch a terminal on your Linux system to begin the process.

✅ **Create the Monitoring Script**

Use a text editor like nano to write a shell script (log_monitor.sh) that monitors the system log file.

✅ **Use tail -f to Follow Logs**

The script uses **tail -f /var/log/syslog** to track new log entries in real-time.

✅ **Filter for Keywords**

Pipe the log entries through grep to detect keywords like **error, failed, or critical** using case-insensitive matching.

✅ **Trigger Alerts**

If a match is found, the script displays an alert message and the matched log line on the terminal.

✓ **Make the Script Executable**

Change script permissions using **chmod +x log_monitor.sh.**

✓ **Run the Script**

Start the log monitoring by executing the script **(./log_monitor.sh).**

Objectives :

✓**Monitor System Logs in Real-Time**
Continuously observe /var/log/syslog to detect system activity and issues as they happen.

✓**Detect Critical Events Automatically**
Search for specific keywords such as **"error", "failed"**, and **"critical"** that indicate potential problems.

✓**Trigger Immediate Alerts**
Notify users instantly via console output whenever a critical log entry is found.

✓ **Implement Lightweight Automation**
Use a simple shell script that runs efficiently without needing external tools or heavy monitoring solutions.

✓ **Lay the Foundation for Advanced Monitoring**
Establish a base that can be extended to send email alerts, system notifications, or integrate with monitoring tools like Nagios or Prometheus.

Importance :

✅ **System Security & Stability**

Real-time log monitoring helps detect unauthorized access, service failures, and system errors as soon as they occur.

✅ **Proactive Troubleshooting**

By identifying critical keywords instantly, administrators can address issues before they escalate into bigger problems.

✅**Time-Saving Automation**

Manual log checking is time-consuming. This script automates the process, increasing efficiency for system monitoring tasks.

✅**Lightweight & Customizable**

Requires no third-party tools—runs with basic Linux utilities. It can also be customized for different log files or keywords.

✅ **Scalable for Production Use**

This basic setup serves as a foundation for building more advanced alerting systems **(e.g., email, Slack, or cloud alerts).**

Step-by-Step Overview

Step 1:Open Terminal

Launch a terminal window on your Linux system.

Step 2:Create a Shell Script File

Create a new shell script named log_monitor.sh:

Step 3:Write the Monitoring Script

In the nano editor,Paste the following code:

```bash
#!/bin/bash

# Log file to monitor
LOG_FILE="/var/log/syslog"

# Keywords to look for
KEYWORDS=("error" "failed")

# Function to check each line for keywords
check_keywords() {
    local line="$1"
    for keyword in "${KEYWORDS[@]}"; do
        if echo "$line" | grep -iq "$keyword"; then
            echo "⚠️ALERT: Found keyword '$keyword' in log:"
            echo "$line"
        fi
    done
}

# Monitor the log file in real-time
echo "📡 Monitoring $LOG_FILE for keywords: ${KEYWORDS[*]}"
tail -F "$LOG_FILE" | while read -r line; do
    check_keywords "$line"
done
```

Step 4:Save and Exit

Press Ctrl + O → Enter (to save)

Press Ctrl + X (to exit)

Step 5: Make the Script Executable

Back in the terminal:

This gives the script permission to run as a program.

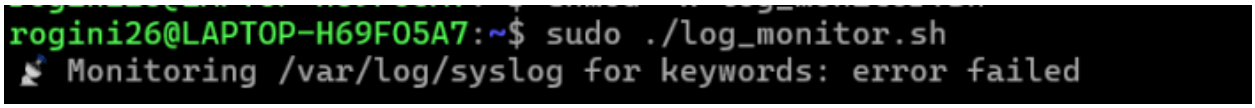
Step 6: Run the Script with sudo

Since you're monitoring a protected system log file,run the script using:

You'll be promoted to enter your Linux password.

Step 7:Script Starts Monitoring

Once running,you'll see:



This means it's **actively watching the log file** in real time.

Step 8:Test the Script(Optional)

If nothing is appearing,you can simulate a log message by typing:

You should see output like:

Outcomes:

✅ **Real-Time Log Monitoring**
You gain the ability to watch log files live and instantly detect system issues or failures.

✅ **Automated Alerts**
Critical events containing keywords like error, failed, or critical are immediately flagged without manual log inspection.

✅ **Improved Troubleshooting Speed**
Instant feedback helps reduce downtime by allowing you to act on issues as soon as they occur.

✅ **Hands-on Shell Scripting Experience**
Reinforces core Linux skills—especially in using tools like tail, grep, conditionals, and script automation.

✅ **Scalable for Production Environments**
Forms the base for future enhancements like sending email/SMS alerts, integrating with monitoring tools, or monitoring custom log files.