# Design Document – Alerting Mechanism for Selenium Hub and Nodes via Grafana

## 1. Objective

Monitor the Selenium 4.8.3 Hub and Node health (for both browser and mobile) using Grafana. Alerts should be triggered when any component becomes unavailable, with email notifications sent to the support team.

## 2. Monitoring Approaches

Two possible implementations are being considered. Final selection will be made after confirmation.  
  
Option 1: HTTP Endpoint Monitoring (Preferred)  
Grafana’s built-in HTTP check will be used to periodically verify the status of:  
- Selenium Hub: http://<hub-ip>:4444/status  
- Browser Nodes: http://<node-ip>:5555/status  
- Mobile Nodes: http://<mobile-node-ip>:5555/status  
  
Health Criteria:  
- A response code of 200 indicates the component is UP.  
- Any other response or timeout indicates the component is DOWN.  
  
Option 2: Prometheus Integration (Alternative)  
If future scalability or metric correlation is needed, Prometheus can be integrated to scrape metrics from a custom endpoint or exporter.

## 3. Alert Configuration

Alert Trigger Condition:  
- Check Interval: Every 30 seconds  
- Condition: Response code ≠ 200 or timeout  
- For: Must fail for at least 2 consecutive checks before alerting.

## 4. Alert Behavior Options

A. One-Time Alert (No Repeat Until Recovery)  
- Grafana triggers an alert once when the Hub or Node transitions to DOWN.  
- Remains active until recovery.  
- Sends a Resolved alert once UP again.  
  
Configuration Example:  
evaluation\_interval: 30s  
for: 1m  
repeat\_interval: 0s  
receiver: 'Email-Notification'  
  
B. Continuous Alert Until Recovery (Repeat Alerts)  
- Grafana triggers the first alert when DOWN.  
- Sends reminder alerts at defined intervals until recovery.  
- Sends a Resolved alert when UP again.  
  
Configuration Example:  
evaluation\_interval: 30s  
for: 1m  
repeat\_interval: 1h  
receiver: 'Email-Notification'

## 5. Notification Channel

Primary Notification Method: Email  
  
Channel | Purpose | Frequency  
--------|----------|------------  
Email | Notify support team when Hub/Node is DOWN or UP again | As per alert configuration  
  
Future integration options: Slack, Microsoft Teams, or PagerDuty.

## 6. Email Alert Template (Example)

Subject Templates:  
- For DOWN Alert: 🚨 [ALERT] Selenium Hub DOWN – {{ $labels.instance }}  
- For Recovery Alert: ✅ [RESOLVED] Selenium Hub UP – {{ $labels.instance }}  
  
Email Body Template:  
Alert Name: {{ .CommonLabels.alertname }}  
Environment: Production  
Component: {{ .CommonLabels.instance }}  
Status: {{ .Status }}  
  
Summary: {{ .Annotations.summary }}  
Description: {{ .Annotations.description }}  
  
Triggered At: {{ .StartsAt }}  
Resolved At: {{ .EndsAt }}  
  
Please verify the Selenium Hub/Node health immediately.

## 7. Recovery Notification

When the Selenium Hub or Node returns to a healthy state (HTTP 200), Grafana automatically sends a Resolved email alert to indicate the system is operational again.

## 8. Summary Table

Scenario | Alert Sent | Repeated? | Notification Method  
----------|-------------|------------|----------------------  
Hub/Node DOWN | Yes | Optional | Email  
Hub/Node UP | Yes (Resolved) | No | Email

## 9. Next Steps

- Confirm whether to proceed with HTTP Check or Prometheus method.  
- Decide between One-Time Alert or Continuous Alert behavior.  
- Set up SMTP integration for Grafana to send email notifications.  
- Configure test alerts to validate end-to-end behavior.  
- Finalize email template and recipients (support/infra DL).