Observing Cloud Resources

*SRE Assessment Template*

# Categorize Responsibilities

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| **Prometheus and Grafana Screenshots** | |
| Provide a screenshot of the Prometheus node\_exporter service running on the EC2 instance. Use the following command to show that the system is running: sudo systemctl status node\_exporter | |
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| **Host Metric**  **(CPU, RAM, Disk, Network)** | **Dashboard** |
| **CPU, RAM, Disk, Network** |  |
| **Responsibilities** | |
| 1. The development team wants to release an emergency hotfix to production. Identify two roles of the SRE team who would be involved in this and why. | |
| *For a hotfix release, the main SRE roles and responsibilities revolve around quickly ensuring stability and reliability while minimizing downtime.  Release Manager: This role ensures the coordination of the hotfix deployment, making sure the fix is rolled out in a controlled manner and that it doesn’t introduce new issues. They also track the release status and communicate with stakeholders.  Monitoring Engineer: This role involves actively monitoring the system before, during, and after the hotfix release to ensure no unintended side effects. The engineer sets up alerts for any unexpected behavior and works on troubleshooting issues if something goes wrong during the hotfix.* | |
| 2. The development team is in the early stages of planning to build a new product. Identify two roles of the SRE team that should be invited to the meeting and why. | |
| *For a new product build, the focus shifts toward ensuring that the product is built with reliability, scalability, and performance in mind from the start.*  Infrastructure Engineer: This role is responsible for setting up the necessary infrastructure for the new product. They ensure that the infrastructure is scalable and can handle the expected load. They also take care of automation, load balancing, and redundancy.  Reliability Engineer: This role ensures that reliability is built into the product from the start. They set up error budgets, service level objectives (SLOs), and service level agreements (SLAs). They also focus on building resilience into the product by preparing for failures and planning for chaos engineering. | |
| 3. The emergency hotfix from question 1 was applied and is causing major issues in production. Which SRE role would primarily be involved in mitigating these issues? | |
| *In production issues, the key SRE roles involve fast identification, mitigation, and prevention of future occurrences.*  Incident Response Engineer: This role takes immediate ownership during production incidents. They work to identify the root cause, mitigate the issue, and bring the system back to normal operation as quickly as possible. This role also involves coordinating with other teams for incident resolution and conducting post-mortems to prevent recurrence. In all these cases, SREs ensure that services remain reliable, scalable, and efficient across various stages of software development and operation. | |

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# Team Formation and Workflow Identification

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| **API Monitoring and Notifications** |
| Display the status of an API endpoint: Provide a screenshot of the Grafana dashboard that will show at which point the API is unhealthy (non-200 HTTP code), and when it becomes healthy again (200 HTTP code). |
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| Create a notification channel: Provide a screenshot of the Grafana notification which shows the summary of the issue and when it occurred. |
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| Configure alert rules: Provide a screenshot of the alert rules list in Grafana. |
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# Applying the Concepts

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| **Graph 1** |
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| 4a. Given the above graph, where does it show that the API endpoint is down? Where on the graph does this show that the API is healthy again? |
| Based on the chart, the API was down around 15:35 (the time when the curve dropped to a low value). The API became active again around 15:25 (the time when the line rose above the 400 level). |
| 4b. If there was no SRE team, how would this outage affect customers? |
| Without an SRE (Site Reliability Engineering) team to monitor and resolve issues, an API outage can have significant impacts on customers, including:  + Service interruption  + Poor user experience  + Data loss or transaction error  + Impact on reputation |
| 4c. What could be put in place so that the SRE team could know of the outage before the customer does? |
| *To ensure that the SRE team can detect and resolve incidents continuously before customers are impacted, the following monitoring methods and tools can be developed: + API and service monitoring: Use monitoring tools (like Prometheus, Grafana, Datadog, New Relic) to track important metrics like latency, error rate, response time response time and status code of the API. This monitoring allows for immediate detection when performance drops or signs of downtime. + Automatic warnings (Alerts) Using Alert Manager with Grafana, Zabbix, Prometheus,…* |

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| **Graph 2** |
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| 5a. Given the above graph, which instance had the increase in traffic, and approximately how many bytes did it receive (feel free to round)? |
| From the graph:   * The instance **"10.0.0.68:9100"** (represented by the green line) experienced a significant increase in network traffic. * Around **15:00**, the traffic increased from approximately 1,000 bytes to about **4,500 bytes**. |
| 5b. Which team members on the SRE team would be interested in this graph and why? |
| **Network Engineers:** They are responsible for monitoring and managing network traffic, ensuring that there is no network congestion or unexpected traffic spikes that could degrade service quality or cause outages. The increase in traffic might indicate a network issue or an unusual amount of data being received. **Performance Engineers:** They would be interested in understanding the cause of the traffic increase and how it might impact system performance, latency, or the application's ability to handle higher loads. Monitoring the system's behavior under increased network traffic can help optimize performance and scalability. **Security Engineers:** A sudden and significant increase in traffic could be a sign of a security threat, such as a **DDoS attack** or unauthorized access. Security engineers would need to investigate whether this increase is legitimate or the result of malicious activity. **Application Owners/Developers:** They would want to know if this spike in traffic is related to new releases, features, or changes in user behavior. The increase could also indicate bugs or issues in the application causing unnecessary or excessive network requests. |

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