A] SRE (Site Reliability engineering)

→ Splunk is most widely used SRE Tool. (cloud agnostic - work with all clouds)

→ SRE is all about observability.

→ SRE is automating.

→ SRE is used to automate IT operations task such as Production System management, change management, incident responses, that would manually be performed by System admin.

→ SRE automate task that can be done by People

SRE are software developer engineer with IT operation experience

→ SRE was Born in Google.

SRE what when you ask a S/W engineer to create a IT operation teams.

★] Responsibilities of SRE engineer.

monitor System,

identify issue.

develop solution.

★] Principal of SRE (Basic concepts)

i] Risk evaluation → Evaluate the Risk of unexpected failures.
↳ achieving the 99.999% of Reliability

ii] SLO (Service level objective) → medium to meet the SLA

iii] Eliminating Toil → Toil = task that bring no value in long term
Toil - manual work to keep a Service Running
The SRE Should bring automation & eliminate Toil.

iv] Monitoring → monitoring all the data that is generated by the application (collect, analyze, process data

v] Release ~~Energy~~ Engineering - what are we releasing & how?

vi] Automation → (save money, time)

vii] Simplicity
↳ focus on what is important.

★] Key components.

1] availability → No downtime, Systems are accessible and operational whenever needed.
↳ minimize downtime, maximize uptime

2] Latency → Provide low latency

3] Performance →

4] Efficiency → Effective utilize Resources

5] change management → change should be done without disturbing
6] Monitoring →
7] Emergency Response → RCA & Incident Responding

★] key Terms

if too many incidents are happening for a long time that is called a problem

1] SLA (Service level agreement) → an agreement between user & Service provider that says a minimum level of Service is maintained.

eg - banking Service should be up 99.9%

2] SLI (Service level indicator) → measurement used to check the performance of a Service. (SLI used to measure Reliability)

3] SLO (Service level objective) → to maintain SLA we use an SLO (the desired Reliability level)

4] MTBF (mean time between failures) → average time between System failure.

5] Latency : basically delay

6] Error Budget : System allocates a budget for downtime for cloud, an error budget might allow a certain amount of downtime without violating the SLA.

7] MTTR (mean time to Repair) - time taken to Repair downtime

★] customer expectations.

↳ expect Reliability, innovation

SRE is all about meeting customer expectations

SLI = used to measure Reliability

5-nine (99.999%) - trying to achieve perfection

100% Reliability is not possible

five-nine are very expensive

customer wants innovations

error budget → allows you to safely innovate

*] Best SRE Practises.

i] monitoring
- collecting, Processing, analyzing data
- check what wrong is happening
- find the Root cause of Problem

ii] Incident Response
- Be prepared for any incident
- Quickly Respond to incidents

iii] Root cause Analysis (RCA) & postmortems
- find the main cause of problem

iv] Testing & Releasing
- Improves the quality, Release engineering makes the Release Process more Secure & faster.

v] capacity planning

vi] development -- 50 % dev & 50 % OPs

vii] User enpurience
1] Whole SRE team
2] OPS | SRE team
3] SRE in Product development teams
4] SRE + SRE in Dev & OPS = more money