

1 HW 2: Microservices Problems Case Studies (outages, failures, performance issues)

This homework aims to help you understand the challenges that companies face when managing and maintaining microservices. Essentially, there are several microservice's unique edge cases and unexpected scenarios which arise after the migration. The result of which is a hit in performance or services availability. Both of which are undesirable.

To this end, your goal is to pick 3-4 outage/performance problem stories from Kubecon or qcon and write a 2-3 page report about the problem case studies. Note: KubeCon and QCon have multiple instances a year– a North American conference, European conference, a China conference, etc. You should be able to find problem case studies in different instances. I would recommend taking a look at the various conferences over the last 18-24 months.

In analyzing the stories, your goals are to understand:

- What was the problem? Why did the problem occur?
- How could the problem have been avoided?
- What were steps to a resolution?
- What are generalizable lessons from this one instance?
- Looking across the three (or four) case studies, what are the common themes? What are the differences? Why do the differences exist? (What aspect of the organization, services, use case led to the differences)
- Given your observations about similarities and differences, what new technique would you propose to simplify problem diagnosis? Why do you think such a tool does not exist?

Hand-Ins: Your report should be 2 pages (excluding figures and references) and **must** follow the SIGCOMM submission template. You **must** use **10pt font in times**. Your report **must** follow conference style with the following sections:

- Abstract: A brief summary of your report.
- Introduction: A description of the importance of microservices performance and availability, justification for why understanding performance/availability case studies are essential, justification for why (and how) you picked the specific case studies.
- Case Studies: This describes and summarizes the different case studies.
- Discussion: This provides discussion on the themes (similarities/differences between case studies) and the new techniques you propose to simplify problem diagnosis and eliminate the practical problems.

You can turn in your homework using this form.