**Assignment 5.3 Case Studies**

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This week we looked at two case studies one having to do with Google and one having to do with Netflix. Both companies where running into issues with their site or application having downtime. Both companies needed to find a way to solve this issue and quick as this can really have a major impact on their company and customer base. Amazon came up with two testing methods to combat this issue and Netflix came up with a program called Scryer to help fix theirs after finding Amazon’s tool wasn’t working for them. Below I will go into detail to explain how each company figure out the needed tools to fix this issue.

In the case study of the Launch Hand-off and Readiness review at Google (2010) they talked about how Ben Treynor Sloss in 2004 came up with the idea of they have a functional operation for their Ops engineers called “Site Reliability”. (Kim, G.) Ben Sloss started with seven SRE (site reliability engineers) that later on grew to a little over a thousand by 2014. (Kim, G.) SREs are a software engineering approach to IT operations. (Red Hat.) These teams use the software as a tool to do things like manage different systems and to solve problems as well as do many automated tasks. (Red Hat.) Sloss believed that any time Google was offline it was his fault because he had so many tools and team members and tests were run on each part. These SREs where tasked to protect team members all across Google but because SREs are hard to come by they were tasks mostly to teams with the highest importance’s in the company. (Kim, G.) When teams became important enough to finally be assigned an SRE they had to meet several requirements one being that they managed their project for six months before they were eligible. (Kim, G.) To help the teams out that didn’t have SREs yet Google decided to create two programs to help them out called Launch Readiness Review (LLR) and the Hand-Off Readiness Review (HRR). (Kim, G.) The Launch Readiness Review was there to make sure products where being signed off on and that no product was being released to the public before it is completely ready. The Hands-Off Readiness Review is done when program or service is transitioned to an Ops managed state which is normally several months after the LLR tests. (Kim, G.) While theses tests are being completed the team has an SRE that helps them through these and also to help them understand the requirements of each test. (Kim, G) Tom Limoncelli found that during each one of these tests that’s someone was always learning something from the tests and that the tests changed over time. (Kim, G.) Limoncelli believed that walking through these tests really gave the teams a feel for what it would be like to be on the Ops position. Limoncelli also found that teams that started working with an SRE member that their products past the tests much quicker than teams that started working with SRE later in the process. Getting help from SRE’s is said to be an easy thing to do because they always want to help because that helps to cut down on time later when its time to test.

The second case study was Auto-Scaling Capacity at Netflix (2012) which was a tool that Netflix developed called Scryer after seeing issues with the Amazon auto-scaling. The Amazon auto-scaling would dynamically increase and decrease the Amazon web services (AWS) based off workload data. (Kim, G.) Scryer however works by predicting what customers will demand based off historical usage patterns and then will prevision the needed compacity. (Kim, G.) The Scryer tool addressed several issues that the Amazon auto-scaling had. Issues such as; having issues with dealing with spikes in demand, after any outages AAS would think there was a large decrease in customers and then remove too much capacity so that it didn’t have enough to deal with the number of customers, and lastly AAS didn’t factor in known usage traffic patterns when it would schedule a compute capacity. (Kim, G.) Nexflix’s consumer viewing patterns stayed pretty much the same and predictable even though it didn’t have Gaussians distributions. Gaussians distributions are known as normal distribution and is a bell-shaped curve and it assumes that during any measurement values will follow a normal distribution with an equal number of measurements above and below the mean value. (Sciencedirect.) Scryer will put out spurious data points and then use Fast Fourier Transform (FFT) and linear regression to smooth out the data and preserving spikes in traffic. (Kim, G.) This allows Netflix to predict the amount of traffic with a high level of accuracy. (Kim, G.) After only using Scryer for a short time Netflix was able to lower costs from Amazon EC2 and also greatly improve their customers viewing and service availability.

To Sum it up both companies Amazon and Netflix found great ways to improve the customers experience on the back end. Both tools allowed for costs to be lowered in one way or another. These tools also help really cut down on the amount of trouble and downtime each site had. I believe the outcome at both companies really helped to make the customer experience a lot better than it had been before they implemented the new tools. When a site or application goes down that really can have a negative impact on your customers because it disrupts their lives in some way. So, by implementing something that can really help cut the downtime down a lot its going to really help make your customers stay with you longer and potentially raise revenues for the company.

**Bibliography**

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