Availability
Thinking beyond 9's

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DRI
Adding 9's to Bing
Since 2009

Technical Details on the Recent Firefox Add-on Outage

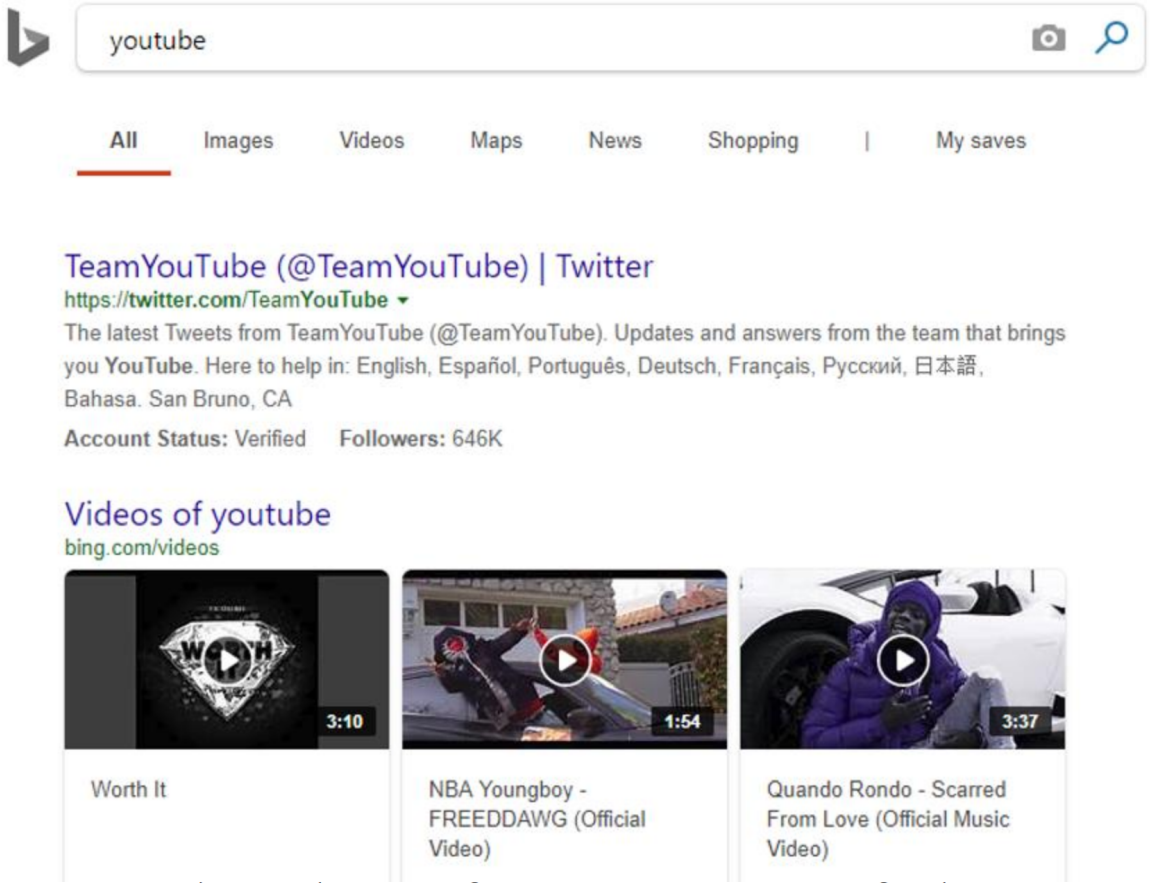
By Eric Rescorla

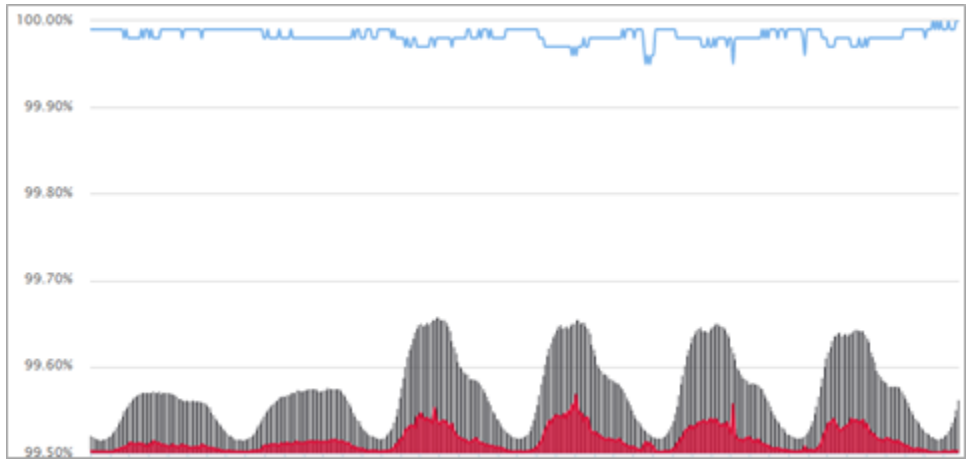
Posted on May 9, 2019 in Add-ons and Firefox ❤ Share This

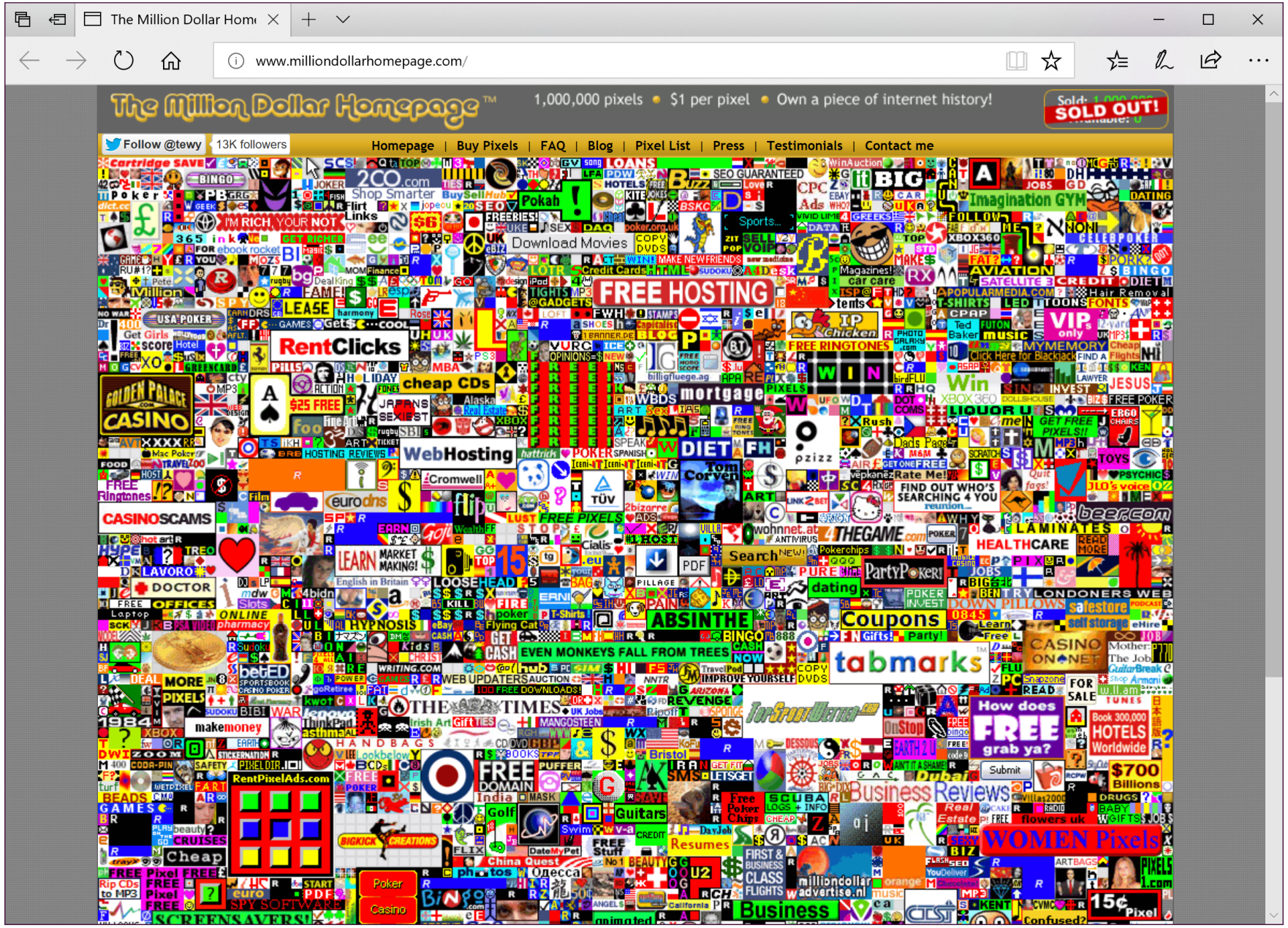
Recently, Firefox had an incident in which most add-ons stopped working. This was due to an error on our end: we let one of the certificates used to sign add-ons expire which had the effect of disabling the vast majority of add-ons. Now that we've fixed the problem for most users and most people's add-ons are restored, I wanted to walk through the details of what happened, why, and how we repaired it.

https://hacks.mozilla.org/2019/05/technical-details-on-the-recent-firefox-add-on-outage/

Available, but is it useful?







www.milliondollarhomepage.com

Definition

Availability & Downtime

Availability %	Downtime per year	Downtime per month	Downtime per week	Downtime per day
90% ("one nine")	**36.5 days**	**72 hours**	**16.8 hours**	**2.4 hours**
95%	18.25 days	36 hours	8.4 hours	1.2 hours
97%	10.96 days	21.6 hours	5.04 hours	43.2 minutes
98%	7.30 days	14.4 hours	3.36 hours	28.8 minutes
99% ("two nines")	**3.65 days**	**7.20 hours**	**1.68 hours**	**14.4 minutes**
99.5%	1.83 days	3.60 hours	50.4 minutes	7.2 minutes
99.8%	17.52 hours	86.23 minutes	20.16 minutes	2.88 minutes
99.9% ("three nines")	**8.76 hours**	**43.8 minutes**	**10.1 minutes**	**1.44 minutes**
99.95%	4.38 hours	21.56 minutes	5.04 minutes	43.2 seconds
99.99% ("four nines")	**52.56 minutes**	**4.38 minutes**	**1.01 minutes**	**8.66 seconds**
99.995%	26.28 minutes	2.16 minutes	30.24 seconds	4.32 seconds
99.999% ("five nines")	**5.26 minutes**	**25.9 seconds**	**6.05 seconds**	**864.3 milliseconds**
99.9999% ("six nines")	**31.5 seconds**	**2.59 seconds**	**604.8 milliseconds**	**86.4 milliseconds**
99.99999% ("seven nines")	**3.15 seconds**	**262.97 milliseconds**	**60.48 milliseconds**	**8.64 milliseconds**
99.999999% ("eight nines")	**315.569 milliseconds**	**26.297 milliseconds**	**6.048 milliseconds**	**0.864 milliseconds**
99.9999999% ("nine nines")	**31.5569 milliseconds**	**2.6297 milliseconds**	**0.6048 milliseconds**	**0.0864 milliseconds**

https://en.wikipedia.org/wiki/High_availability

Simplified formula:

$$Availability = \frac{(Total\ Requests - Failed\ Requests)}{Total\ Requests}\ \%$$

$$A = \frac{(T-F)}{T}\ \%$$

Used only weekdays

During work hours

99 or 99.9%?

en.wikipedia.org/wiki/Parking_meter#/media/File:Multi-space_parking_meter.JPG

www.faa.gov/air_traffic/by_the_numbers/media/Air_Traffic_by_the_Numbers_FY2018_Average_Daily_Flights_Handled_760x540_ca02.jpg

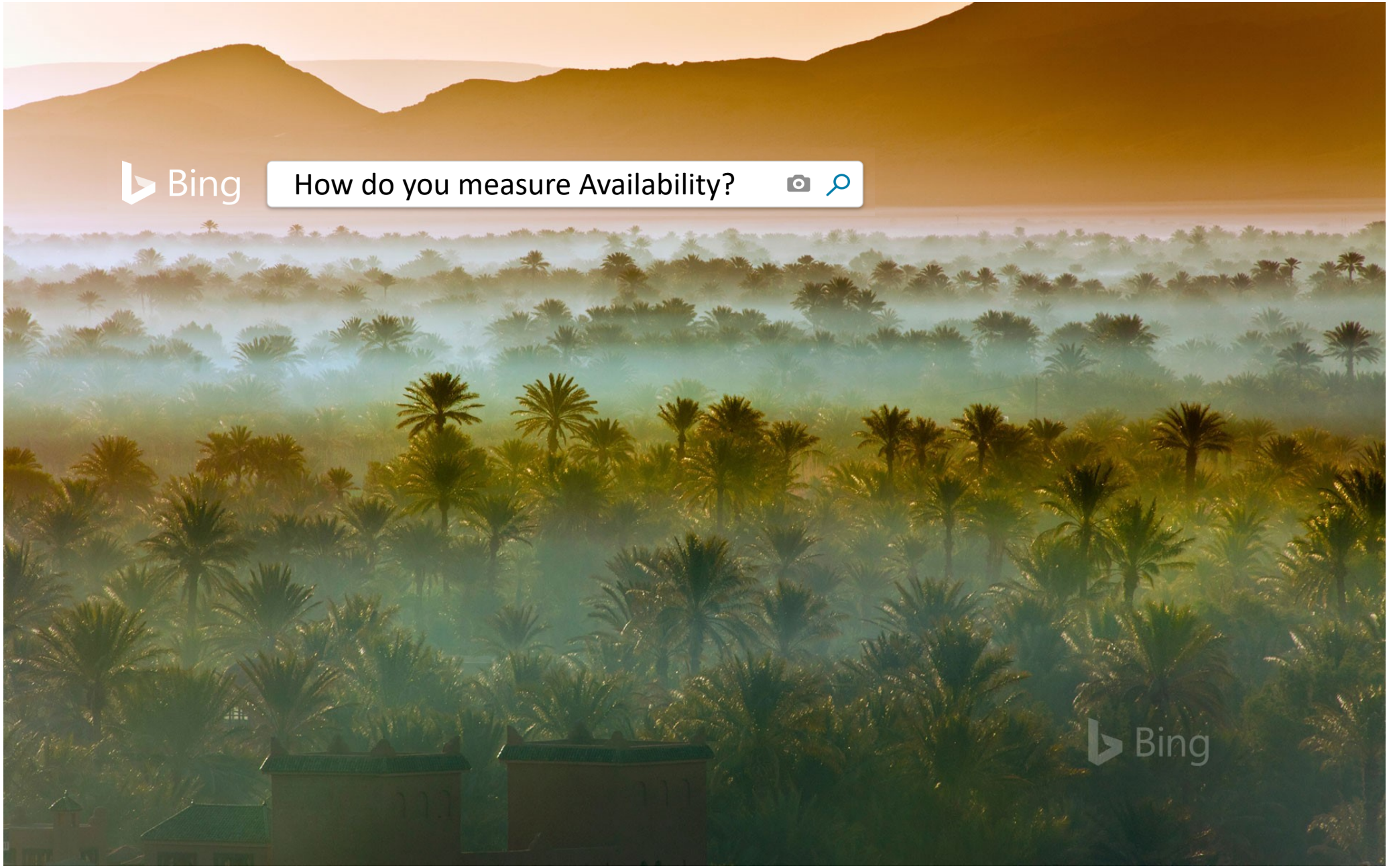
100,000 Flights a day

99.9% ➔ 100 failures/day

99.999% ➔ 1 failure/day

99.99999% ➔ 0.01 failure/day

99.99999% ➔ 3.65 failures/year

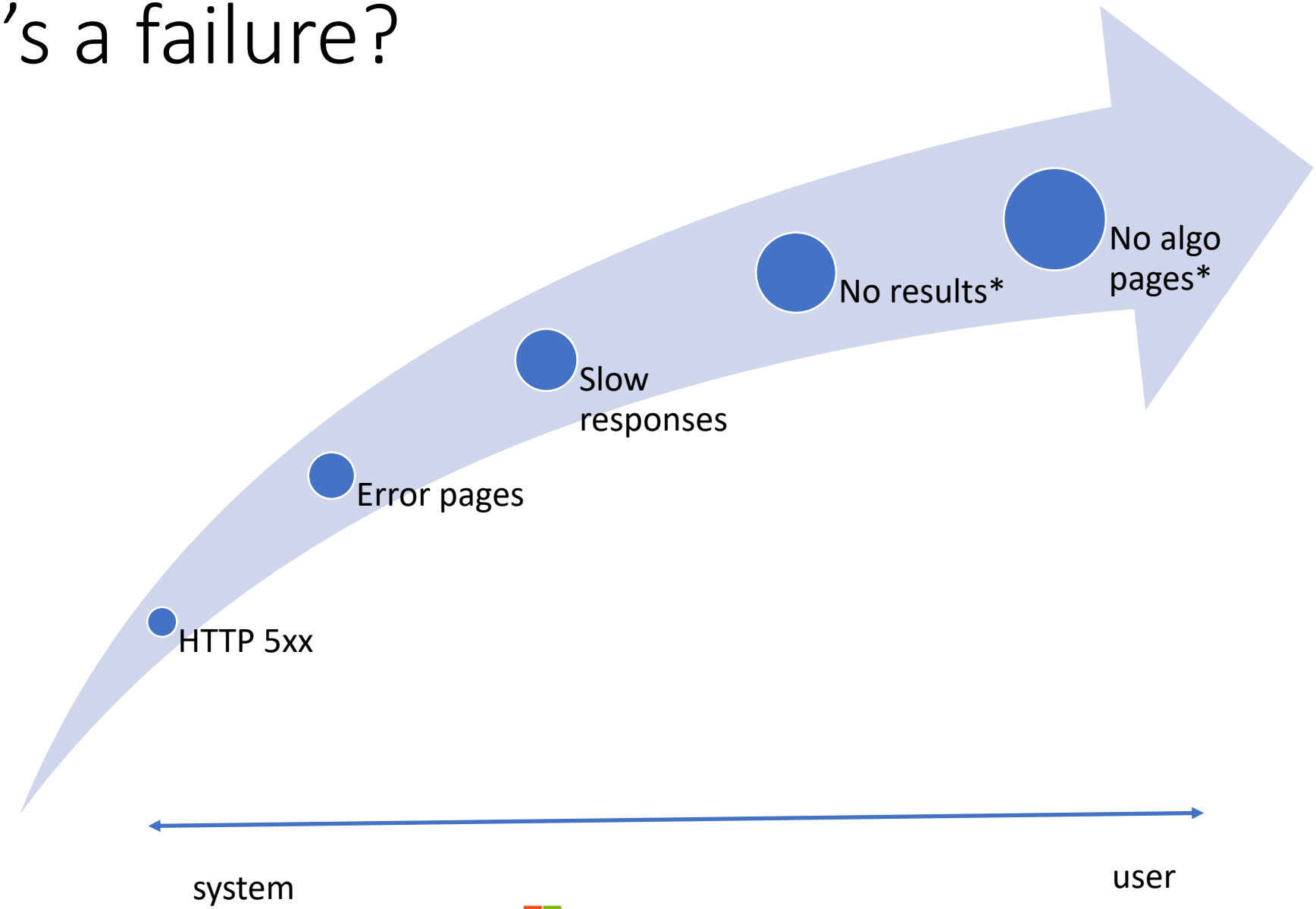

Bing
How do you measure Availability?
Bing

Remember our formula?

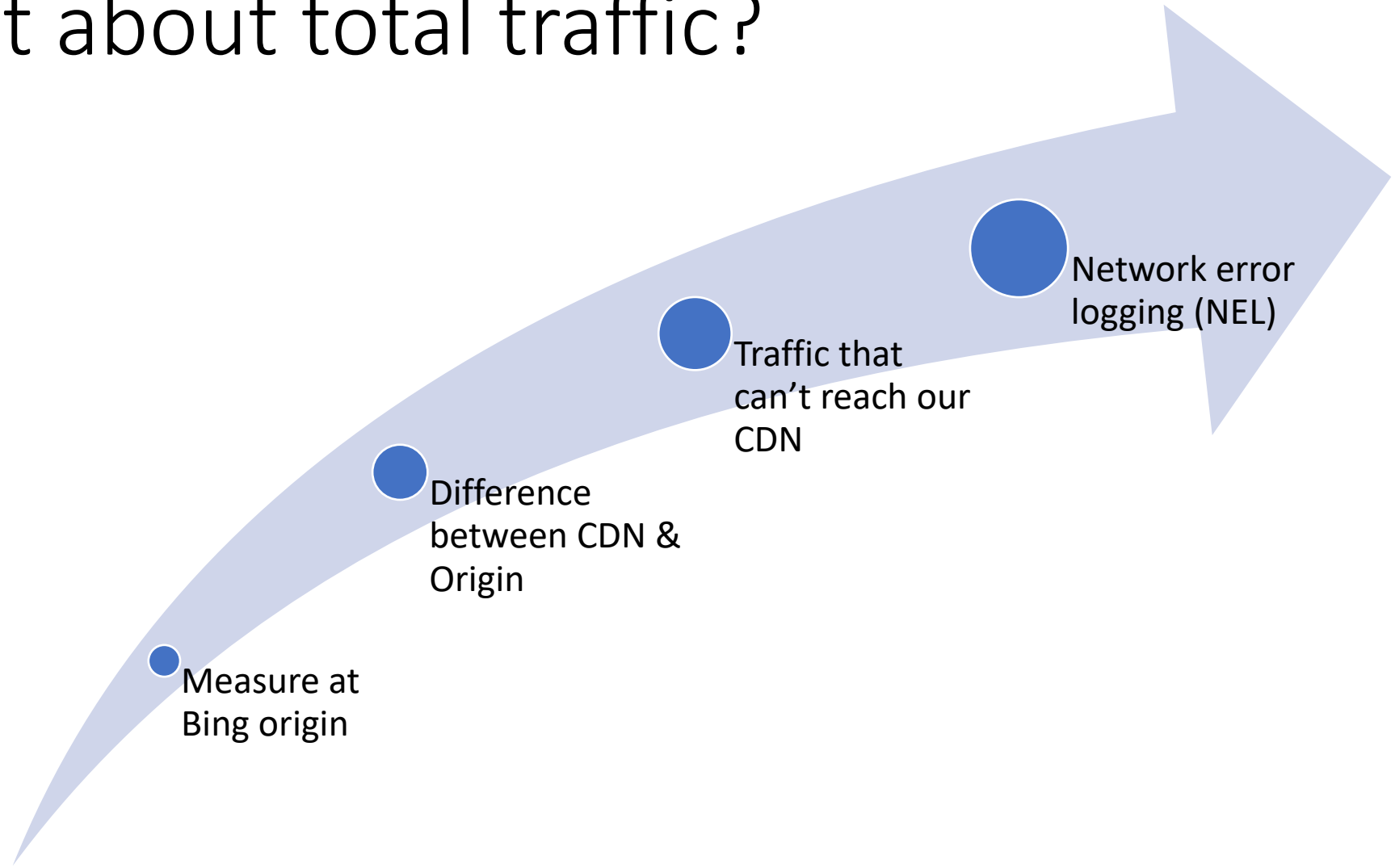
$$Availability = \frac{(Total\ Requests - Failed\ Requests)}{Total\ Requests}\ \%$$

$$A = \frac{(T - F)}{T}\ \%$$

What's a failure?



What about total traffic?



Things to consider…

- How many 9’s?
  - Guided by user expectation & business needs
  - Think of diminishing returns
- Where and how you measure matters
- Synthetic monitoring can hide issues
- Client issues cannot be ignored
- Metrics need to evolve over time
- Outages/failures can affect metrics
- Reliabile telemetry pipeline is critical

Track 2

Hide details ▾

Room 331–332

Understanding Business Metrics Can Make You a Better SRE

Friday, 2:00 pm–3:00 pm

Mohit Suley, Microsoft, and Kurt Andersen, LinkedIn

Practical Instrumentation for Observability

Wednesday, 12:00 pm–12:30 pm

Gabe Krabbe, Google

Show details ▸

Questions?

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