Disponibilidad

Ejemplos de no disponibilidad en verano de 2012

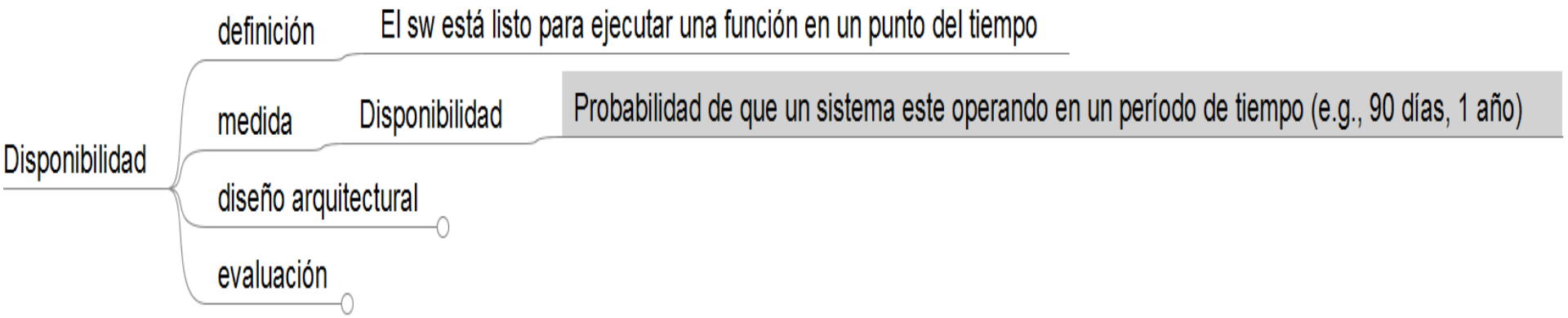
On June 14, Amazon reported a network outage caused by a power failure. While the downtime wasn't as sizeable as the days of downtime reported in 2011, the outage still left many upset.

Facebook went down on June 1, users were looking for a "dislike" button to hit. Facebook's outage began around 7 p.m. EDT, and was apparently so traumatic that the hashtag #RIPFacebook began trending on Twitter.

According to tracking site Pingdom, Twitter had been enjoying 99%-plus uptime for every month this year and hit 100% in April. However, On June 21 the micro blogging site experience its largest outage in nearly eight months

https://www.pingdom.com/

Definición y medidas



Escenario de calidad de disponibilidad

- El sistema debe estar disponible el 99.95% del tiempo en el año

Costos Directos / No-Disponibilidad (Tomado de [1])

INDUSTRY	AVERAGE DOWNTIME COST PER HOUR
Brokerage services	$6.48 million
Energy	$2.8 million
Credit card	$2.58 million
Telecomm	$2 million
Financial	$1.5 million
Manufacturing	$1.6 million
Financial institutions	$1.4 million
Retail	$1.1 million
Pharmaceutical	$1.0 million
Chemicals	$704,000
Health care	$636,000
Media	$340,000
Airline reservations	$90,000

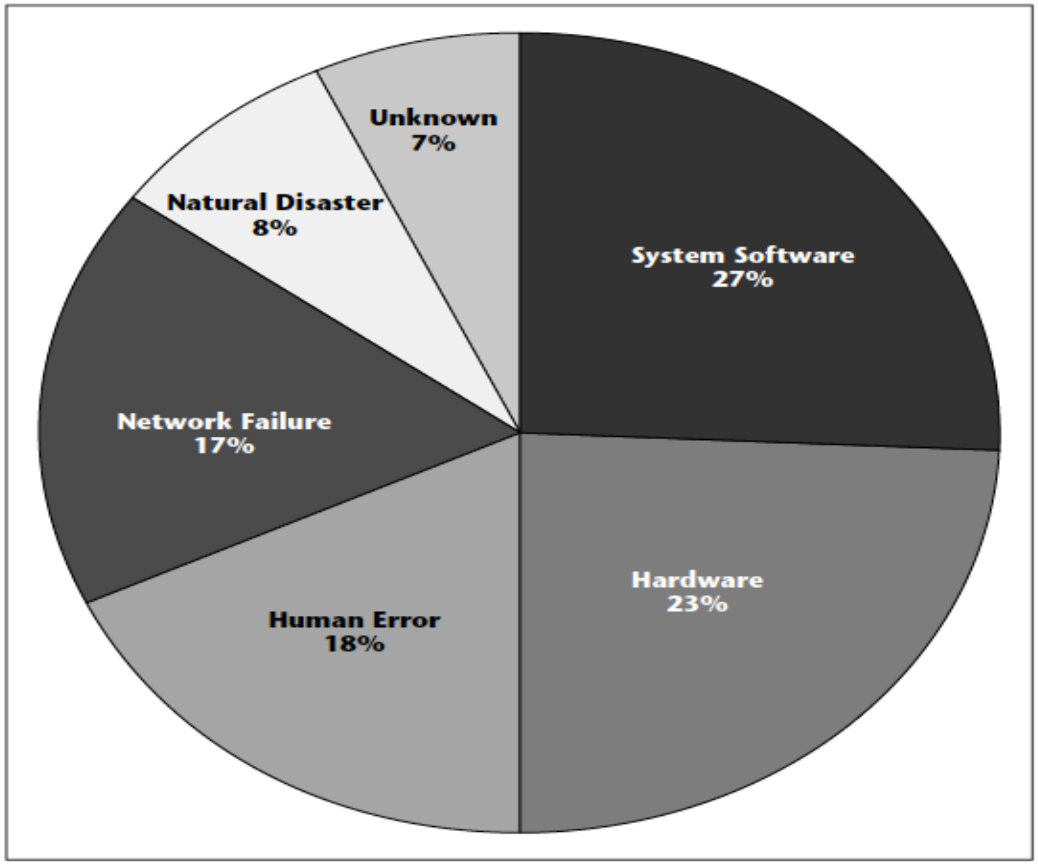
Sources: Network Computing, the Meta Group, and Contingency Planning Research.

Medición de Disponibilidad (Tomado de [1])

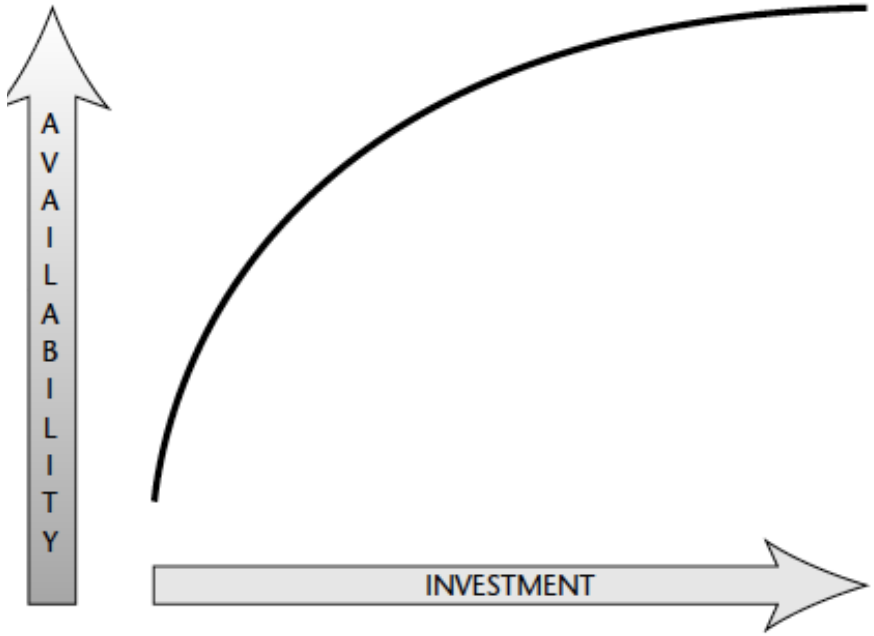
PERCENTAGE UPTIME	PERCENTAGE DOWNTIME	DOWNTIME PER YEAR	DOWNTIME PER WEEK
98%	2%	7.3 days	3 hours, 22 minutes
99%	1%	3.65 days	1 hour, 41 minutes
99.8%	0.2%	17 hours, 30 minutes	20 minutes, 10 seconds
99.9%	0.1%	8 hours, 45 minutes	10 minutes, 5 seconds
99.99%	0.01%	52.5 minutes	1 minute
99.999%	0.001%	5.25 minutes	6 seconds
99.9999% ("six 9s")	0.0001%	31.5 seconds	0.6 seconds

¿Cuáles son las causas de no disponibilidad?

Causas de no disponibilidad (no planeada) (Tomado de [1])



Disponibilidad / Inversión (Tomado de [1])



Cómo se calcula la disponibilidad de una parte del sistema

A = MTBF / (MTBF + MTTR)

Donde:

A = Grado de disponibilidad
A es un número entre 0 y 1, es un promedio no un mínimo
MTBF= Mean Time Between Failures
MTTR= Mean Time to Repair

Disponibilidad de una parte hardware

A = MTBF / (MTBF + MTTR)

Donde:

A = Grado de disponibilidad
MTBF= Mean Time Between Failures (Manufacturer estimated)
MTTR= Mean Time to Repair (Time to replace a failed hardware module)

Disponibilidad de una parte software

- MTBF más difícil de medir
- Se puede tener una intuición a través de:
  - La densidad de defectos

    Número de defectos en mil líneas de código (defects/KLOC)

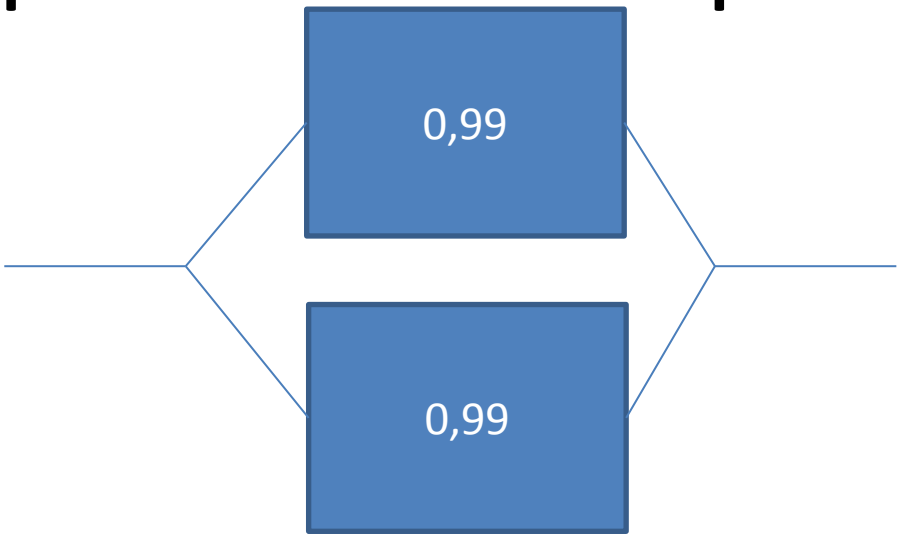
Cómo se calcula la disponibilidad de un sistema

- Se considera el sistema como una interconexión de partes en serie y paralelo
  - Si el fallo de una parte A hace que una parte B se vuelva inoperante, las dos partes están interconectadas en serie
  - Si no, las dos partes están interconectadas en paralelo

Disponibilidad en series

- 0,99*0,99=0,98 (7,3 días por año)

Disponibilidad en paralelo



- 1 -((1-0,99)*(1-0,99)) = 0,9999 (52,5 minutos por año)