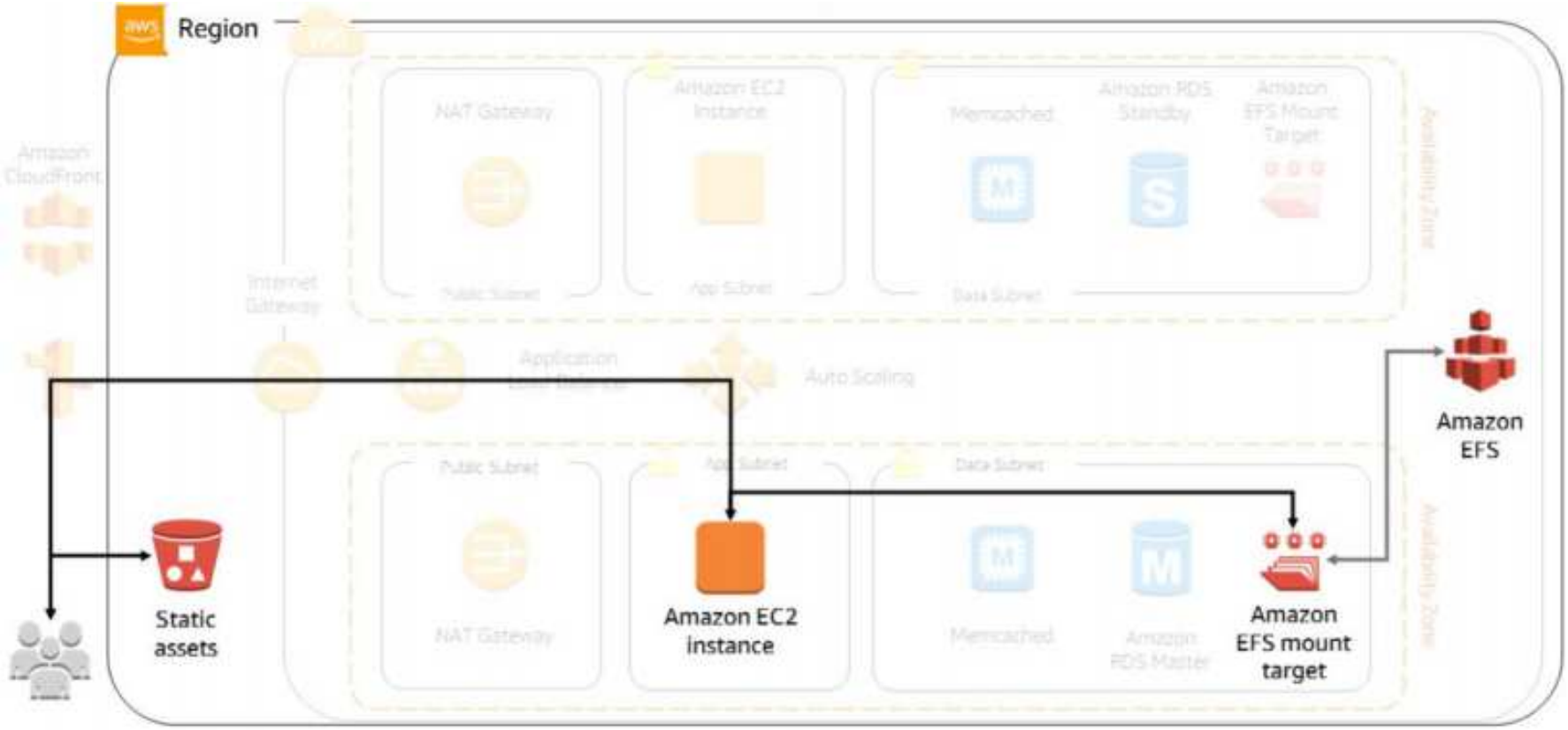
2.3

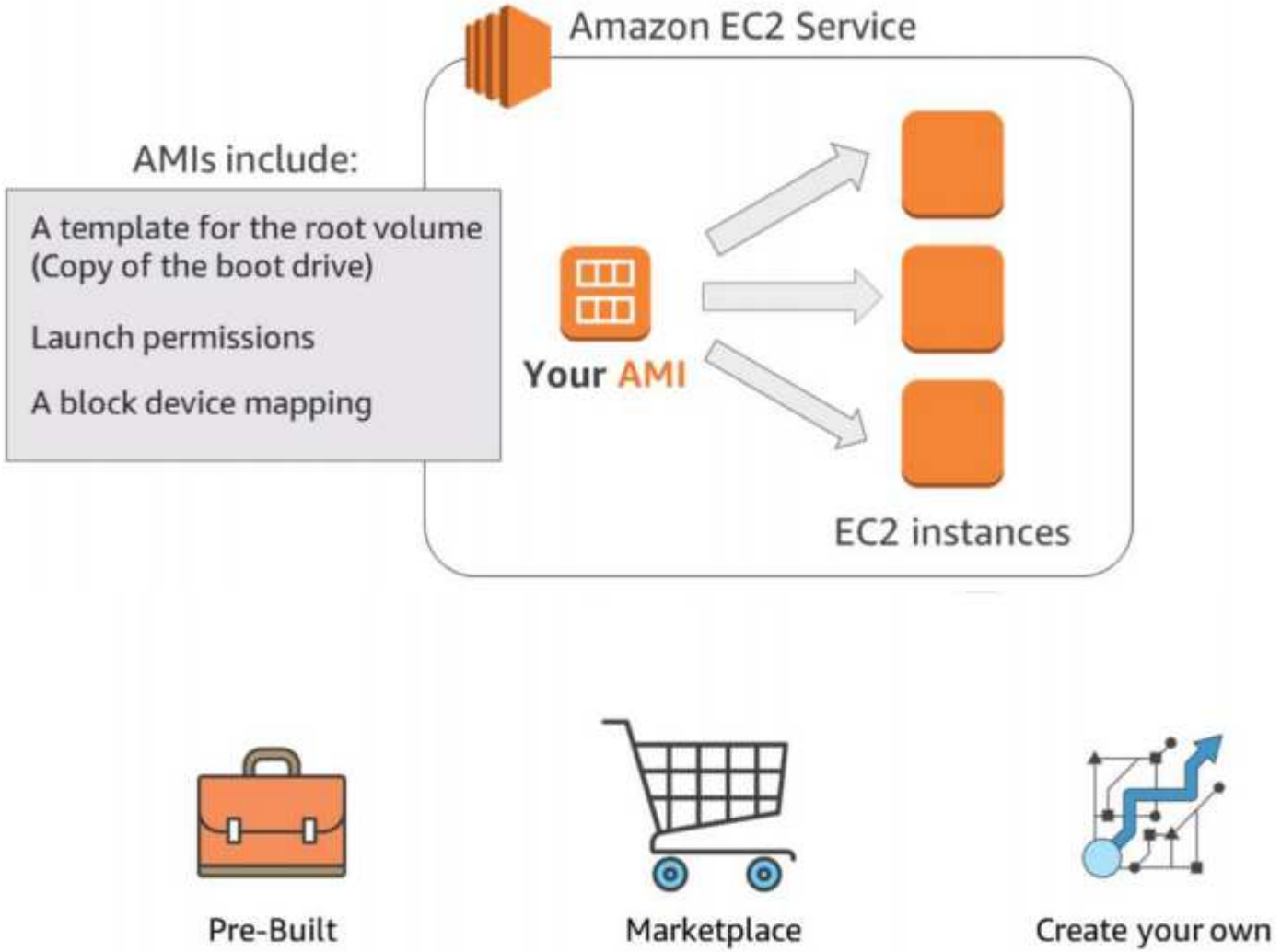
Capa de computación EC2

2.3 Capa de computación EC2



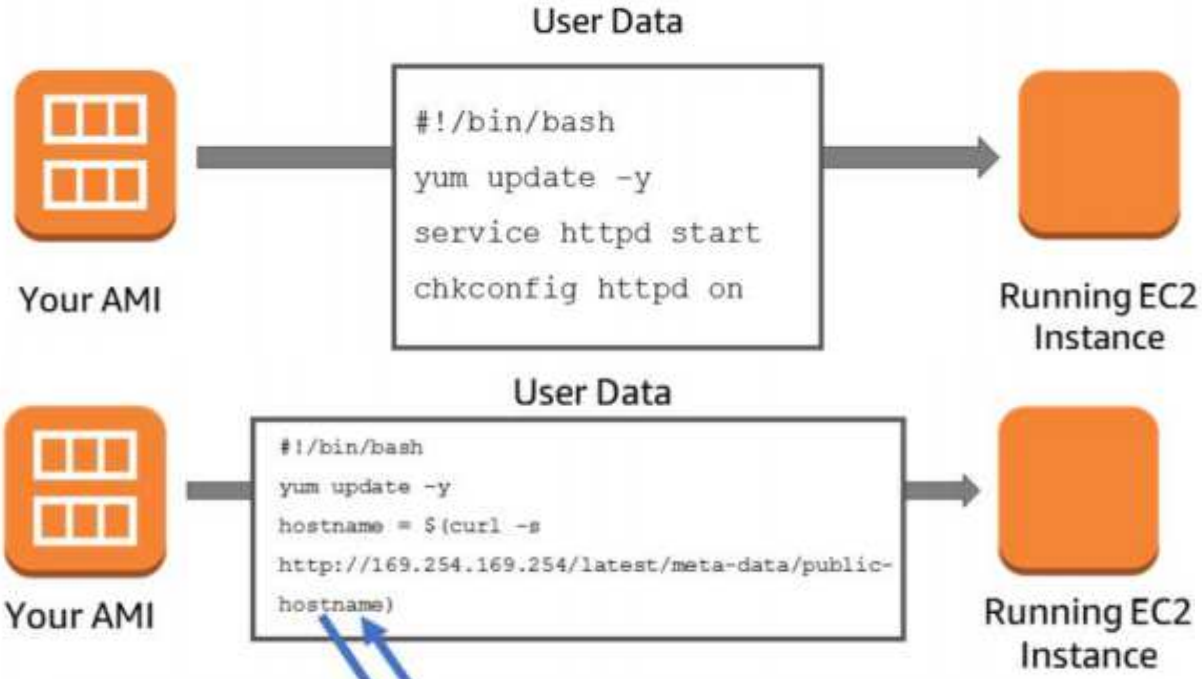
2.3 Capa de computación EC2

2.3 Capa de computación EC2



2.3 Capa de computación EC2

- Utilizando Script de arranque cloud-init



Metadata	Value
instance-id	i-1234567890abcdef0
mac	00-1B-63-84-45-E6
public-hostname	ec2-203-0-113-25.compute-1.amazonaws.com
public-ipv4	67.202.51.223
local-hostname	ip-10-251-50-12.ec2.internal
local-ipv4	10.251.50.12

2.3 Capa de computación EC2

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- Tipo de Almacenamiento

Application needs block level storage

Instance storage is ephemeral

Need data to persist through shutdowns

Need to be able to back up data volumes

Solid-State Backed

Volume Type	General Purpose SSD	Provisioned IOPS SSD
Description	General purpose SSD volume that balances price and performance for a wide variety of workloads	Highest-performance SSD volume for mission-critical low-latency or high-throughput workloads
Use Cases	• Recommended for most workloads	• Critical business applications that require sustained IOPS performance • Large database workloads

Hard-Disk Backed

Volume Type	Throughput Optimized HDD	Cold HDD
Description	Low cost HDD volume designed for frequently accessed, throughput-intensive workloads	Lowest cost HDD volume designed for less frequently accessed workloads
Use Cases	• Streaming workloads • Big data • Data warehouses • Log processing • Cannot be a boot volume	• Throughput-oriented storage for large volumes of data that is infrequently accessed • Scenarios where the lowest storage cost is important • Cannot be a boot volume

2.3 Capa de computación EC2

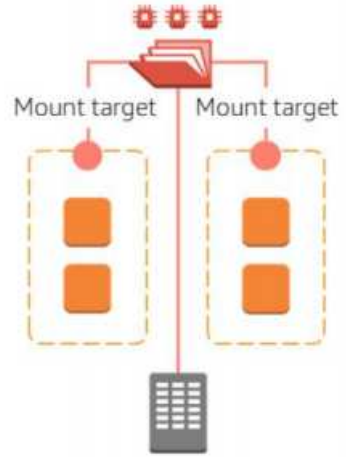
- Y si quiero compartir datos entre instancias

Amazon EFS
(Linux Workloads)
NFSv4 file system

Shared Across
- Availability Zones
- Regions
- VPCs
- Account

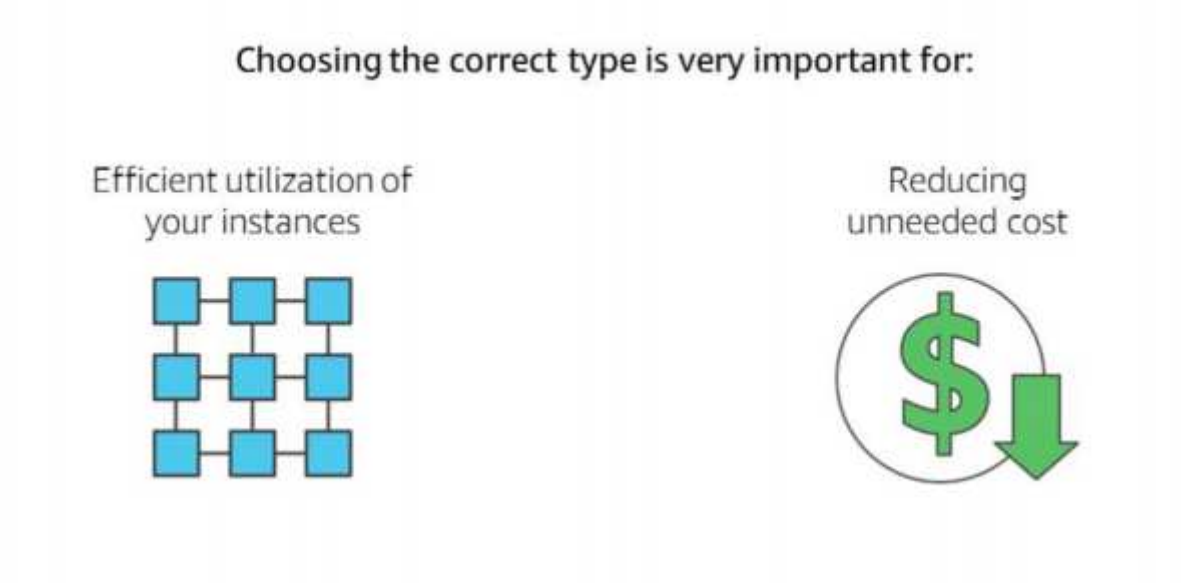
Amazon FSx
(Windows Workloads)
NTFS file system

Shared Across
- Availability Zones



2.3 Capa de computación EC2

- Tipo de instancias



2.3 Capa de computación EC2

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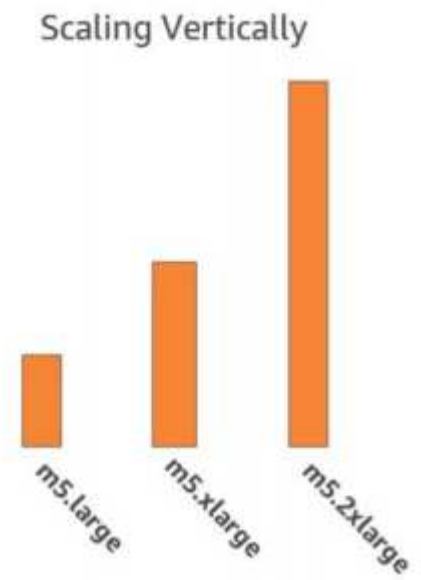
- Tipo de instancias

Type family	Member types	Focus
T	T2	Baseline general purpose (*burstable performance*)[a]
M	M3, M4	General purpose: balance between compute, memory, and network
C	C3, C4	Computer optimized: high-performance processors
X	X1	Memory optimized for enterprise-class, in-memory applications
R	R3, R4	Memory optimized for memory-intensive applications
P	P2	Graphics accelerated for GPU-intensive applications
G	G2	Graphics-heavy processing
F	F1	Hardware acceleration with field-programmable arrays (FPGAs)
I	I2, I3	Storage optimized: very fast storage volumes for efficient I/O operations
D	D2	Storage optimized: high disk throughput for very large data stores

2.3 Capa de computación EC2

- Tipos de instancias
  - Escalado vertical

Model	vCPU
m5.large	2
m5.xlarge	4
m5.2xlarge	8
m5.4xlarge	16
m5.12xlarge	48
m5.24xlarge	96



2.3 Capa de computación EC2

- Tipos de instancias
  - Escalado vertical

Model	vCPU
m5.large	2
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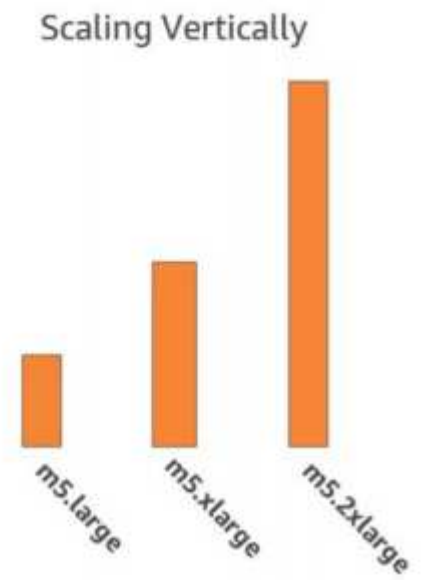
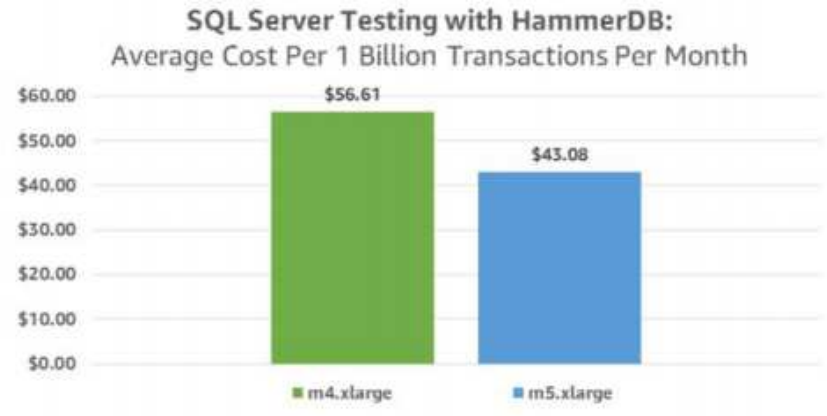
m5.4xlarge	16
m5.12xlarge	48
m5.24xlarge	96



2.3 Capa de computación EC2

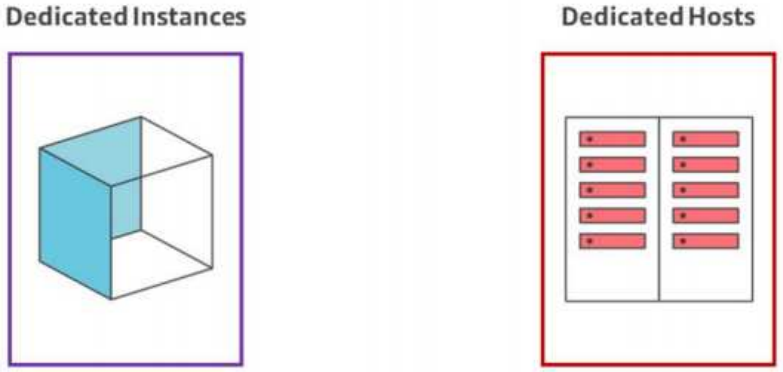
- Tipo de instancias
  - https://aws.amazon.com/es/ec2/instance-types/



2.3 Capa de computación EC2

- Opciones de compra de computación

	On-demand	Reserved	Spot
Price	High	Medium	Low
Flexibility	High	Low	Medium
Reliability	Medium	High	Low

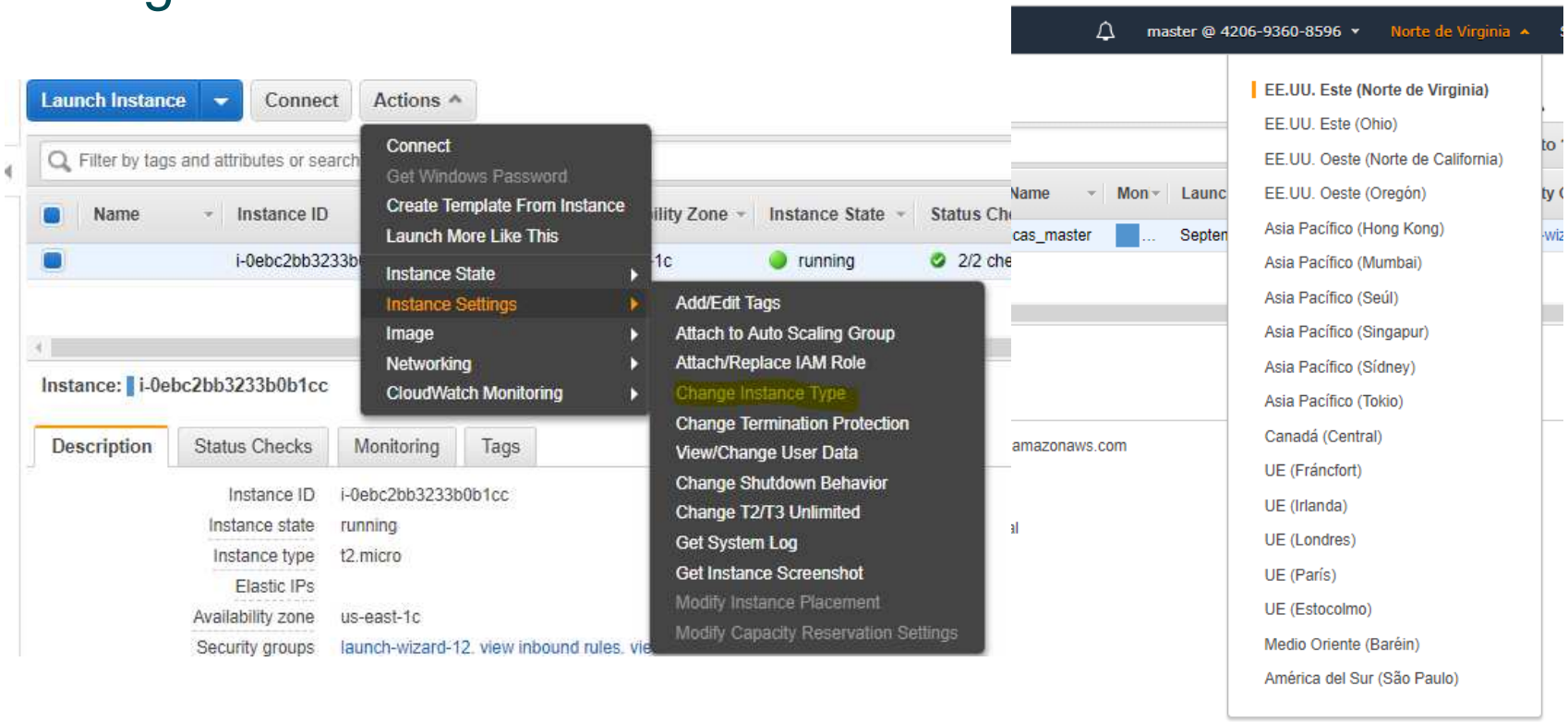


2.3 Capa de computación EC2

- Casos de uso : Ejercicios
  - Cambio de tipo de instancia
  - Cambio de región de instancia
  - IP estática/elástica
  - Creación de servidor por puja
  - Monitorizando el servidor

2.3 Capa de computación EC2

- Ejercicio :Cambio de tipo de instancia, Cambio de región de instancia



2.3 Capa de computación EC2

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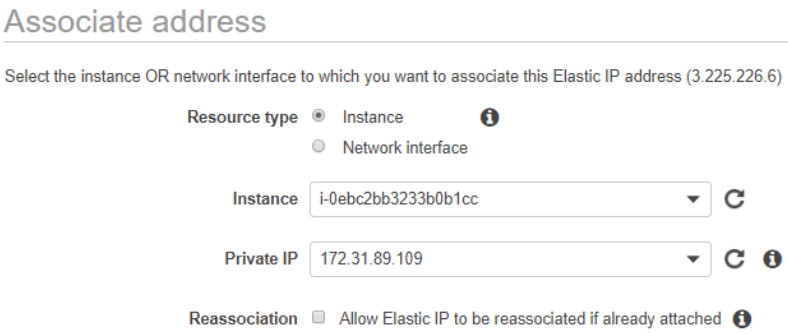
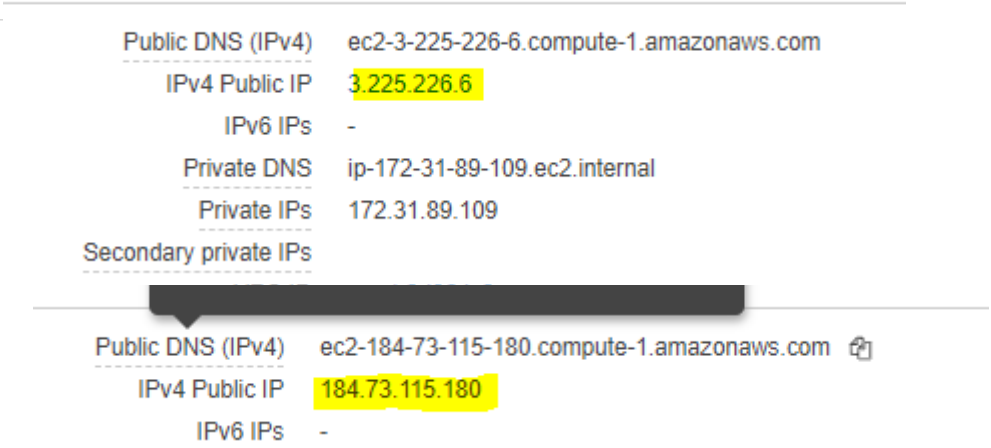
- Ejercicio : IP estática/elástica
  - Requiere un costo
  - Se crea la IP y luego se asigna



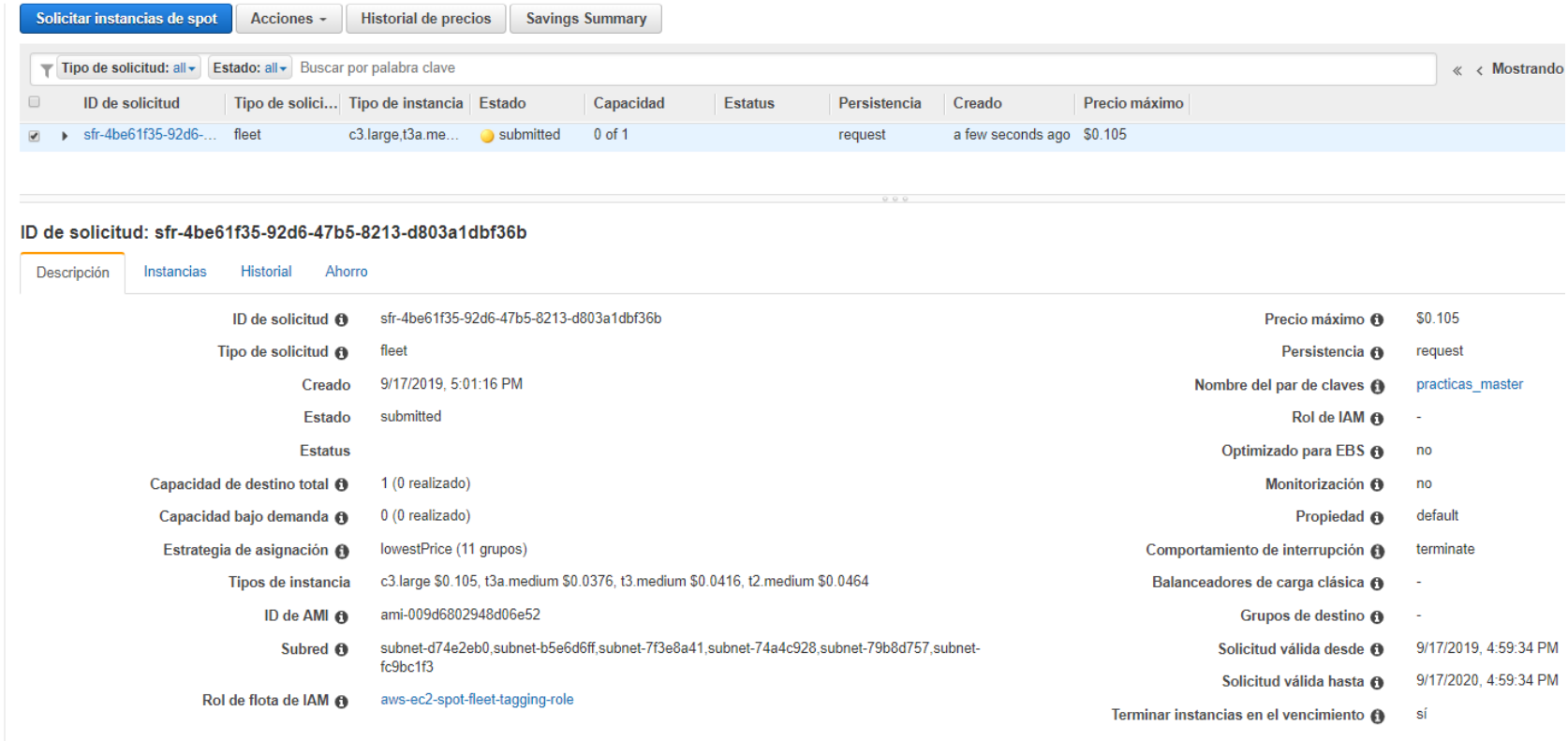


2.3 Capa de computación EC2

- Ejercicio Creación de servidor por puja

2.3 Capa de computación EC2

- Ejercicio Creación de servidor por puja



2.3 Capa de computación EC2

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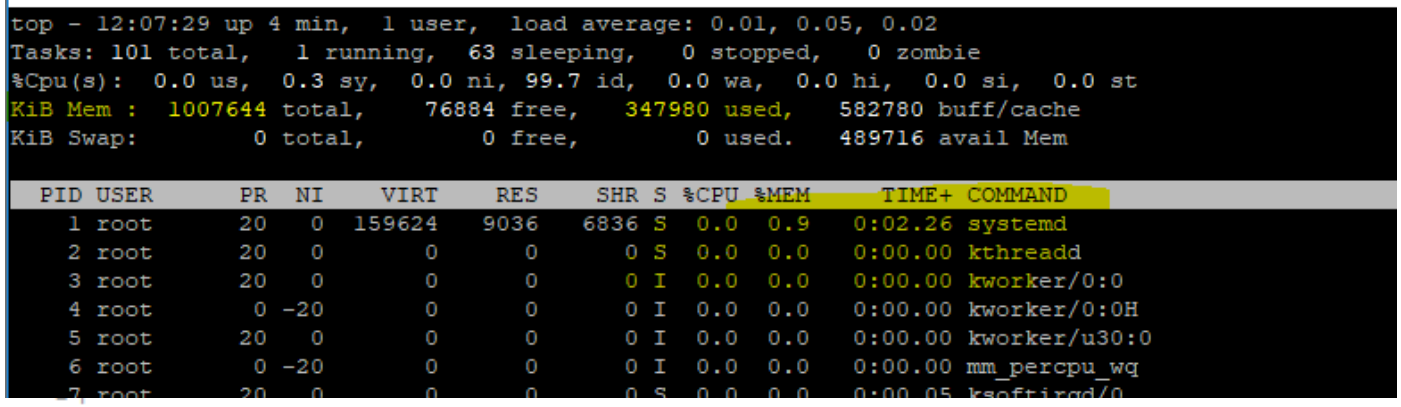
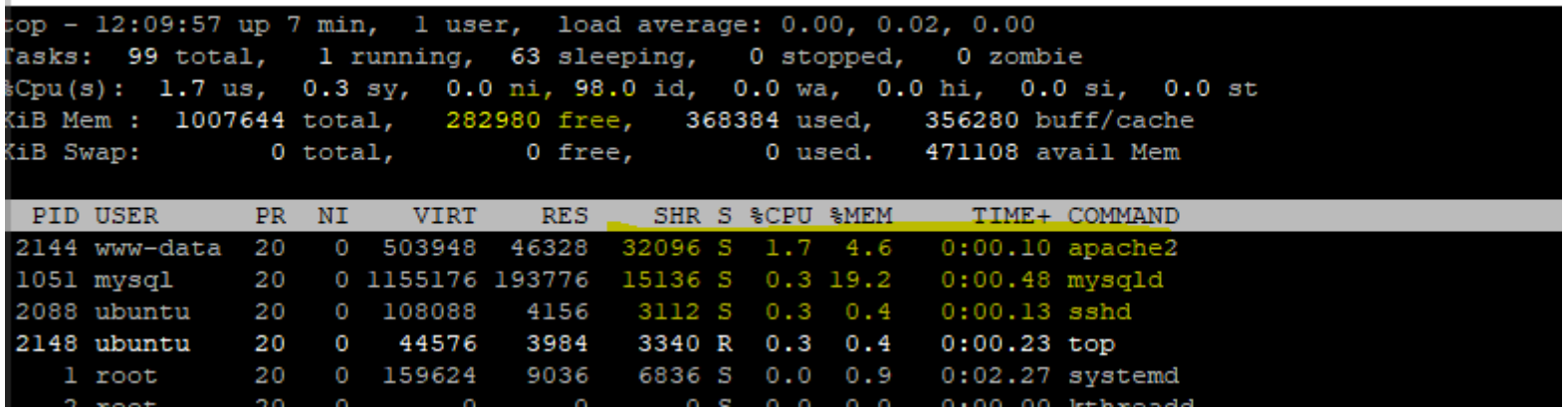
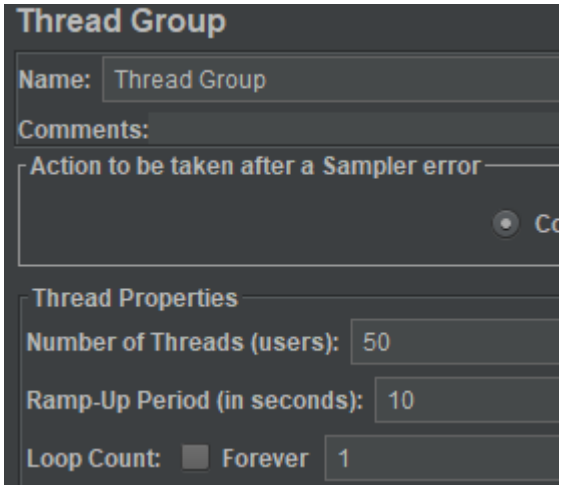
- Ejercicio : Monitorizando el servidor
  - Acceder via ssh y ejecutar comando *top*
  - *Comparar rendimiento CPU al cargar una página de wordpress*

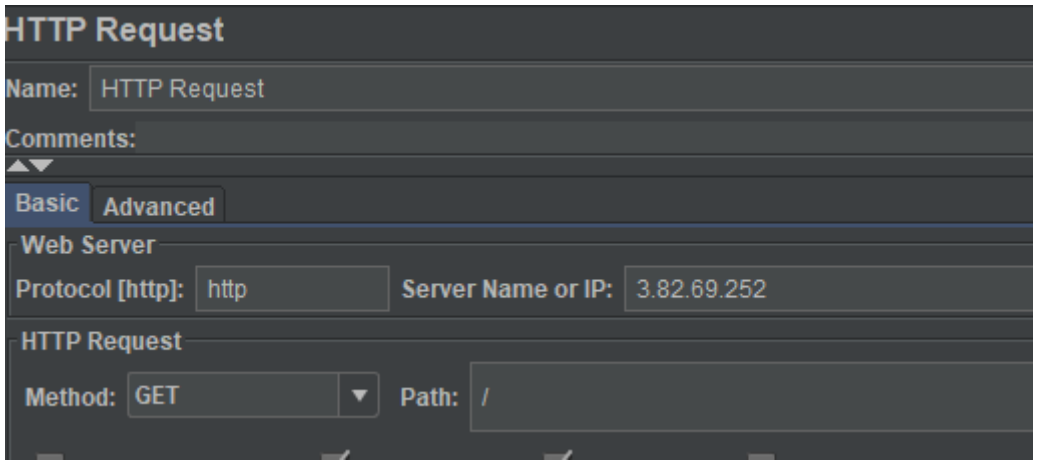




2.3 Capa de computación EC2

- Ejercicio : Monitorizando el servidor
  - Ejecutar Test de stress (carga) mediante JMeter
  - Instalar JMeter
  - Primero configurar un sencillo Test Plan
    - 1 Thread Group (50 hilos en 10 segundos)
      - 1 Sampler HTTP Request
    - 1 Viewer Results in Table
    - Resultados correctos





2.3 Capa de computación EC2

- Ejercicio : Monitorizando el servidor
  - 1 Thread Group (50 hilos en 10 segundos)
    - 1 Sampler HTTP Request
  - 1 Viewer Results in Table
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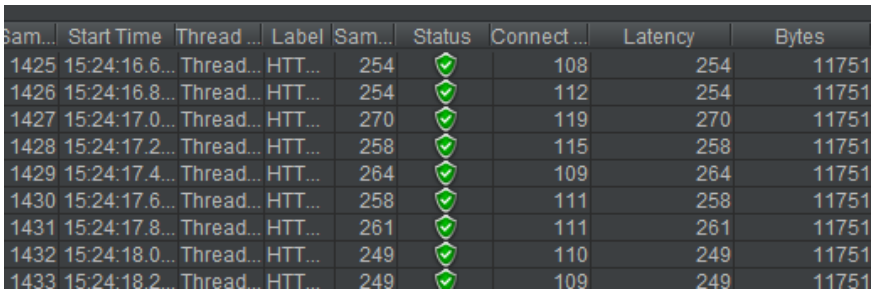


Sam...	Start Time	Thread ...	Label	Sam...	Status	Connect ...	Latency	Bytes
1425	15:24:16.6...	Thread...	HTT...	254	✓	108	254	11751
1426	15:24:16.8...	Thread...	HTT...	254	✓	112	254	11751
1427	15:24:17.0...	Thread...	HTT...	270	✓	119	270	11751
1428	15:24:17.2...	Thread...	HTT...	258	✓	115	258	11751
1429	15:24:17.4...	Thread...	HTT...	264	✓	109	264	11751
1430	15:24:17.6...	Thread...	HTT...	258	✓	111	258	11751
1431	15:24:17.8...	Thread...	HTT...	261	✓	111	261	11751
1432	15:24:18.0...	Thread...	HTT...	249	✓	110	249	11751
1433	15:24:18.2...	Thread...	HTT...	249	✓	109	249	11751

```
asks:  98 total,   1 running,  63 sleeping,   0 stopped,   0 zombie
Cpu(s):  8.0 us,  0.3 sy,  0.0 ni, 91.7 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0
iB Mem :  1007644 total,   263376 free,   386876 used,   357392 buff/cache
iB Swap:        0 total,        0 free,        0 used.   452512 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S %CPU %MEM     TIME+ COMMAND
 1051 mysql     20   0 1155176 194568  15136 S  1.3 19.3   0:02.29 mysqld
 1055 www-data  20   0  503940  48548  34656 S  1.0  4.8   0:00.47 apache2
 1054 www-data  20   0  503956  44692  31048 S  0.7  4.4   0:00.41 apache2
 1058 www-data  20   0  503948  48768  34872 S  0.7  4.8   0:00.50 apache2
 1948 www-data  20   0  578808  52024  37260 S  0.7  5.2   0:00.57 apache2
 2139 www-data  20   0  504100  49952  35456 S  0.7  5.0   0:00.59 apache2
 2142 www-data  20   0  579464  55012  39484 S  0.7  5.5   0:00.66 apache2
 2143 www-data  20   0  503620  42208  28948 S  0.7  4.2   0:00.35 apache2
 2144 www-data  20   0  504012  46860  32480 S  0.7  4.7   0:00.44 apache2
 2231 www-data  20   0  503620  42292  29064 S  0.7  4.2   0:00.37 apache2
 2148 ubuntu    20   0   44576   3984   3340 R  0.3  0.4   0:04.32 top
    1 root      20   0  159624   9036   6836 S  0.0  0.9   0:02.29 systemd
```

2.3 Capa de computación EC2

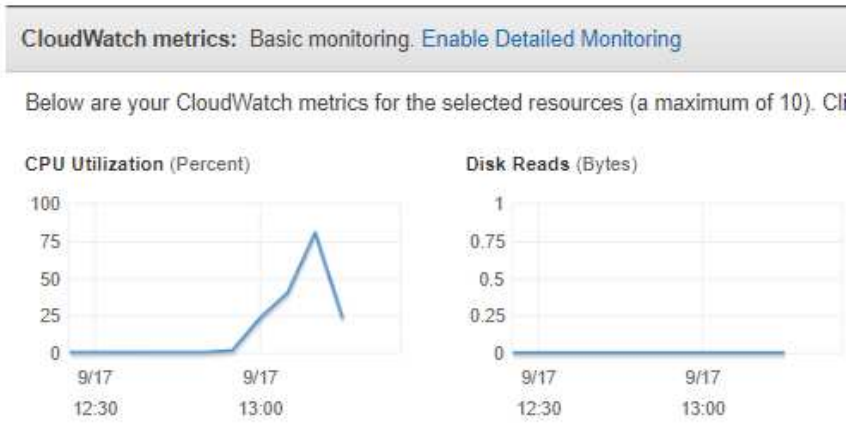
- Ejercicio : Monitorizando el servidor
  - 4 Thread Group en secuencia
    1. 50 hilos en 10 segundos (ok)
    2. 200 hilos en 10 segundos (ok)
    3. 500 hilos en 10 segundos (errores , requiere reinicio)
    4. 700 hilos en 10 segundos (errores, requiere reinicio)

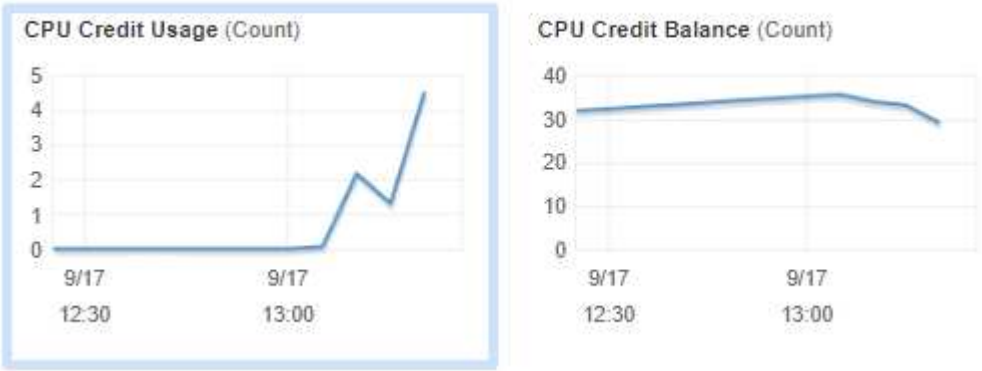
390	15:24:31.414	Thread Group 2-...	HTTP Request	263	263
391	15:24:31.465	Thread Group 2-...	HTTP Request	253	253
392	15:24:31.515	Thread Group 2-...	HTTP Request	253	253
393	15:24:31.572	Thread Group 2-...	HTTP Request	255	255
394	15:24:31.621	Thread Group 2-...	HTTP Request	253	253
395	15:24:31.672	Thread Group 2-...	HTTP Request	259	259
396	15:24:31.721	Thread Group 2-...	HTTP Request	248	248
397	15:24:31.768	Thread Group 2-...	HTTP Request	250	250
398	15:24:31.815	Thread Group 2-...	HTTP Request	254	254
399	15:24:31.864	Thread Group 2-...	HTTP Request	253	253
400	15:24:29.715	Thread Group 2-...	HTTP Request	3091	3091

Sample #	Start Time	Thread Name	Label	Sample Time(ms)	Status	Latency	Connect Time(ms)
756	15:24:38.131	Thread Group 3-...	HTTP Request	3936		3936	112
757	15:24:38.072	Thread Group 3-...	HTTP Request	4021		4021	110
758	15:24:37.172	Thread Group 3-...	HTTP Request	4924		4924	110
759	15:24:37.332	Thread Group 3-...	HTTP Request	4918		4918	111
760	15:24:37.313	Thread Group 3-...	HTTP Request	4954		4954	111
761	15:24:37.295	Thread Group 3-...	HTTP Request	5014		5014	112
762	15:24:38.258	Thread Group 3-...	HTTP Request	4297		4297	111
763	15:24:37.412	Thread Group 3-...	HTTP Request	5177		5177	110
764	15:24:41.211	Thread Group 3-...	HTTP Request	21004		0	21004
765	15:24:41.231	Thread Group 3-...	HTTP Request	21006		0	21006
766	15:24:41.251	Thread Group 3-...	HTTP Request	21002		0	21002
767	15:24:41.271	Thread Group 3-...	HTTP Request	21003		0	21003
768	15:24:41.291	Thread Group 3-...	HTTP Request	21003		0	21003

2.3 Capa de computación EC2

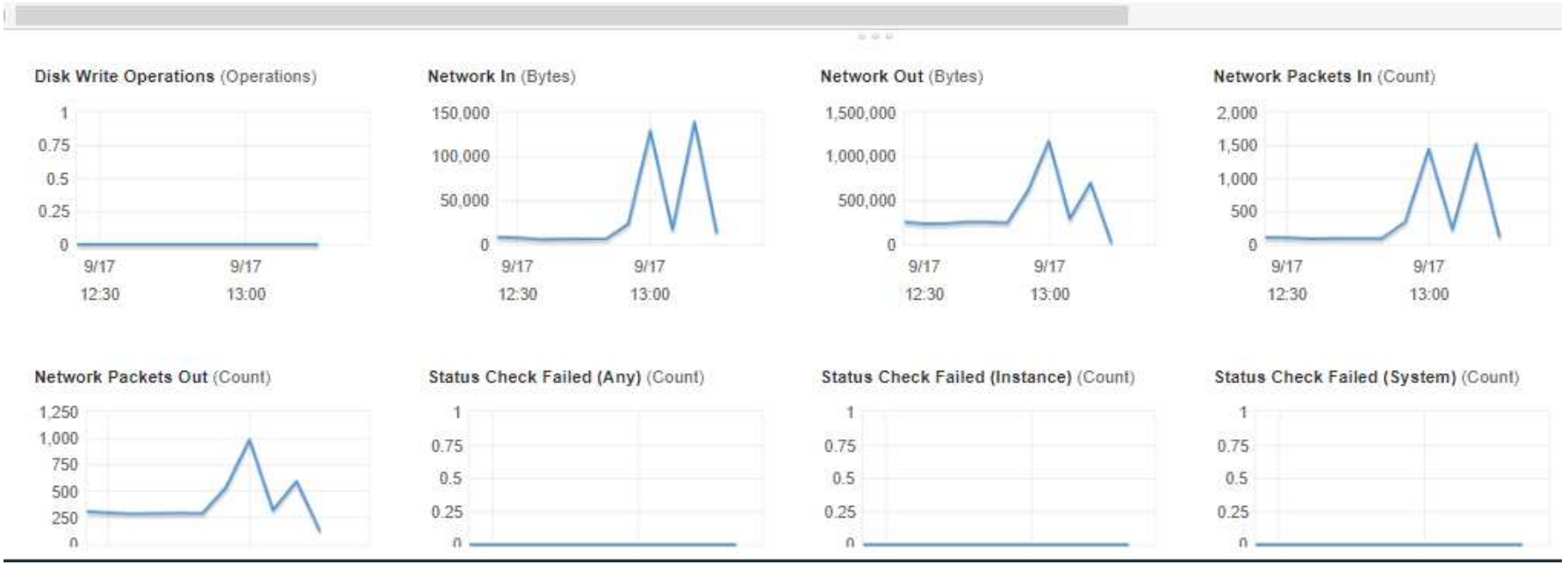
- Ejercicio : Monitorizando el servidor
  - Monitorización básica EC2





2.3 Capa de computación EC2

- Ejercicio : Monitorizando el servidor
  - Monitorización básica EC2



2.3 Capa de computación EC2

- Ejercicio : Monitorizando el servidor
  - Probar con otro tipos de instancias

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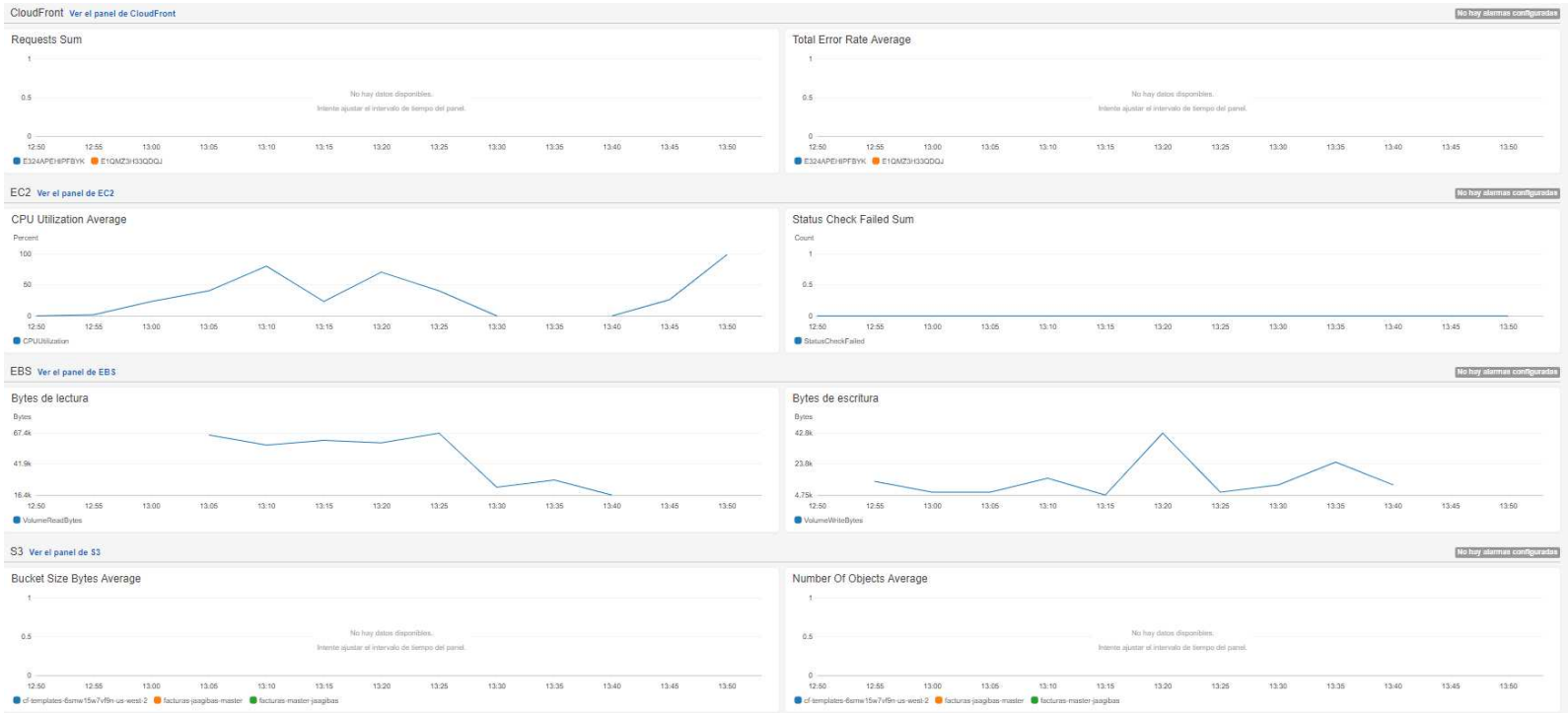
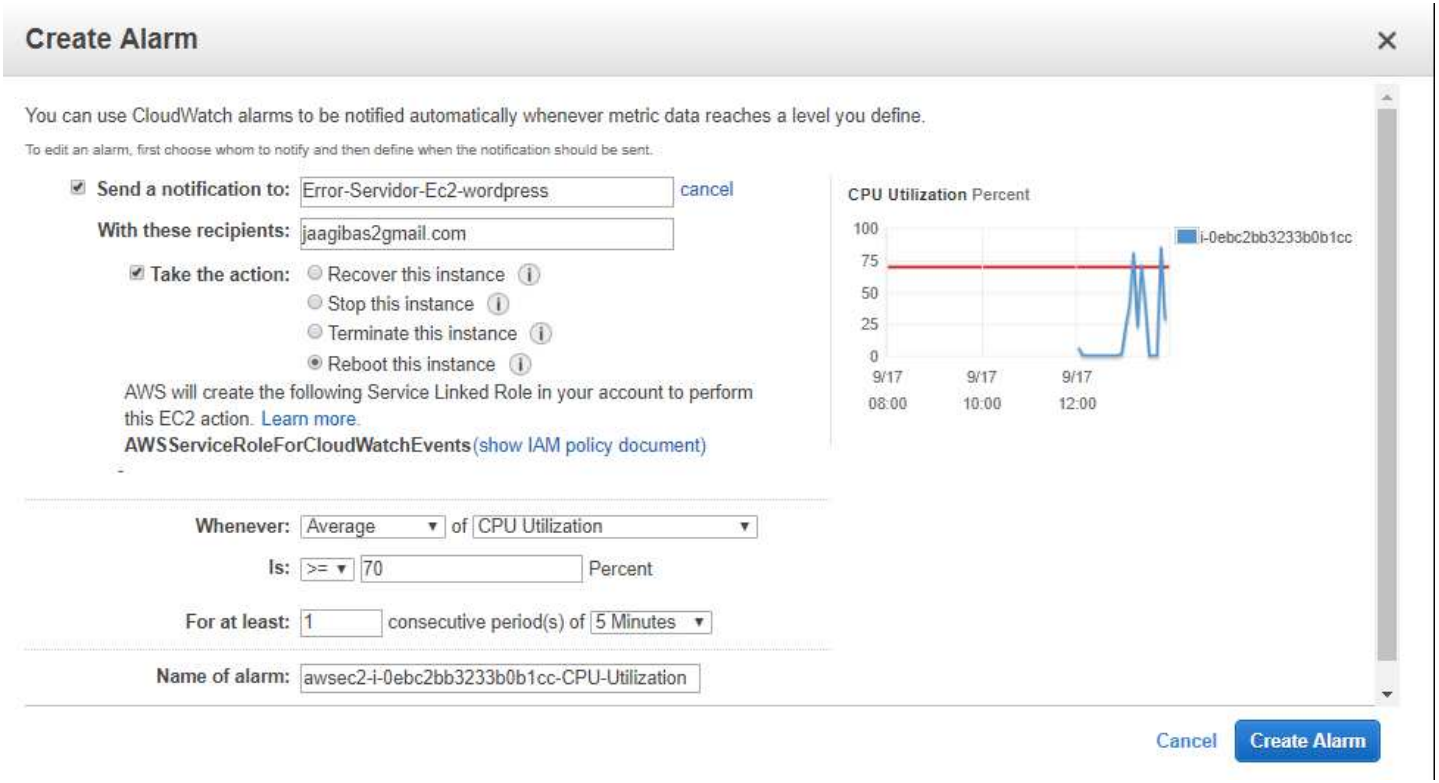
2.3 Capa de computación EC2

- Ejercicio : Monitorizando el servidor
  - Monitorización CLOUDWATCH
    - Requiere un gasto activarlo
    - Agregar métrica de coste al CLOUDWATCH al panel del servidor
    - Solo para explorar , este tema se trabajará más adelante
    - Permite actualizaciones a frecuencia altas



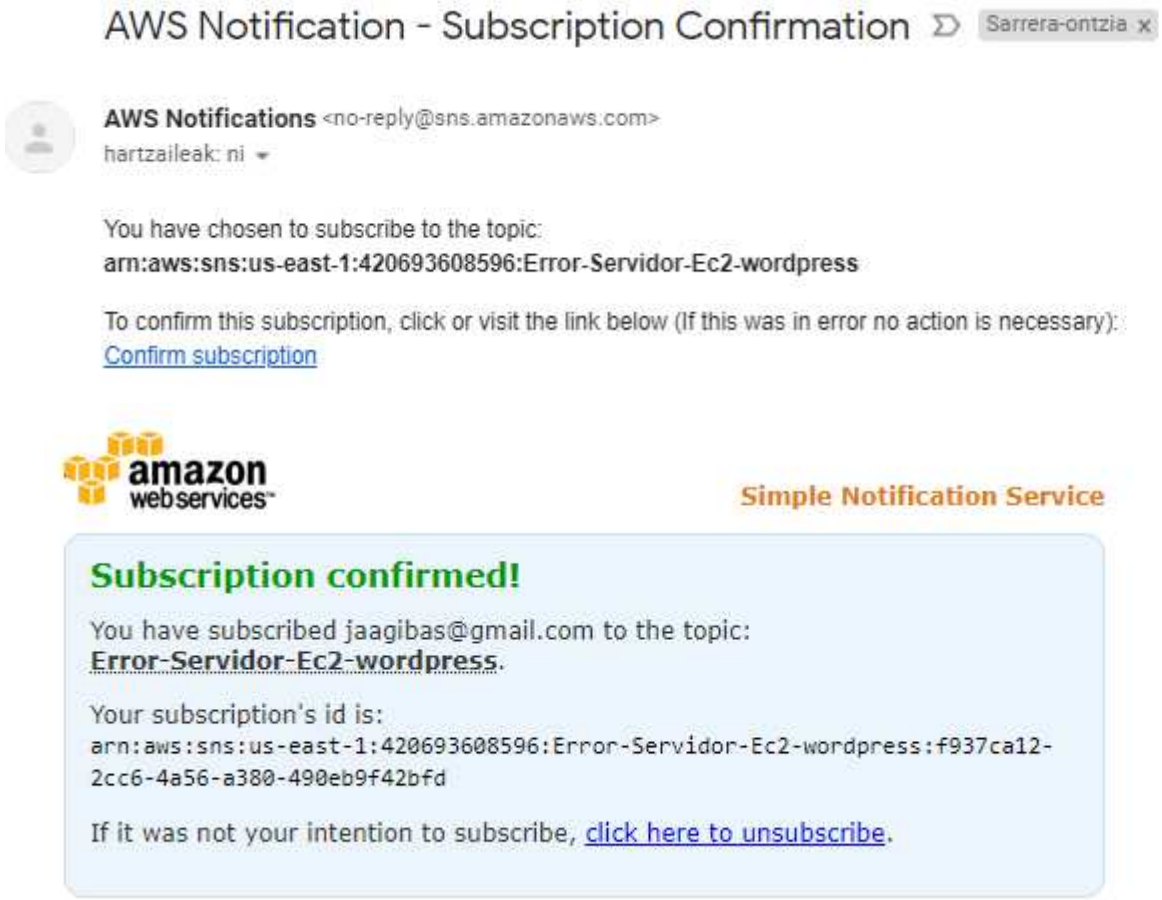
2.3 Capa de computación EC2

- Ejercicio : Monitorizando el servidor
  - Monitorización CLOUDWATCH
    - Alarma : De uso de CPU



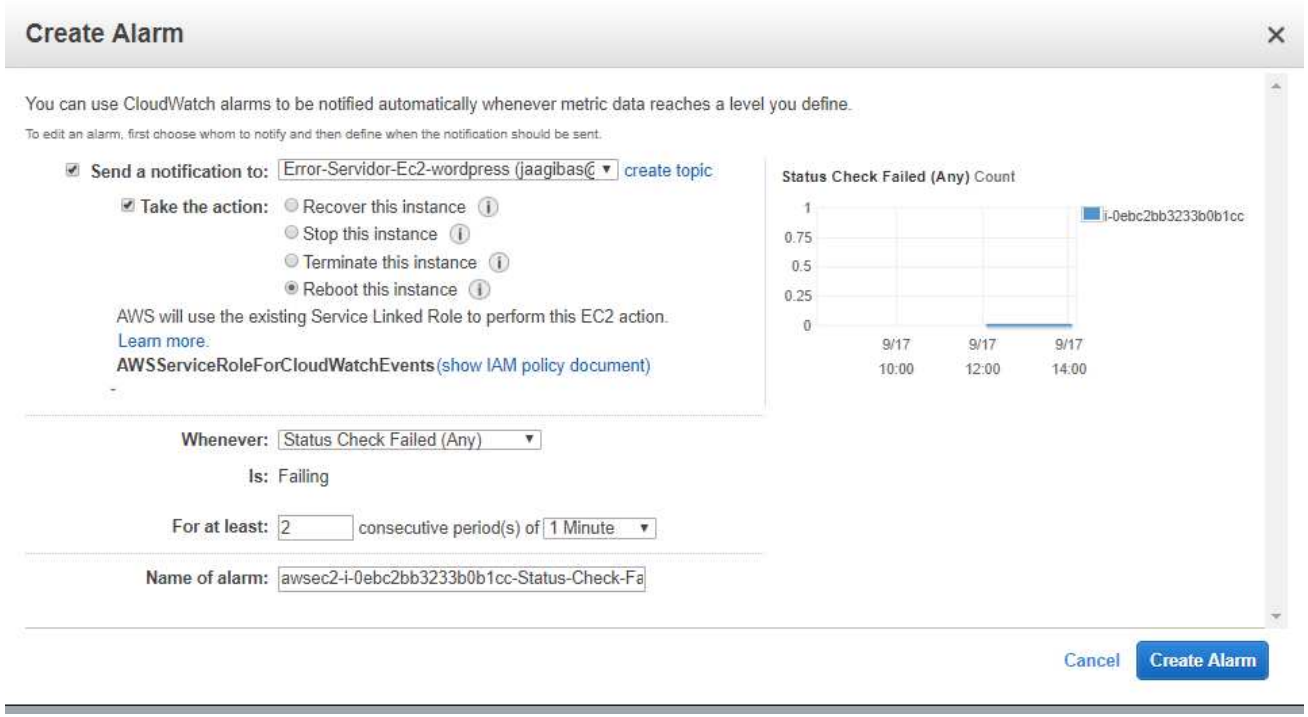
2.3 Capa de computación EC2

- Ejercicio : Monitorizando el servidor
  - Alarmas mediante el Servicio de notificación de Amazon SNS



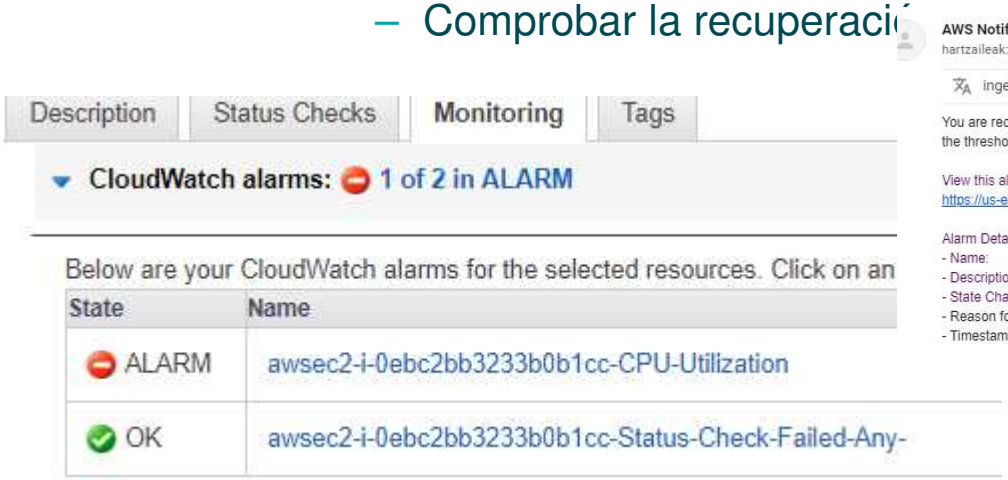
2.3 Capa de computación EC2

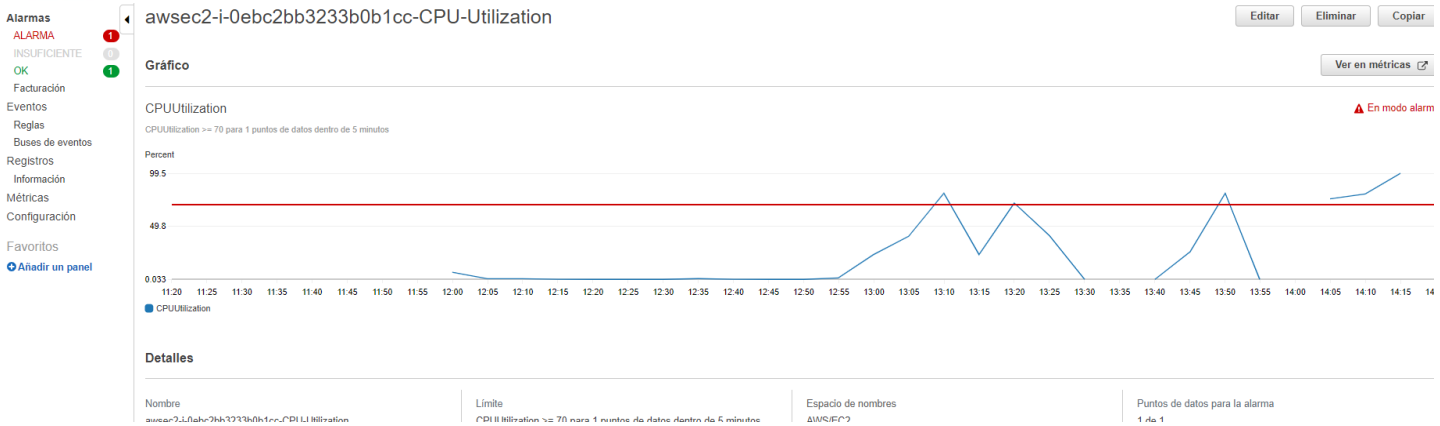
- Ejercicio : Monitorizando el servidor
  - Monitorización CLOUDWATCH
    - Alarmas de estado



2.3 Capa de computación EC2

- Ejercicio : Monitorizando el servidor
  - Alarmas
    - Volver a ejecutar los tests
    - Comprobar la alarma
    - Comprobar la recuperaci





2.3 Capa de computación EC2

- Ejercicio : Monitorizando el servidor
  - Alarmas
    - Recuperación