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Coursework 1

Question 1

Explain different pricing models

On-Demand Pricing

On-demand service prices, where the user pays for compute capacity by the hour, without upfront payments or long-term commitments. Good for developing applications or applications with short-term, spiky or unpredictable workloads. (EC2 Instance Types – Amazon Web Services (AWS), 2017)

Reserved Instance Pricing

Commitment to a 1 or 3 year contract in exchange for lower costs. Instances are reserved and assigned to specific availability zones, providing better ability to launch instances when needed. Good for applications with predictable, steady state usage, or that require capacities reservations. If instance are no longer needed, they can be sold to a 3rd party. Options of paying in monthly installments, all upfront or a mix of the two. The more paid upfront, the bigger the discount. (EC2 Instance Types – Amazon Web Services (AWS), 2017)

Spot Instance Pricing

Instead of paying the set on-demand price, the user can bid for computing power at a significant discount. AWS spot prices fluctuate with time. If the user's bid exceeds the spot-price, then a spot instance will be launched. If the bid is lower, then the instance is terminated. Spot instance is a good option for projects with flexible start/end times or projects that are only feasible if the computing cost is low. (EC2 Instance Types – Amazon Web Services (AWS), 2017)

Dedicated Host Pricing description

A dedicated host is a physical server, instead of a shared virtual server or dedicated instance. Good for reduced costs, meeting compliance requirements and gives the user the ability to use server-bound software licences. Can be bought on-demand or reserved (EC2 Instance Types – Amazon Web Services (AWS), 2017)

Table

		Server capacity				Network Performance	Availability Rate	Cost - AWS Linux			Cost Physical	
Name	Type	Number of cores	Clock rate per core (GHz)	Ram GB	Storage GB	Speed	Rate	On demand instance	Reserved Dedicated Host	Spot Instance Standard 1 year	Estimation $	Estimation £
t2.small	General Purpose	1	up to 3.3	2 GB	EBS only	Low	99% - 99.95%	$0.026 per Hour	n/a	n/a	$0.021	$ 573.40	£ 458.72
t2.medium	General Purpose	2	up to 3.3	4 GB	EBS only	Low to Moderate	99% - 99.95%	$0.052 per Hour	n/a	n/a	$0.041	$ 693.09	£ 554.47
t2.xlarge	General Purpose	4	up to 3.3	16 GB	EBS only	Low to Moderate	99% - 99.95%	$0.212 per Hour	n/a	n/a	$0.168	$ 791.94	£ 633.55
t2.2xlarge	General Purpose	8	up to 3.3	32 GB	EBS only	Low to Moderate	99% - 99.95%	$0.424 per Hour	n/a	n/a	$0.337	$ 1,794.46	£ 1,435.57

Server Cost

Comparing the costs of four different AWS services (Amazon EC2 Instance Comparison, 2017; EC2 Instance Types – Amazon Web Services (AWS), 2017) to a cost estimation of a physical server (Newegg.com, 2017).

Name	Server capacity			
	Number of cores	Clock rate per core (GHz)	Ram size GB	Price
t2.small	1	up to 3.3	2 GB	$ 573.40
t2.medium	2	up to 3.3	4 GB	$ 693.09
t2.xlarge	4	up to 3.3	16 GB	$ 791.94
t2.2xlarge	8	up to 3.3	32 GB	$ 1,794.46

Cores	Price	
1	$ 129.95	https://www.newegg.com/Product/Product.aspx?Item=9SIA4MR3W33491
2	$ 245.14	https://www.newegg.com/Product/Product.aspx?Item=9SIAA0T5255619
4	$ 244.99	https://www.newegg.com/Product/Product.aspx?Item=N82E16819117316
8	$ 1,100.00	https://www.newegg.com/Product/Product.aspx?Item=9SIAAEE54F1045

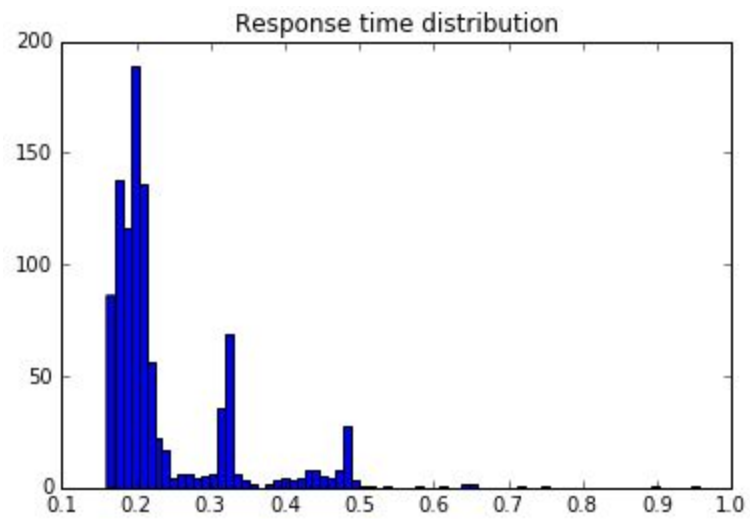| Ram	Price	
2	$ 36.49	https://www.newegg.com/Product/Product.aspx?Item=N82E16820148489
4	$ 40.99	https://www.newegg.com/Product/Product.aspx?Item=N82E16820242154
16	$ 139.99	https://www.newegg.com/Product/Product.aspx?Item=N82E16820148855
32	$ 287.50	https://www.newegg.com/Product/Product.aspx?Item=9SIA67S3T38666

Fixed	Price	
Motherboard	$156.99	https://www.newegg.com/Product/Product.aspx?Item=N82E16813182819
Power Supply	$119.99	https://www.newegg.com/Product/Product.aspx?Item=N82E16817338110
Rack	$109.99	https://www.newegg.com/Product/Product.aspx?Item=N82E16811165083
RAID	$19.99	https://www.newegg.com/Product/Product.aspx?Item=N82E16816124073
TOTAL	$ 406.96	

Question 2

Response time metrics

Average response time: 0.2384
Median response time: 0.2010
MIN   response time: 0.1605
MAX   response time: 0.9565
Std   response time: 0.0951

Histogram

Response time distribution

References

Amazon EC2 Instance Comparison. (2017). [online] Ec2instances.info. Available at: http://www.ec2instances.info/?region=eu-west-2&cost_duration=daily&selected=t2.nano,t2.large [Accessed 23 Feb. 2017].

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EC2 Instance Types – Amazon Web Services (AWS). (2017). [online] Amazon Web Services, Inc. Available at: https://aws.amazon.com/ec2/instance-types/ [Accessed 23 Feb. 2017].

Newegg.com. (2017). [online] Newegg.com. Available at: https://www.newegg.com/ [Accessed 23 Feb. 2017].