Tutorial 3 – Intro to EC2 and VM storage Performance
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Version 1.97		Sequential Output						Sequential Input				Random Seeks			Sequential Create						Random Create					
	Size	Per Char		Block		Rewrite		Per Char		Block				Num Files	Create		Read		Delete		Create		Read		Delete	
		K/sec	% CPU	K/sec	% CPU	K/sec	% CPU	K/sec	% CPU	K/sec	% CPU	/sec	% CPU		/sec	% CPU	/sec	% CPU	/sec	% CPU	/sec	% CPU	/sec	% CPU	/sec	% CPU
TEST-EBS	7520M			132981	8	65616	3			127951	3	6544	46													
	Latency			60239us		167ms				22237us		8605us		Latency												
TEST-IS	7520M			40927	2	40322	2			92100	2	+++++	+++													
	Latency			129ms		268ms				1497us		2995us		Latency												
TEST-EBSP	7520M			25653	1	12762	0			25588	0	131.7	0													
	Latency			317ms		122ms				19826us		270ms		Latency												

Question 1: What EC2 instance type did you run Bonnie++ on?

Answer: c5d.large is the instance type that we used to run Bonnie++ on.

Question 2: Which disk (EBS or Instance Store) provided faster sequential output block reads throughput (in k/sec)?

Answer: Sequential output block reads throughput for EBS and Instance store is as follows –

EBS – 132981 k/sec
Instance store – 40927 k/sec

Therefore, EBS provided faster sequential output block reads throughput.

Question 3: Which disk (EBS or Instance Store) required more CPU capacity for sequential output block reads?

Answer: CPU capacities for EBS and Instance store is as follows –

EBS – 8%
Instance store – 2%

Therefore, EBS required more CPU capacity for sequential output block reads.

Question 4: Now evaluate performance for sequential output block rewrites and sequential input block reads. Which disk performs better EBS or Instance Store?

Answer: The data is tabulated as follows –

	EBS		**Instance Store**	
	Throughput	**Latency**	**Throughput**	**Latency**
Sequential output Block Rewrites	65616 k/sec	167 ms (167000 us)	40322 k/sec	268 ms (268000 us)
sequential input block reads	127951 k/sec	22237 us	92100 k/sec	1497 us

We can see that when evaluated in terms of Throughput, Sequential output block rewrites and sequential input block reads of EBS performs better than Instance Store. But when evaluated in terms of Latency, Sequential output block rewrites of EBS performs better than Instance Store and sequential input block reads of Instance Store performs better than EBS.

Question 5: For Sequential output block rewrites and Sequential input block reads, which disk requires more CPU capacity?

Answer: The data is tabulated as follows –

	EBS	**Instance Store**
Sequential output Block Rewrites	3%	2%
sequential input block reads	3%	2%

Therefore, EBS requires more CPU capacity than Instance Store.

Question 6: Now consider performance of random seeks. Which disk (EBS or Instance Store) provides faster random seek disk performance?

Answer: Performance for random seeks for EBS and Instance store is as follows –

	EBS		**Instance Store**	
	Throughput	**Latency**	**Throughput**	**Latency**
Random Seeks	6544 k/sec	8605 us	+++++	2995 us

When evaluated in terms of Latency, Instance Store performs better than EBS.

Question 7: If your EBS volume test provided faster performance compared to the Instance Store volume for the random seek test, can you suggest why? What is unique about how amazon hosts EBS volumes that could provide this performance improvement v/s our local instance store volume?

Answer: When evaluated the performance of random seeks, my Instance store disk performance was much better than EBS.

Bonus Activity: We have done the bonus activity and it is tabulated above.