Contents

1. Public Cloud details

Instance Type	vCPU	Memory (GiB)	Storage (GB)	Storage Type	Networking Performance (Gbps)	Physical Processor	Clock Speed (GHz)	Price	No. of Cores / Processor	No. of hardware threads / core	IPC	Theoretical GFlops value per instance
						Public AWS Cloud						
m4.10xlarge	40	160	EBS only	EBS	10	Intel Xeon E5- 2676 v3	2.4	$2.39	12	2	16	768
m3.large	2	7.5	1 x 32	SSD	0.5	Intel Xeon E5- 2670 v2	2.5	$0.13	10	2	8	20
m3.2xlarge	8	30	2 x 80	SSD	1	Intel Xeon E5-2670 v2	2.5	$0.53	10	2	8	80
c3.8xlarge	32	60	2 x 320	SSD	10	Intel Xeon E5-2680 v2	2.8	$1.68	10	2	8	358.4
g2.2xlarge	8	15	1 x 60	SSD	1	Intel Xeon E5-2670	2.6	$0.65	8	2	8	2531.6
r3.4xlarge	16	122	1 x 320	SSD	1	Intel Xeon E5-2670 v2	2.5	$1.33	10	2	8	160
i2.8xlarge	32	244	8 x 800	SSD	10	Intel Xeon E5-2670 v2	2.5	$6.82	10	2	8	320
d2.8xlarge	36	244	24 x 2000	HDD	10	Intel Xeon E5-2676 v3	2.4	$5.52	12	2	16	691.2

The above table shares some of the important statistics of the AWS Public Cloud. The corresponding Private Cloud instances (pr.m4.10xlarge, pr.m3.large, pr.m3.2xlarge, pr.c3.8xlarge, pr.g2.2xlarge, pr.r3.4xlarge, pr.i2.8xlarge, and pr.d2.8xlarge) are discussed below.

2. pr.m4.10xlarge

a. Costing

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
1.	Case	NORCO RPC-170 Black 1U Rackmount Server Chassis	1	96.84	96.84	http://www.newegg.com/Product/Product.aspx?Item=9SIA3913UN3410&cm_re=_-NORCO_RPC-170_Black_1U_Rackmount_Server_Chassis-_-9SIA3913UN3410-_-Product
2.	Processor	Intel Xeon E5-2640 V4 2.4 GHz 25MB L3 Cache LGA 2011 90W BX80660E52640V4 Server Processor	2	989.99	1979.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16819117631&cm_re=Intel_Xeon_E5-2640_V4_2.4_GHz_25MB_L3_Cache_LGA_2011_90W_BX80660E52640V4_Server_Processor-_-19-117-631-_-Product
3.	Memory	Kingston 16GB 288-Pin DDR4 SDRAM ECC Registered DDR4 2133 (PC4 17000) Server Memory Model KVR21R15D4/16	10	91.99	919.9	http://www.newegg.com/Product/Product.aspx?Item=N82E16820242018&cm_re=Kingston_16GB_288-Pin_DDR4_SDRAM_ECC_Registered_DDR4_2133_%28PC4_17000%29_Server_Memory_Model_KVR21R15D4%2f16-_-20-242-018-_-Product
4.	Motherboard	GIGABYTE MD80-TM0 E-ATX / SSI EEB Server Motherboard Dual LGA 2011-3 Intel C612	1	659.99	659.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16813128830&cm_re=GIGABYTE_MD80-TM0_E-ATX_%2f_SSI_EEB_Server_Motherboard_Dual_LGA_2011-3_Intel_C612-_-13-128-830-_-Product
5.	HDD	Kingston SSD Now mS200 mSATA 30GB SATA III Internal Solid State Drive (SSD) SMS200S3/30G	1	30.29	30.29	http://www.newegg.com/Product/Product.aspx?Item=9SIA1N822W1859&cm_re=Kingston_SSD_Now_mS200_mSATA_30GB_SATA_III_Internal_Solid_State_Drive_%28SSD%29_SMS200S3%2f30G-_-0RN-000E-000B1-_-Product
6.	Network Adapter	Available on Motherboard				

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
7.	Network Switch	NETGEAR ProSAFE XS728T 28-Port 10-Gigabit Ethernet Smart Managed Switch (XS728T) - Lifetime Warranty		2413.99		http://www.newegg.com/Product/Product.aspx?Item=0XP-001M-000U0&cm_re=NETGEAR_ProSAFE_XS728T_28-Port_10-Gigabit_Ethernet_Smart_Managed_Switch_%28XS728T%29_-_Lifetime_Warranty-_-0XP-001M-000U0-_-Product Total cost for Network Switch(es) will be dependent upon the no. of instances needed
8.	System Admin			105290	526450	Final Cost is for 1 System Admin cost for 5 years; total cost for System Admin will be dependent upon the no. of instances needed
9.	System Power consumption		290 w / hr	0.153		Total cost for System Power consumption will be dependent upon the no. of instances needed
10.	Cooling Power consumption		290 w / hr	0.153		Total cost for Cooling Power consumption will be dependent upon the no. of instances needed Cooling Power consumption is assumed to be same as System Power consumption
11.	Rack	APC AR3300 42U NetShelter SX 600mm Wide x 1200mm Deep Enclosure		1654.73		http://www.newegg.com/Product/ProductList.aspx?Submit=ENE&DEPA=0&Order=BESTMATCH&Description=APC+AR3300+42U+NetShelter+SX+600mm+Wide+x+1200mm+Deep+Enclosure&N=-1&isNodeId=1 Total cost for Rack will be dependent upon the no. of instances needed

b. Points

- GFlops is calculated as GFops = number of processor cores* IPC* CPU frequency
- GFlops for multiple CPU machine / instance will be computed as GFlops for one processor * No. of processors

- Cost is calculated in terms of Cost per hour per GFlops

c. Cost / hour / GFlop computation

GFlops	No. of instances required	No. of physical nodes required	Hardware cost	Network Switches cost (Switch + Power Consumption cost)	System Admin cost	System & Cooling Power cost for 5 years	Rack cost (Rack + Rack Power Consumption cost)	Total Cost	Cost / hour	Cost / hour / Gflop
1	1	1	3,687.00	2,749.24	526,450.00	3,888.94	2,191.14	538,966.32	12.30	0.01601358
10	1	1	3,687.00	2,749.24	526,450.00	3,888.94	2,191.14	538,966.32	12.30	0.01601358
100	1	1	3,687.00	2,749.24	526,450.00	3,888.94	2,191.14	538,966.32	12.30	0.01601358
1000	2	2	7,374.00	2,749.24	526,450.00	7,777.88	2,191.14	546,542.26	12.47	0.00811934
10000	14	14	51,618.00	2,749.24	526,450.00	54,445.18	2,191.14	637,453.56	14.55	0.00135284
100000	131	131	482,997.00	16,495.46	526,450.00	509,451.37	8,764.54	1,544,158.38	35.24	0.00035023
1000000	1303	1303	4,804,161.00	236,434.95	1,052,900.00	5,067,291.11	70,116.34	11,230,903.41	256.27	0.00025609

3. pr.m3.large

a. Costing

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
1.	Case	NORCO RPC-170 Black 1U Rackmount Server Chassis	1	96.84	96.84	http://www.newegg.com/Product/Product.aspx?Item=9SIA3913UN3410&cm_re=NORCO_RPC-170_Black_1U_Rackmount_Server_Chassis-_-9SIA3913UN3410-_-Product
2.	Processor	Intel Xeon E5-2680 v3 Haswell 2.5 GHz LGA 2011-3 120W BX80644E52680V3 Server Processor	2	1719.99	3439.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16819117473&cm_re=Intel_Xeon_E5-2680_v3_Haswell_2.5_GHz_LGA_2011-3_120W_BX80644E52680V3_Server_Processor-_-19-117-473-_-Product
3.	Memory	Kingston 16GB 288-Pin DDR4 SDRAM ECC Registered DDR4 2133 (PC4 17000) Server Memory Model KVR21R15D4/16	23	91.99	2115.77	http://www.newegg.com/Product/Product.aspx?Item=N82E16820242018&cm_re=Kingston_16GB_288-Pin_DDR4_SDRAM_ECC_Registered_DDR4_2133_%28PC4_17000%29_Server_Memory_Model_KVR21R15D4%2f16-_-20-242-018-_-Product
4.	Motherboard	GIGABYTE MD80-TM0 E-ATX / SSI EEB Server Motherboard Dual LGA 2011-3 Intel C612	1	659.99	659.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16813128830&cm_re=GIGABYTE_MD80-TM0_E-ATX_%2f_SSI_EEB_Server_Motherboard_Dual_LGA_2011-3_Intel_C612-_-13-128-830-_-Product
5.	HDD	Black Diamond Memory Sonic Series BDSSDS1T 2.5" 1TB SATA III TLC Internal Solid State Drive	2	259.99	519.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16820014089&cm_re=Black_Diamond_Memory_Sonic_Series_BDSSDS1T_2.5%22_1TB_SATA_III_TLC_Internal_Solid_State_Drive-_-20-014-089-_-Product
6.	Network Adapter	Lenovo ThinkServer I350-T4 AnyFabric 1 Gb 4-port Base-T Ethernet Adapter by Intel	1	90.99	90.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16833828192&cm_re=Lenovo_ThinkServer_I350-T4_AnyFabric_1_Gb_4-port_Base-T_Ethernet_Adapter_by_Intel-_-33-828-192-_-Product

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
7.	Network Switch	NETGEAR ProSAFE XS728T 28-Port 10-Gigabit Ethernet Smart Managed Switch (XS728T) - Lifetime Warranty		2413.99		http://www.newegg.com/Product/Product.aspx?Item=0XP-001M-000U0&cm_re=NETGEAR_ProSAFE_XS728T_28-Port_10-Gigabit_Ethernet_Smart_Managed_Switch_%28XS728T%29_-_Lifetime_Warranty-_-0XP-001M-000U0-_-Product Total cost for Network Switch(es) will be dependent upon the no. of instances needed
8.	System Admin			105290	526450	Final Cost is for 1 System Admin cost for 5 years; total cost for System Admin will be dependent upon the no. of instances needed
9.	System Power consumption		445 w / hr	0.153		Total cost for System Power consumption will be dependent upon the no. of instances needed
10.	Cooling Power consumption		445 w / hr	0.153		Total cost for Cooling Power consumption will be dependent upon the no. of instances needed Cooling Power consumption is assumed to be same as System Power consumption
11.	Rack	APC AR3300 42U NetShelter SX 600mm Wide x 1200mm Deep Enclosure		1654.73		http://www.newegg.com/Product/ProductList.aspx?Submit=ENE&DEPA=0&Order=BESTMATCH&Description=APC+AR3300+42U+NetShelter+SX+600mm+Wide+x+1200mm+Deep+Enclosure&N=-1&isNodeId=1 Total cost for Rack will be dependent upon the no. of instances needed

b. Points

- GFlops is calculated as GFops = number of processor cores* IPC* CPU frequency
- GFlops for multiple CPU machine / instance will be computed as GFlops for one processor * No. of processors

- Cost is calculated in terms of Cost per hour per GFlops

c. Cost / hour / GFlop computation

GFlops	No. of instances required	No. of physical nodes required	Hardware cost	Network Switches cost (Switch + Power Consumption cost)	System Admin cost	System & Cooling Power cost for 5 years	Rack cost (Rack + Rack Power Consumption cost)	Total Cost	Cost / hour	Cost / hour / Gflop
1	1	1	6923.55	2,749.24	526450	5,967.51	2,191.14	544,281.44	12.42	0.62098558
10	1	1	6923.55	2,749.24	526450	5,967.51	2,191.14	544,281.44	12.42	0.62098558
100	5	1	6923.55	2,749.24	526450	5,967.51	2,191.14	544,281.44	12.42	0.12419712
1000	50	2	13847.1	2,749.24	526450	11,935.03	2,191.14	557,172.51	12.71	0.01271387
10000	500	11	76159.05	3,084.50	526450	65,642.65	2,191.14	673,527.34	15.37	0.00153689
100000	5000	105	726972.75	7,107.54	526450	626,588.98	6,573.41	1,893,692.68	43.21	0.00043211
1000000	50000	1042	7214339.1	114,388.69	1052900	6,218,149.67	54,778.39	14,654,555.86	334.40	0.00033440

4. pr.m3.2xlarge

a. Costing

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
1.	Case	NORCO RPC-170 Black 1U Rackmount Server Chassis	1	96.84	96.84	http://www.newegg.com/Product/Product.aspx?Item=9SIA3913UN3410&cm_re=NORCO_RPC-170_Black_1U_Rackmount_Server_Chassis-_-9SIA3913UN3410-_-Product
2.	Processor	Intel Xeon E5-2680 v3 Haswell 2.5 GHz LGA 2011-3 120W BX80644E52680V3 Server Processor	2	1719.99	3439.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16819117473&cm_re=Intel_Xeon_E5-2680_v3_Haswell_2.5_GHz_LGA_2011-3_120W_BX80644E52680V3_Server_Processor-_-19-117-473-_-Product
3.	Memory	Kingston 16GB 288-Pin DDR4 SDRAM ECC Registered DDR4 2133 (PC4 17000) Server Memory Model KVR21R15D4/16	23	91.99	2115.77	http://www.newegg.com/Product/Product.aspx?Item=N82E16820242018&cm_re=Kingston_16GB_288-Pin_DDR4_SDRAM_ECC_Registered_DDR4_2133_%28PC4_17000%29_Server_Memory_Model_KVR21R15D4%2f16-_-20-242-018-_-Product
4.	Motherboard	GIGABYTE MD80-TM0 E-ATX / SSI EEB Server Motherboard Dual LGA 2011-3 Intel C612	1	659.99	659.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16813128830&cm_re=GIGABYTE_MD80-TM0_E-ATX_%2f_SSI_EEB_Server_Motherboard_Dual_LGA_2011-3_Intel_C612-_-13-128-830-_-Product
5.	HDD	Black Diamond Memory Sonic Series BDSSDS1T 2.5" 1TB SATA III TLC Internal Solid State Drive	2	259.99	519.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16820014089&cm_re=Black_Diamond_Memory_Sonic_Series_BDSSDS1T_2.5%22_1TB_SATA_III_TLC_Internal_Solid_State_Drive-_-20-014-089-_-Product
6.	Network Adapter	Available on Motherboard				

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
7.	Network Switch	NETGEAR ProSAFE XS728T 28-Port 10-Gigabit Ethernet Smart Managed Switch (XS728T) - Lifetime Warranty		2413.99		http://www.newegg.com/Product/Product.aspx?Item=0XP-001M-000U0&cm_re=NETGEAR_ProSAFE_XS728T_28-Port_10-Gigabit_Ethernet_Smart_Managed_Switch_%28XS728T%29_-_Lifetime_Warranty-_-0XP-001M-000U0-_-Product Total cost for Network Switch(es) will be dependent upon the no. of instances needed
8.	System Admin			105290	526450	Final Cost is for 1 System Admin cost for 5 years; total cost for System Admin will be dependent upon the no. of instances needed
9.	System Power consumption		440 w / hr	0.153		Total cost for System Power consumption will be dependent upon the no. of instances needed
10.	Cooling Power consumption		440 w / hr	0.153		Total cost for Cooling Power consumption will be dependent upon the no. of instances needed Cooling Power consumption is assumed to be same as System Power consumption
11.	Rack	APC AR3300 42U NetShelter SX 600mm Wide x 1200mm Deep Enclosure		1654.73		http://www.newegg.com/Product/ProductList.aspx?Submit=ENE&DEPA=0&Order=BESTMATCH&Description=APC+AR3300+42U+NetShelter+SX+600mm+Wide+x+1200mm+Deep+Enclosure&N=-1&isNodeId=1 Total cost for Rack will be dependent upon the no. of instances needed

b. Points

- GFlops is calculated as GFops = number of processor cores* IPC* CPU frequency
- GFlops for multiple CPU machine / instance will be computed as GFlops for one processor * No. of processors

- Cost is calculated in terms of Cost per hour per GFlops

c. Cost / hour / GFlop computation

GFlops	No. of instances required	No. of physical nodes required	Hardware cost	Network Switches cost (Switch + Power Consumption cost)	System Admin cost	System & Cooling Power cost for 5 years	Rack cost (Rack + Rack Power Consumption cost)	Total Cost	Cost / hour	Cost / hour / Gflop
1	1	1	6832.56	2,749.24	526450	5,900.46	2,191.14	544,123.40	12.42	0.15520132
10	1	1	6832.56	2,749.24	526450	5,900.46	2,191.14	544,123.40	12.42	0.15520132
100	2	1	6832.56	2,749.24	526450	5,900.46	2,191.14	544,123.40	12.42	0.07760066
1000	13	2	13665.12	2,749.24	526450	11,800.93	2,191.14	556,856.43	12.71	0.01221794
10000	125	11	75158.16	2,749.24	526450	64,905.10	2,191.14	671,453.64	15.32	0.00153216
100000	1250	105	717418.8	5,431.27	526450	619,548.65	6,573.41	1,875,422.13	42.79	0.00042794
1000000	12500	1042	7,119,527.52	60,748.12	1052900	6,148,282.82	54,778.39	14,436,236.85	329.41	0.00032941

5. pr.c3.8xlarge

a. Costing

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
1.	Case	NORCO RPC-170 Black 1U Rackmount Server Chassis	1	96.84	96.84	http://www.newegg.com/Product/Product.aspx?Item=9SIA3913UN3410&cm_re=NORCO_RPC-170_Black_1U_Rackmount_Server_Chassis-_-9SIA3913UN3410-_-Product
2.	Processor	Intel Xeon E5-2680 v2 Ivy Bridge-EP 2.8 GHz 25MB L3 Cache LGA 2011 115W BX80635E52680V2 Server Processor	2	1769.99	3539.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16819116928&cm_re=Intel_Xeon_E5-2680_v2_Ivy_Bridge-EP_2.8_GHz_25MB_L3_Cache_LGA_2011_115W_BX80635E52680V2_Server_Processor-_-19-116-928-_-Product
3.	Memory	Kingston 64GB (4 x 16GB) 288-Pin DDR4 SDRAM ECC Registered DDR4 2133 (PC4 17000) Server Memory Model KVR21R15D4K4/64	1	365.99	365.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16820242019&cm_re=Kingston_64GB_%284_x_16GB%29_288-Pin_DDR4_SDRAM_ECC_Registered_DDR4_2133_%28PC4_17000%29_Server_Memory_Model_KVR21R15D4K4%2f64-_-20-242-019-_-Product
4.	Motherboard	GIGABYTE MD80-TM0 E-ATX / SSI EEB Server Motherboard Dual LGA 2011-3 Intel C612	1	659.99	659.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16813128830&cm_re=GIGABYTE_MD80-TM0_E-ATX_%2f_SSI_EEB_Server_Motherboard_Dual_LGA_2011-3_Intel_C612-_-13-128-830-_-Product
5.	HDD	Black Diamond Memory Sonic Series BDSSDS1T 2.5" 1TB SATA III TLC Internal Solid State Drive	1	259.99	259.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16820014089&cm_re=Black_Diamond_Memory_Sonic_Series_BDSSDS1T_2.5%22_1TB_SATA_III_TLC_Internal_Solid_State_Drive-_-20-014-089-_-Product
6.	Network Adapter	Available on Motherboard				

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
7.	Network Switch	NETGEAR ProSAFE XS728T 28-Port 10-Gigabit Ethernet Smart Managed Switch (XS728T) - Lifetime Warranty		2413.99		http://www.newegg.com/Product/Product.aspx?Item=0XP-001M-000U0&cm_re=NETGEAR_ProSAFE_XS728T_28-Port_10-Gigabit_Ethernet_Smart_Managed_Switch_%28XS728T%29_-_Lifetime_Warranty-_-0XP-001M-000U0-_-Product Total cost for Network Switch(es) will be dependent upon the no. of instances needed
8.	System Admin			105290	526450	Final Cost is for 1 System Admin cost for 5 years; total cost for System Admin will be dependent upon the no. of instances needed
9.	System Power consumption		310 w / hr	0.153		Total cost for System Power consumption will be dependent upon the no. of instances needed
10.	Cooling Power consumption		310 w / hr	0.153		Total cost for Cooling Power consumption will be dependent upon the no. of instances needed Cooling Power consumption is assumed to be same as System Power consumption
11.	Rack	APC AR3300 42U NetShelter SX 600mm Wide x 1200mm Deep Enclosure		1654.73		http://www.newegg.com/Product/ProductList.aspx?Submit=ENE&DEPA=0&Order=BESTMATCH&Description=APC+AR3300+42U+NetShelter+SX+600mm+Wide+x+1200mm+Deep+Enclosure&N=-1&isNodeId=1 Total cost for Rack will be dependent upon the no. of instances needed

b. Points

- GFlops is calculated as GFops = number of processor cores* IPC* CPU frequency
- GFlops for multiple CPU machine / instance will be computed as GFlops for one processor * No. of processors

- Cost is calculated in terms of Cost per hour per GFlops

c. Cost / hour / GFlop computation

GFlops	No. of instances required	No. of physical nodes required	Hardware cost	Network Switches cost (Switch + Power Consumption cost)	System Admin cost	System & Cooling Power cost for 5 years	Rack cost (Rack + Rack Power Consumption cost)	Total Cost	Cost / hour	Cost / hour / Gflop
1	1	1	4,922.79	2,749.24	526,450.00	4,157.14	2,191.14	540,470.31	12.33	0.03441057
10	1	1	4,922.79	2,749.24	526,450.00	4,157.14	2,191.14	540,470.31	12.33	0.03441057
100	1	1	4,922.79	2,749.24	526,450.00	4,157.14	2,191.14	540,470.31	12.33	0.03441057
1000	3	3	14,768.37	2,749.24	526,450.00	12,471.43	2,191.14	558,630.18	12.75	0.01185559
10000	28	28	137,838.12	3,084.50	526,450.00	116,400.05	2,191.14	785,963.80	17.93	0.00178716
100000	280	280	1,378,381.20	6,437.03	526,450.00	1,164,000.50	15,337.95	3,090,606.68	70.52	0.00070276
1000000	2791	2791	13,739,506.89	95,279.24	1,579,350.00	11,602,590.69	146,806.10	27,163,532.91	619.83	0.00061965

6. pr.g2.2xlarge

a. Costing

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
1.	Case	NORCO RPC-170 Black 1U Rackmount Server Chassis	1	96.84	96.84	http://www.newegg.com/Product/Product.aspx?Item=9SIA3913UN3410&cm_re=NORCO_RPC-170_Black_1U_Rackmount_Server_Chassis-_-9SIA3913UN3410-_-Product
2.	Processor	Intel Xeon E5-2690 v3 Haswell 2.6 GHz 12 x 256KB L2 Cache 30 MB L3 Cache LGA 2011-3 135W BX80644E52690V3 Server Processor	2	2149.99	4299.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16819117474&cm_re=Intel_Xeon_E5-2690_v3_Haswell_2.6_GHz_12_x_256KB_L2_Cache_30_MB_L3_Cache_LGA_2011-3_135W_BX80644E52690V3_Server_Processor-_-19-117-474-_-Product
3.	Memory	Kingston 64GB (4 x 16GB) 288-Pin DDR4 SDRAM ECC Registered DDR4 2133 (PC4 17000) Server Memory Model KVR21R15D4K4/64	2	365.99	731.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16820242019&cm_re=Kingston_64GB_%284_x_16GB%29_288-Pin_DDR4_SDRAM_ECC_Registered_DDR4_2133_%28PC4_17000%29_Server_Memory_Model_KVR21R15D4K4%2f64-_-20-242-019-_-Product
4.	Motherboard	GIGABYTE MD80-TM0 E-ATX / SSI EEB Server Motherboard Dual LGA 2011-3 Intel C612	1	659.99	659.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16813128830&cm_re=GIGABYTE_MD80-TM0_E-ATX_%2f_SSI_EEB_Server_Motherboard_Dual_LGA_2011-3_Intel_C612-_-13-128-830-_-Product
5.	HDD	Black Diamond Memory Sonic Series BDSSDS1T 2.5" 1TB SATA III TLC Internal Solid State Drive	1	259.99	259.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16820014089&cm_re=Black_Diamond_Memory_Sonic_Series_BDSSDS1T_2.5%22_1TB_SATA_III_TLC_Internal_Solid_State_Drive-_-20-014-089-_-Product
6.	GPU	Nvidia GRID K520 8GB PCIe x16 Cloud Gaming GPU Graphics Card 900-12055-0020-000	3	1895	5685	http://www.ebay.com/itm/Nvidia-GRID-K520-8GB-PCIe-x16-Cloud-Gaming-GPU-Graphics-Card-900-12055-0020-000-/231299808146

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
						Double Precision GFlops value of GPU is added to CPU GFlops value to arrive at Total Instance GFlops
7.	Network Adapter	Available on Motherboard				
8.	Network Switch	NETGEAR ProSAFE XS728T 28-Port 10-Gigabit Ethernet Smart Managed Switch (XS728T) - Lifetime Warranty		2413.99		http://www.newegg.com/Product/Product.aspx?Item=0XP-001M-000U0&cm_re=NETGEAR_ProSAFE_XS728T_28-Port_10-Gigabit_Ethernet_Smart_Managed_Switch_%28XS728T%29_-_Lifetime_Warranty-_-0XP-001M-000U0-_-Product Total cost for Network Switch(es) will be dependent upon the no. of instances needed
9.	System Admin			105290	526450	Final Cost is for 1 System Admin cost for 5 years; total cost for System Admin will be dependent upon the no. of instances needed
10.	System Power consumption		1045 w / hr	0.153		Total cost for System Power consumption will be dependent upon the no. of instances needed
11.	Cooling Power consumption		1045 w / hr	0.153		Total cost for Cooling Power consumption will be dependent upon the no. of instances needed Cooling Power consumption is assumed to be same as System Power consumption
12.	Rack	APC AR3300 42U NetShelter SX 600mm Wide x 1200mm Deep Enclosure		1654.73		http://www.newegg.com/Product/ProductList.aspx?Submit=ENE&DEPA=0&Order=BESTMATCH&Description=APC+AR3300+42U+NetShelter+SX+600mm+Wide+x+1200mm+Deep+Enclosure&N=-1&isNodeId=1 Total cost for Rack will be dependent upon the no. of instances needed

b. Points

- GFlops is calculated as GFops = number of processor cores* IPC* CPU frequency
- GFlops for multiprocessor machine / instance will be computed as GFlops for one processor * No. of processors
- GFlops for g2.2xlarge instance are computed as CPU GFlops + GPU GFlops (83.2 + 2448.4 = 2531.6)
- Double Precision GFlops value for GPU is considered for Instance's GFlops computation
- Cost is calculated in terms of Cost per hour per GFlops

c. Cost / hour / GFlop computation

GFlops	No. of instances required	No. of physical nodes required	Hardware cost	Network Switches cost (Switch + Power Consumption cost)	System Admin cost	System & Cooling Power cost for 5 years	Rack cost (Rack + Rack Power Consumption cost)	Total Cost	Cost / hour	Cost / hour / Gflop
1	1	1	11,733.78	2,749.24	526,450.00	14,013.60	2,191.14	557,137.76	12.71	0.00502175
10	1	1	11,733.78	2,749.24	526,450.00	14,013.60	2,191.14	557,137.76	12.71	0.00502175
100	1	1	11,733.78	2,749.24	526,450.00	14,013.60	2,191.14	557,137.76	12.71	0.00502175
1000	1	1	11,733.78	2,749.24	526,450.00	14,013.60	2,191.14	557,137.76	12.71	0.00502175
10000	4	1	11,733.78	2,749.24	526,450.00	14,013.60	2,191.14	557,137.76	12.71	0.00125544
100000	40	7	82,136.46	2,749.24	526,450.00	98,095.20	2,191.14	711,622.04	16.24	0.00016035
10000000	396	66	774,429.48	3,419.75	526,450.00	924,897.63	4,382.27	2,233,579.13	50.97	0.00005084

7. pr.r3.4xlarge

a. Costing

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
1.	Case	NORCO RPC-170 Black 1U Rackmount Server Chassis	1	96.84	96.84	http://www.newegg.com/Product/Product.aspx?Item=9SIA3913UN3410&cm_re=-_-NORCO_RPC-170_Black_1U_Rackmount_Server_Chassis-_-9SIA3913UN3410-_-Product
2.	Processor	Intel Xeon E5-2680 v3 Haswell 2.5 GHz LGA 2011-3 120W BX80644E52680V3 Server Processor	2	1719.99	3439.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16819117473&cm_re=Intel_Xeon_E5-2680_v3_Haswell_2.5_GHz_LGA_2011-3_120W_BX80644E52680V3_Server_Processor-_-19-117-473-_-Product
3.	Memory	Black Diamond Memory 32GB 288-Pin DDR4 SDRAM ECC Registered DDR4 2133 (PC4 17000) Server Memory Model BD32G2133MQR26	23	214.99	4944.77	http://www.newegg.com/Product/Product.aspx?Item=N82E16820014071&cm_re=Black_Diamond_Memory_32GB_288-Pin_DDR4_SDRAM_ECC_Registered_DDR4_2133_%28PC4_17000%29_Server_Memory_Model_BD32G2133MQR26-_-20-014-071-_-Product
4.	Motherboard	GIGABYTE MD80-TM0 E-ATX / SSI EEB Server Motherboard Dual LGA 2011-3 Intel C612	1	659.99	659.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16813128830&cm_re=GIGABYTE_MD80-TM0_E-ATX_%2f_SSI_EEB_Server_Motherboard_Dual_LGA_2011-3_Intel_C612-_-13-128-830-_-Product
5.	HDD	Black Diamond Memory Sonic Series BDSSDS1T 2.5" 1TB SATA III TLC Internal Solid State Drive	2	259.99	519.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16820014089&cm_re=Black_Diamond_Memory_Sonic_Series_BDSSDS1T_2.5%22_1TB_SATA_III_TLC_Internal_Solid_State_Drive-_-20-014-089-_-Product
6.	Network Adapter	Available on Motherboard				

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
7.	Network Switch	NETGEAR ProSAFE XS728T 28-Port 10-Gigabit Ethernet Smart Managed Switch (XS728T) - Lifetime Warranty		2413.99		http://www.newegg.com/Product/Product.aspx?Item=0XP-001M-000U0&cm_re=NETGEAR_ProSAFE_XS728T_28-Port_10-Gigabit_Ethernet_Smart_Managed_Switch_%28XS728T%29_-_Lifetime_Warranty-_-0XP-001M-000U0-_-Product Total cost for Network Switch(es) will be dependent upon the no. of instances needed
8.	System Admin			105290	526450	Final Cost is for 1 System Admin cost for 5 years; total cost for System Admin will be dependent upon the no. of instances needed
9.	System Power consumption		440 w / hr	0.153		Total cost for System Power consumption will be dependent upon the no. of instances needed
10.	Cooling Power consumption		440 w / hr	0.153		Total cost for Cooling Power consumption will be dependent upon the no. of instances needed Cooling Power consumption is assumed to be same as System Power consumption
11.	Rack	APC AR3300 42U NetShelter SX 600mm Wide x 1200mm Deep Enclosure		1654.73		http://www.newegg.com/Product/ProductList.aspx?Submit=ENE&DEPA=0&Order=BESTMATCH&Description=APC+AR3300+42U+NetShelter+SX+600mm+Wide+x+1200mm+Deep+Enclosure&N=-1&isNodeId=1 Total cost for Rack will be dependent upon the no. of instances needed

b. Points

- GFlops is calculated as GFops = number of processor cores* IPC* CPU frequency
- GFlops for multiple CPU machine / instance will be computed as GFlops for one processor * No. of processors

- Cost is calculated in terms of Cost per hour per GFlops

c. Cost / hour / GFlop computation

GFlops	No. of instances required	No. of physical nodes required	Hardware cost	Network Switches cost (Switch + Power Consumption cost)	System Admin cost	System & Cooling Power cost for 5 years	Rack cost (Rack + Rack Power Consumption cost)	Total Cost	Cost / hour	Cost / hour / Gflop
1	1	1	9,661.56	2,749.24	526,450.00	5,900.46	2,191.14	546,952.40	12.48	0.07800412
10	1	1	9,661.56	2,749.24	526,450.00	5,900.46	2,191.14	546,952.40	12.48	0.07800412
100	1	1	9,661.56	2,749.24	526,450.00	5,900.46	2,191.14	546,952.40	12.48	0.07800412
1000	7	2	19,323.12	2,749.24	526,450.00	11,800.93	2,191.14	562,514.43	12.84	0.01146050
10000	63	11	106,277.16	2,749.24	526,450.00	64,905.10	2,191.14	702,572.64	16.03	0.00159045
100000	625	105	1,014,463.80	3,755.00	526,450.00	619,548.65	6,573.41	2,170,790.86	49.53	0.00049534
1000000	6250	1042	10,067,345.52	23,534.97	1,052,900.00	6,148,282.82	54,778.39	17,346,841.70	395.83	0.00039583

8. pr.i2.8xlarge

a. Costing

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
1.	Case	NORCO RPC-170 Black 1U Rackmount Server Chassis	1	96.84	96.84	http://www.newegg.com/Product/Product.aspx?Item=9SIA3913UN3410&cm_re=NORCO_RPC-170_Black_1U_Rackmount_Server_Chassis-_-9SIA3913UN3410-_-Product
2.	Processor	Intel Xeon E5-2680 v3 Haswell 2.5 GHz LGA 2011-3 120W BX80644E52680V3 Server Processor	2	1719.99	3439.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16819117473&cm_re=Intel_Xeon_E5-2680_v3_Haswell_2.5_GHz_LGA_2011-3_120W_BX80644E52680V3_Server_Processor-_-19-117-473-_-Product
3.	Memory	Black Diamond Memory 32GB 288-Pin DDR4 SDRAM ECC Registered DDR4 2133 (PC4 17000) Server Memory Model BD32G2133MQR26	23	214.99	4944.77	http://www.newegg.com/Product/Product.aspx?Item=N82E16820014071&cm_re=Black_Diamond_Memory_32GB_288-Pin_DDR4_SDRAM_ECC_Registered_DDR4_2133_%28PC4_17000%29_Server_Memory_Model_BD32G2133MQR26-_-20-014-071-_-Product
4.	Motherboard	GIGABYTE MD80-TM0 E-ATX / SSI EEB Server Motherboard Dual LGA 2011-3 Intel C612	1	659.99	659.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16813128830&cm_re=GIGABYTE_MD80-TM0_E-ATX_%2f_SSI_EEB_Server_Motherboard_Dual_LGA_2011-3_Intel_C612-_-13-128-830-_-Product
5.	HDD	SAMSUNG 850 EVO 2.5" 2 TB SATA III 3-D Vertical Internal Solid State Drive (SSD) MZ-75E2T0B/AM	10	602.73	6027.3	http://www.newegg.com/Product/ProductList.aspx?Submit=ENE&DEPA=0&Order=BESTMATCH&Description=SAMSUNG+850+EVO+2.5%22+2+TB+SATA+III+3-D+Vertical+Internal+Solid+State+Drive+%28SSD%29+MZ-75E2T0B%2FAM&N=-1&isNodeId=1
6.	Network Adapter	Lenovo ThinkServer I350-T4 AnyFabric 1 Gb 4-port Base-T Ethernet Adapter by Intel	1	90.99	90.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16833828192&cm_re=Lenovo_ThinkServer_I350-T4_AnyFabric_1_Gb_4-port_Base-T_Ethernet_Adapter_by_Intel-_-33-828-192-_-Product

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
7.	Network Switch	NETGEAR ProSAFE XS728T 28-Port 10-Gigabit Ethernet Smart Managed Switch (XS728T) - Lifetime Warranty		2413.99		http://www.newegg.com/Product/Product.aspx?Item=0XP-001M-000U0&cm_re=NETGEAR_ProSAFE_XS728T_28-Port_10-Gigabit_Ethernet_Smart_Managed_Switch_%28XS728T%29_-_Lifetime_Warranty-_-0XP-001M-000U0-_-Product Total cost for Network Switch(es) will be dependent upon the no. of instances needed
8.	System Admin			105290	526450	Final Cost is for 1 System Admin cost for 5 years; total cost for System Admin will be dependent upon the no. of instances needed
9.	System Power consumption		645 w / hr	0.153		Total cost for System Power consumption will be dependent upon the no. of instances needed
10.	Cooling Power consumption		645 w / hr	0.153		Total cost for Cooling Power consumption will be dependent upon the no. of instances needed Cooling Power consumption is assumed to be same as System Power consumption
11.	Rack	APC AR3300 42U NetShelter SX 600mm Wide x 1200mm Deep Enclosure		1654.73		http://www.newegg.com/Product/ProductList.aspx?Submit=ENE&DEPA=0&Order=BESTMATCH&Description=APC+AR3300+42U+NetShelter+SX+600mm+Wide+x+1200mm+Deep+Enclosure&N=-1&isNodeId=1 Total cost for Rack will be dependent upon the no. of instances needed

b. Points

- GFlops is calculated as GFops = number of processor cores* IPC* CPU frequency
- GFlops for multiple CPU machine / instance will be computed as GFlops for one processor * No. of processors

- Cost is calculated in terms of Cost per hour per GFlops

c. Cost / hour / GFlop computation

GFlops	No. of instances required	No. of physical nodes required	Hardware cost	Network Switches cost (Switch + Power Consumption cost)	System Admin cost	System & Cooling Power cost for 5 years	Rack cost (Rack + Rack Power Consumption cost)	Total Cost	Cost / hour	Cost / hour / Gflop
1	1	1	15,259.87	2,749.24	526,450.00	8,649.54	2,191.14	555,299.79	12.67	0.03959729
10	1	1	15,259.87	2,749.24	526,450.00	8,649.54	2,191.14	555,299.79	12.67	0.03959729
100	1	1	15,259.87	2,749.24	526,450.00	8,649.54	2,191.14	555,299.79	12.67	0.03959729
1000	4	2	30,519.74	2,749.24	526,450.00	17,299.09	2,191.14	579,209.21	13.22	0.01032556
10000	32	11	167,858.57	3,084.50	526,450.00	95,144.97	2,191.14	794,729.17	18.13	0.00177095
100000	313	105	1,602,286.35	7,107.54	526,450.00	908,202.00	6,573.41	3,050,619.30	69.61	0.00069500
1000000	3125	1042	15,900,784.54	114,388.69	1,052,900.00	9,012,823.68	54,778.39	26,135,675.31	596.38	0.00059638

9. pr.d2.8xlarge

a. Costing

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
1.	Case	NORCO RPC-170 Black 1U Rackmount Server Chassis	1	96.84	96.84	http://www.newegg.com/Product/Product.aspx?Item=9SIA3913UN3410&cm_re=NORCO_RPC-170_Black_1U_Rackmount_Server_Chassis-_-9SIA3913UN3410-_-Product
2.	Processor	Intel Xeon E5-2640 V4 2.4 GHz 25MB L3 Cache LGA 2011 90W BX80660E52640V4 Server Processor	2	989.99	1979.98	http://www.newegg.com/Product/Product.aspx?Item=N82E16819117631&cm_re=Intel_Xeon_E5-2640_V4_2.4_GHz_25MB_L3_Cache_LGA_2011_90W_BX80660E52640V4_Server_Processor-_-19-117-631-_-Product
3.	Memory	Kingston 64GB (4 x 16GB) 288-Pin DDR4 SDRAM ECC Registered DDR4 2133 (PC4 17000) Server Memory Model KVR21R15D4K4/64	4	365.99	1463.96	http://www.newegg.com/Product/Product.aspx?Item=N82E16820242019&cm_re=Kingston_64GB_%284_x_16GB%29_288-Pin_DDR4_SDRAM_ECC_Registered_DDR4_2133_%28PC4_17000%29_Server_Memory_Model_KVR21R15D4K4%2f64-_-20-242-019-_-Product
4.	Motherboard	GIGABYTE MD80-TM0 E-ATX / SSI EEB Server Motherboard Dual LGA 2011-3 Intel C612	1	659.99	659.99	http://www.newegg.com/Product/Product.aspx?Item=N82E16813128830&cm_re=GIGABYTE_MD80-TM0_E-ATX_%2f_SSI_EEB_Server_Motherboard_Dual_LGA_2011-3_Intel_C612-_-13-128-830-_-Product
5.	HDD	Seagate Archive HDD v2 ST8000AS0002 8TB 128MB Cache SATA 6.0Gb/s 3.5" Internal Hard Drive Bare Drive	6	219.99	1319.94	http://www.newegg.com/Product/Product.aspx?Item=N82E16822178748&cm_re=Seagate_Archive_HDD_v2_ST8000AS0002_8TB_128MB_Cache_SATA_6.0Gb%2fs_3.5%22_Internal_Hard_Drive_Bare_Drive-_-22-178-748-_-Product
6.	Network Adapter	Available on Motherboard				

Sr. No.	Description	Details	Quantity	Cost per Unit ($)	Final Cost ($)	Remarks / newegg Link
7.	Network Switch	NETGEAR ProSAFE XS728T 28-Port 10-Gigabit Ethernet Smart Managed Switch (XS728T) - Lifetime Warranty		2413.99		http://www.newegg.com/Product/Product.aspx?Item=0XP-001M-000U0&cm_re=NETGEAR_ProSAFE_XS728T_28-Port_10-Gigabit_Ethernet_Smart_Managed_Switch_%28XS728T%29_-_Lifetime_Warranty-_-0XP-001M-000U0-_-Product Total cost for Network Switch(es) will be dependent upon the no. of instances needed
8.	System Admin			105290	526450	Final Cost is for 1 System Admin cost for 5 years; total cost for System Admin will be dependent upon the no. of instances needed
9.	System Power consumption		505 w / hr	0.153		Total cost for System Power consumption will be dependent upon the no. of instances needed
10.	Cooling Power consumption		505 w / hr	0.153		Total cost for Cooling Power consumption will be dependent upon the no. of instances needed Cooling Power consumption is assumed to be same as System Power consumption
11.	Rack	APC AR3300 42U NetShelter SX 600mm Wide x 1200mm Deep Enclosure		1654.73		http://www.newegg.com/Product/ProductList.aspx?Submit=ENE&DEPA=0&Order=BESTMATCH&Description=APC+AR3300+42U+NetShelter+SX+600mm+Wide+x+1200mm+Deep+Enclosure&N=-1&isNodeId=1 Total cost for Rack will be dependent upon the no. of instances needed

b. Points

- GFlops is calculated as GFops = number of processor cores* IPC* CPU frequency
- GFlops for multiple CPU machine / instance will be computed as GFlops for one processor * No. of processors

- Cost is calculated in terms of Cost per hour per GFlops

c. Cost / hour / GFlop computation

GFlops	No. of instances required	No. of physical nodes required	Hardware cost	Network Switches cost (Switch + Power Consumption cost)	System Admin cost	System & Cooling Power cost for 5 years	Rack cost (Rack + Rack Power Consumption cost)	Total Cost	Cost / hour	Cost / hour / Gflop
1	1	1	5,520.71	2,749.24	526,450.00	6,772.12	2,191.14	543,683.21	12.41	0.01794858
10	1	1	5,520.71	2,749.24	526,450.00	6,772.12	2,191.14	543,683.21	12.41	0.01794858
100	1	1	5,520.71	2,749.24	526,450.00	6,772.12	2,191.14	543,683.21	12.41	0.01794858
1000	2	2	11,041.42	2,749.24	526,450.00	13,544.25	2,191.14	555,976.04	12.69	0.00917720
10000	15	15	82,810.65	2,749.24	526,450.00	101,581.84	2,191.14	715,782.87	16.33	0.00157534
100000	145	145	800,502.95	4,425.51	526,450.00	981,957.79	8,764.54	2,322,100.80	52.99	0.00052869
1000000	1447	1447	7,988,467.37	35,939.35	1,052,900.00	9,799,261.58	76,689.75	18,953,258.05	432.49	0.00043241

10. Graphs
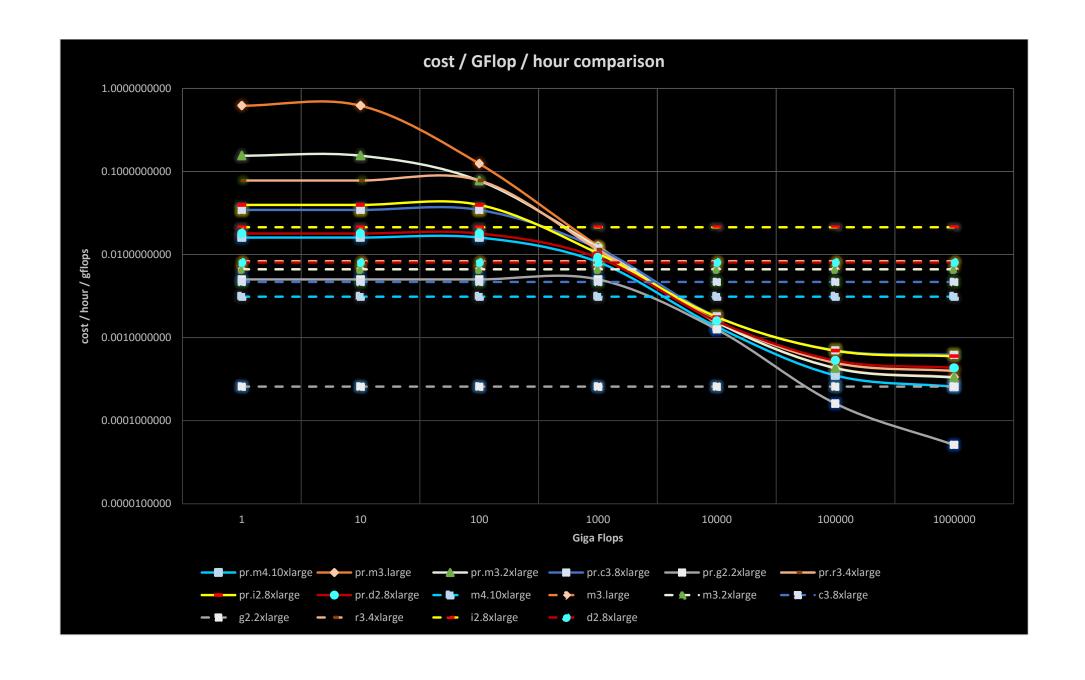
a. Cost / GFlop / Hour comparison

- Private Cloud Costs

GFlops		pr.m4.10xlarge	pr.m3.large	pr.m3.2xlarge	pr.c3.8xlarge	pr.g2.2xlarge	pr.r3.4xlarge	pr.i2.8xlarge	pr.d2.8xlarge
1	1 GFlops	0.0160135785	0.6209855826	0.1552013174	0.0344105670	0.0050217547	0.0780041191	0.0395972949	0.0179485835
10	10 GFlops	0.0160135785	0.6209855826	0.1552013174	0.0344105670	0.0050217547	0.0780041191	0.0395972949	0.0179485835
100	100 GFlops	0.0160135785	0.1241971165	0.0776006587	0.0344105670	0.0050217547	0.0780041191	0.0395972949	0.0179485835
1000	1 TFlops	0.0081193361	0.0127138670	0.0122179370	0.0118555888	0.0050217547	0.0114605016	0.0103255566	0.0091772030
10000	10 TFlops	0.0013528426	0.0015368915	0.0015321596	0.0017871644	0.0012554387	0.0015904451	0.0017709536	0.0015753400
100000	100 TFlops	0.0003502251	0.0004321132	0.0004279441	0.0007027578	0.0001603549	0.0004953429	0.0006949950	0.0005286854
1000000	1 PFlops	0.0002560926	0.0003343957	0.0003294139	0.0006196499	0.0000508392	0.0003958297	0.0005963781	0.0004324139

- Public Cloud Costs

GFlops		m4.10xlarge	m3.large	m3.2xlarge	c3.8xlarge	g2.2xlarge	r3.4xlarge	i2.8xlarge	d2.8xlarge
1	1 GFlops	0.0031171875	0.0066500000	0.0066500000	0.0046875000	0.0002567546	0.0083125000	0.0213125000	0.0079861111
10	10 GFlops	0.0031171875	0.0066500000	0.0066500000	0.0046875000	0.0002567546	0.0083125000	0.0213125000	0.0079861111
100	100 GFlops	0.0031171875	0.0066500000	0.0066500000	0.0046875000	0.0002567546	0.0083125000	0.0213125000	0.0079861111
1000	1 TFlops	0.0031171875	0.0066500000	0.0066500000	0.0046875000	0.0002567546	0.0083125000	0.0213125000	0.0079861111
10000	10 TFlops	0.0031171875	0.0066500000	0.0066500000	0.0046875000	0.0002567546	0.0083125000	0.0213125000	0.0079861111
100000	100 TFlops	0.0031171875	0.0066500000	0.0066500000	0.0046875000	0.0002567546	0.0083125000	0.0213125000	0.0079861111
1000000	1 PFlops	0.0031171875	0.0066500000	0.0066500000	0.0046875000	0.0002567546	0.0083125000	0.0213125000	0.0079861111

cost / GFlop / hour comparison

Giga Flops

cost / hour / gflops

pr.m4.10xlarge	pr.m3.large	pr.m3.2xlarge	pr.c3.8xlarge	pr.g2.2xlarge	pr.r3.4xlarge
pr.i2.8xlarge	pr.d2.8xlarge	m4.10xlarge	m3.large	m3.2xlarge	c3.8xlarge
g2.2xlarge	r3.4xlarge	i2.8xlarge	d2.8xlarge		

- Conclusion
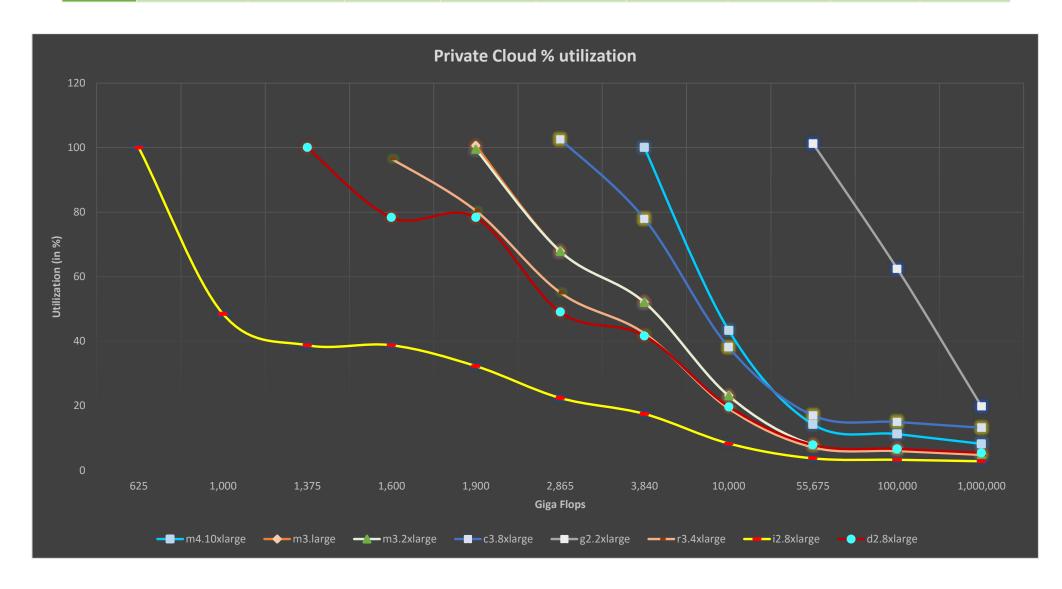
  ✓ The above graph explains the Private vs. Public cloud comparison
  ✓ Different Private and Public Cloud instances breaks even or achieves equilibrium at different GFlops depending upon the Private Cloud instances' hardware cost and instances' GFlops value
  ✓ Although the initial investment in Private Cloud (Hardware Cost, Administration Cost, Energy Cost, Network Cost and other costs ignored or excluded in this report) is very high, but in a long run and with consistent GFlops requirement for each instance, Private Cloud is more profitable and advantageous than Public Cloud and has better Return on Investment
  ✓ Usage of Public Cloud is profitable only if the GFlops requirement is low and less frequent or GFlops requirement is high but less frequent or GFlops requirement is moderate but less frequent
  ✓ Usage of Private Cloud is profitable only if the GFlops requirement is high and consistent
  ✓ The cost for Private Cloud decreases over time based on the fact that the initial investment or cost gets amortized over 5 years and the GFlops requirement is continuous

b. Private Cloud % utilization

GFlops		m4.10xlarge	m3.large	m3.2xlarge	c3.8xlarge	g2.2xlarge	r3.4xlarge	i2.8xlarge	d2.8xlarge
625	625 GFlops							100.00	
1000	1 TFlops							48.45	
1375	1.375 TFlops							38.76	100.00
1600	1.6 TFlops						96.51	38.76	78.30
1900	1.9 TFlops		100.62	99.52			80.42	32.30	78.30
2865	2.865 TFlops		67.92	67.86	102.55		55.10	22.42	49.01
3840	3.84 TFlops	100.00	52.09	52.04	77.95		42.44	17.48	41.69
10000	10 TFlops	43.40	23.11	23.04	38.13		19.13	8.31	19.73
55675	55.675 TFlops	14.26	7.91	7.85	17.03	101.23	7.08	3.70	7.81
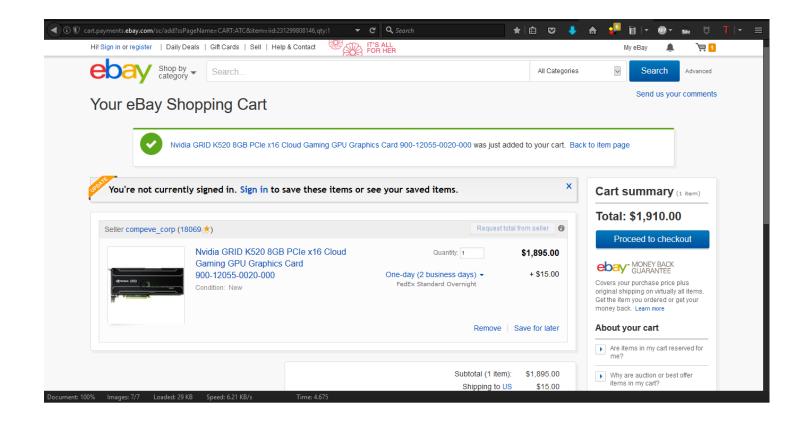
GFlops		m4.10xlarge	m3.large	m3.2xlarge	c3.8xlarge	g2.2xlarge	r3.4xlarge	i2.8xlarge	d2.8xlarge
100000	100 TFlops	11.24	6.50	6.44	14.99	62.45	5.96	3.26	6.62
1000000	1 PFlops	8.22	5.03	4.95	13.22	19.80	4.76	2.80	5.41

Private Cloud % utilization

- Conclusion
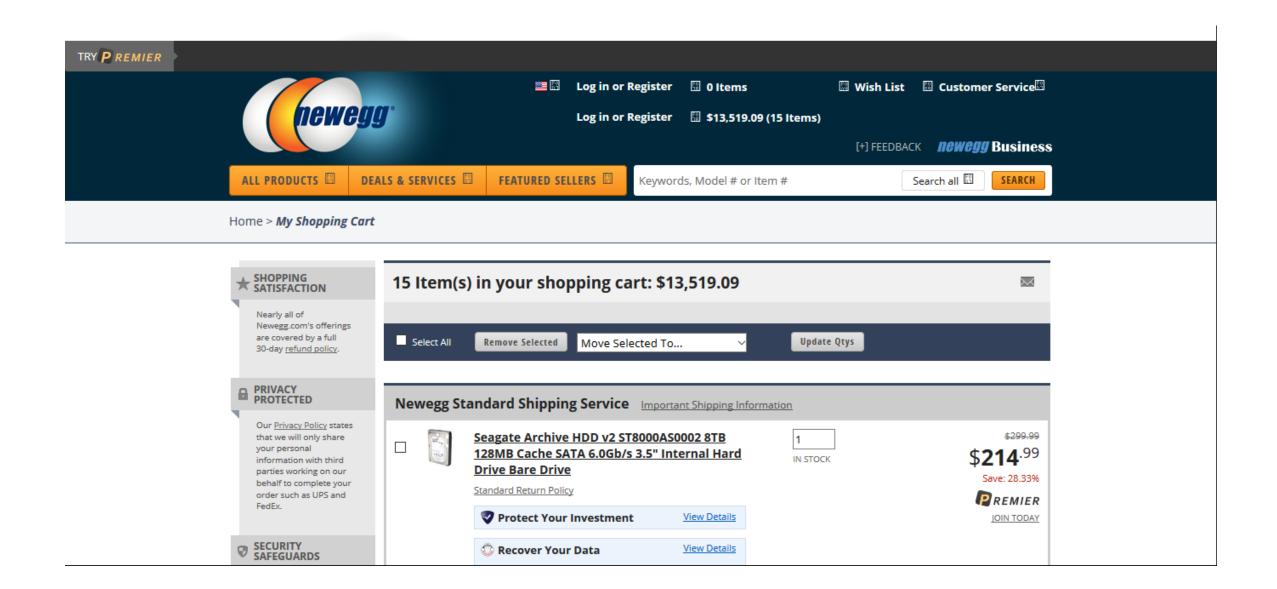
  - ✓ The above graph explains the % Utilization for Private Cloud
  - ✓ Different Private and Public Cloud instances breaks even or achieves equilibrium (100% or starting point of the above graph) at different GFlops depending upon the Private Cloud instances' hardware cost and instances' GFlops value
  - ✓ The above graph also proves the all the conclusions from the earlier graph
  - ✓ For larger Gflops, private cloud is effective even for less percentage utilization

11. Shopping Cart Images

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Seller compeve_corp (18069 ⭐)   Request total from seller ⓘ

Nvidia GRID K520 8GB PCIe x16 Cloud   Quantity: 1   **$1,895.00**
Gaming GPU Graphics Card
900-12055-0020-000   One-day (2 business days) ▾   + $15.00
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                                                    Remove   Save for later

Subtotal (1 item): $1,895.00
Shipping to US $15.00

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12.   Assumptions

- System Power consumption is assumed to be same as Cooling Power consumption
- It is assumed that one System Admin is able to handle 1000 physical nodes
- It is assumed that the Data Center will be setup in Chicago; hence the Power charges are considered accordingly as on Feb 2016
- GPU's Double Precision GFlops are considered for g2.2xlarge GFlops computation
- A UPS can support maximum 20 nodes up to 5 – 8 hours. Considering the number of nodes in Private Cloud, it will be inappropriate to spend a huge costing (Housing, Power Consumption and Cooling costs) on UPS. Hence, it is assumed that the Data Center will have power backup instead of UPS.

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