

## **Introduction**

This report is about cost of cloud computing, here the comparison have been made between public cloud AWS and the private configuration when they have a huge demand of cloud services.

As most of the industries now know the cost effectiveness and performance benefits that cloud can offer at the cost of very less actual investment, they obviously will have two questions in mind:

1. Whether to use existing public cloud services provide by reputed companies, like Amazon, Google, Microsoft, etc?
2. Or, build their own private cloud?

While making a choice, many factors are needed to be considered to conclude between both.

Following are the factors needs to be considered while deciding between private or public cloud.

- 1) Cost of computing
- 2) Demand/ Usage
- 3) Security
- 4) Maintenance
- 5) Compliance
- 6) Future usage
- 7) Scalability
- 8) Reliability

The problem statement is to identify whether the computing resources should be rented from a public cloud on-demand or whether a private cloud should be purchased. The task is to estimate the cost breakdown of a private cloud and compare it with Amazon on demand instances cost.

## **PUBLIC CLOUD CONFIGURATION(AWS)**

### **Configuration 1**

Core needed- 32 k , therefore number of VM's =889

Memory needed 256 TB, therefore number of VM's = 978

HDD needed 50PB, therefore number of VM's needed= 1042

Therefore, we need 1042 instances

According to the AWS Calculator the monthly cost for 1042 d2.8x large instances will be (including AWS Support for Business) : \$ 4343557.29

So, the cost for the 5 years for d2.8xlarge instance will be:

\$ 4343557.29 \*12 \* 5 = \$ 260613437.4

For Distributed Storage:

For 100PB the total cost for per month which will be charged by AWS is \$ 2275549.99( including AWS Business Support)

Therefore total cost for 5 years is

\$2275549.99 \*12\*5 =\$ 136532999.4

Therefore Total Public Cloud Cost for Configuration 1 is :

Cost of EC2 for 5 years + Cost of Storage for 5 years:

\$ 260613437.4 + \$ 136532999.4 = \$ 397146436.8

### **Configuration 2**

VM needed 1 million

According to AWS Calculator 1 million VM of r3.large instance will cost up \$ 125172500.00 (including cost AWS Business support)

SO for 5 years the cost will be \$ 125172500.00 \*12\*5 =\$7510350000

Distributed Storage :

For 10PB the total cost for per month which will be charged by AWS is \$ 233702.37 (including AWS Business Support)

Therefore total cost for 5 years is

\$ 233702.37\*12\*5 =\$ 14022142.2

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Yash Agarwal - A20392372

Chitrarth Singh- A20387080

Therefore Total Public Cloud Cost for Configuration 2 is :

Cost of EC2 for 5 years + Cost of Storage for 5 years:

=\$7510350000+ \$ 14022142.2= \$ 7524372142.2

## Configuration 3:

EC2 per hour cost:\$24.48 per Hour

We need 1000 VM's

According to AWS Calculator 1 VM of p3.16xlarge instance will cost up \$ 24.48

So for 5 years the cost will be \$ 24.48 \*43800\*1000 =\$1072224000

Distributed Storage :

For 1PB the total cost for per month which will be charged by AWS is \$ 233702.37 (including AWS Business Support)

Therefore total cost for 5 years is

\$ 24464.01\*12\*5 =\$ 1467840.6

Therefore Total Public Cloud Cost for Configuration 2 is :

Cost of EC2 for 5 years + Cost of Storage for 5 years:

=\$1072224000+\$ 1467840.6 =\$1073691840.6

## Configuration 1

Component		Description	Quantity	Price/Unit	Total Price	Power(Watts)/ Unit	Total Watt/hour	
Computer Servers	Processor	INTEL XEON E5-2676 V3 2.40GHZ SOCKET 2011-3 LGA2011-3 HASWELL SERVER OEM CPU SR1Y5 CM8064401613101	2668	\$2,197	\$5,861,596.00	120	320160	<a href="https://starmicroinc.net/intel-xeon-e5-2676-v3-2-40ghz-socket-2011-3-lga2011-3-haswell-server-oem-cpu-sr1y5-cm8064401613101/">https://starmicroinc.net/intel-xeon-e5-2676-v3-2-40ghz-socket-2011-3-lga2011-3-haswell-server-oem-cpu-sr1y5-cm8064401613101/</a>
	Rackmount	SUPERMICRO SYS-4028GR-TRT2 4U Rackmountable Server - Barebone Dual LGA 2011 Intel C612 2400 / 2133 / 1866 / 1600 MHz ECC DDR4 SDRAM 72-bit	1334	\$4,837	\$6,452,558.00	2000	2668000	<a href="https://www.newegg.com/Product/Product.aspx?Item=9SI A3AR59H9718">https://www.newegg.com/Product/Product.aspx?Item=9SI A3AR59H9718</a>
	Internal Storage	Seagate IronWolf ST12000VN0007 12TB 7200 RPM 256MB Cache SATA 6.0Gb/s 3.5" Internal Hard Drive	4167	\$400	\$1,666,800.00			<a href="https://www.newegg.com/Product/Product.aspx?Item=N82E16822172025&amp;ignorebbr=1">https://www.newegg.com/Product/Product.aspx?Item=N82E16822172025&amp;ignorebbr=1</a>
	Memory	Samsung M386A8K40BM1-CPB 64GB DDR4-2133 4Rx4 LP ECC LRDIMM Server Memory	4000	\$850.00	\$3,400,000.00			<a href="https://www.newegg.com/Product/Product.aspx?Item=9SI A5EM3G36302&amp;cm_re=memory_server_-1WK-002G-00022-_Product">https://www.newegg.com/Product/Product.aspx?Item=9SI A5EM3G36302&amp;cm_re=memory_server_-1WK-002G-00022-_Product</a>
Network Switches		Lenovo RackSwitch G8272 Layer 3 Switch	34	\$7,823	\$265,982.00	230	7820	<a href="https://www.newegg.com/Product/Product.aspx?Item=9SI A91N5SB8508">https://www.newegg.com/Product/Product.aspx?Item=9SI A91N5SB8508</a>

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								<a href="#">&amp;ignorebbr=1&amp;nm_mc=KNC-GoogleMKP-PC&amp;cm_mmc=KNC-GoogleMKP-PC_-pla_-Network+-+Switches-9SIA91N5SB8508&amp;gclid=Cj0KCQiA6enQBRDUARIsAGs1YQh12T-dkPpmJV30MuxP88R2FEp-uX4OuchW_H5IICTWfkZ-lhFOZ4aAu-BEALw_wcB&amp;gclsrc=a.w.ds</a>
Rack & Shelf	shelf	4U 7" Vented Rack Shelf	1507	\$86	\$128,999.20			<a href="https://www.newegg.com/Product/Product.aspx?Item=9SIA00Y1Y94194&amp;cm_re=4u_rack_shelf-9SIA00Y1Y94194-Product">https://www.newegg.com/Product/Product.aspx?Item=9SIA00Y1Y94194&amp;cm_re=4u_rack_shelf-9SIA00Y1Y94194-Product</a>
	Rack	42U 4 Post Open Frame Server Rack 19" Adjustable Depth 25"-37" Aluminum.	170	\$199	\$33,830.00			<a href="https://www.newegg.com/Product/Product.aspx?Item=9SIAA053V29199&amp;ignorebbr=1">https://www.newegg.com/Product/Product.aspx?Item=9SIAA053V29199&amp;ignorebbr=1</a>
Network Cable		Dell Networking, Cable, SFP+ to SFP+, 10GbE, Active Optical (Optics included) Cable,3 Meter, Customer Kit	2494	\$170	\$423,980.00			<a href="http://www.dell.com/en-us/shop/accessories/apd/470-ablz?ref=p13n_ena_pdp_vv&amp;c=us&amp;cs=04&amp;l=en&amp;s=bsd">http://www.dell.com/en-us/shop/accessories/apd/470-ablz?ref=p13n_ena_pdp_vv&amp;c=us&amp;cs=04&amp;l=en&amp;s=bsd</a>
Storage Servers		J4601S-Storage Options: 1x HGST 4U 60 Bay JBOD with 60 x 12TB Helium SAS HDD (Kepler +) 3 Meter SAS Cable: 4x Patch Cable SFF-8644 to SFF-8644 External JBOD 3M Warranty and Support: 1x Return to Depot Warranty (5 Year Hardware Warranty with Standard Advance Parts Replacement)	139	\$44,475.85	\$6,182,143.15	3300	458700	
Electric Power					17737598.4			

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Cooling		Tripp Lite SRCOOL24K SmartRack 24,000 BTU 208 / 240V Portable Air Conditioning Unit	85	2,582	219469. 15	7000	595000	<a href="https://www.newegg.com/Product/Product.aspx?Item=N82E16816228213&amp;cm_re=SRCOOL24K_-16-228-213_-Product&amp;nm_mc=AFC-C8Junction&amp;cm_mmc=AFC-C8Junction_-na-na-na&amp;cm_sp=&amp;AID=11552995&amp;PID=1796839&amp;SID=285945163">https://www.newegg.com/Product/Product.aspx?Item=N82E16816228213&amp;cm_re=SRCOOL24K_-16-228-213_-Product&amp;nm_mc=AFC-C8Junction&amp;cm_mmc=AFC-C8Junction_-na-na-na&amp;cm_sp=&amp;AID=11552995&amp;PID=1796839&amp;SID=285945163</a>
Administration			2	\$1,000,000	\$2,000,000.00			
Total					\$44,372,955.90			
Electricity:	4049680	177375984000	177375984	17737598.4				

Assuming total power(watt)/hr we now calculate the power for five years :

Total Power = 3454680

Five years = 3454680 \* 365 \*24\* 5 = 151314984000

Converting this power to KWatt = 151314984000 / 1000 = 151314984

Assuming the power cost ar \$0.1 = 151314984 \* 0.1 = 107433638.6

## Screenshots:


### Configuration 1:

#### Compute Servers

- Processor

HOME / ... PREVIOUS PAGE / YOUR SHOPPING CART

YOUR SHOPPING CART

CART ITEMS	QUANTITY	ITEM PRICE	ITEM TOTAL
 Intel Xeon E5-2676 v3 2.40GHz Socket 2011-3 LGA2011-3 Haswell Server OEM CPU SR1Y5 CM8064401613101	1 ▾	\$2,197.00	\$2,197.00 ✕
		Subtotal:	\$2,197.00
		<a href="#">Estimate Shipping &amp; Tax</a>	
		Grand Total: \$2,197.00	
<a href="#">UPDATE CART</a>			

- Rackmount

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- Internal Storage

- Memory

## Network Switches



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\$258.29

Next Day Shipping (One business day)

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Lenovo RackSwitch G8272 Layer 3 Switch

Model: G8272

Sold by [PC Supply](#)

1

IN STOCK

\$7,823.00

Subtotal:

\$7,823.00

Shipping Options

Shipping: \$152.07

Choose a delivery method

\$152.07

Standard Shipping (5-7 business days)

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Network Cables

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Item



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more

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Quantity

1

Price

\$170.00

Cart Summary

1 Item

Subtotal

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Shipping and taxes not included.

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Racks and Shelf

- Shelf

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Subtotal:

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- Rack

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42U 4 Post Open Frame Server Rack 19"

Adjustable Depth 25"-37"

Aluminum.Warehouse in USA!

Rack Units: 42U

Sold by [Raising Electronics](#)

1

IN STOCK

\$249.00

\$199.00

Save: 20.08%

Subtotal:

\$199.00

Shipping:

\$0.00

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## Storage Servers

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Qty	System	Description			
1	J4601S	view components	\$44,475.85	\$44,475.85	Edit System Delete System
<div><div>Storage Options:</div><div>1x HGST 4U 60 Bay JBOD with 60 x 12TB Helium SAS HDD (Kepler +)</div><div>3 Meter SAS Cable:</div><div>4x Patch Cable SFF-8644 to SFF-8644 External JBOD 3M</div><div>Warranty and Support:</div><div>1x Return to Depot Warranty (5 Year Hardware Warranty with Standard Advance Parts Replacement)</div></div>					close
<a href="#">Create Quote from Webcart</a> <a href="#">Why create a quote?</a>			Total	\$44,475.85	<a href="#">Checkout</a>

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TRIPP-LITE

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### Configuration 2:

Component		Description	Quantity	Price/Unit	Total Price	Power(Watts)/Unit	Total Power(watt)/hour		
Computer Servers	Processor	Intel Xeon E5-2670 v2 Ivy Bridge-EP 2.5 GHz 25MB L3 Cache LGA 2011 115W BX80635E52670V2 Server Processor	200000	\$1,550	\$310,000,000.00	115	23000000	<a href="https://www.newegg.com/Product/Product.aspx?Item=9SIAAEE5739794&amp;ignorebbr=1">https://www.newegg.com/Product/Product.aspx?Item=9SIAAEE5739794&amp;ignorebbr=1</a>	
	Rackmount	SUPERMICRO SYS-4028GR-TRT2 4U Rackmountable Server - Barebone Dual LGA 2011 Intel C612 2400 / 2133 / 1866 / 1600 MHz ECC DDR4 SDRAM 72-bit	100000	\$4,837	\$483,700,000.00	2000	200000000	<a href="https://www.newegg.com/Product/Product.aspx?Item=9SIA3AR59H9718">https://www.newegg.com/Product/Product.aspx?Item=9SIA3AR59H9718</a>	
	Internal Storage	Intel 535 Series 2.5" 360GB SATA III MLC SSDSC2BW360H6R5	100000	\$150	\$15,000,000			<a href="https://www.newegg.com/Product/Product.aspx?Item=9SIA99455A0964&amp;cm_re=ssd_storage--9SI">https://www.newegg.com/Product/Product.aspx?Item=9SIA99455A0964&amp;cm_re=ssd_storage--9SI</a>	



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								<a href="#">A99455A0964- -Product</a>	
	Memory	SAMSUNG 16GB 288-Pin DDR4 SDRAM Registered DDR4 2400 (PC4 19200) Memory (Server Memory) Model M393A2K40BB1-C RC	200000	\$200	\$40,000,000			<a href="https://www.newegg.com/Product/Product.aspx?Item=N82E16820147575">https://www.newegg.com/Product/Product.aspx?Item=N82E16820147575</a>	
		Samsung M386A8K40BM 1-CPB 64GB DDR4-2133 4Rx4 LP ECC LRDIMM Server Memory	200000	\$850.00	\$170,000,000			<a href="https://www.newegg.com/Product/Product.aspx?Item=9SIA5EM3G36302&amp;cm_re=memory_server-1W-K-002-G-00022- -Product">https://www.newegg.com/Product/Product.aspx?Item=9SIA5EM3G36302&amp;cm_re=memory_server-1W-K-002-G-00022- -Product</a>	
Network Switches		Cisco Catalyst 2960-Plus 48TC-L 48-Port Fast Ethernet Switch	2181	\$1,789	\$3,901,787.19	30.6	66738.6	<a href="https://www.cdw.com/shop/products/Cisco-Catalyst-2960-Plus-48TC-L-48-Port-Fast-Ethernet-Switch/3156751.aspx">https://www.cdw.com/shop/products/Cisco-Catalyst-2960-Plus-48TC-L-48-Port-Fast-Ethernet-Switch/3156751.aspx</a>	
Rack& Shelf	Shelf	4U 7" Vented Rack Shelf	102174	\$86	\$8,746,094.40			<a href="https://www.newegg.com/Product/Product.aspx?Item=9SIA00Y1Y9">https://www.newegg.com/Product/Product.aspx?Item=9SIA00Y1Y9</a>	

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								<a href="#">4194&amp;cm_re=4u_rack_s helf- -9SIA00Y1Y94194- -Prod uct</a>	
	Rack	45U Open Frame aluminium Server Network Rack 1000MM Deep 4 Post With 3 Pairs of L-Rails	10221	\$199	\$2,033,979			<a href="https://www.newegg.com/Product/Product.aspx?Item=9SIAA054SF5010&amp;cm_re=rack-45u- -9SIAA054SF5010- -Prod uct">https://www.newegg.com/Product/Product.aspx?Item=9SIAA054SF5010&amp;cm_re=rack-45u- -9SIAA054SF5010- -Prod uct</a>	
Network Cable		Dell Networking, Cable, SFP+ to SFP+, 10GbE, Active Optical (Optics included) Cable,3 Meter, Customer Kit	104688	\$170	\$17,796,960.00			<a href="http://www.dell.com/en-us/shop/accessories/apd/470-ablz?ref=p13n_e na_pd p_vv&amp;c=us&amp;cs=04&amp;l=en&amp;s=bs d">http://www.dell.com/en-us/shop/accessories/apd/470-ablz?ref=p13n_e na_pd p_vv&amp;c=us&amp;cs=04&amp;l=en&amp;s=bs d</a>	

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Storage Servers		J4601S-Storage Options: 1x HGST 4U 60 Bay JBOD with 60 x 12TB Helium SAS HDD (Kepler +) 3 Meter SAS Cable: 4x Patch Cable SFF-8644 to SFF-8644 External JBOD 3M Warranty and Support: 1x Return to Depot Warranty (5 Year Hardware Warranty with Standard Advance Parts Replacement)	14	\$44,475.85	\$622,661.90	3300	46200		
Electric Power					1133937931				
Cooling		Tripp Lite SRCOOL24K SmartRack 24,000 BTU 208 / 240V Portable Air Conditioning Unit	5111	2,582	13196550.89	7000	35777000	<a href="https://www.newegg.com/Product/Product.aspx?Item=N82E16816228213&amp;cm_re=SR_COOL_24K_-16-228-213-Prod&amp;utm_source=AFC-C8Junction&amp;utm_medium=AFC-C8Junction-name-na-na-na&amp;utm_source=&amp;AID=11552995&amp;PID=1">https://www.newegg.com/Product/Product.aspx?Item=N82E16816228213&amp;cm_re=SR_COOL_24K_-16-228-213-Prod&amp;utm_source=AFC-C8Junction&amp;utm_medium=AFC-C8Junction-name-na-na-na-na&amp;utm_source=&amp;AID=11552995&amp;PID=1</a>	

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## Compute Servers

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Subtotal:

\$1,550.00

Shipping Options

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☒ **FREE** Standard Shipping (5-7 business days)

Subtotal:

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**SUPERMICRO SYS-4028GR-TRT2 4U Rackmountable Server - Barebone Dual LGA 2011 Intel C612 2400 / 2133 / 1866 / 1600 MHz ECC ...**

CPU Type: Intel Xeon

Sold by [GeekZilla](#) 

IN STOCK


**\$4,837.00**

<b>Subtotal:</b>	<b>\$4,837.00</b>
<b>Shipping:</b>	<b>\$0.00</b>

### Shipping Options

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<input checked="" type="radio"/> <b>FREE</b>	Standard Shipping (5-7 business days)
<input type="radio"/> <b>\$123.84</b>	Expedited Shipping (3-5 business days)
<input type="radio"/> <b>\$162.52</b>	Two-Day Shipping (2 business days)
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- Internal Storage

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Newegg Marketplace Direct Delivery Service

Intel 535 Series 2.5" 360GB SATA III MLC SSDSC2BW360H6R5

Form Factor: 2.5" / Capacity: 360GB / Memory Components: MLC

Sold by Server Part Deals

SquareTrade Protection Plan

3 year: \$12.99

4 year: \$15.99

Recover Your Data

View Details

1

IN STOCK

\$149.99

Subtotal:

\$149.99

Shipping Options

Shipping:

\$0.00

Choose a delivery method

FREE

Standard Shipping (5-7 business days)

\$13.99

Expedited Shipping (3-5 business days)

\$19.99

Two-Day Shipping (2 business days)

\$29.99

Next Day Shipping (One business day)

- Memory

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Newegg Marketplace Direct Delivery Service

Samsung M386A8K40BM1-CPB 64GB DDR4-2133 4Rx4 LP ECC LRDIMM Server Memory

Capacity: 64GB / Type: 288-Pin DDR4 SDRAM

Sold by CA Server Pro

1

IN STOCK

\$849.99

PREMIER JOIN TODAY

Subtotal:

\$849.99

Shipping Options

Shipping:

\$0.00

Zip/Postal Code

60616

Update

Choose a delivery method

FREE

Standard Shipping (5-7 business days)

\$22.70

Expedited Shipping (3-5 business days)

\$44.50

Two-Day Shipping (2 business days)

SHOPPING SATISFACTION

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Select All

Remove Selected

Move Selected to Wish List

Update Qtys

Newegg Standard Shipping Service

SAMSUNG 16GB 288-Pin DDR4 SDRAM Registered DDR4 2400 (PC4 19200) Memory (Server Memory) Model M393A2K40BB1-CRC

Extended Holiday Return Policy

1

IN STOCK

\$199.99

PREMIER JOIN TODAY

Subtotal:

\$199.99

Shipping Options

Shipping:

\$0.00

Zip/Postal Code

60616

Update

Choose a delivery method

FREE

Super Eggsaver (4-7 Business Days)

\$8.94

Newegg 3 Business Days

\$19.73

Newegg 2 Business Days

\$28.21

Newegg Next Business Day

Network Switches



PROJECT- UNDERSTANDING THE COST OF COMPUTING IN THE CLOUD

Yash Agarwal - A20392372

Chitrarth Singh- A20387080

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CLOUD

BRANDS

BLOG

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Sign In to Save this Cart, View Saved Carts or E-mail this Cart

Share

Print

Add Item to Cart:

Enter CDW# or MFG#

Add

ITEM	PRICE	AVAILABILITY	QUANTITY	ITEM TOTAL	
<div><div></div><div><div>Cisco Catalyst 2960-Plus 48TC-L 48-Port Fast Ethernet Switch</div><div>MFG Part#: WS-C2960+48TC-L</div><div>CDW Part#: 3156751</div><div>UNSPSC: 43222612</div></div></div> <div>\$1,788.99</div> <div>Pricing Option Applied: Advertised Price</div> <div>In Stock</div> <div>Ships same day if ordered before 2 PM CT</div> <div><div>1</div><div>Update</div></div> <div>\$1,788.99</div> <div></div>					
<div><div>- Top Accessories</div><div><div></div><div></div><div></div></div><div><a href="#">View All</a></div></div>					

ORDER SUMMARY

Subtotal: \$1,788.99

[Lease Option](#) (\$52.78 /month)

Checkout

Network Cables

Products

Solutions & Services

Support

Deals

Shop Cyber Monday deals. Save up to 70% on select PCs for your business.

Shop Now

Cart

View saved carts.

Cart

Sign In

Shipping

Payment

Verify & Submit

Order Submitted

Item	Quantity	Price
<div><div></div><div><div>Dell Networking, Cable, SFP+ to SFP+, 10GbE, ...</div><div><a href="#">more</a></div><div>Save for later   Remove</div><div>Estimated Ship Date: 11/30/2017</div></div></div> <div>1</div> <div>\$170.00</div>		

Cart Summary

1 Item

Subtotal \$170.00

Shipping and taxes not included.

Checkout

Continue Shopping

Save Cart | Email your cart

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Racks and Shelf

- Shelf

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Select All

Remove Selected

Move Selected to Wish List

Update Qrys

Newegg Marketplace Direct Delivery Service

[Important Shipping Information](#)

4U 7" Vented Rack Shelf

Sold by [UnbeatableSale](#)

1

IN STOCK

\$73.65

Subtotal: \$73.65

Shipping: \$11.95

Shipping Options

Zip/Postal Code: 60616 

Update

Choose a delivery method

\$11.95

Standard Shipping (5-7 business days)

Newegg Marketplace Direct Delivery Service

[Important Shipping Information](#)

- Rack

# PROJECT- UNDERSTANDING THE COST OF COMPUTING IN THE CLOUD

Yash Agarwal - A20392372

Chitrarth Singh- A20387080

Newegg Marketplace Direct Delivery Service

42U 4 Post Open Frame Server Rack 19" Adjustable Depth 25"-37" Aluminum.Warehouse in USA!

Rack Units: 42U

Sold by [Raising Electronics](#)

1

IN STOCK

\$249.99

\$199.00

Save: 20.08%

Subtotal:

\$199.00

Shipping Options

Shipping:

\$0.00

Choose a delivery method

☒ FREE

Standard Shipping (5-7 business days)

AMERICAN EXPRESS

Earn \$25 Back +

Credit Card Statement Credit\*: - \$25.00

## Storage Servers

Not Logged In

[View a generated quote](#)

[Login or Signup](#)

Shopping Cart

Qty	System	Description			
1	J4601S	view components	\$44,475.85	\$44,475.85	<a href="#">Edit System</a> <a href="#">Delete System</a>
<b>Storage Options:</b> 1x HGST 4U 60 Bay JBOD with 60 x 12TB Helium SAS HDD (Kepler +) <b>3 Meter SAS Cable:</b> 4x Patch Cable SFF-8644 to SFF-8644 External JBOD 3M <b>Warranty and Support:</b> 1x Return to Depot Warranty (5 Year Hardware Warranty with Standard Advance Parts Replacement)			<a href="#">close</a>		
<a href="#">Create Quote from Webcart</a> <a href="#">Why create a quote?</a>			Total	\$44,475.85	<a href="#">Checkout</a>

## Cooling

CYBER MONDAY

SALE STARTS NOW

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Try PREMIER

0 Items

Wish List

Customer Service

TRENDING NOW:

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cyber monday monitor

msi rx 580

newegg Business

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SEARCH

Home > Components > Server Components > Server Racks / Cabinets > Tripp Lite > Item#: N82E16816228213



TRIPP-LITE

Tripp Lite SRCOOL24K SmartRack 24,000 BTU 208 / 240V Portable Air Conditioning Unit

Be the first to review this product... Ask Or Answer A Question

SHARE

In stock. Ships from United States.

Sold and Shipped by Newegg

- Produces 24,000 BTU/h (7 kW) of cooling capacity in a portable, rack-width chassis
- Prevents equipment shutdowns, malfunctions and failures caused by overheating and temperature fluctuations
- Filters and dehumidifies the air to enhance equipment performance
- Uses environmentally friendly R410A refrigerant, which complies with worldwide standards
- Efficient close-coupled cooling reduces energy use and

★ FREE SHIPPING AVAILABLE

\$2,581<sup>99</sup>

Sold and Shipped by: Newegg

1

+

-

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☐ ADD TO WISH LIST

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Mega Retail Store

VIEW DETAILS

## Configuration 3

Component		Description	Quan tity	Price/Unit	Total Price	Power(Watts)/ Unit	Total Watt/hour	
Computer Servers	GPU	NVIDIA CORP 8-GPU/512GB DGX-1 DL WITH V100	1000	\$154,766	\$154,766,060.00	120	120000	<a href="http://www.nextwarehouses.com/item/?2707240_g10e">http://www.nextwarehouses.com/item/?2707240_g10e</a>
	Network	Lenovo RackSwitch	23	\$7,823	\$179,929.00	230	5290	<a href="https://www.newegg.com/">https://www.newegg.com/</a>

# PROJECT- UNDERSTANDING THE COST OF COMPUTING IN THE CLOUD

Yash Agarwal - A20392372

Chitrarth Singh- A20387080

Switches		G8272 Layer 3 Switch						<a href="#">Product/Product.aspx?Item=9SIA91N5SB8508&amp;ignorebbr=1&amp;nm_mc=KNC-GoogleMKP-PC&amp;cm_mmc=KNC-GoogleMKP-PC--pla--Network+-+Switches--9SIA91N5SB8508&amp;gclid=Cj0KCQiA6enQBRDUARISAGs1YQhh12T-dkPpmJV30MuxP88R2FEp-uX4OuchW_H5IICTWfkZ-lhFOZ4aAu-BEALw_wcB&amp;gclid=aw.ds</a>
Rack & Shelf	shelf	4U 7" Vented Rack Shelf	1025	\$86	\$87,740.00			<a href="https://www.newegg.com/Product/Product.aspx?Item=9SIA00Y1Y94194&amp;cm_re=4u_rack_shelf--9SIA00Y1Y94194--Product">https://www.newegg.com/Product/Product.aspx?Item=9SIA00Y1Y94194&amp;cm_re=4u_rack_shelf--9SIA00Y1Y94194--Product</a>
	Rack	42U 4 Post Open Frame Server Rack 19" Adjustable Depth 25"-37" Aluminum.	102	\$199	\$20,298.00			<a href="https://www.newegg.com/Product/Product.aspx?Item=9SIAA053V29199&amp;ignorebbr=1">https://www.newegg.com/Product/Product.aspx?Item=9SIAA053V29199&amp;ignorebbr=1</a>
Network Cable		Dell Networking, Cable, SFP+ to SFP+, 10GbE, Active Optical (Optics included) Cable,3 Meter, Customer Kit	1039	\$170	\$176,630.00			<a href="http://www.dell.com/en-us/shop/accessories/apd/470-ablz?ref=p13n_ena_pdp_vv&amp;c=us&amp;cs=04&amp;l=en&amp;s=bsd">http://www.dell.com/en-us/shop/accessories/apd/470-ablz?ref=p13n_ena_pdp_vv&amp;c=us&amp;cs=04&amp;l=en&amp;s=bsd</a>
Storage Servers		J4601S-Storage Options: 1x HGST 4U 60 Bay JBOD with 60 x 10TB Helium SAS HDD (Kepler +) 3 Meter SAS Cable: 4x Patch Cable SFF-8644 to SFF-8644 External JBOD 3M Warranty and Support: 1x Return to Depot Warranty (5 Year Hardware Warranty with Standard Advance Parts Replacement)	2	\$39,244.15	\$78,488.30	3300	6600	
Electric Power					2141338.2			
Cooling		Tripp Lite SRCOOL24K SmartRack 24,000 BTU 208 / 240V	51	2,582	131681.49	7000	357000	<a href="https://www.newegg.com/Product/Product.aspx?Item=N82E168162">https://www.newegg.com/Product/Product.aspx?Item=N82E168162</a>

PROJECT- UNDERSTANDING THE COST OF COMPUTING IN THE CLOUD


Yash Agarwal - A20392372  
Chitrarth Singh- A20387080

		Portable Air Conditioning Unit						<a href="#">28213&amp;cm_r</a> <a href="#">e=SRCOOL24</a> <a href="#">K-_-16-228-2</a> <a href="#">13-_-Product</a> <a href="#">&amp;nm_mc=AF</a> <a href="#">C-C8Junction</a> <a href="#">&amp;cm_mmc=A</a> <a href="#">FC-C8Junctio</a> <a href="#">n-_-na-_-na-</a> <a href="#">-na&amp;cm_sp=</a> <a href="#">&amp;AID=115529</a> <a href="#">95&amp;PID=1796</a> <a href="#">839&amp;SID=285</a> <a href="#">950899</a>
Administration			1	\$1,000,000	\$1,000,000.00			
Total					\$158,582,164.99			
Electricity:	488890	21413382000	21413382	2141338.2				

Compute Servers

- GPU

### Your Shopping Cart



**NVIDIA CORP 8-GPU/512GB DGX-1 DL WITH V100**  
Part Number: 920-22787-2510-000, Item #: 2707240

☐ \$17,024.27/unit for Hot Swap Warranty

\$154,766.06

1

Remove

Select a Destination Country: 

United States





(Including Guam, US Territory)

US\$ Sub-Total: \$154,766.06

Continue Shopping

Update

Checkout

Sales tax will be collected for CA,MA,MD,TN,DC customers.  
We Accept     , PO and Wire.

Please Select Your Service Level:

Show Shipping Options for AK/HI/PR/VI and APO/FPO

Service Level

☐ Free 6-10 Business Days (Free Ground Shipping)


Network Switches

\$258.29

Next Day Shipping (One business day)

Newegg Marketplace Direct Delivery Service

Important Shipping Information



Lenovo RackSwitch G8272 Layer 3 Switch

Model: G8272

Sold by [PC Supply](#)

1

IN STOCK

\$7,823.00

Subtotal:

\$7,823.00

Shipping Options

Choose a delivery method

☒ \$152.07

Standard Shipping (5-7 business days)

Shipping:

\$152.07

Newegg Marketplace Direct Delivery Service

Important Shipping Information

Network Cables



PROJECT- UNDERSTANDING THE COST OF COMPUTING IN THE CLOUD

Yash Agarwal - A20392372  
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Item

Dell Networking, Cable, SFP+ to SFP+, 10GbE,...  
[more](#)  
Save for later | Remove  
Estimated Ship Date 11/30/2017

Quantity1

Price\$170.00

Cart Summary1 Item

Subtotal\$170.00

Shipping and taxes not included.

Checkout

Continue Shopping

Save Cart | Email your cart

Call or Chat

Racks

- Shelf

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Select AllRemove SelectedMove Selected to Wish ListUpdate Qtys

Newegg Marketplace Direct Delivery Service

[Important Shipping Information](#)

4U 7" Vented Rack Shelf

Sold by [UnbeatableSale](#)

1

IN STOCK

\$73.65

Subtotal:\$73.65

Shipping:\$11.95

Shipping Options

Zip/Postal Code60616Update

Choose a delivery method

☒ \$11.95

Standard Shipping (5-7 business days)

Newegg Marketplace Direct Delivery Service

[Important Shipping Information](#)

42U 4 Post Open Frame Server Rack 19" Adjustable Depth 25"-37" Aluminum.Warehouse in USA!

Rack Units: 42U

Sold by [Raising Electronics](#)

1

IN STOCK

~~\$249.00~~

\$199.00

Save: 20.08%

Subtotal:\$199.00

Shipping:\$0.00

Shipping Options

Choose a delivery method

☒ FREE

Standard Shipping (5-7 business days)

Earn \$25 Back +

Credit Card Statement Credit\* : - \$25.00

FREE DELIVERY ON ALL ORDERS OVER \$250.00

- Rack

Newegg Marketplace Direct Delivery Service

[Important Shipping Information](#)

42U 4 Post Open Frame Server Rack 19" Adjustable Depth 25"-37" Aluminum.Warehouse in USA!

Rack Units: 42U

Sold by [Raising Electronics](#)

1

IN STOCK

~~\$249.00~~

\$199.00

Save: 20.08%

Subtotal:\$199.00

Shipping:\$0.00

Shipping Options

Choose a delivery method

☒ FREE

Standard Shipping (5-7 business days)

Earn \$25 Back +

Credit Card Statement Credit\* : - \$25.00

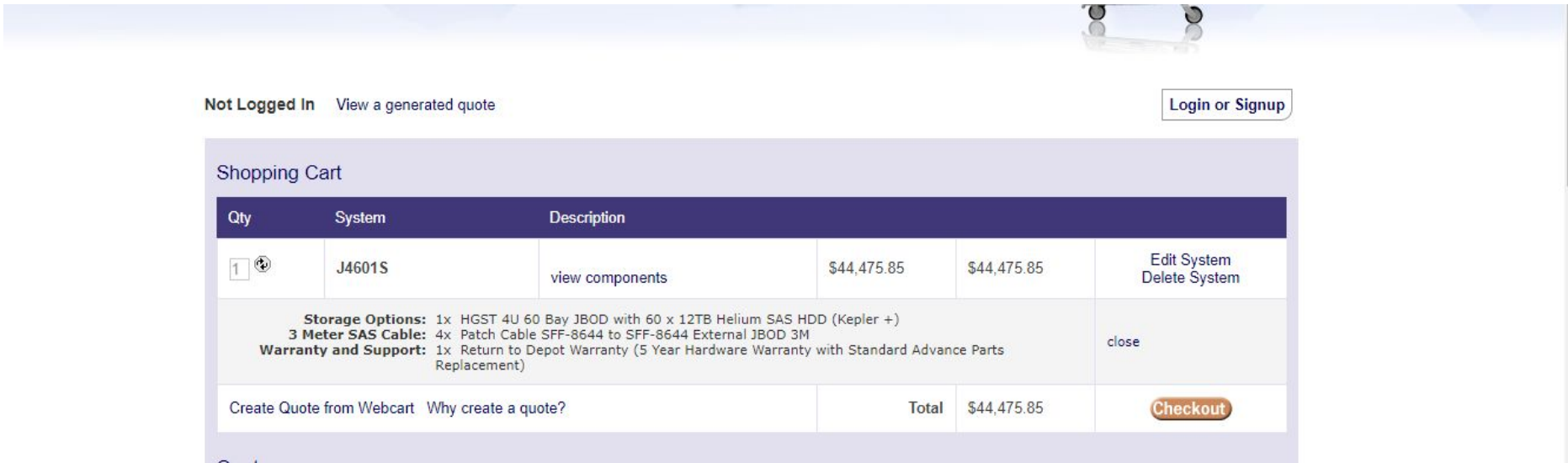
FREE DELIVERY ON ALL ORDERS OVER \$250.00

Storage Servers

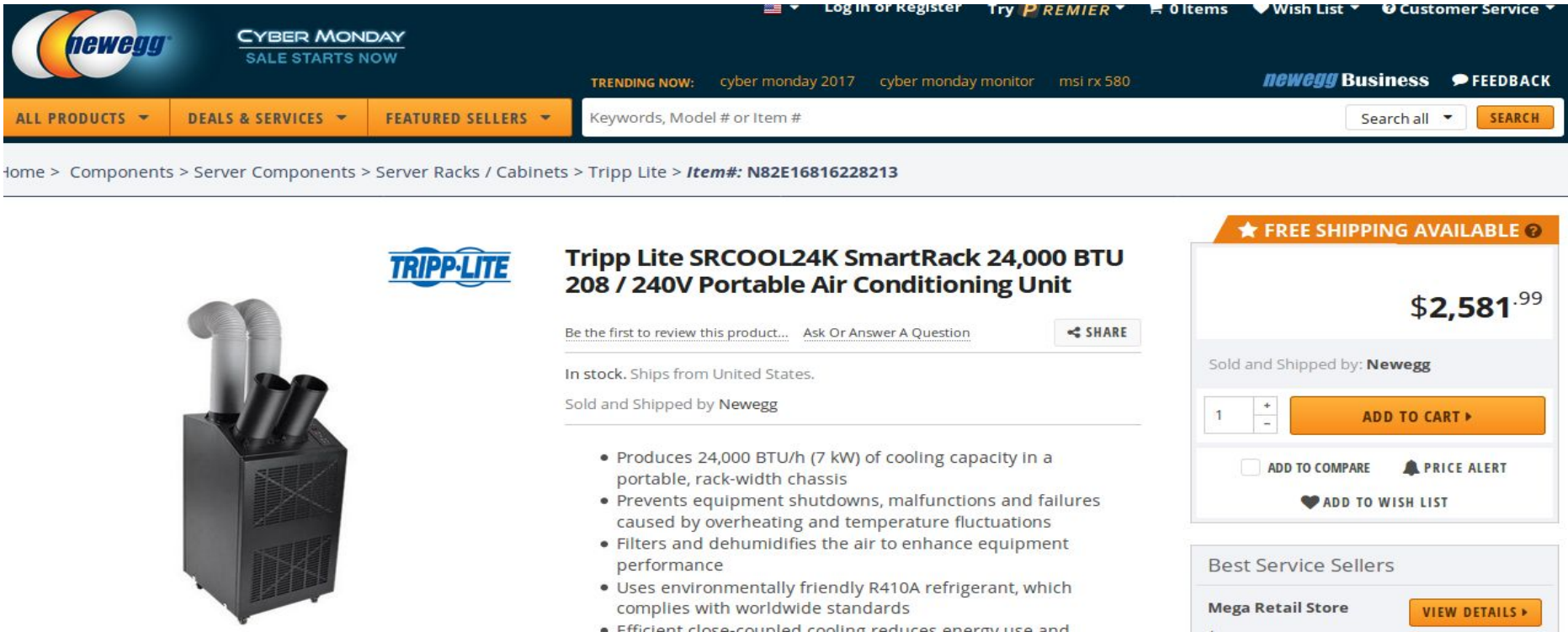


PROJECT- UNDERSTANDING THE COST OF COMPUTING IN THE CLOUD

Yash Agarwal - A20392372  
Chitrarth Singh- A20387080



Cooling



Conclusion:

	Configuration 1	Configuration 2	Configuration 3
Public Cloud (including EC2 and S3) Cost over 5 years, 24/7 operation, with 100% usage	\$ 397,146,436.8	\$ 7,524,372,142.2	\$1,073,691,840.6
Private Cloud cost over 5 years, 24/7 operation, with 100% usage	\$44,372,955.90	\$2,298,935,964.45	\$158,582,164.99
What utilization must be achieved with the private cloud to make the private cloud option more attractive than the public cloud?	10%	15.9%	17.2%

**Assumption:** AWS Business Support is included in public cloud cost.

**Utilization:**

For configuration 1

At **11%** utilization it costs us **\$39,714,643.68** for Public and **\$4,437,295.59** for the Private cloud.

For configuration 2

At **15.9%** utilization it costs us **\$1,196,375,170.6** for Public Cloud and **\$3,65,530,818.2** for Private Cloud

For configuration 3

At **17.2%** utilization it costs **\$184,674,996.58** for Public Cloud and **\$27,104,132.378** for Private Cloud

In the above observations, if we decrease the utilization rates than above utilization rates then it will make the private cloud more expensive than that of the public cost. Because only the cost for electricity for the private cloud will get decrease, but for the public cloud it's not the same.