

HOSTING REPOSITORIES AND WEBSITES

Determine the Correct Size and Type of a Web server

- a) **Web server** – There are 3 main hardware components when choosing a web server are the CPU or processor, memory and hard drive. However, it is also important to consider other factors such as bandwidth, reliability, security, support and backups.

Processor – handles all processing, calculations and logic
4 or 8 cores @ 1.40Ghz 64-bit processor

Memory – RAM depend on your operating system, applications, security software and database that consumes memory. It is recommended to check each system requirements to ensure enough memory for the web server

At least 4 GB of memory

Minimum requirements:

Operating System	: 2GB
Content Management	: 1GB
Database	: 1GB

Storage – storage size depends on factors such as the size and type of website and files, number of users and whether they save data on the site.

Minimum requirements:

Operating System	: 32GB
Content Management	: 1GB
Database	: 1GB

Sample computation for the root folder:

Disk Space	= Page size x Number of pages
	= 25kb/page x 4000 pages
	= 100,000 KB or 100MB

Bandwidth – This refers to the total amount of data that you can transfer to and from your website per month. Some providers have packages with unmetered bandwidth while other charge according to the amount of data you transfer.

Sample computation:

Bandwidth	= page size x visitors per month x pages per month
	= 25KB x 10,000 x 10
	= 2.5 GB / month

b) Types of Web server

a. Shared Hosting

Your website is hosted on a server shared by other websites. The advantage of this setup is the shared cost but, the biggest disadvantage of a shared hosting is that your site performance may adversely affected by some popular sites.

b. Virtual Private Server (VPS) Hosting

VPS share one physical server but act like multiple, separate servers.

- c. **Dedicated Server Hosting**
Renting one physical server from a hosting company, you don't have to worry about other websites on a shared server taking up resources
- d. **Managed WordPress Hosting**
WordPress hosting is a service where the web hosting provider will keep your WordPress installation up to date which can help protect your site from security threats.
- e. **Colocation Web Hosting**
You rent rack space from a datacenter. You bring your own server hardware and they provide power, cooling, physical security and an internet uplink.
- f. **Self Service Hosting**
You buy the servers, install and configure the software, make sure there are sufficient cooling and power in your machine room

Department Web Server Hosting Plan

DEPARTMENT	WEB SERVER	OPERATING COST (USD)	
		Monthly	Yearly
SEC	Hosted	187	2,244
TD	Hosted	28.75	345
AQD	On-premise	39.20	470.40
MFRDMD	Hosted		
IFRDMD	Hosted	28.92	347

DSpace Server hardware requirements

- **Mid-range DSpace production system**
 - 4 GB of Random Access Memory (RAM)
 - ~2GB for Tomcat
 - ~2GB for Database (PostgreSQL or Oracle)
 - Keep in mind your operating system also need some memory to function. So, ensure the computer itself has at least 5-6GB of RAM available overall.
 - 200GB of Storage or roughly enough storage for all the files your wish to store in DSpace
- **High End DSpace production system**
 - 8 GB of Random Access Memory (RAM)
 - ~4-6GB for Tomcat
 - ~2-4GB for Database (PostgreSQL or Oracle)
 - Keep in mind your operating system also need some memory to function. So, ensure the computer itself has at least 9-10GB of RAM available overall.
 - 1TB of Storage or roughly enough storage for all the files your wish to store in DSpace

Department Repository Specification

DEPARTMENT	PROCESSOR	MEMORY	STORAGE	HOSTING	OPERATING
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					COST
SEC	Intel Xeon E7-4870 2.40Ghz	8GB	200GB	Hosted (VPS)	172.5 USD/ month
TD					172.5 USD/ month
AQD	Intel Xeon E5-520 Quad Core 2.27Ghz	4GB	500GB	On-premise	39.20 USD/ month
MFRDMD	Intel Xeon E5-2630 6 Core 2.20Ghz	24GB	600GB	Hosted (VPS)	90.55 USD/ month
IFRDMD	Intel Core i5-3570T 2.30Ghz	8GB	1TB	On-premise	17.48 USD/ month

Power Consumption and Bandwidth computation for on-premise web server

Electricity computation

Formula: Server watt/KWh x Hours per day x Electricity Rate

Example:

Server = 200 watts or 0.2 KW
 No. of hours = 24hrs
 Electricity rate per KWh (Philippines) = 0.20 USD

Monthly Rate = 0.2 KW x 24 hrs x 365/12 x 0.20 USD
 = 0.2 KW x 24 hrs x 30.42 x 0.20 USD
 = 0.2 kW x 730.08 hrs x 0.20 USD
 = 29.20 USD

Bandwidth computation

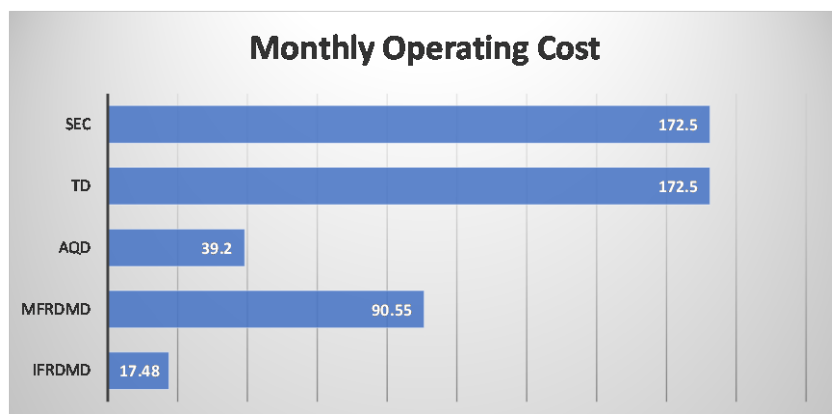
Formula: Average badwidth per day x (Monthly Cost/Bandwidth)

Example:

Repository = 300 kbps or 0.3 Mbps
 AQD ISP subscription = 30Mbps @ USD 1,000.00
 = 33.33 USD per Mbps

Monthly Rate = 0.3 Mbps x 33.33 USD
 = 9.99 or 10 USD

Department Operating Cost in Hosting the Repository



DEPARTMENT INCURRED COST IN NUMBER OF YEARS (USD)			
Department	First Year	Second Year	Third Year
SEC	2,070.00	4,140.00	6,210.00

TD	2,070.00	4,140.00	6,210.00
AQD	470.40	940.80	1,411.20
MFRDMD	1,086.60	2,173.20	3,259.80
IFRDMD	209.76	419.52	629.28

Cost Analysis in relocating the Repository VPS to AQD

- **Investment (≥ \$ 4,990.23)**
 - a. Server Equipment
 - Dell PowerEdge R630 Rack Server = **USD 4,590.23**
 - Specifications:
 - Processor : Dual processor Intel Xeon E5-2640 2.4Ghz 10C/20T
 - Memory : 32GB RDIMM, 2666MT/s dual rank
 - RAID : RAID 5 for S130 (up to 4SATA HDDs)
 - Storage : 4 x 960GB SSD SATA Mix Use 6Gbps
 - Power Supply : Dual, Hot-plug, Redundant PSU 750W
 - OS : Windows Server 2019
 - Warranty : 3 Year Hardware warranty
 - b. Operating System
 - 10 cores Windows Server 2019 Academe license = **USD 400.00**
 - c. IT Technical Support
 - AQD MIS and Library personnel
- Shared Investment

Shared Investment (USD)			Yearly (USD)
Dell PowerEdge R630		Windows server 2019	Total
SEC	1,530.08	133.33	1,663.41
TD	1,530.08	133.33	1,663.41
MFRDMD	1,530.08	133.33	1,663.41

- Server Equipment ROI (Return of Investment)

AQD Monthly Bills – monthly recurring charges of electricity and internet bill

SECRETARIAT / TD

Installment Month	Investment	AQD Monthly Bills	Payment	Balance
1	1663.41	39.2	172.5	1530.11
2	1530.11	39.2	172.5	1396.81
3	1396.81	39.2	172.5	1263.51
4	1263.51	39.2	172.5	1130.21

Installment Month	Investment	AQD Monthly Bills	Payment	Balance
5	1130.21	39.2	172.5	996.91
6	996.91	39.2	172.5	863.61
7	863.61	39.2	172.5	730.31
8	730.31	39.2	172.5	597.01
9	597.01	39.2	172.5	463.71
10	463.71	39.2	172.5	330.41
11	330.41	39.2	172.5	197.11
12	197.11	39.2	172.5	63.81
13	63.81	39.2	172.5	-69.49
14		39.2	172.5	-133.3
15		39.2	172.5	-133.3
16		39.2	172.5	-133.3
17		39.2	172.5	-133.3
18		39.2	172.5	-133.3
19		39.2	172.5	-133.3
20		39.2	172.5	-133.3
21		39.2	172.5	-133.3
22		39.2	172.5	-133.3
23		39.2	172.5	-133.3
24		39.2	172.5	-133.3

* SEC / TD Savings after 24 months = USD 1,535.79 each

MFRDMD

Installment Month	Investment	AQD Monthly Bills	Payment	Balance
1	1663.41	39.2	90.55	1612.06
2	1612.06	39.2	90.55	1560.71
3	1560.71	39.2	90.55	1509.36
4	1509.36	39.2	90.55	1458.01
5	1458.01	39.2	90.55	1406.66
6	1406.66	39.2	90.55	1355.31
7	1355.31	39.2	90.55	1303.96
8	1303.96	39.2	90.55	1252.61
9	1252.61	39.2	90.55	1201.26
10	1201.26	39.2	90.55	1149.91
11	1149.91	39.2	90.55	1098.56
12	1098.56	39.2	90.55	1047.21
13	1047.21	39.2	90.55	995.86
14	995.86	39.2	90.55	944.51
15	944.51	39.2	90.55	893.16

16	893.16	39.2	90.55	841.81
17	841.81	39.2	90.55	790.46
18	790.46	39.2	90.55	739.11
19	739.11	39.2	90.55	687.76
20	687.76	39.2	90.55	636.41
21	636.41	39.2	90.55	585.06
22	585.06	39.2	90.55	533.71
23	533.71	39.2	90.55	482.36
24	482.36	39.2	90.55	431.01
25	431.01	39.2	90.55	379.66
26	379.66	39.2	90.55	328.31
27	328.31	39.2	90.55	276.96
28	276.96	39.2	90.55	225.61
29	225.61	39.2	90.55	174.26
30	174.26	39.2	90.55	122.91
31	122.91	39.2	90.55	71.56
32	71.56	39.2	90.55	20.21
33	20.21	39.2	90.55	-31.14
34		39.2	90.55	-51.35
35		39.2	90.55	-51.35
36		39.2	90.55	-51.35

36 months = USD 185.19

AQD Datacenter

- **Server**
 - DNS/DHCP Server
 - Active Directory Server
 - Antivirus Server
 - Web Server: Dedicated and VPS Hosting

- **Connectivity & Security**
 - 2 ISP Provider
 - Network Failover Support
 - Fortigate 81e Firewall
 - Demilitarize Zone for Website/Portals
 - ESET NOD32 business antivirus
 - Scheduled VPS Image Backup

- **Power Efficiency & Support**
 - Backup Power Generator
 - Redundant 10KVA Uninterrupted Power Supply
 - Extended ICT Hardware warranty