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Energy Efficiency Security Mechanism in Cloud MANET Mobility Model

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ABSTRACT

Cloud Computing (CC) solutions are used to reduce the deployment and operational costs and further designed to provide energy saving methods and also tries to reduce the adverse impact on environment. So to tackle this specific objective, for this a new and special type of understanding is required to the energy consumption patterns in complex Cloud ecosystem. Here, we planned to present an effective model for energy consumption in any Cloud based environments .We measure energy utilized of different run-time tasks in Cloud based environments. The Device-2-Device correspondence in systems has expanded to n number of clients and the rate of transmission of data among the portable hubs in Cloud based-Mobile Ad-Hoc Networks, i.e. CB-MANETs. For this energy consumption expends to high level. Consequently, this work tries to significantly decrease the utilization of energy by proposing an effective model, i.e. Energy Efficient Cloud Security Mechanism (EECSM) for Cloud Based -Mobile ad-hoc networks. Consumption of Energy in a secured manner is minimized by performing Empirical tryout of the relationship that utilize energy consumption and Cloud related task for information and computation purpose. This model will also support to asses the system performance Our research results are often integrated into Cloud ecosystems to monitor the energy consumption by supporting all type of Sys-level optimization. The results obtained from this proposed methodology provides expected and positive impact as far as consumption of energy is concerned, along with residual energy and network lifetime as compared with the other related models those are already exists. Here we'll utilize the concept of Analytical hierarchical processing (AHP) to supply the simplest service in terms of energy consumptions.

Key words- Cloud Computing, point-to-point, EECSM, Energy consumption; performance analysis, MANETs, AHP

1. INTRODUCTION

Investigation of the relationship of energy or vitality utilization and Cloud information and computational Mobile Ad-hoc Network sare self-designing and foundation free systems. The fitness in arrange sending and brilliant gadgets to gallivant openly with advantageous information trade. In MANETs, rules for management and routing rules are fundamental to find courses between nodes and/or associated hubs that are subjectively found and can progress further. Since, these management information exchange are the basic formation of Mobile Ad-hoc Networks, they discussed the evaluation process. The noteworthy qualities of Mobile Ad-hoc Networks are restricted limit with high portability, ground-breaking hubs that lead to high data loss ratio [1]. Course revelation and intermittent course support prompts increment in energy utilization and deferral in administration [2]. Additionally directing overhead happened because of huge control message exchanges between versatile hubs in Mobile Ad-hoc Networks [25, 26]. To vanquish this issue, different analysts have endeavored to limit inactivity, vitality utilization, directing overhead and to improve the nature of administration in various types of communication typologies [3].

Lately, the developing distributed computing has given a chance to spare vitality and improve the productivity of cell phones in ad-hoc Mobile networks [4]. As we have recently used and observed in current mobile communication systems take out the contrast among old wired and remote systems and subsequently they accomplish the development of versatility in Device to Device correspondence in Mobile Ad-hoc Networks [9]. The Device to Device correspondence innovation encourages the User hand held device (HHD) to discuss immediately with different HHD with or without halfway inclusion of foundation [11]. The necessities of current mobile system and Device to Device correspondence requests the usage of Cloud based -Mobile Ad-hock Networks and this has been perceived and appreciated by different analysts [10]. The Cloud based -Mobile Ad-hock Networks underscore from the trait of mobile based Cloud Computing in which both the cloud and MANETs[12, 14] are shaped like a Cloud based -Mobile Ad-hock Networks in an overlay as appeared in Figure 1. In this courses of action the server farms of cloud servers and data centers are attached through the peers by Mobile Ad-hoc Networks, and companion hubs alludes to the cell phones, which are associated straightforwardly or in a roundabout way inside the

MANETs. Besides, peer hubs go about as a primary companion when it has an immediate association with the peer hubs to share the benefits of cloud environment in Mobile Ad-hoc Networks. Companion or peer hubs are a section and pared of Mobile Ad-hoc Networks and they are associated either legitimately or by implication to the principle peers. The principle peers associate with the next neighbour which are associated with the server hub via Internet in the cloud . Consequently eventually it's workable for a friend hub to get to the server hubs whenever required. Cloud computing may be another and promising worldview which conveys figuring as a utility [8]. It gives calculation, programming, information access, and capacity benefits through the web. Key focal points incorporate that clients can scale on request their processing and information stockpiling administrations without the typical huge forthright interest in registering framework. Most of the research over the previous decades in building data centers on large-scale has been focused. Hence energy consumption or vitality utilization has become a basic worry in structuring present day Cloud frameworks. The high vitality utilization of information focuses regularly prompts utilization of power delivered by "earthy colored" age offices, prompting high outflow of CO2, with negative effects on nature. Also, a standard monetary target of Cloud suppliers is to limit their all out sending and operational expenses. High vitality utilization straightforwardly adds to both organization and operational expenses. As examined in [16], the power utilization for controlling the information communities inside the united nations alone is anticipated to prevail in 10K billion units at the estimation of $7.4 billion by 2011. This energy utilization contributes more then 40% of an information community's month to month spending plan [3]. Consequently, vitality utilization, additionally as its effect on framework execution, working cost and along these lines the earth, became basic issues in Cloud situations [20]. Numerous endeavors are made to improve vitality effectiveness in Cloud situations. Some basic strategies give fundamental vitality the board to servers in Cloud conditions, for example turning on and off servers, taking care of them or utilizing Dynamic Voltage Scaling or Dynamic Frequency Scaling to control servers' capacity states[5]. Dynamic Frequency Scaling alters C.P.U. power (thus the exhibition level) steady with the remaining task at hand. Anyway the extent of Dynamic Frequency Scaling enhancement is limited to CPUs. Another methodology for improving vitality proficiency is to receive virtualization procedures to encourage better asset detachment and decrease framework vitality utilization through asset union and live movement [6]. Utilizing virtualization procedures, a few vitality mind full asset distribution arrangements and planning calculations are proposed to streamline absolute vitality utilization in Cloud situations [7]. Cloud- based MANETs Architecture concept have presented the various view at figure 1.

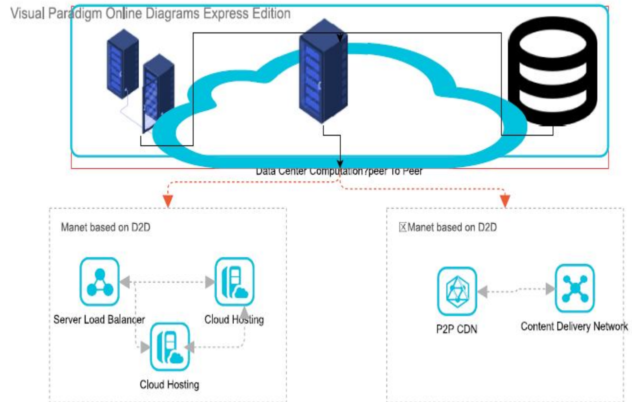

Figure 1 :A Cloud- based MANETs Architecture (Generic)

Not with standing, it faces different issues during association foundation between super companion hubs and Mobile Ad-hoc network hub. It's expected to, the in-accessibility of a focal framework for connecting hubs. Subsequently, this arrangement upgrades hubs to progressively exchange information without the showing the decadency on base station [19]. The significant issues of Mobile Ad-hoc Networks are course disclosure, course upkeep and portability. This portability prompts connect disappointments of distributed transmission separated from the hub inclusion extend. Additionally, portability and connection disappointment influences the Quality of Service (QoS). In this manner, the recognition and recuperation of these issues have extra overhead and subsequently these issues challenge the exhibition of Mobile Ad-hoc Networks [13].

Consequently, a different issue has been occurred during association foundation between super hubs and Mobile Ad-hoc Network hubs. It's expected to, the non-accessibility of a focal foundation for connecting hubs. Thus, this arrangement upgrades hubs to progressively trade information without the assistance of base station [12]. The significant issues of Mobile Ad-hoc Networks are course disclosure, course upkeep and portability. This portability prompts connect disappointments of shared transmission separated from the hub inclusion extend. Likewise, portability and connection disappointment influences the Quality of Service (QoS). Subsequently, the location and recuperation of these issues have extra overhead and thus these issues challenge the presentation. Another prevailing discussion in the Mobile Ad-hoc Networks is the more vitality utilization, which influences the Device to Device execution in current mobile systems. To limit the vitality corruption issue, Dynamic type of Cloud-Assisted Routing Mechanism has been proposed in [14]. In this dynamic cloud are utilized to limit the vitality utilization and go about as a server farm for haze figuring in Mobile Ad-hoc Networks. By watching these realities that win in Mobile Ad-hoc Networks and Cloud based -Mobile Ad-hoc Networkswe focus our work around the decrease of vitality utilization. Since if abundance vitality utilization is maintained a strategic distance from a large portion of the issues related with Mobile Ad-hoc Networkswill be settled effectively. The critical commitments of this proposed work can be measured by providing the right energy consumption models with added security mechanism, and finally needed to address the following issues as a major challenge:

- ✓ What decides the vitality utilization of explicit undertakings in portability?
- ✓ How do we describe and profile the vitality utilization of various assignments in development?
- ✓ What is the connection between vitality utilization and remaining burden of assignments in versatility?

The huge commitments of this proposed work are as per the following,

• To lessen the difficult that happens in interface breakage while correspondence

•To correspond the remaining vitality of hubs and absolute vitality to get best model in the event of personal time. So as to detect these difficulties, we propose a substitution vitality utilization model and an examination device for MANET based on Cloud. Our energy consumption model gives a top to bottom depiction of different related parameter wont to figure the energy consumption areas in MANET based on cloud. The examination apparatus takes the vitality utilization model as information and portrays vitality devoured by each errand. It recognizes the association between vitality utilization and running undertakings in Cloud situations, additionally as framework setup and execution. the idea is to utilize our vitality utilization examination apparatus and experimental vitality and undertaking investigation results to statically design task association and booking on accessible cloud stages, or to progressively screen vitality utilization and emotionally supportive network level streamlining (or both). We quickly sum up the cutting edge of vitality utilization models and investigation approaches in Section II. In Section III, we present our vitality utilization model for Cloud based MANET situations. The vitality utilization examination device and approval system are portrayed in Section IV. In Section V, we portray our experimental approval draws near. At long last, we close the paper and talk about bearings for future promotions Section VI.

Scope of work

- ➢ The scope of our work is to provide a secured and energy efficient approach for cloud based mobile ad-hoc network.
- ➢ To Scrutinize the different parameters of Manet and cloud environment.
- ➢ To access cloud services on the basis of three proposed sub models.

2. RELATED WORK

Zhang et al. [25] proposed a plan to build up an association between versatile hubs and diminishing directing overhead by computing neighbor inclusion proportion. The absolute likelihood of rebroadcasting and network factor to every hub adjustment essentially limit the quantity of re transmissions that assists with diminishing the directing overhead [26].

A vitality productive multi-jump Device to Devicecommunications with versatile sending procedure has introduced [28]. It shows that immediate cell correspondence shows low normal because of high blackout likelihood and high transmission power. Chevillon et al. [29] proposed a vitality advancement of Device to Device interchanges utilizing transfer gadgets and information entropy. The two-bounce Device to Device arrange definitely is the decrease of the vitality devoured by the hand-off gadget. Chu et al. [30] proposed a Device to Device mode choice plan with vitality utilization minimization basic two-level heterogeneous cell systems. Here, the ideal mode choice with vitality utilization minimization for Device to Device correspondence causes wasteful utilization of range and enormous vitality utilizations.

The asset portion for vitality proficient Device to Device multicast correspondence has proposed by Zhao et al. [31]. The ideal force distribution, direct portion in joint force and asset designations plot which diminishes the vitality utilization are authorized to nonlinear programming issue. A vitality proficient stable coordinating calculation for the asset portion issue in Device to Device correspondence proposed by Zhou et.al. [32]. In which the UE's inclination and fulfillment in the joint accomplice determination and force portion issue was defined to boost the feasible vitality productivity under greatest transmission force and QOS limitations. Lin et al. [33] proposed vitality proficient remote reserving in Device to Device helpful systems utilizing imperfect storing plan to quantify the effectiveness of vitality.

Zhang et al. [34] proposed a portability implanted and social-mindful dispersed storing for Device to Device content partaking in appropriated reserving. This authorized substance sharing is a deft conduct, yet storing limit not be reached out after a specific measure of client. A two phase of vitality effective calculation for asset designation to acknowledge vehicular heterogeneous systems in green urban communities is proposed by Zhou et.al. [35]. In stage 1, to advance the vitality productivity of two jump Device to Device-V2V and cell interfaces at the same time in an iterative design is done dependent on a closeout coordinating based joint hand-off choice. In stage 2, a non-direct fractional programming based force control calculation was utilized to limit the vitality utilization in the base stations.

A Cloud-Assisted Mobile Ad-hoc Networks improve the highlights of Mobile Ad-hoc Networks by joining with cloud server farms and Device to Device correspondence in 5G systems. The correspondence between the versatile hubs and cloud peer hubs or little server farms inside the range where subjectively conveyed and build up a connection [36]. Dong et al. [37] proposed a thought regarding Greedy booking of assignments with time requirements for vitality proficient distributed computing server farms in which they utilized the MESF calculation. The commitment of proficient handover

verification with client obscurity and obstinacy for Mobile Cloud Computing was proposed by Yang et al. [38].
Ganapathy et.al [40], recommended that the framework based grouping strategy is increasingly proficient in vitality enhancement among the different bunching strategies. At the point when the data is transmitted from source hub to the sink hub in a solitary jump or multi-bounce design is performed by the matrix coordinator. Yan et al. [41] contributed cloud-helped portable group detecting for traffic blockage control utilizing More Feedback Services Mechanism (MCFS) where authorizes the forward recurrence. It ought to be an exchange off between continuous reactions, information traffic, vitality utilization, and motivating energy tool.
Energy utilization or consumption in Cloud registering situations has immediately become a well known research theme. A few endeavors have been made to construct vitality utilization models and create vitality mindful cost models for streamlining the complete expense, i.e., arrangement cost in addition to operational expense, in Cloud conditions. Li et al [9] propose a cost model for computing the all out expense of possession and usage cost in Cloud conditions. They likewise created set-ups of measurements for this count. Anyway their figuring granularity is a solitary equipment segment. So also, Jung et al [10] center around power devoured by physical hosts. Their vitality utilization models don't consider the effect of explicit outstanding tasks at hand running on explicit hardware. Additionally, those given a cloud based costing framework for calculating the consumption rate and efficiency [11]. Their vitality utilization computation depends on the quantity of Java Virtual Machine (JVM) examples on every server. Besides, Lee and Zomaya [12] gave vitality framework of Cloud errands for creating vitality cognizant assignment union calculations to decrease vitality utilization in Cloud conditions. In any case, the vitality models just accept the connection between CPU use and vitality utilization is with direct expanding.
Vitality sparing arrangements in Cloud conditions has likewise been researched in the previous not many years. Liu [13] depict a framework for finding dormant machines that are continuously devouring energy. These inert machines can be killed to spare vitality.
Verma et. al. [14] utilize qualities of Virtual machines. Virtual Power [15] is proposed to misuse power is vital and its measurement is a challenging task so systems are need to be devised that measure it and help in its optimization. This is also important for power asset management and is a cause of concern, provided the vastly increasing computerization in the world.
Research endeavors have been profiled in profiling and investigating the vitality utilization in Cloud conditions. Already recorded examination results, investigation are led by effectively utilizing vitality benchmarks or intently checking the vitality profile of individual framework segments, for example, CPU, reserve, plate and memory, at runtime. A structure for vitality advancement and improvement of a vitality mindful activity framework has been created dependent on the accessibility of vitality models for every equipment segment [16]. Chen et al [17] proposed vitality framework which emphasizes on conduct and force utilization from singular segments to a solitary hub. Joule meter is a force meter for VMs [18]. This utilizes programming parts to screen the asset utilization of VMs and afterward changes over it to vitality devoured dependent on the force model of every individual hardware asset.
Above mentioned scholars have contributed a lot with their researches in optimizing output of system and also focused on conservation of vitality. But nobody has worked till now on establishing the relation between vitality utilization and runtime tasks, with various setups in cloud based context and the efficiency of a system [21, 23]. This work has bridged this research gap and it put forth a new framework for studying utilization of vitality along with a tool for studying and observing the utilization rate of energy in context to cloud based computing.

3. ENERGY CONSUMPTION ANALYSIS MODEL AND FRAMEWORK

Proposed Model

We have been concentrating on the vitality or energy utilization of three kinds of undertakings: Information driven assignments, Calculation driven assignments and Communication-driven errands. So as to quantify the extra vitality utilization of the Cloud based- MANET, the vitality expended out of gear state is estimated as the benchmark. At that point, we profile and examinations the vitality utilization of the single errand and various assignments of a similar sort, just as the comparing framework performance. As analyzed in Segment III, we intend to distinguish the connection between the information and yield in the vitality or energy model for consumption. The contributions of the model are the assignment parameters and the framework arrangements. The yield of the model is the extra vitality devoured by the assignments. What's more, we will likewise examine the framework performance with different remaining tasks at hand of various undertakings. The vitality utilization profiling examination measurements of each of the three assignment types are introduced in Table 1.

Table 1: Parameters for Model Development

PARAMETERS FOR MODEL TASK ASSESSMENT	MODEL TYPE
SECURE CPU UTILIZATION BETWEEN D 2 D	DATA-DRIVEN TASKS
SECURE MEMORY UTILIZATION AMONG DATA CENTERS	
DISK BANDWIDTH UTILIZATION	
SECURE I/O OPERATIONS IN BETWEEN CENTERS	
EXECUTION TIME OF TASK AMONG DEVICE TO DEVICE	
SECURE CPU UTILIZATION BETWEEN D 2 D	COMPUTATION- DRIVEN TASKS
SECURE MEMORY UTILIZATION AMONG DATA CENTERS	
DISK BANDWIDTH UTILIZATION	
SECURE I/O OPERATIONS IN BETWEEN CENTERS	
EXECUTION TIME OF TASK AMONG DEVICE TO DEVICE	
SECURE CPU UTILIZATION BETWEEN D 2 D	COMMUNICATION-DRIVEN TASKS
SECURE MEMORY UTILIZATION AMONG DATA CENTERS	
DISK BANDWIDTH UTILIZATION	
SECURE I/O OPERATIONS IN BETWEEN CENTERS	
EXECUTION TIME OF TASK AMONG DEVICE TO DEVICE	
SECURE CPU UTILIZATION BETWEEN D 2 D	

A. Data-driven Tasks (Energy Consumption)

An data driven assignment or task for the most part needs to process a lot of information in various information stockpiling servers inside similar server farm. It requires high neighborhood circle I/O transfer speed so as to meet clients' exhibition necessities. In spite of the fact that in all actuality, the capacity servers could be conveyed in various server farms situated in various geographic areas, we just consider the vitality utilization in one server farm with the end goal of straightforwardness. As researched in [22, 24], the energy utilization of the equivalent hard disk isn't direct with the information moved to or from the plate due to the information preparing overhead. In this way, we center around the relationship of vitality utilization and the information moved in or out the capacity servers. We profile and examinations the vitality utilization of undertakings with various information sizes, just as framework or system performance for each peer in Cloud-Based MANET [27].

B. Computation- driven Tasks (Energy Consumption)

A calculation driven errand for the most part requires various secluded procedures to play out the calculation. In a Cloud-Based MANET, distinctive VMs are allotted to manage various procedures. These VMs are facilitated by various servers and VM relocation is executed if the server's ability arrives at the cutoff or the server can't meet performance necessity in a secured manner. The movement of VMs can build vitality utilization essentially [25, 39]. Be that as it may, the energy consumption may increment with the quantity of procedures inside a similar server since the overhead of booking will increment as needs be. We center around the vitality or energy devoured by various calculation outstanding tasks at hand.

C. Communication- driven Tasks (Energy Consumption)

A communication driven assignment or task requires many system assets to transmit a lot of information. Switches structure the premise of the interconnection texture of a Cloud-Based MANET. In this manner, switches are the primary vitality utilizes among topological assets [42]. Generally, the vitality or energy utilization of a switch relies upon the equipment parameters, for example, sort of switch, number of ports and their rate of transmitting information. Be that as it may, the consumption of energy may increment with the measure of information stream as a result of the preparing overhead. Moreover, the all out vitality utilization (consumption of energy) may be affected by the system blockage in light of the irregularity between the calculation speed and the correspondence speed and additionally to monitor the security issues. Various workloads of networks have been employed for understanding it in a better way [43].

4. PROPOSED FRAMEWORK BASED ON MODELS

We have been building up a tool to figure and examine all out energy or vitality utilization. Our vitality utilization model characterized in Section III is incorporated in this device. The center segment of the system is the Analysis Engine. It takes our energy utilization or consumption model and application task parameters as contribution, just as the exhibition information gathered from the Cloud by Data Collection Engine. The Data Collection Engine gathers two sorts of information:

The vitality devoured by each undertaking while transmission among different data centers and Devices of a different MANET in cloud environment;

The performance parameters and its value, e.g. Secure Central Processing Unit Utilization between D-2-D, Secure Memory Utilization Among Data Centers, Disk Bandwidth Utilization Secure I/O operations in between centers and Execution Time of Task among nodes of CB- MANET. The design of our vitality utilization investigation framework view at figure 2.

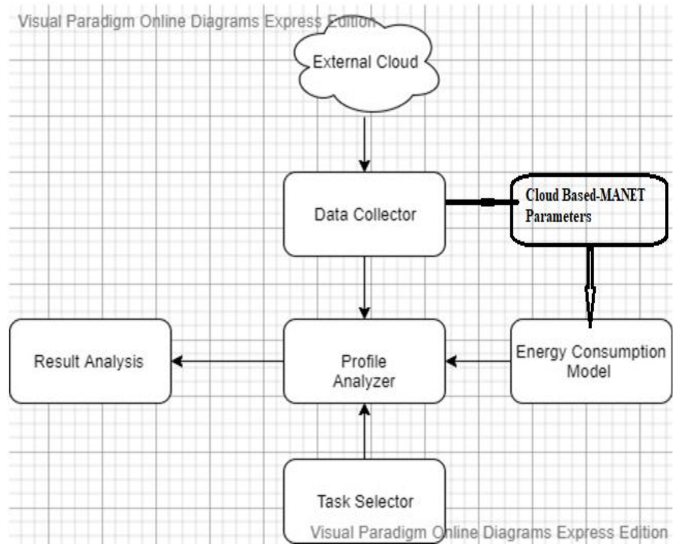

Figure 2 : Architecture depicting analysis of energy that is consumed

Table 2: Empirical Validation of Proposed Models and Criteria

Models	Secure CPU Utilization between D 2 D	Secure Memory,	Utilization Among Data Centers,	Disk Bandwidth Utilization,	Secure I/O operations in between centers,	Execution Time of Task among D2D
Data-driven tasks,						
Computation- driven tasks,						
Communication-driven tasks						

The Table 2 used to describe the metrics of the developed model

Table 3: Preference between Different Criteria

Criteria	Secure CPU Utilization between D 2 D	Secure Memory,	Utilization Among Data Centers,	Disk Bandwid th Utilization,	Secure I/O operations in between centers,
Secure CPU Utilization between D 2 D	1				
Secure Memory,		1			
Utilization Among Data Centers,			1		
Disk Bandwidth Utilization,				1	
Secure I/O operations in between centers,					1

In this table 3 diagonal values are 1 and show the preference of criteria over other

Table 4 : Paired Comparison of Various Criterion

	7	5	3	1	3	5	7	
Secure CPU Utilization between D 2 D	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	Equal Energy Consumption	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	**Secure CPU Utilization between D 2 D**
Secure CPU Utilization between D 2 D	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	Equal Energy Consumption	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	**Secure Memory,**
Secure CPU Utilization between D 2 D	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	Equal Energy Consumption	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	**Utilization Among Data Centers,**
Secure CPU Utilization between D 2 D	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	Equal Energy Consumption	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	**Disk Bandwidth Utilization,**
Secure Memory,	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	Equal Energy Consumption	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	**Secure I/O operations in between centers,**
Secure Memory,	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	Equal Energy Consumption	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	**Utilization Among Data Centers,**

Secure Memory,	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	Equal Energy Consumption	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	**Disk Bandwidth Utilization,**
Utilization Among Data Centers,	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	Equal Energy Consumption	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	**Secure I/O operations in between centers,**
Utilization Among Data Centers,	ExtremelyHigh Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	Equal Energy Consumption	ExtremelyHigh Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	**Disk Bandwidth Utilization,**
Disk Bandwidth Utilization,	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	Equal Energy Consumption	Extremely High Level of Consumption	High Level of Consumption	**Moderate Energy Consumption**	**Secure I/O operations in between centers,**

In this table 4 one to many comparison has been shown on pair basis

Table 5 : Weighted Comparison

Criterion	**Secure CPU Utilization between D 2 D**	**Secure Memory,**	**Utilization Among Data Centers,**	**Disk Band width Utilization,**	**Secure I/O operations in between centers,**
Secure CPU Utilization between D 2 D	1	1/3	1/5	1/7	1/9
Secure Memory,	3	1	1/3	1/5	1/7
Utilization Among Data Centers,	5	3	1	1/3	1/5
Disk Bandwidth Utilization,	7	5	3	1	1/3
Secure I/O operations in between centers,	9	7	5	3	1

In this table 5 weight for each parameter has been assigned on the basis of paired comparison

Table 6: Model Vs Criteria1 Wise Comparison

Secure CPU Utilization between D 2 D	M1	M2	M3
M1	1	5	7
M2	1/5	1	3
M3	1/7	1/3	1

In this table 6 all three models were compared with criteria Secure CPU Utilization between D 2 D

Table 7: Model Vs Criteria2 Wise Comparison

Secure Memory,	M1	M2	M3
M1	1	1/7	1/3
M2	7	1	5
M3	3	1/5	1

In this table 7 all three models were compared with criteria Secure Memory

Table 8: Model Vs Criteria3 Wise Comparison

Utilization Among Data Centers,	M1	M2	M3
M1	1	5	1/9
M2	1/5	1	1/3
M3	9	3	1

In this table 8 all three models were compared with criteria Utilization among Data Centers

Table 9 : Model Vs Criteria 4wise Comparison

Disk Bandwidth Utilization,	M1	M2	M3
M1	1	7	1/9
M2	1/7	1	1/5
M3	9	5	1

In this table 9 all three models were compared with criteria Disk bandwidth Utilization

Table 10: Model Vs Criteria5 Wise Comparison

Secure I/O operations in between centers,	M1	M2	M3
M1	1	5	1/7
M2	1/5	1	1/3
M3	7	3	1

In this table 10 all three models were compared with criteria Secure I/O operations in between centers,

Table 11 : Original Score and Weighted Score

		Original Score			Weighted Score							
Criterion	Weight	X	Y	Z	X	Y	Z			X	Y	Z
Secure CPU Utilization between D 2 D	9%	0.73	0.19	0.08	0.064	0.017	0.007	0.064	**Secure CPU Utilization between D 2 D**	1.00	0.26	0.11
Secure Memory,	24%	0.08	0.73	0.19	0.020	0.177	0.046	0.177	**Secure Memory,**	0.11	1.00	0.26
Utilization Among Data Centers,	67%	0.06	0.27	0.67	0.042	0.178	0.450	0.450	**Utilization Among Data Centers,**	0.09	0.39	1.00
Disk Bandwidth Utilization,	167%	1.06	1.27	1.67	1.775	2.112	2.791	2.791	**Disk Bandwidth Utilization,**	0.64	0.76	1.00
Secure I/O operations in between centers,	267%	2.06	2.27	2.67	5.507	6.047	7.133	7.133	**Secure I/O operations in between centers,**	0.77	0.85	1.00
	Total	4.00	4.71	5.28	7.407	8.531						

In this table 11 we have calculate weight of each criteria

Table 12: Pair-Wise Comparison

C1										
1	0.3333333333	0.2	0.142857143	0.11111						
3	1	0.333333333	0.2	0.142857143						
5	3	1	0.333333333	0.2						
7	5	3	1	0.333333333						
9	7	5	3	1						
25	16.33333333	9.533333333	4.676190476	1.787300476						
0.04	0.020408163	0.020979021	0.030549898	0.06216638						

0.12	0.06122449	0.034965035	0.042769857	0.079929002						
0.2	0.183673469	0.104895105	0.071283096	0.111900602						
0.28	0.306122449	0.314685315	0.213849287	0.186501004						
0.36	0.428571429	0.524475524	0.641547862	0.559503012						
1	1	1	1	1						
					0.187331445	0.122563802	0.149622102	0.218208228	0.322274423	1
					0.29595715	0.193633447	0.131323183	0.160877777	0.218208443	1
					0.241587428	0.28451055	0.192956494	0.131323228	0.149622301	1
					0.166233995	0.233058315	0.28451039	0.193633405	0.122563895	1
					0.108890791	0.166233855	0.241587088	0.295956836	0.18733143	1
					1.000000808	0.999999968	0.999999258	0.999999474	1.000000492	
					0.187331294	0.122563806	0.149622213	0.218208343	0.322274264	0.99999992
					0.295956911	0.193633453	0.131323281	0.160877862	0.218208335	0.999999842
					0.241587232	0.284510559	0.192956637	0.131323297	0.149622227	0.999999953
					0.166233861	0.233058322	0.284510601	0.193633507	0.122563835	1.000000126
					0.108890703	0.16623386	0.241587268	0.295956992	0.187331338	1.00000016
					1	1	1	1	1	

In this table 12 used method to Summation of rows and columns till each row and column get identify at last, internal steps are not shown here due to limitation pages.

Comparative analysis of the models

Here in this section we will do the comparative analysis of the given models, for this we will use the weighted score of each criteria that we have calculate with respect to different models and then we will calculate the model with other existing models, for this we will refer to table no 11 in this table weights were calculated given below comparative analysis table 13.

Table 13: Comparative Analysis

Weight	X	Y	Z	X	Y	Z			X	Y	Z
	0.73	0.19	0.08	0.064	0.017	0.007	0.064	**Secure CPU Utilization between D 2 D**	1.00	0.26	0.11
	0.08	0.73	0.19	0.020	0.177	0.046	0.177	**Secure Memory,**	0.11	1.00	0.26
	0.06	0.27	0.67	0.042	0.178	0.450	0.450	**Utilization Among Data Centers,**	0.09	0.39	1.00

	1.06	1.27	1.67	1.775	2.112	2.791	2.791	**Disk Bandwidth Utilization,**	0.64	0.76	1.00
	2.06	2.27	2.67	5.507	6.047	7.133	7.133	**Secure I/O operations in between centers,**	0.77	0.85	1.00

The proposed model that we have prepared and the comparison, weights of different model parameters/criteria has been used to draw this graphical comparison concept have presented the various view at figure 3.

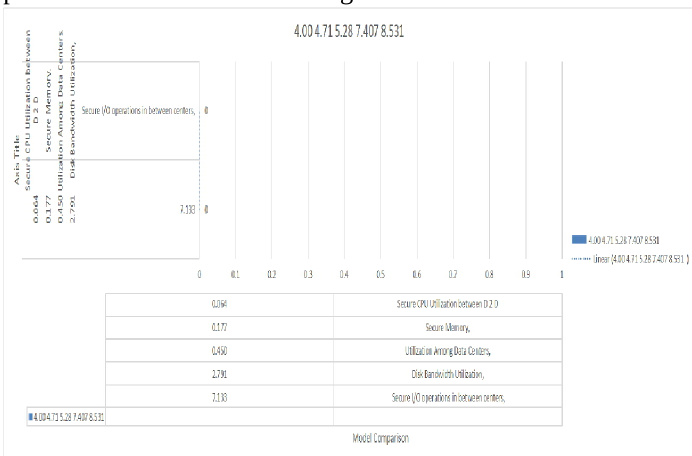

Figure 3 : Comparison of Different models

5. CONCLUSION

Analyzing dynamics of consumption of vitality or energy in Cloud based- MANET is significant and pivotal as it leads to the development of energy saving methods and approaches for management of energy assets for Cloud based- MANET. During this paper, we've presented a model for consumption of energy and related calculation in cloud based environments. Various approaches for the studies are discussed here and a tool which is used for analyzing energy consumption has also been discussed here. A task has been taken as a single entity and the energy produced by it has been calculated under different type of configurations. This correlate the system performance and the energy consumed and further extracted the analytical results. The results obtained from this research will pave the way for developing methods and means to reduce the consumption of energy and will also lead to better management of energy assets. This work also delivers the favorable and desired throughput for Cloud based- MANET. We practice the empirical validation the data has been used in different Energy lab.. At last we'll utilize this model and perform the empirical validation of those supported data sets, for this we use AHP approach for Cloud based- MANET.

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