Global Scientific JOURNALS

GSJ: Volume 10, Issue 10, October 2022, Online: ISSN 2320-9186
www.globalscientificjournal.com

EVALUATION AND DEVELOPMENT OF NEW STRATEGY TO ACHIEVE SECURITY AND ENERGY EFFICIENCY IN WIRELESS NETWORK

***Vishal Dattana*[1] *Dr. Krishna Prasad K*[2]** *Srinivas University, India*

Abstract— The evaluation and development of new Strategies for Wireless Network is a complex task, as there is no general optimization strategy. Traditionally, energy efficiency and security have been treated separately, but in recent years, there has been an increase in demand for joint optimization. This paper presents a number of strategies that can help in achieving a balance between these two objectives.
The authors of the paper present an energy-efficient relay selection scheme that maximizes secrecy while minimizing network energy consumption. This framework can be used to select the best relays, based on their relative power levels. This scheme enables a wireless network to achieve maximum reliability, while preserving energy-efficiency. The authors propose a protocol that can help wireless sensor networks to increase security while reducing costs.

Keywords: *wireless detector networks (WSNs), energy-effective routing protocols, MANET, VANET, Wi-Fi sensor community*

I. INTRODUCTION

Historically, communication networks have been optimized based on performance metrics such as data-rate, throughput, and latency. These performance metrics are often placed ahead of security and energy efficiency due to economic, operational, and environmental concerns. But, recent reports have shown that wireless and fixed access networks consume nearly half a trillion watt-hours (TWh) of electricity annually, and this amount has continued to rise. In addition to that, the average American household uses 7,200 kWh of electricity per year. Clearly, the wireless and fixed access networks must become more energy-efficient. In the world of information and communication technology, energy efficiency and security have been competing for attention. While energy efficiency is important for every aspect of a network, it is also essential for a number of reasons. For example, energy efficiency is a major concern in developing countries. The number of wireless devices has increased exponentially, and the demand for high-speed internet is increasing. Traditional networking architectures cannot scale up to meet the demands. Hence, small scale network deployments should focus on reducing the amount of energy they consume, while maintaining high quality of service. The next-generation wireless networks are expected to be more energy-efficient than ever, allowing us to make smarter decisions while using energy-efficient devices. The fifth generation (5G) wireless networks could be the answer to the growing global demand for energy and renewable energy. This technology is already contributing trillions to the world economy and enabling the creation of new innovations and productivity advances. And because it is now available everywhere, it will make it easier to deploy and operate a 5G network.

The first step in a new strategy to achieve energy-efficient security and energy-efficient wireless network is to optimize resource allocation. A single access point serves all nodes on the network and is connected to a distributed system. The single access point is always the same, and uses the same amount of energy no matter how much traffic is on it. This model requires massive amounts of power, which is costly and wasteful. While these challenges are formidable, the new strategy to achieve energy-efficient security and energy-efficient wireless network is a promising one. It offers two main advantages: it is more secure and efficient, and it is more flexible. This strategy is called adaptive wireless, and it can prevent retransmissions, which leads to huge energy savings. It can also reduce power consumption and improve user experience. In addition to this, it is more effective than traditional approaches.

The new strategy to achieve security and energy efficiency in wireless network is a combination of different technologies. Like, a physical-layer approach to security is more efficient than classical cryptography, which relies on assumptions about a user's computational power. By preventing an attacker from detecting the message, it can ensure the safety of the wireless network. It can even be more beneficial for low-power systems.

II. LITERATURE REVIEW

The first approach for achieving energy efficiency is through dissimilar traffic requirements. Different radio access technologies consume different amounts of energy. Using dissimilar traffic patterns, the network can monitor variations in traffic and switch components on and off. However, intermittent on-off schemes introduce latencies and affect the functioning of the network. The preferred technique is to use predictive data analytic techniques to minimize the impact of intermittent on-off schemes on the performance of the network [1].

In addition to optimizing resource allocation and implementing efficient routing, 6G is the first mobile technology that directly imposes energy-efficiency constraints. The goal is to achieve the highest level of energy-efficiency without compromising security [2]. The next-generation of wireless networks is likely to have dynamic topology, which will make maintaining privacy difficult. This will require more sophisticated and complex technologies to ensure the highest level of security [3].

The next-generation wireless technology

There are many technical challenges in wireless communications. The technology must meet stringent requirements. In addition, the cost of such networks must be drastically reduced. The next-generation wireless technology will provide a range of new innovations to the market will require cross-disciplinary discussions [4]. The ultra-dense deployment will require the evaluation of existing and developing new coding and modulation schemes to overcome these problems. The future of wireless communications is already a bright one, so the next generation will need to address these challenges. A robust and resilient wireless network will be a better place to live in [2].

The proposed research will advance our understanding of radio transceiver spectral optimized energy operation. It will also enable better video quality, and will be the most cost-effective way to achieve security in wireless networks [5]. It will also contribute to the development of a secure and efficient network. While the research will have many advantages, it will help the industry make informed decisions for its future [6]. The evaluation of wireless networks should take into consideration several factors. Among these, energy operators must shift their energy sourcing to greener, renewable technologies [7]. By shifting to green energy sources, operators can reduce carbon emissions and improve network reliability. The goal of the evaluation should be to optimize network performance and minimize cost. This will make the network more cost-efficient and secure [8].

The evaluation of wireless networks should consider the impact of energy on the environment. While traditional network infrastructures may be cost-efficient, a more sustainable system could provide better services. Its energy-efficient strategy will provide improved QoE for wireless video traffic. The analysis should also take into account the impact of network performance on battery life. For instance, the optimization of wireless networks should consider power consumption in the context of global environmental protection [1].

Besides the security and energy efficiency, it is important to consider the user's experience while using a network. The use of different technologies will affect the user's experience. A wireless network should be a seamless and easy to use one that meets the needs of its users. It should not only be fast and reliable, but also be easy to configure. Lastly, it should be energy-efficient and low-cost [3].

The concept of evaluation and development of new strategy to achieve security and energy efficiency in wireless network has been under investigation for many years. The key to this success is the design of small base stations that can provide the same functions as larger ones. Such devices are able to reduce network infrastructure costs while ensuring high-quality service to end users [2]. They also ensure that data is only exposed to the intended recipients. To achieve this, network configuration must balance the need for QoS and energy efficiency. For example, a new study examined the effect of energy efficiency and security on global-sum-rate. They found that combining energy-efficient technologies and secure access to content and services can significantly improve energy-efficiency. These researchers believe that the two concepts are interdependent and can be achieved by leveraging existing technology and techniques [9].

III. The deployment of reliable privacy & security algorithms in Wireless Network

The implementation of reliable privacy and security algorithms is a key part of the overall network design. However, the burden of implementing these protocols and security algorithms on IoT devices makes the solution uneconomical [5]. Hence, it is imperative to use a strategy that promotes cooperation among nodes. In this article, we will examine the advantages and disadvantages of this new approach. It will also show why it is beneficial for the industry [6]. The goal of the program is to enable next-generation wireless networks and communications. It encourages collaborative teamwork to address cross-layer challenges. The proposed game theory strategy was evaluated by NS2, a network simulator, and the results showed better energy efficiency [9]. In addition, the SpecEES program will be a great source of inspiration for wireless networking companies. This article provides a brief overview of how this new strategy will benefit the industry [10]. A recent study has demonstrated the benefits of energy-efficient and secure wireless networks. Researchers at the University of Texas at Austin applied game theoretic schemes to design and deploy a direct-sequence CDMA network. This game theory model provides an efficient resource allocation in a wireless network. It is also efficient, but requires an investment in advanced technologies and software. In contrast, energy-efficient and secure network strategies are necessary for any application, whether it is noncritical or critical [8].

The new strategy was developed to improve energy efficiency and security in a wireless network. It has been evaluated with NS2 network simulator. In addition, the authors analyzed the effectiveness of the proposed strategy by using a game theory model. These methods are extremely promising for extending the life span of a wireless network and can improve network performance and energy management [5]. They have a lot to offer in this area. In the near future, a wireless network will support diverse services and QoS requirements. In fact, delay-sensitive applications can coexist with delay-tolerant ones. This mixture of QoS requirements is called a wireless media sensor network. The combination of both types of applications will allow for a diverse range of services. In addition to this, a future wireless network will also support voice and data transmission at the same time [11].

A wireless sensor network is a network comprised of many tiny sensor nodes. Most of these sensors are battery-powered, which limits their energy-efficient capacity. During a wireless sensor network's lifetime, each node must be able to operate independently and efficiently. Moreover, the network must be capable of sustaining its functionality and be secure. In addition to the physical layer, a wireless sensor node must be connected to the internet in order to maintain its integrity [6].

The main concerns of a wireless network are security and energy efficiency. The security of communication channels is the first concern, as it allows against denial of service and eavesdropping. Traditionally, the two have been considered separate issues, but they are closely related. In this article, we will discuss how these two factors interact. Let's begin with energy efficiency. Achieving optimum efficiency means reducing the power consumption of a network by as much as possible [10].

This concept requires an increase in network performance. This increase in performance should be achieved with the same amount of energy consumption as current systems. A good design must maintain battery levels. It should be energy efficient as well as secure. This article will examine some of the most important considerations in a wireless network. This article will explore the benefits and challenges of a new, more advanced wireless network. We will also cover some of the basic tradeoffs that must be addressed [1]. The exponential growth of connected devices is a serious concern. By 2020, the world's population will have more than 50 billion connected devices - that's six per person! Similarly, there will be more than 60 Exabytes of IP traffic, most of which will be wireless. In the end, this exponential growth will have serious consequences for our environment. This is because most of these devices will be wireless and mobile [3].

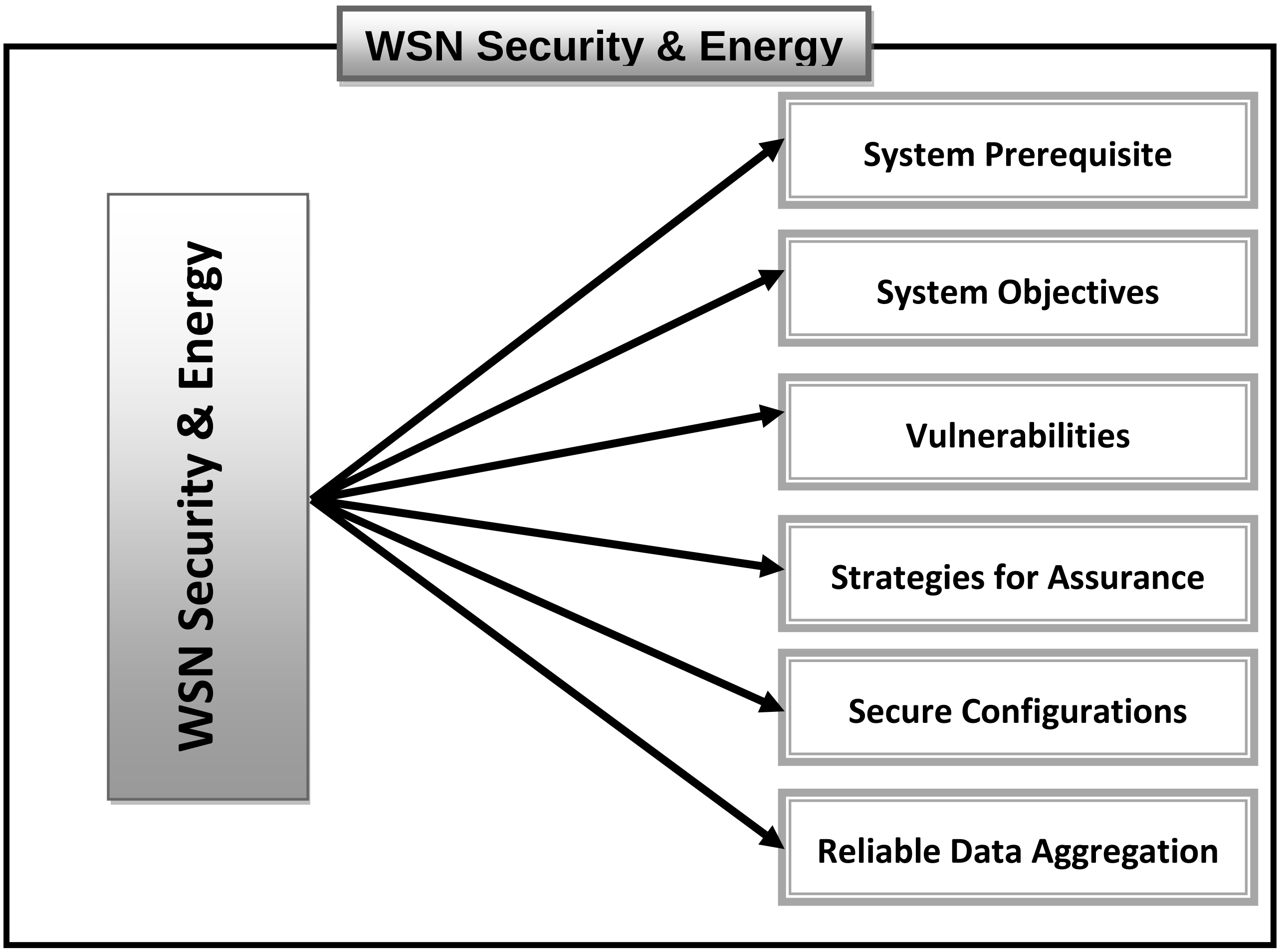

Figure 1 : WSN security and Energy efficiency plan

Optimal use of energy is essential to minimize power consumption

In order to create energy efficient wireless networks, the first step is to understand how energy is used. The current technology uses a fixed amount of energy to transmit and receive data, so the optimal use of energy is essential to minimize power consumption. In addition, the number of nodes and their power consumption need to be coordinated and optimized to provide maximum coverage without compromising their overall lifespan. A wireless network can be comprised of several entities at one time, so maximizing the lifetime of each node will help it operate at its maximum capacity [2].

Having energy efficient nodes is an important first step to ensuring that the network is highly resilient and scalable. In the past, the constant need for faster data rates has limited energy conservation. However, 5G has been predicted to bring about data rates as high as 1 Gbps. For example, this technology will require

50% more power than today's systems, which will need more robust power supplies and more bandwidth to support the increased load [12].

The second step in energy efficiency is to improve the energy awareness of all devices in the network. The higher the energy awareness, the higher the network's energy efficiency will be. The energy efficiency of a wireless network depends on its power consumption. This can be achieved by adjusting the transmit power or by enabling node aggregation. In addition to this, adaptive wireless devices are capable of preventing retransmissions. Delay tolerance can greatly increase the life of sensor nodes and therefore reduce the amount of power required by the network [1].

Lastly, the network topology can vary with single-hops, multi-hops, dense or sparse networks. The topology affects the energy consumption of nodes, and it may be better to use a star topology instead of a hierarchical structure. Different channels can be used for data packets and out of band wake up signals can help reduce energy usage. For example, the frequency of the radio waves can be adjusted network [13].

Besides energy efficiencies, network's reliability can also be considered. The more nodes and antennas, the more power they require. Moreover, the density of the network and the amount of traffic will determine its optimal sleep time. The more dense a wireless network is, the more energy it will save per unit of bandwidth. But in addition to this, network reliability and security are other factors of energy efficiency [10].

The energy efficiency of a wireless network is dependent on the higher with more energy they will consume. For example, when the number of sensors in a wireless network is greater, the less power they will need to power the nodes [8]. Further, this type of networking also requires more power, which will increase the cost of the service. Thus, the greater the energy efficiency of a wireless network, the better it is for the environment [14].

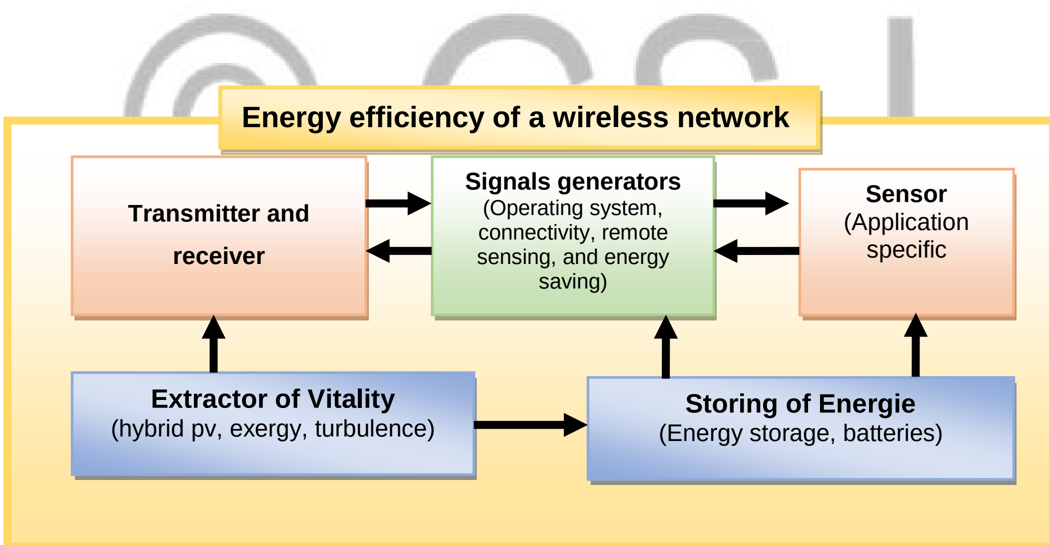

Figure 2 Extractor of Vitality & Energy storage

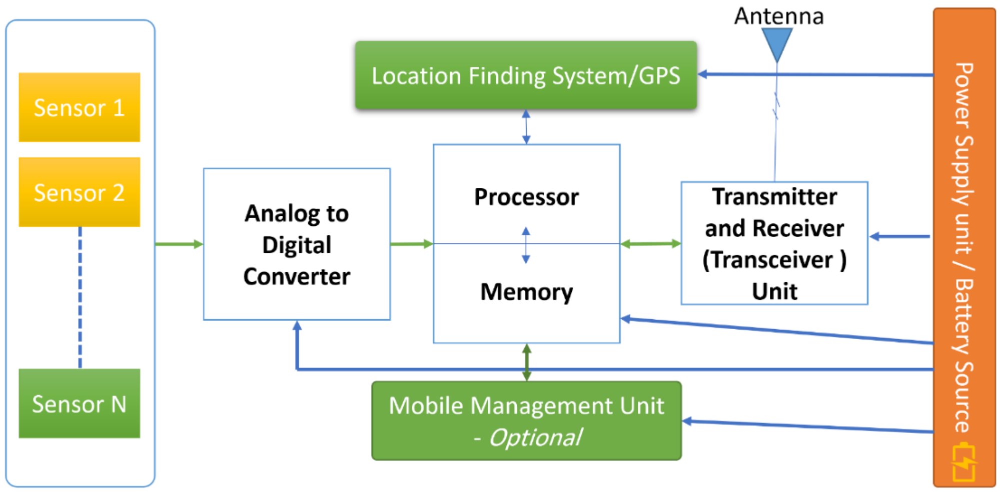

Figure 3 Sensor Node Architecture

IV. Analysis

The New Strategy to Achieve Security and Energy Efficiency in Wireless Networks aims to reduce the number of wireless nodes and increase their density. This can be achieved by deploying large antenna arrays at each base station. By doing this, a network can cover a larger area with less power consumption. Massive MIMO takes advantage of the fact that many antennas are needed to cover a smaller base [11].
The physical-layer approach to security is a promising approach. This technique does not rely on the assumption that the attacker has limited computational power. Instead, it prevents the attacker from detecting and interpreting the messages. In other words, this method is secure because it prevents both security and energy efficiency problems [12]. By implementing the strategy, network operators will be able to create a more secure and energy-efficient wireless network [13].
This new strategy will help networks reduce their energy consumption without compromising security. As mobile devices continue to grow exponentially, the number of wireless networks will grow. This means that current network architectures will not be able to keep pace with the demand for bandwidth and power. Moreover, the cost of running a wireless network will be astronomical. The solution to this problem is to scale up the network. The main goal of this strategy is to reduce the energy consumed and provide high quality of service for small-scale deployments [14].

How various tactics may boost wirelesses networks power generation, reliability + resilience based on Analysis

As the demand for wireless networks grows, the need for new energy and security solutions is evident. One of the major challenges is the energy consumption of secure services. However, there are new techniques that can improve energy efficiency and security, and can be implemented in existing network infrastructure. The following factor explores some of these techniques [11].

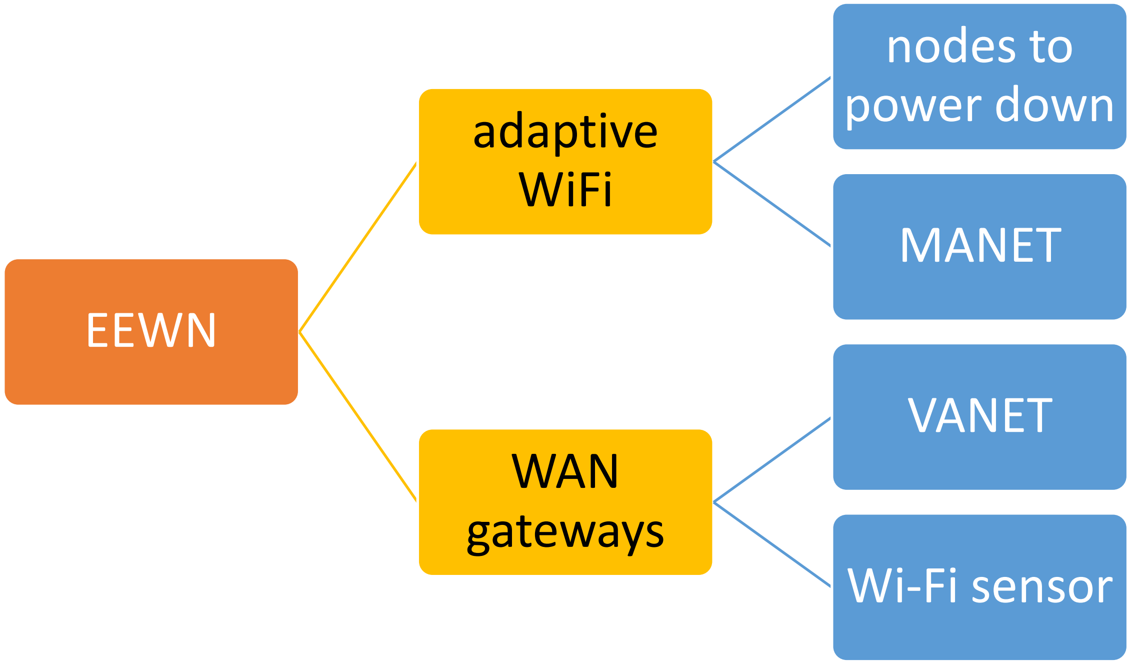

Figure 4 Strategies for Mitigating Energy Adoption

Adaptive Wireless Devices

The adaptive use of network resources allows for a variety of techniques. The use of dissimilar traffic requirements allows node aggregation, which optimizes network utilization during low-peak periods. During high-demand times, a different approach is employed. Adaptive Wireless Devices use artificial intelligence to optimize bandwidth utilization and ensure consistent high-quality wireless service. Compared to static Wi-Fi systems, adaptive Wi-Fi uses a dynamic model to prioritize connection quality and reduce latency. It also allows you to monitor your network's health in real time. It can identify and prioritize high-bandwidth devices and reduce bandwidth-related costs. The system is also capable of recognizing individual needs, such as those of individuals with different needs [15].

It is possible to configure multiple tunable-adaptive circuits and control them with advanced software. Tunable-adaptive circuits are composed of a low-noise amplifier and solid-state varactors. These two types of tunable wireless devices vary in their tuning ranges. They can be implemented at the system level or on the device level. These courses will provide you with hands-on experience in the design and operation of a wireless adaptive circuit [14].

Adaptive Wireless Devices enable wireless devices to respond to changing situations. Their use of tunable-adaptive circuits enables them to adapt to changing conditions and improve performance. Moreover, they can be used in any environment and are more cost-effective than their equivalent counterparts. They also have a higher degree of flexibility and adaptability than conventional fixed-frequency systems. Besides, tunable-adaptive devices can be programmed to switch channels based on network traffic patterns and interference from other devices. The only major disadvantage of Plume WiFi is that it lacks parental controls and guest networking capabilities. The spokesperson of Plume WiFi has said these features will be included in the future firmware updates [15].

Distributed & Hybrid Networks

In a heterogeneous network, nodes are distributed throughout the network. These nodes have different power and data capabilities. They are deployed according to traffic demands. In low-traffic areas, the nodes remain powered and operational. Backbone communications are the most energy-intensive, and require a wide radius of communication. With the proliferation of mobile devices and cloud services, it's more important than ever to adopt a distributed and hybrid networking architecture [16]. With applications and resources moving from one place to another, networks must be flexible and adaptable to accommodate these movements. Workflows can span multiple cloud environments, including physical data centers. Since workers and users travel, data and resources need to be available from anywhere. These technologies enable organizations to achieve the goals of mobility and agility while controlling costs. SteelConnect Manager is a centralized management portal that simplifies the network design and deployment process. The SteelConnect Gateway line of physical secure WAN gateways provides unified connectivity and enforces global policy. It provides next-generation firewall and threat protection capabilities. The company's portfolio of network appliances also includes zero-touch provisioning and next-generation firewall solutions. It is designed to meet the needs of enterprises across a wide variety of industries [17].

SteelConnect SD-WAN follows security and performance policies across all networks. Its virtual access zones follow users and enforce enterprise-wide security and password policies. These capabilities also reduce network maintenance costs and improve agility and efficiency [16]. While on-premises network environments aren't going away anytime soon, most organizations are still operating hybrid networks. Some of their sensitive data lakes are still located on-premises. By using a hybrid approach, organizations can maintain control of sensitive assets while benefiting from the scalability and agility of cloud-based environments [17].

Dynamic Strategies

A dynamic strategy enables an access point to automatically detect the presence of connected nodes and wake them up when they are ready. A user- or network-controlled sleep mode sends a wakeup message to the network. An algorithm determines when the devices should be awake and sent back to sleep [18].

Dynamic Strategies improve the energy efficiency of wireless networks by allowing nodes to power down or wake up automatically depending on their state. The access point can control the energy saving strategies by sending a wake-up message to the attached nodes [16]. Sleep modes can be controlled by the user or by the network. An algorithm determines the time at which a device should be woken up and turned back on. These strategies can significantly reduce energy consumption and the environmental impact of wireless networks [18].

Different wireless networking protocols take different measures to achieve energy efficiency. For example, some of them reduce power consumption while the network is in different states. Other measures include reducing interference during wireless transmission and increasing transmission rate. These strategies can reduce the errors and retransmit times and save energy. The current trend is to create a single access point to serve all nodes in the network. This system is connected to a distributed system to access the internet. However, this only works if the network is always one. In this case, the nodes in the network need a longer wakeup time to get the same amount of work done.

The multichip wireless charging scheme

A wireless charging scheme uses multiple nodes to transfer energy. This strategy is used for charging mobile devices, but is not effective for stationary appliances. Typical wireless charging networks have up to 40 charger nodes. An ICS optimizes the number of nodes based on the available resources and distance. For example, in a coffee shop, a single user will only need one node to charge their device. However, if multiple users need to charge their devices, the number of nodes should increase [3].

In this strategy, the number of charger nodes is randomly distributed among the sensor nodes. These nodes are charged by charger nodes located in multiple locations. The deployment of the charger nodes is done using an ICS algorithm [1]. As the network grows, the ICS algorithm gradually approaches the

optimal number. In both MOPSO and CS, the maximum number of charger nodes is found. The proposed algorithms improve the utility of the charging network and reduce the number of nodes [12].
The proposed algorithm can handle dynamic energy demands and cover three times more nodes than traditional cuckoo search. As a result, it reduces the number of charger nodes while increasing the receiving power of sensor nodes. It also reduces the number of nodes, thereby maximizing the utility of the network [20].

Conserving vitality WSN

To affect the overall performance existing WSNS, a number of techniques can be used. The first technique is to use an energy efficient protocol to reduce energy consumption during network activity [5]. The second technique is to use a power management scheme to switch off node components when not needed. The proposed techniques can help to reduce energy consumption and maintain high data accuracy. Several energy saving methods are discussed in this article. The next two techniques can also be applied to wireless sensor networks [11].
The first technique involves using a hierarchical cluster-based structure. The sensor nodes are grouped together into clusters and a coordinator acts as cluster head. The latter is responsible for coordinating the cluster and forwarding data. Rotating selection considered a good way to balance energy consumption. The second technique is to use a dense-deployment scheme and display temporal and spatial correlations [9].
The second technique involves employing an energy-efficient routing protocol. This protocol conserves network energy builds a minimum spanning tree with a root as a central hub (CH). This reduces energy dissipation during long-distance transmission [6]. In addition, the protocol also minimizes the number of connections between nodes, thereby enabling low-power operation [3].

Wireless detector network

The Wireless detector network is a distributed system of electronic nodes that communicate with each other by means of wireless data connections. It is a promising alternative to conventional methods such as manual sampling and laboratory testing [1]. The network uses transmit data to top user. The cost of a single node is a significant factor in the overall cost of the network. The proposed information routing formula also takes into account the in-network aggregation formula to reduce the overall cost of the network [2].
In order to achieve this goal, the WSN uses small routers with detectors that are able to perform native computations and communicate with alternative sensor nodes. In addition, the device includes a fault node recovery algorithm that combines a genetic and grade diffusion algorithm to find a dead node and shortest path. The algorithm considers the average delay and packet delivery ratio to determine the most appropriate route. For large-scale networks, multiple detectors can be placed in different locations for increased coverage [3].
The Wireless Sensor Network requires battery power and is suited for long-term outdoor use. In addition, the network is able to cover a wide area. The detection range of this network is up to 300 feet. When deploying the network, it is crucial to set up a group of wireless detectors. Each wireless detector has a red activation wheel. Once activated, the device will show a green LED for 1 second and a red LED for three seconds [7].

Energy-effective routing protocols

In network environments, energy-effective routing protocols are used to minimize the amount of traffic on the network. Compared to conventional routing protocols, such as RIP, these protocols use less energy to ensure high-quality service. This article will provide a brief overview of these protocols. The following section contains an explanation of the basic idea behind them. This article also outlines the advantages and disadvantages of these protocols. It is important to understand the basic concept of these protocols to make sure that they are suitable for your organization [19].

The most effective routing protocol combines routing capabilities and energy efficiency. It aggregates devices into clusters based on their distance from the base station, data length, and environment data. Each node in cluster is represented by a directed acyclic graph (DAG). All the nodes are connected by edges with weighted edge values. The minimum cost path to the base station is calculated for each path [20].

The best route discovery algorithm is SEPFL. It uses fuzzy logic to select the best cluster among a group of nodes. The consistent event that has been adjusted hierarchical clustering routing algorithm that considers various transmission types and energy levels. It is a very good choice for energy-efficient network design [16].

MANET, VANET, Wi-Fi sensor community

Wireless ad hoc networks, such as MANETs, use a variety of radio protocols. Although all radios operate over the same basic frequency range, their bandwidths differ significantly [11]. Ideally, radio channels used in MANETs would be higher in bandwidth and lower in power. This is because many nodes within a network must simultaneously communicate. The problem with using so many radio channels is that they require large resources, which are scarce. Another limitation is the small size and power requirements of these nodes [17].

To develop a successful MANET, a large number of sensors must be integrated into the overall network. These sensors must be connected to a single device using a common Wi-Fi protocol. Numerous hosts - to - host routing segments must be optimized to support the complexities of VANETs. The media access layer must address terminals, while dynamic network topologies and overcome lost connections [19].

MANETs have a limited power supply. The system allows for independent information networks. As a result, MANETs have the potential to scale up. The concept is rooted in the military and is used in emergency response and disaster relief. The system allows for communication in remote areas and increases the likelihood of survival. The low-level civilian applications of MANETs can extend the existing infrastructure while increasing ease of use [20].

Acquisitional Context Engine (ACE)

The ACE is a context-aware middleware for low-energy continuous sensing applications [21]. It supports the continuous acquisition of contexts while reducing the sensing costs involved in inferring contexts [9]. It automatically learns the relationships among context attributes and exploits these relationships for two powerful optimizations. The ACE App is a lightweight application that helps users navigate through the big picture and understand what's happening in their world (Caos, Yuei, and Zhange, 2021).

ACE is a web-application that is independent of the portal site and configures itself according to marketing requirements. It communicates with back-end systems to access content and various services. It can process single product orders, create an account on a portal site, and transfer the user to the relevant page. It also recognizes activities and their context and is capable of inferring which one is corresponding to the context [4].

The ACE is a powerful customer acquisition flow engine that can be customized for a specific application. It is a standalone web-application that is configured to meet a specific company's marketing requirements [11]. It has the ability to communicate directly with back-end systems and access content and various services. It can also generate a user account on a portal site, assign a product to that account, and transfer the user to a relevant page [5].

Table 1 : New Strategy for Wireless Network Security and Energy Efficiency

SN	Paper Titles	Authors & Years	Techniques Used	Advantages	Disadvantages

1	An overview of optimization techniques for building energy consumption.	[1] Himeurs, et al., (2021).	The creators devised a network protocol E2R2, which itself is modular and cluster-based. Each clusters has one Central role, and the Cluster - head node is aided by 2 DCH nodes, also known as clusters management nodes, to control the endpoints' and energy efficiency, resilience, and fluidity.	When compared to previous processes, it provides higher energy efficiency, throughput, and a longer lifetime. Handles sensor node mobility as well.	It only provides for energy-efficient and dependable transmission, but it does not address the issue of station integrity.
2	Advancement of cognitive computing in microgrids for energy conservation Technology and Research	[2] Farzanehs, Malehmirchegine, Bejain, Afolaibi, Mulumiba and Dakar, (2021).	Scheme chooses the root node using a set of numbers. The grouping is constructed based on the closest distance. Scheme employs a one-hop dialogue. It is in charge of the WSN's energy use.	Protocol for low-energy, ad-hoc, and distributed communication	It is inapplicable to large-scale networks, and dynamic clustering adds extra cost.
3	Throughout super duper wireless links.	[3] Marabissie, Muccha and Morose, (2021)	This approach is superior to Protocol. In this system, each node connects with only one of its neighbors and takes turns sending to the access point.	The majority of the node's transmission distance is lowered.	When one of the nodes is chosen as the head node, the position of the base station has no bearing on the energy of the nodes.
4	Adaptable Cybersecurity in AI-Enabled 6G	[4] Shens, Yue, Zhangs, Nie and Cia, (2021)	This method uses the words hard threshold and soft threshold. Clusters are established and transmission times are determined based on these values.	It performs effectively in scenarios such as abrupt changes in perceived qualities such as temperature.	In the event of a huge network, there is a lot of energy usage and overhead.
5	Mechanism for optimizing energy savings in the Iot technology	Zenge, 2022	It is a step above from Teens.For the clustered and transmissions operation, this approach employs attributes, thresholds, count time, and a TDMA schedule.	Energy usage is minimal.	Substantial delays, node roaming is not taken into account

	game – theoretic				
6	Comprehensive Study of Energy - efficient and Power Losses in Wireless Personal Area Networking	Ullaha, et al., 2022	The EECS algorithm is a predictive model that determines Routing table with the least amount of energy. On the basis of initial energy, a steady set of possible sensor nodes are chosen and compete for the status of cluster - head.	Creates a balance point depending on energy and distance between intra-cluster energy demand and inter-cluster communications demand.	Long-distance broadcasts from Cluster heads will consume a lot of energy. As a result, it is unsuitable for long-distance networks.

V. CONCLUSION

Increasing demand for security and energy efficiency are two major concerns for the wireless network industry. As the number of mobile devices increases and the cost of deploying base stations continues to rise, energy-efficient solutions have become essential. Using small base stations in wireless networks can drastically reduce energy consumption, and at the same time enhance network performance. This is an important topic that is being discussed more.

In addition to these concerns, the growing volume of wireless traffic is likely to increase exponentially in the next few years, making energy efficiency and security a top priority in the WSNS. Likewise, the distribution of visuals through remote technologies seems high and increasing rapidly. This is why this research seeks to develop a new radio resource access scheme that is Quality of Experience aware.

The evaluation of existing wireless networks reveals and the proposed scheme improves performance by reducing energy consumption and packet delay. It also enables low-energy use of radio resources. This scheme can be applied in the field of mobile networks, as it can be widely adopted in the field of mobile networks.

A new strategy to achieve security and energy efficiency in Wireless Network is gaining momentum today, thanks to the growing demand for mobile data. While the current network architecture is largely based on gateway nodes and connects these to the rest of the internet, new network topologies can help address these challenges. By eliminating the need for separate access points, a single access point can save energy and increase coverage.

REFERENCES

[1] Himeurs, H., Alsalemei, V., Ni-Kababaji, X., Bensiali, T., Amiria, E., Sardianoss, Q., Dimitrakopouloos, S. & Varlamise, (2021). A overview of optimization techniques for building energy consumption: Grundlagen, difficulties, and opportunities. Amalgam Knowledge, *73*, pp.11-25.

[2] Farzanehs, B., Malehmirchegine, L., Bejain, A., Afolaibi, T., Mulumiba, G. and Dakar, J.F., (2021). Advancement of cognitive computing in microgrids for energy conservation Technology and Research, *12*(3), p.768.

[3] Marabissie, D., Muccha, L. and Morose, S., (2021). Throughout super duper wireless links, subscriber interaction improves quality and power savings devices, *22*(2), p.508.

[4] Shens, S., Yue, C., Zhangs, K., Nie, J. and Cia, S., (2021). Adaptable Cybersecurity in AI-Enabled 6G: An Energy Saving Perspectives Institute of electrical and electronics Wireless Journals, *6*(4), pp.85-95.

[5] Zenge, Z., (2022). Mechanism for optimizing energy savings in the Iot technology game - theoretic.Telecommunications over Computers, *187*, pp.171-180.

[6] Ullaha, F., Khaan, M.Z., Mahmood, G., Qureishi, M.S. and Fayyaz, M., (2022). Comprehensive Study of Energy - efficient and Power Losses in Wireless Personal Area Networking Treatments Using Simulation and Modeling Strategies, *2022*.

[7] Lvi, S., Xue, X., Haan, S., Taoc, X. and Zhange, P., (2021). Non - orthogonal multiple access ultratech cement Networking using Retransmissions: Resources Protected Relatively brief Transmitting. *IEEE Transactions on Vehicular Technology*.

[8] Beltramella, B., Mahmoode, C., Österberge, R., Gidlunda, N., Ferrarie, V. & Sisinna, K., (2021). Notched wlan transmission now without synchronisation conserves energy, Symposium on Electronic instruments and Measurements Institute of electrical and electronics Steve, *75*, pp.2-12.

[9] Wange, M., Lindo, Y., Tiani, X. & Siaga, F., (2021). Transferring knowledge encourages 6G cellular networking: existing advancements and upcoming problems, Seminars on Longevity of the IEEES.

[9] Kummar, A., Sharmaa, S., Singham, A., Alwadaini, A., Choie, E.D., Manuaal-Brenosai, S., Orrtega-Mansillea, Z. & Goyale, C., (2022). Assessment of Disruptive Techniques and Existing Methodology for Emerging Infrastructures in the Cloud computing Environment, *15*(2), p.71.

[10] Haseb, K., Jaan, Z., Alzahranie, F.A. and Jeons, G., (2022). A Framework for Integrated Evidence Gathering with both the Virtualized Environment on Ubiquitous Iot Devices. Electronics and digital technologies, *97*, p.107588.

[11] Cheng, W. and Yange, B., (2022). Evaluation of the Energy Consumption of an e-Commerce Business Relationship monitoring e-business Network Built on Handheld Cloud Applications Developing software in Science, *2022*.

[12] Chochliourose, A.H, Kourtiss, L.G., Spiliopouloue, C.X., Lazaridisa, I., Zahariss, K., Zarakoovitis, S. & Kourtise, F., (2021). Considerations about energy saving and tendencies in upcoming 5G deep learning architectures Frequencies, *15*(18), p.5395.

[13] Caos, L., Yuei, Y. and Zhange, Y., (2021). Towards Energy-Efficient and Collaboration Optimization-Based Intelligence Gathering Tactic for Multilingual Iot Devices, Research journal.

[14] Ivoghlians, A., Salcici, Z. and Wange, K.I.K., (2022). Adaptive Wireless Network Management with Multi-Agent Reinforcement Learning. *Sensors*, *22*(3), p.1019.

[15] Moare, S.F., Rosenthal, E.W., Smiths, T.Y. and Reynolds, B.F., (2021). Responsive Inductive Charging Transmission and Multispectral Connectivity for Rechargeable Visual cortex Implants that Operate Indefinitely, Procedia, *110*(1), pp.89-106.

[16] Pirouzie, S., Zaghians, M., Aghaeie, J., Chabook, H., Abbassi, M., Norouzie, M., Shafie-khahan, M. and Catalãoo, J.P., (2022). Integrated decentralized power utilities robotic ramping up safety and operational KPIs, Journals of Electronic engineering Power and Energy Systems, *138*, p.107540.

[17] Lims, J., Normman, B.A. and Rajgopals, L., (2022). Immunotherapeutic infrastructures must be redesigned. Proceedings in Analytical Internationally Interactions in Parametric Studies, *30*(2), pp.200-225.

[18] Zouu, B., Penge, C., Gu, B., Lei, R., Yann, Z. and Yange, K., (2022). The comparison of dynamically scripting language and commandment operating methodologies for office space energy Power system. Power generation Utilization, *305*, p.117875.

[19] Nagendranths, M.V.S.S., Khannai, M.R., Krishnarajan, N., Sikkanddar, M.Y., Aboameir, M.A. and Surendrani, R., (2022). With cryptography in nodes, a subunit distorted clustered protocols with enhanced amoeba swarm cache coherency networking. *The Journal of Supercomputing*, pp.1-19.

[20] Wange, Z., Liue, J., Zhange, Y., Yuaan, H., Zhong, R. and Srinivasani, M.K., (2021). Philosophical dilemmas in using device frameworks for sustainable buildings: Traveling through roadblocks Assessments of Alternative energy, *145*, p.110969.

[21] Yousef M.AA.E., Dattana V. (2021) Auto Attendance Smartphones Application Based on the Global Positioning System (GPS). In: Arai K. (eds) Advances in Information and Communication. FICC 2021. Advances in Intelligent Systems and Computing, vol 1363. Springer, Cham. https://doi.org/10.1007/978-3-030-73100-7_63