UT-AKSES NETWORK PERFORMANCE AND RELIABILITY IN SUPPORTING DISTANCE EDUCATION

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Abstract

Universitas Terbuka (UT), as a pioneer of distance education in Indonesia, has developed the UT-Akses Point (UT-AP) system to support inclusive and flexible online learning. This study aims to evaluate the performance and reliability of the UT-Akses network in supporting the distance learning process. UT-Akses uses a low-orbit (LEO) satellite constellation capable of reaching remote areas, including the 3T (outermost, disadvantaged, and isolated) areas, which have previously been difficult to reach by terrestrial networks. The methods used include literature studies, secondary data analysis, and observations of the implementation of learning technology at UT. The results of the study indicate that UT-Akses has high performance in terms of service coverage, access flexibility, and digital technology integration through a digital learning ecosystem (Digital Learning Ecosystem). However, satellite signals are susceptible to atmospheric interference and physical obstacles such as obstruction by buildings, geographical location with many tall trees that obstruct the placement of equipment. To measure the reliability of UT-Akses, parameters are used, including: Average download throughput, Maximum download throughput, Average upload throughput, Maximum upload throughput, Percentage of time latency is below 90ms, Percentage of time latency is below 50ms, Down time, Average power consumption, and Peak power consumption. The UT-Akses trial program in 2025 was carried out at 20 blank spot locations including UT Kupang, UT Menado, UT Pontianak, UT Palangkaraya, UT Jambi and UT Bengkulu.

Keyword: UT-Akses, distance education, network performance, system reliability, online learning.

1 INTRODUCTION

Entering the era of the industrial revolution 4.0, all parties began to improve to make adjustments. Human resources are required to have 21st century skills in order to be able to compete in the industrial environment. Educational institutions are starting to apply 21st century learning methods to unlock the potential of every student. The era of the Industrial Revolution 4.0 was marked by the increasing number of job automation using the internet, robots, and AI (Artificial Intelligence). Referring to this, it is predicted that several professions will disappear and be replaced by technology. Types of work that are quite vulnerable to being replaced are jobs that are repetitive in nature. This condition is quite threatening for workers with low levels of education who tend to work in repetitive lines of work.

This global problem encourages the need to formulate skills or skills that are needed to deal

with this revolution. WEF or the World Economic Forum formulates a framework called 21st Century Education. This formulation is then used by educational institutions to form a 21st century learning model that can spark the potential of students so that when they graduate they can become superior human resources. Seeing the demands of the world of work above, the contribution of learning media is by utilizing repository applications in supporting learning processes that are relevant to current and future conditions. Currently the repository is a rich potential source of useful information, data, images and research results. Repositories are systems that enable institutions to store and manage digital documents as well as interact and collaborate between users within one institution. There are several digital library software available as "open source" or as "proprietary format". Open source software helps primarily in lowering initial and ongoing costs, eliminating vendor lock-in and allowing for greater application flexibility. The main advantage of open source software is that it is generally free to use such as the DSpace application.

Internet access, especially in rural/rural areas, will usually largely depend on the presence of mobile/3G/4G operators. It is clear from the data nperf.com from one of the mobile operators; there are still many blank spots in various regions in Indonesia. Consequently, Internet access in the area is also challenging. There are many blank spots, especially outside Java. On the nperf.com site, we can evaluate mobile operator coverage in Indonesia with data collected by nperf.com since 2019.

An offline internet server is a device that enables users to access digital content without requiring an internet connection. These devices typically store web pages, educational materials, and other digital content on a local network, making them accessible to users within that network. Efforts to make internet access offline may not be new. Since the beginning of Internet development, some groups, especially in developing countries, have been trying to find solutions to read internet content while offline. They start from simple by backing up email, SMS, WhatsApp to more complex activities such as downloading songs, movies, files, PDFs, e-books.

In the UT-Akses Point case study, the focus was given for making educational content accessible offline. These efforts are nothing new; several steps seem to be made globally from the initiative of several state institutions and non-governmental organizations supported by various technologies that support the offline Internet. So, there are some offline Internet initiative activities, but not many. Only a handful of institutions/research in the world are trying to provide solutions for areas with scarce internet access. Therefore, Universitas Terbuka is

developing an offline Internet system for student access residing in remote areas with limited telecommunications/ Internet networks. This project focuses on providing online learning support for Universitas Terbuka (UT) students who are living in remote areas without a reliable Internet network. It aims to develop a local hotspot in five areas in Java island where UT's students are located, to enable them to access UT's online support services. The project will also develop a learning design that is adapted to low bandwidth capacity.

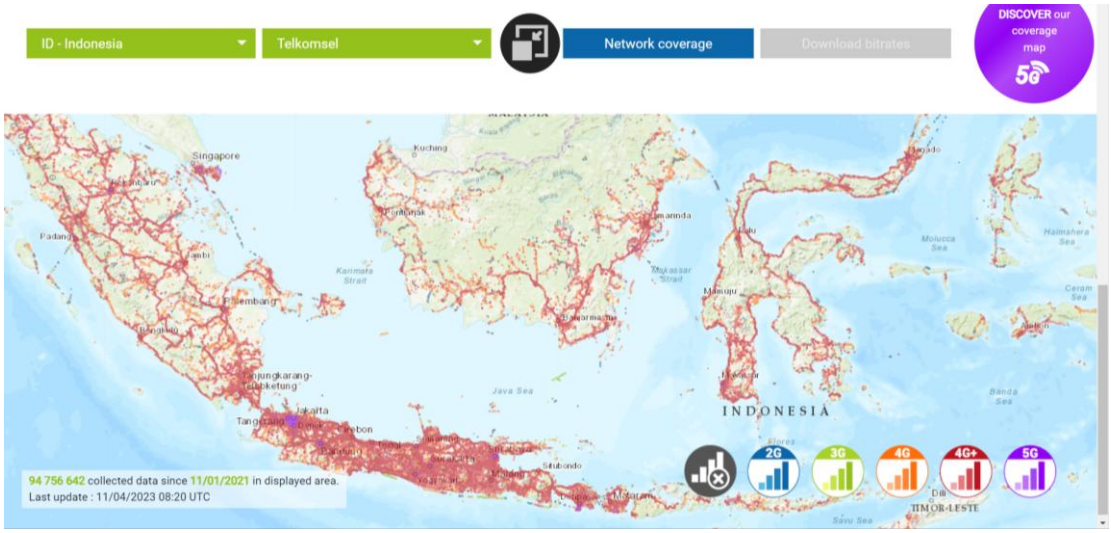
UT-Akses Point (UT-AP)

The UT-Akses Point (UT-AP) focuses on providing online learning support for UT students living in remote areas. Because internet access is still a privilege for UT students living in many remote areas in Indonesia, many of them struggle to access UT's online services due to a lack of reliable internet access. This widens the gap in online learning equity among UT students. To address this inequality, the program aims first to develop local hotspot areas so that UT students in remote areas can access UT's online support services. These local hotspot services are very beneficial for UT students, providing the desired online learning experience and improving their academic success. Most remote areas have limited infrastructure, including power supply and bandwidth, so minimum local hotspot service requirements are needed to provide access to UT's online support services. Second, to develop learning designs that need to be adapted to support low bandwidth capacity. By utilizing the offline Moodle platform service, the online support services are designed with adaptive features. The adaptive features of the learning management system include discussion forums, formative test feedback, student learning progress, and collaborative applications.

Improving Internet Access Starlink has begun providing internet services in various remote areas in Indonesia, including several areas where UT regional universities are located. Using LEO (Low Earth Orbit) satellite technology, UT-AP is able to provide high-speed and low-latency internet connections, which are very beneficial for students and lecturers in areas previously difficult to reach by conventional internet infrastructure. In supporting Distance Education, Starlink in UT regional universities is expected to help improve the quality of distance education in Indonesia. More stable and faster internet access allows students to participate in online learning, access global educational resources, and participate in academic activities more effectively. While UT-AP offers many benefits, its presence also faces challenges, such as resistance from several local internet companies and the need for adequate supporting infrastructure.

The trial was conducted at six different UT Regional locations accessible by land transportation due to air transportation and budget limitations. The program consisted of four activities: 1) assessing the online learning needs of UT students living in remote areas; 2) developing adaptive learning designs and strategies; 3) designing a business model and governance for local hotspot services; and 4) evaluating the usability and performance of local hotspot services. The two main outcomes were 1) local hotspot infrastructure and 2) adaptive learning designs for implementation in low bandwidth environments.

The development of UT-AP aims to: 1) assess the online learning needs of UT students living in remote areas; 2) develop local hotspot infrastructure; 3) develop adaptive learning designs and strategies; 4) design a business model and governance structure for local hotspot services; 5) evaluate the usability and performance of local hotspot services. Therefore, governance guidelines are needed to serve as a reference for implementing UT AP development at the host locations.



UT Access Point Location

No.	UT Location by Region	Number of Students	Number of UT Access Points
Western Region			
1	Bengkulu	7.485	3
2	Jambi	9.438	3
Central Region			
3	Palangkaraya	5.988	3
4	Pontianak	14.617	4
Eastern Region			
5	Kupang	10.999	4
6	Manado	4.239	3
		Total	20

Activity




e-ISSN 2963-2870
Vol 6 2025

UT-Akses Point Indonesia Program

In this section we will discuss several case studies on the process of designing and implementing long- distance wireless access networks that are required by the OFFLINE Internet. In this design process, usually the constraints will be:

- Minimum number of towers. As far as possible the number of towers used is minimal even though the goal is to reach as many users as possible. Tower is the most expensive investment in wireless networks.
- Shortest possible distance. As far as possible the distance from the client to the nearest tower is around 1-2 km so that it is easy to direct the antenna.
- Power and security on servers and towers. The tower should be placed at a school or an agreed location, where there are people, electricity that allows the server to be turned on 24 hours.

Prototype Wireless Access Network Design in Jasinga-Bogor

In this section we will try to show the design of a wireless access network for 7 Open University students who are in Jasinga, Bogor Regency. For an example of network planning here, the coordinate data for student locations are:

-6.454047,106.460922
-6.441695,106.462051
-6.446236,106.460457
-6.411963,106.490471
-6.426875,106.475693
-6.451865,106.461388
-6.478530,106.462738

Alternative server locations are at:
-6.447597,106.46081 - SMPN2 Jasinga
-6.482854,106.468242 - SDN Jasinga 01
-6.46436,106.459506 - SDN Sukamanah 03

The steps that need to be taken are:

- Create a PtMP (Point to Multi Point) connection
- Click the location of a school.
- Use the Ubiquiti Bullet AC 2.4GHz omni antenna on the school site.
- Check connection conditions one by one for each client, assuming a parabolic antenna, such as Ubiquiti PowerBeam, on the client. In fact, it is likely that the client will use a cheap Wajanbolic antenna.

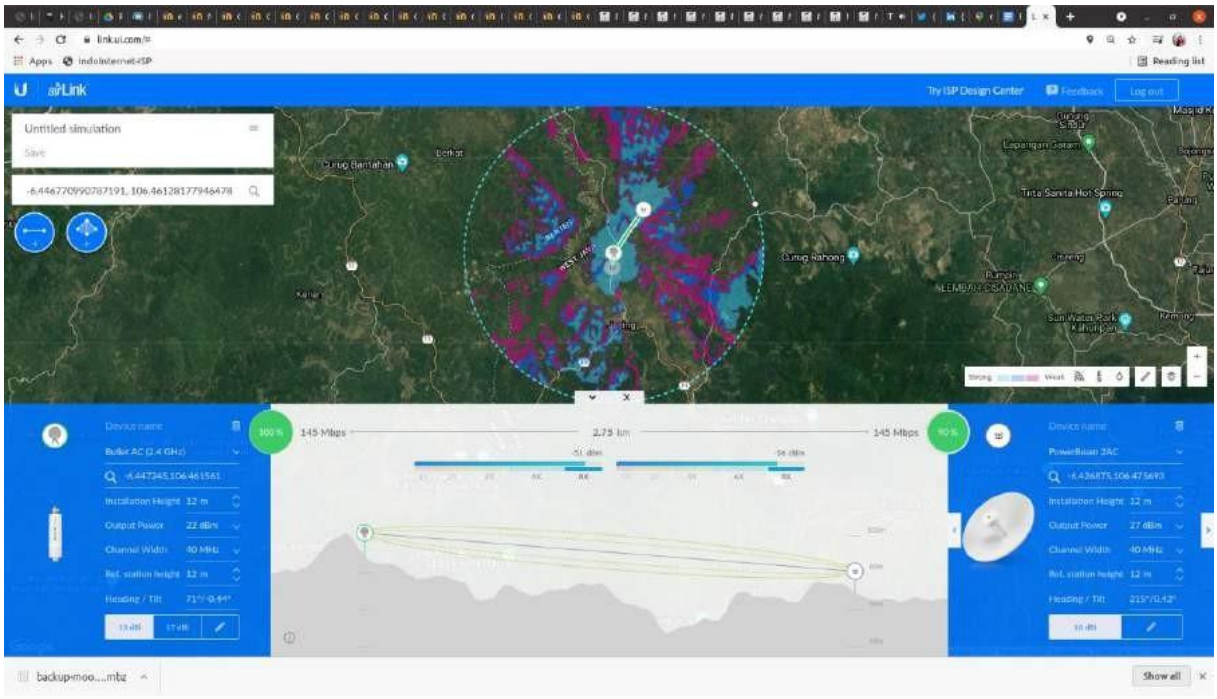


Figure 1: 2.4GHz connection from SMPN2 Jasinga.

The tower is placed behind SMPN 2 Jasinga which is a rather high hill at coordinates -6.447597,106.46081. Site construction was a bit tolerable as it is a small forest. Connection analysis results for each client.

Client	Ways (m)	Kec. (Mbps)	Tower (m)
-6.454047,106.460922	720	153	12
-6.441695,106.462051	672	153	12
-6.446236,106.460457	157	153	12
-6.411963,106.490471	5,15 km	126	20
-6.426875,106.475693	2.83 km	145	12
-6.451865,106.461388	480	153	12
-6.478530,106.462738 (hindered)	3.45 km	0	

It can be seen that only one (1) client cannot be granted access because the location is too low. Others can be given access with an average speed of around 150Mbps.

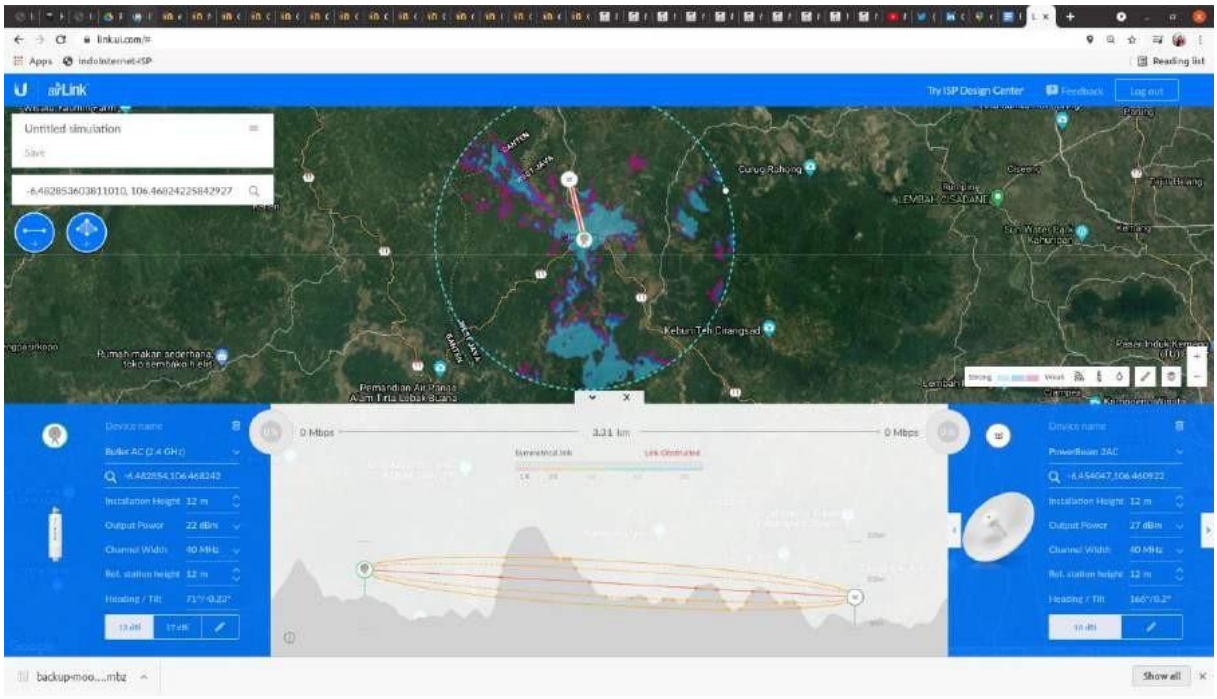


Figure 2: 2.4 GHz connection from SDN Jasinga 01

The tower is placed in the Jasinga 01 SDN yard so it is relatively safe at coordinates -6.482854,106.468242. The height of the tower is 20 meters, with Ubiquiti Bullet AC equipment so that the coverage is rather good.

Client	Ways (m)	Kec. (Mbps)	Tower (m)
-6.454047,106.460922 (hindered)	3.31 km	0	
-6.441695,106.462051 (hindered)	4.63 km	0	
-6.446236,106.460457 (hindered)	4.17 km	0	
-6.411963,106.490471 (hindered)	8.27 km	0	
-6.426875,106.475693 (hindered)	6.29 km	0	
-6.451865,106.461388 (hindered)	3.53 km	0	
-6.478530,106.462738	777 m	153	12

Unlike before, it was seen that only one (1) client could be granted access, while the other 6 clients were all blocked by hills. The average speed is around 150Mbps.

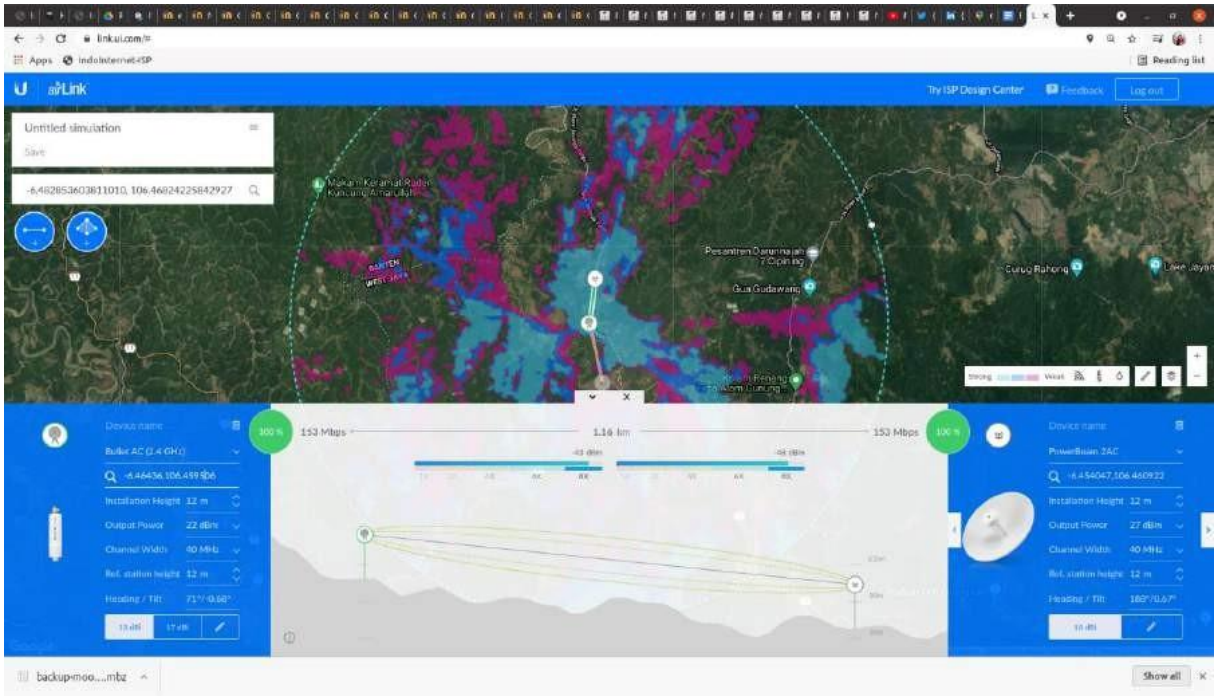


Figure 3: 2.4 GHz connection from SDN Sukamanah 03

The tower is placed on the Sukamanah 03 SDN page so it is relatively safe at coordinates -6.46436,106.459506. The height of the tower is 20 meters, with Ubiquiti Bullet AC equipment so that the coverage is rather good.

Client	Ways(m)	Kec. (Mbps)	Tower (m)
-6.454047,106.460922	1.16 km	153	12
-6.441695,106.462051 (hindered)	2.54 km	0	
-6.446236,106.460457	2.03 km	153	20
-6.411963,106.490471	6.76 km	80	20
-6.426875,106.475693	4.54 km	103	20
-6.451865,106.461388	1.41 km	153	12
-6.478530,106.462738 (hindered)	1.62 km	0	

It can be seen that there are two (2) clients who cannot be granted access because they are

blocked by a hill. The tower that must be used on the client side is on average around 20 meters or very high.

The provisional conclusion is that the best connection is from SMPN2 Jasinga which can provide services to most clients, namely with an average tower height of only 12 meters.

UT Region Office	UT Manado
Name of Regional Officer	Meliza
Name of Monitoring and Evaluation Officer	Zakirman
Number of available devices	3
Installation Location	(1) 3rd floor of the UT Manado office, (2) Village in Wori sub-district, North Minahasa
The distance from the location to the Regional UT Office for installation	24 km (from UT Manado office to Wori Village)
Monev Implementation Date	July 19, 2025

No	Components	Performance/Reliability	Description
1.	Internet Speed	noted: 250Mbps 15.11Mbps	It offers speeds that can compete with cable internet providers, potentially reaching 1 Gbps. This allows users to stream, play online games, and download data quickly without buffering.
2.	Latensi (30ms-2s)	noted: 38ms	Thanks to its satellites operating in low-orbit orbit, Alat can reduce latency to 20-40 milliseconds, significantly lower

			than geostationary satellites, which can reach hundreds of milliseconds. This is crucial for applications requiring rapid response, such as online trading, interactive gaming, and teleconferencing.
3.	Connectivity	noted: Can connect, but not yet tested in rural or remote areas	With its satellite network, Alat is able to provide internet service in areas where cable or fiber optic connections are difficult or expensive to reach. This is especially beneficial for users in rural areas or other remote locations.
4.	Reliability and Durability	noted: Access distance is less than 10 meters, blocked by a wall	The devices are equipped with collision avoidance capabilities, both with other satellites and space debris, increasing the reliability and security of their networks. This also extends their in-orbit service life,

			ensuring a safer investment for users.
5.	Tool Parameters	Average download throughput	Performance -170 Mbps
		Maximum download throughput	Note: Appropriate/Not Appropriate
		Averegae upload throughput	
		Maximum upload throughput	Appropriate
		Percentage of time latency is below 90ms	Performance -330 Mbps
		Percentage of time latency is below 50 ms	Note: Appropriate/Not Appropriate
		Down time	
		Average power consumption	Not Appropriate (test result 237 Mbps)
		Peak power consumption	Performance -17 Mbps
6.	Weather conditions during the monitoring and evaluation	Noted: Bright	
7.	Characteristics of the equipment installation location (mountains, coastline, island, mainland, city, village, etc.)	Noted: Island	
8.	Obstacles during the equipment monitoring and evaluation	Noted: City	
9.	Equipment	Noted: Three devices were sent, but only one router	

	condition/presence during the monitoring and evaluation	
10.	Monitoring time (Morning, afternoon, evening: include the time)	Noted: Located on the 3rd floor and there are no obstructions according to the instructions
11.	General monitoring	Noted: Evening 3:00 PM WITA


Network Installation
The UT Access device consists of two main components:
UT Access Antenna - which receives signals from the satellite constellation network.
Network Router - which distributes the wireless network within a radius of approximately 50 meters from the installation point.
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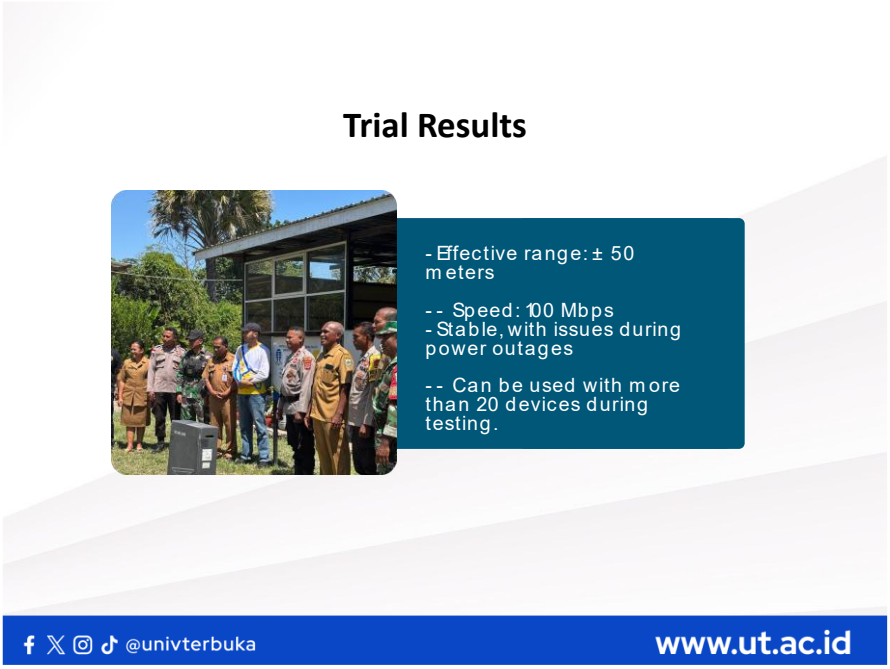
Trial Results
- Effective range: ± 50 meters
-- Speed: 100 Mbps
- Stable, with issues during power outages
-- Can be used with more than 20 devices during testing.
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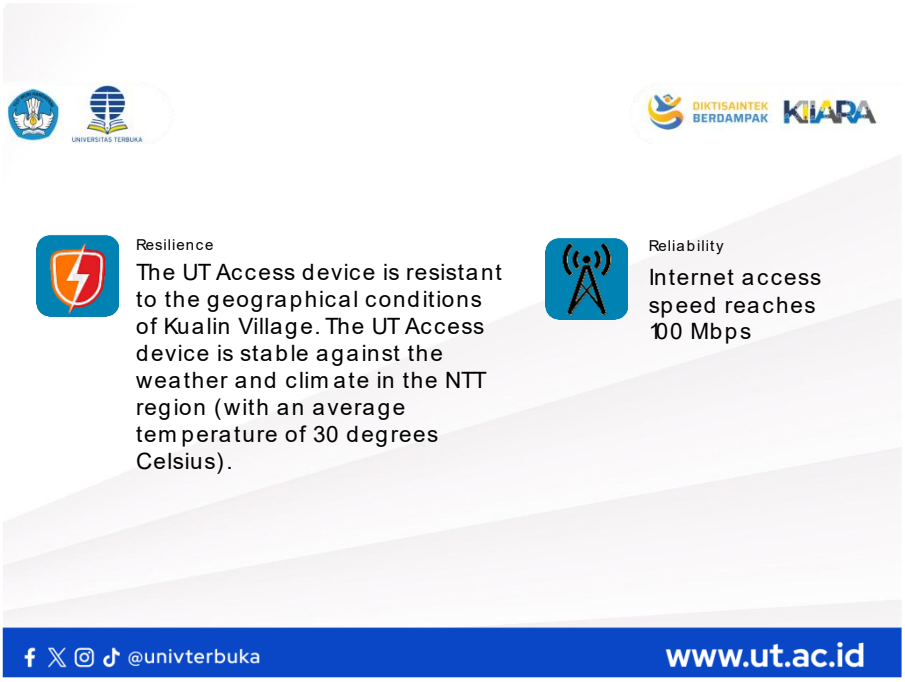
Resilience
The UT Access device is resistant to the geographical conditions of Kualin Village. The UT Access device is stable against the weather and climate in the NTT region (with an average temperature of 30 degrees Celsius).
Reliability
Internet access speed reaches 100 Mbps
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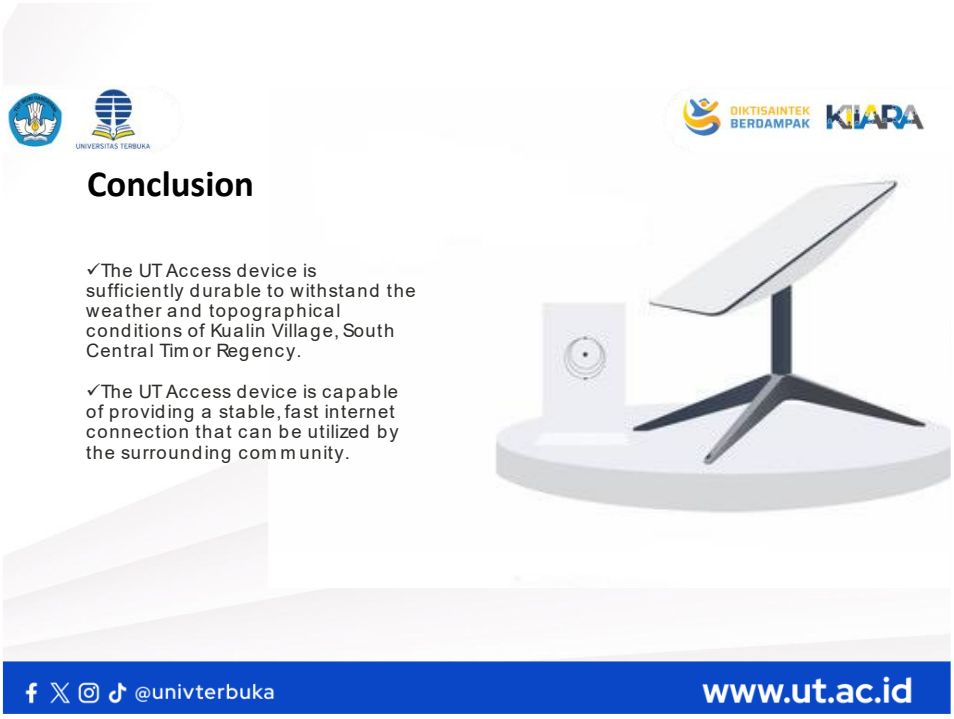
Conclusion
✓The UT Access device is sufficiently durable to withstand the weather and topographical conditions of Kualin Village, South Central Timor Regency.
✓The UT Access device is capable of providing a stable, fast internet connection that can be utilized by the surrounding community.
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Constraint
Power Outages
Frequent power outages occur in Kualin Village, TTS Regency, preventing residents fr
the internet to their full potential.
The UT Access device is only provided to SalUT for a period of three months. After tha
away, residents will no longer be able to use UT Access services.
UT Access Support Equipment
The limited availability of UT Access support equipment, such as internet cables, make
find replacement equipment in remote areas or cities if damaged.
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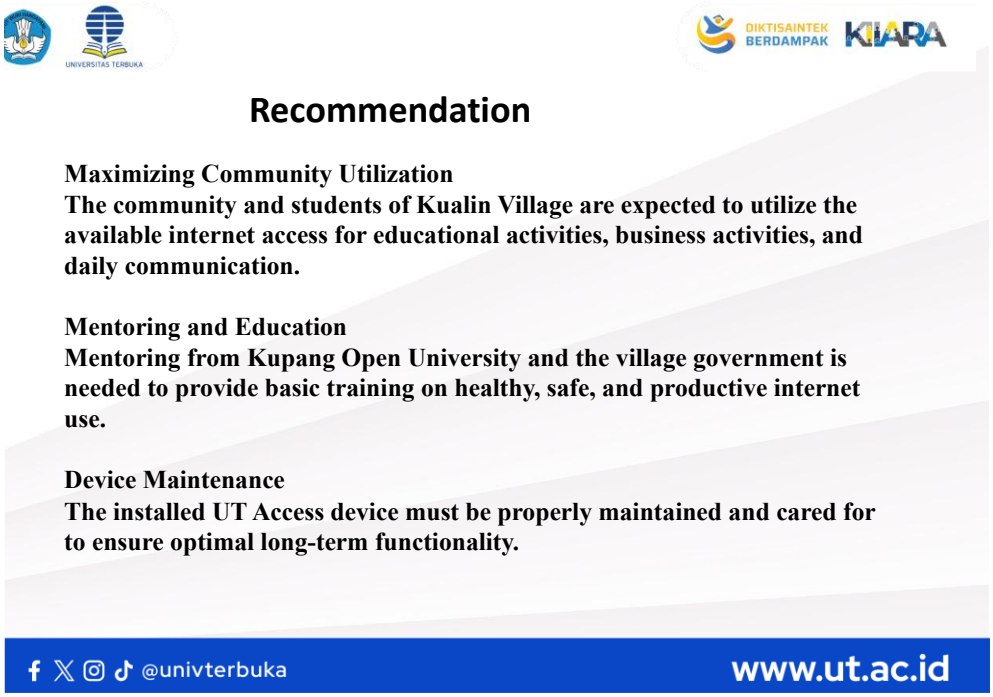
Recommendation
Maximizing Community Utilization
The community and students of Kualin Village are expected to utilize the available internet access for educational activities, business activities, and daily communication.
Mentoring and Education
Mentoring from Kupang Open University and the village government is needed to provide basic training on healthy, safe, and productive internet use.
Device Maintenance
The installed UT Access device must be properly maintained and cared for to ensure optimal long-term functionality.
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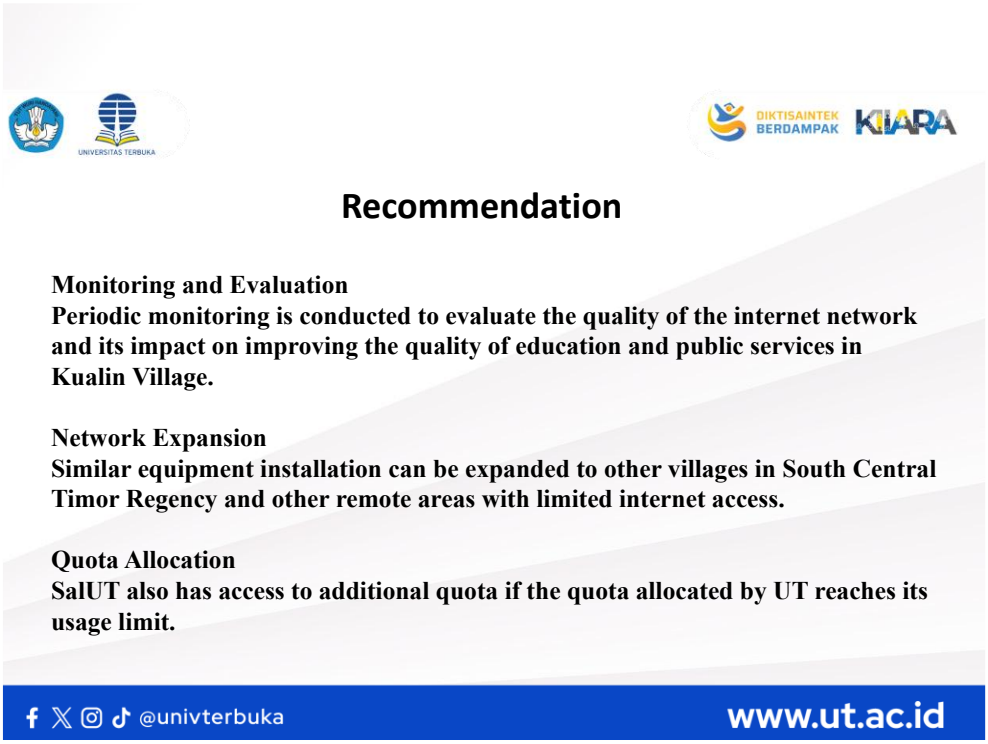

Method

Analysis, Design, Development, Implementation and Evaluations (ADDIE) Development Model Research and development methods or in English is Research and Development is a research method used to produce certain products, and test the effectiveness of these products (Sugiyono, 2017). Model development can be interpreted as an effort to expand or bring a condition or situation on a regular basis to a better situation or condition (Trisiana and Wartoyo, 2016). This research and development is longitudinal (in stages), because in producing a particular product research is used which is needs analysis in nature and in producing product effectiveness so that it can function in society it is necessary to test the effectiveness of the product. This research and development produces a product in the form of media. The ADDIE development model is a model used to design and develop learning

programs that contain analysis, design, development, implementation and evaluation.

The study was conducted for 3 years using an action research approach. The action research is preferred to enable the experimental design in a real situation. an approach in which the action researcher and a client collaborate in the diagnosis of the problem and in the development of a solution based on the diagnosis". Action study assumes social world to be constantly changing, both, researcher and research being one part of that change.

The study was organized into several activities as follows:

Tabel 1. Activities on UT-Akses Point (2025)

No.	Activities	Feb-Mei	Jun-Sept	Okt-Nov
A	**Instructional Design**			
	Instructional Desain Assessment			
	Content Development			
	Small group evaluation			
	Content Deployment			
B	**Hot-Spot Infrastructure Development**			
	Pilot Target Location			
	Assessment of Existing Infrastructure			
	Equipment Procurement			
	Mockup Pilot Development (UT)			
	Mockup Trial (UT			
C	**Hot Spot Infrastructure Installment**			
	Setting Up Hot Spot Infrastructure			
	Installation of Hot Spot Infrastructure			
	Student's testing and Feed Back			
D	**System Design and Governance**			
	Development of system design and governance – (workhsop)			
	Training (Workshop)			
	Coaching and evaluation			
E	**Evaluation and Reporting**			

	Evaluation			
	Reporting			

Challenges

The challenge of an offline internet server, also known as an offline web server or a disconnected network, is to provide a web-based service to users who are not connected to the internet or who have limited connectivity. One of the biggest challenges of an offline internet server is to ensure that users can access the information and services they need without an internet connection. This requires the server to store a large amount of data and content locally, which can be a significant technical challenge, particularly for large or complex websites.

Another challenge is to ensure that the server remains up-to-date and secure, particularly if it is being used in an environment where it cannot be regularly updated or maintained. This requires careful planning and management to ensure that the server is running the latest software and security patches, and that any potential vulnerabilities are addressed as soon as possible. Finally, an offline internet server may also face challenges in terms of scalability, particularly if the number of users accessing the server increases over time. This requires careful planning and resource management to ensure that the server can handle the increased load without compromising performance or availability.

One of the biggest problems in determining a server is ensuring that the server we set up is enough to handle the desired workload. The specifications of the processor used can vary depending on the load to be handled. For a small number of students, an arm processor machine such as Raspberry Pi 3 or 4 can be used. Raspberry Pi 3 has the lowest capability. Mini PC ASUS mobile processor with 2G RAM has the ability two-three times Raspberry Pi 3. Some tips to make the small servers work, images, videos, documents/files/pdf, etc., not on moodle servers, but elsewhere, such as youtube, google drive, etc. It may be good to set up its digital library server to accommodate various images, videos, documents, etc.

Moodle servers should be prioritized for handling exams/quizzes, especially if we adopt the

pattern of exams that can be repeated for one semester. The ability to take exams on moodle servers becomes very special in offline Internet systems because the learning evaluation process is a core component/life of offline Internet systems. A computer with an i5 or i7 processor with 4G RAM capacity will be sufficient for supporting up to 50 students. For schools in areas/rural areas with students of 300-500 people would be better off using more RAM, for example, more than 8Gbyte.

The digital divide is not only a matter of level of access to technology and material infrastructure, as the government seems to believe, but is also related to factors such as education, socio-economic status, age, income and location, all of which affect the ability to adopt digital media. Rather than technology access per se, adoption depends on people's awareness of the potential benefits of using the internet. In that sense, internet skills go beyond the acquisition of practical computer skills to require specific forms of digital literacy.

Findings

In September 2025, the Universitas Terbuka (UT)–UT Akses Point Team explored the strength and weaknesses of the available proprietary and open-source softwares to be used as an operating system of the Internet Offline Server. Based on its functionality and affordability, the Linux operating system was selected. Network and IT technicians in Indonesia are also familiar with the Linux operating system, and it is easy to maintain and update programs.

The first package of the Internet offline infrastructure includes a mini pc, cellular network antenna, omnidirectional antenna, point-to-point bridge already set in place.

The dummy installation server parameters in developing the offline Internet system used the following specifications:

- Operating System – Ubuntu 20.04 or Debian 11
- 64bit mini-computer
- 8G RAM Memory
- 512 GB SSD

The mini-personal computer is quite easy to install as it requires only 10 cm square dimension with DC power supply. For the BUKA pilot project, some of the main applications supporting e-learning services are also installed, such as Apache web server, MariaDB database server, and PHP; Moodle for e-learning; and Kiwix for offline Wikipedia.

Meanwhile, the supporting intranet network operations use the following applications:

- Bind dns servers
- Server SSH
- DHCP Server
- SAMBA File Sharing server

In terms of technology, some exciting technologies are partly also used in UTAKSES Internet system; at a glance, the technology includes

- SolarSpell - SolarSpell - Library powered by Raspberry Pi, with Access Point Wifi http://solarspell.org/ (SolarSPELL, 2021)
- Kiwix - is a free app that lets us search and read Wikipedia without an internet connection. Available for Android, iOS, Windows, MacOS, and Linux http://www.kiwix.org/ (Kiwix, 2021) (Lin, 2015, June) (Purbo, 2019)
- Wikipedia and Wiktionary
- Open content repository

There are not many initiatives similar to the Universitas Terbuka as open university undertaken, where lecture access is done offline, including digital libraries and even the student evaluation process.

Some outcomes of this project include:

1. Performance analysis

a. Hardware: The hardware of the server plays a critical role in its performance. The processor, memory, and storage capacity is sufficient to handle the load of the website or application being hosted.
b. Software: The software running on the server, including the operating system and any web server software or applications, is optimized for performance and configured properly.
c. Network: The network infrastructure, including the LAN (local area network), is designed and configured to provide optimal performance.
d. Load testing: The server has been tested to determine its maximum capacity and identify any bottlenecks or performance issues. There is no performance issues found.
e. Monitoring: The server has been monitored continuously to identify any performance issues or anomalies, and to ensure that it is functioning properly.

f. Security: The server is secured against unauthorized access and protected from potential security threats.

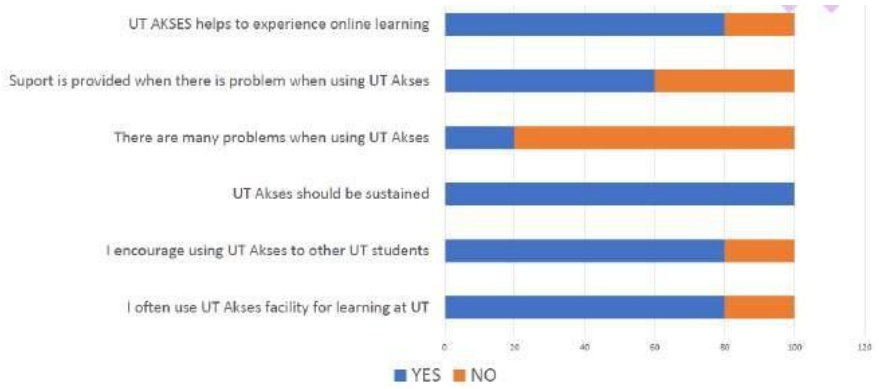

Figure 15: User experience analysis

2. User satisfaction analysis:

a. Security analysis: The study to investigate the security of UT-Akses Point server, including vulnerability to hacking, data breaches, and malware, has been conducted. The server is safe and secure.

b. Cost analysis: The study has been done to compare the costs of implementing and maintaining an offline internet server versus an online server, including hardware, software, and personnel costs. The cost for UT-Akses Point server is affordable compare to online server.

c. Use case analysis: The study has been done to explore the potential use cases for an offline internet server, including in remote or low-connectivity areas, disaster recovery scenarios, or secure network environments. UT-Akses Point is suitable in remote or low-connectivity areas.

Sustainability and Transferability

Most of the Indonesians live in rural areas, increasing the country's internet penetration will require a greater focus on rural villages. However, building expensive infrastructure for small populations in isolated areas is not economically feasible from a commercial operator's point of view. Especially in rural areas, a lack of internet affordability, skills, awareness and cultural acceptance, combined with a lack of content and services in local languages, constitutes a considerable hurdle to digital literacy.

As the internet grows, UT-Akses Point has been looking into ways to build greater sustainability and transferability. UT-Akses Point strategies focusing on learning management system and material infrastructure, are insufficient. The sustainability of rural digital networks also relies on technical education, building infrastructure in response to local demand, keeping costs down and exploring the economic opportunities that can arise from the use of digital technology. For offline Internet purposes in rural areas with 100 students can use a computer or mini pc process i7 with 8G RAM. The estimated budget is around Rp. 8 to 15 million for mini pc with maximum capability with 8G byte SSD memory RAM hard drive. For small schools can use moodlebox in raspberrypi 3 or 4 with a budget of around Rp. 700,000,- so it is very affordable for most schools and universities that want to provide knowledge for students and students with Internet problems.

Education is key to equip the citizens with Internet skills. Currently, the Indonesians have to rely on self- finance workshops, demos, seminars, online discussions to gain the required knowledge. Inclusion of ICT education in school curriculum and the deploy Internet in the schools will accelerate the empowerment process to gain Internet skills and Internet competence for the young Indonesians and, thus, reduce the barrier to greater Internet adoption.

In terms of sustainability, an offline internet server has the potential to be a very sustainable solution for communities that lack reliable internet access. By providing access to digital content without requiring an internet connection, these devices can help bridge the digital divide and improve access to educational and other resources.

However, the sustainability of an offline internet server depends on several factors, including the quality and durability of the device, the availability of maintenance and repair services, and the availability of power sources. To ensure long-term sustainability, it is essential to select a high-quality device that is designed to last and to provide adequate maintenance and repair services.

In terms of transferability, an offline internet server can be an excellent solution for communities that lack reliable internet access, but it may not be appropriate for all settings. The device may be less effective in areas with limited access to power, as it requires electricity to function. Additionally, the content stored on the device may not be relevant or

appropriate for all communities.

To ensure that an offline internet server is transferable to new settings, it is essential to carefully assess the needs of the community and select content that is relevant and appropriate. Additionally, it may be necessary to modify the device to work with different power sources or to address other logistical challenges. With careful planning and implementation, an offline internet server can be an effective solution for improving access to digital resources in a wide range of settings.

Conclusion

Research related to the creation of Institutional Repositories with various platforms, including:

1. The UT Access device is sufficiently durable to withstand the weather and topographical conditions of Kualin Village, South Central Timor Regency.
2. The UT Access device is capable of providing a stable, fast internet connection that can be utilized by the surrounding community
3. Power Outages
   Frequent power outages occur in Kualin Village, TTS Regency, preventing residents from accessing the internet to their full potential.
4. The UT Access device is only provided to SALUT for a period of three months. After that, if it is taken away, residents will no longer be able to use UT Access services.
5. UT Access Support Equipment
   The limited availability of UT Access support equipment, such as internet cables, makes it difficult to find replacement equipment in remote areas or cities if damaged.

Recommendation

1. Maximizing Community Utilization

The community and students of Kualin Village are expected to utilize the available internet access f or educational activities, business activities, and daily communication.

2. Mentoring and Education

Mentoring from Kupang Open University and the village government is needed to provide basic training on healthy, safe, and productive internet use.

3. Device Maintenance

The installed UT Access device must be properly maintained and cared for to ensure optimal long-term functionality.

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