



RENU Partners with Mesh++ to Manufacture Solar-Powered Internet Routers in Uganda

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RENU has partnered with Mesh ++, a connectivity solutions manufacturer based in Chicago, USA, to manufacture solar-powered Internet routers in Uganda, which combine renewable energy from the sun with advanced connectivity technology to deliver an Internet access solution like no other. These will be the first Internet routers to be manufactured in Uganda, and they will be accessible to all Ugandans that wish to have stable and affordable Internet access in their businesses and homes, without having to worry about cabling, unstable electricity, and the monthly power bills. Routers are pieces of equipment that when interconnected, provide the highway and backbone through which Internet communication is made possible.

Access to the Internet is becoming more important everyday as the world increasingly relies on it for communication, education, business, and beyond, and yet the infrastructure to access the Internet is still insufficient in most of the developing countries. In addition, the connectivity infrastructure in place currently relies on the national electricity power grids to deliver access to the Internet yet problems of poor electricity supply persist in developing countries,

with most households and communities not connected to a reliable supply of electricity, or in the worst cases not connected to the national grids.

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Our deployments are quite a few in Africa and specifically in Uganda, which is why we are so excited to announce engagement in a partnership with RENU to manufacture these nodes right here in Uganda, in fact, the first wireless routers to ever be manufactured in Uganda. We are so thrilled and so thankful to the RENU team, and so excited to start this venture”. Danny Gardner, Director, Mesh ++.

Uninterrupted access to the Internet is the foundation of the digital economies that we now live in. The above challenges mean that digitalized and Internet-based processes can hardly be performed without disruptions. In the case of telemedicine, lives can be at stake without a reliable connection, but huge losses can also be incurred in many other processes and businesses if there are Internet connectivity disruptions. So, how can we ensure reliable access to the Internet for unconnected populations, those that do not have access to the national electricity grid, or those that have an unreliable supply of electricity?

Until now, the Research and Education Network for Uganda (RENU), in pursuit of the goal of uplifting the quality of education and research in Uganda, has been providing the research and education community with Wi-Fi connectivity solutions that are highly dependent on electricity, supplied mostly through cables. The dependency on unstable electric power has been very limiting in many ways, especially to the rural communities, and as such, the digital divide in the country is still very big because rural and some urban communities do not have access to reliable and affordable electricity and hence have poor or no Internet connectivity.

| No Electricity? No Problem!

Uganda faces infrastructure challenges that affect the extension of the electricity/power grid to mostly, the remote areas. RENU's joint venture with Mesh++ offers a cost-effective solution to this problem. The solar-powered Internet routers do not require a power supply from the national electricity grid, and can therefore be deployed in any part of Uganda to deliver high-speed Internet connectivity wherever it is required.



| No Cables? No Problem!

The solar-powered Internet routers will provide a quick-to-deploy solution that uses a system of movable nodes to bring Wi-Fi to both indoor and outdoor spaces wherever you are, in an eco-friendly manner. Although the solution works well for indoor spaces, it works best with coverage in a large outdoor space, where trenching cable is very expensive, or a temporary event where laying cable is labor-intensive, and not cost-effective. The solution performs by utilising multiple gateways (cellular, ethernet, satellite, and fiber), and it is portable, i.e., when one is done using it in one location, it can be moved to another location without having to worry about electricity supply and cables.

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I would like to appreciate the leadership at Mesh ++ for having agreed to work with us to enable us to set up the 1st manufacturing plant in Uganda for IT equipment specifically, Internet routers. This will be the first product of its kind manufactured in Uganda and it is firmly aligned to the industrialization drive of the country”, Nicholas Mbonimpa, RENU CEO.



| Greening the Internet

The joint venture between RENU and Mesh++ to manufacture solar-powered routers in Uganda closely aligns with the Environmental, Social, and Governance (ESG) principles, and is set to have a positive impact in various areas. According to some estimates, the carbon footprint of our gadgets, the Internet, and the systems supporting them account for about 3.7% of global greenhouse emissions. The solar-powered routers seek to provide a solution to the issue of greenhouse emissions from the Internet, by providing routing equipment that utilizes renewable energy, which is abundantly available in Uganda given its location at the equator.

| Meshing to Cover Wide Areas

The solar-powered Wi-Fi routers work with a proprietary mesh protocol, which enables connectivity over very wide coverage, through multiple interconnected solar-powered routers while ensuring minimal loss of throughput with each hop, thus enabling massively-efficient outdoor Wi-Fi coverage. The network of interconnected solar-powered nodes makes what in technical terms is referred to as a mesh or rather a mesh network, which is currently the best way to connect large tracts of land and communities to the Internet in minutes without cabling.

Benefits of the Joint Venture to Uganda

The joint venture aligns with Uganda's National Development Plan (NDP), especially the goal of increasing ICT penetration and use of ICT services for social and economic development. For ICT, the NDP aims at “increasing ICT penetration, reducing the cost of ICT devices and services, creating tens of thousands of direct jobs annually within the ICT sector, increasing local ICT innovation products, etc.”, and the joint venture is set to play a critical role in supporting the achievement of the results set out by Uganda's NDP.

It will improve access to reliable Internet in hard-to-reach areas, which will improve the existing education opportunities in the country by providing affordable infrastructure to support modern digital teaching and learning practices, access to e-learning platforms, and education resources, globally.

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The products are simple and easy to deploy and they don't need any cabling; you can spin them up in a very short time, and they are very portable in a way that once you are done using them in a particular location you can shift them to any other location, they will connect you to the Internet right away”. Nicholas Mbonimpa.

With easier access to more reliable and stable Internet connectivity, the venture will promote economic growth by supporting Internet-based economic opportunities, that will in turn create more employment opportunities for Ugandans, attract more investors and grow local businesses.

The venture will also improve Uganda's healthcare system by providing easier access to healthcare resources for individuals that are based in remote areas with limited access to healthcare, and by providing a reliable infrastructure to support remote medical healthcare through telemedicine and research.

The partnership also aligns with Sustainable Development Goal (SDG) 7 which encourages the world to ensure access to affordable, reliable, sustainable, and modern energy for all. Uganda being located at the equator, makes the country an ideal location for solar-powered technologies to thrive. The joint venture will promote more utilization of sustainable renewable energy which will reduce the effects of climate change. Additionally, the joint venture routers are interconnected in a way that requires no opening up of the ground, unlike the older technology-based routers, making the solar-powered routers the most environmentally friendly technology of the current times.

In alignment with Uganda's industrialization drive, the joint venture is among the initiatives that seek to provide a bridge between academia and industry, particularly in the fields of engineering and computer science. By manufacturing high-tech devices and solutions in Uganda, the partnership provides a platform for higher education students to access manufacturing facilities where ideas from their lectures and classrooms are translated into products.

Students will also have an opportunity to contribute to research to continuously improve the devices. This is definitely set to improve the quality of education and research in Uganda.

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**The other good news is that it is going to bridge the gap between academia and industry especially for the courses of Computer Science and Engineering because most of the time our students are studying things in class but they don't have an avenue where they can see how what they study in class translates into products that are useful”,
Nicholas Mbonimpa.**



Key Features, that Make the Device Desirable.

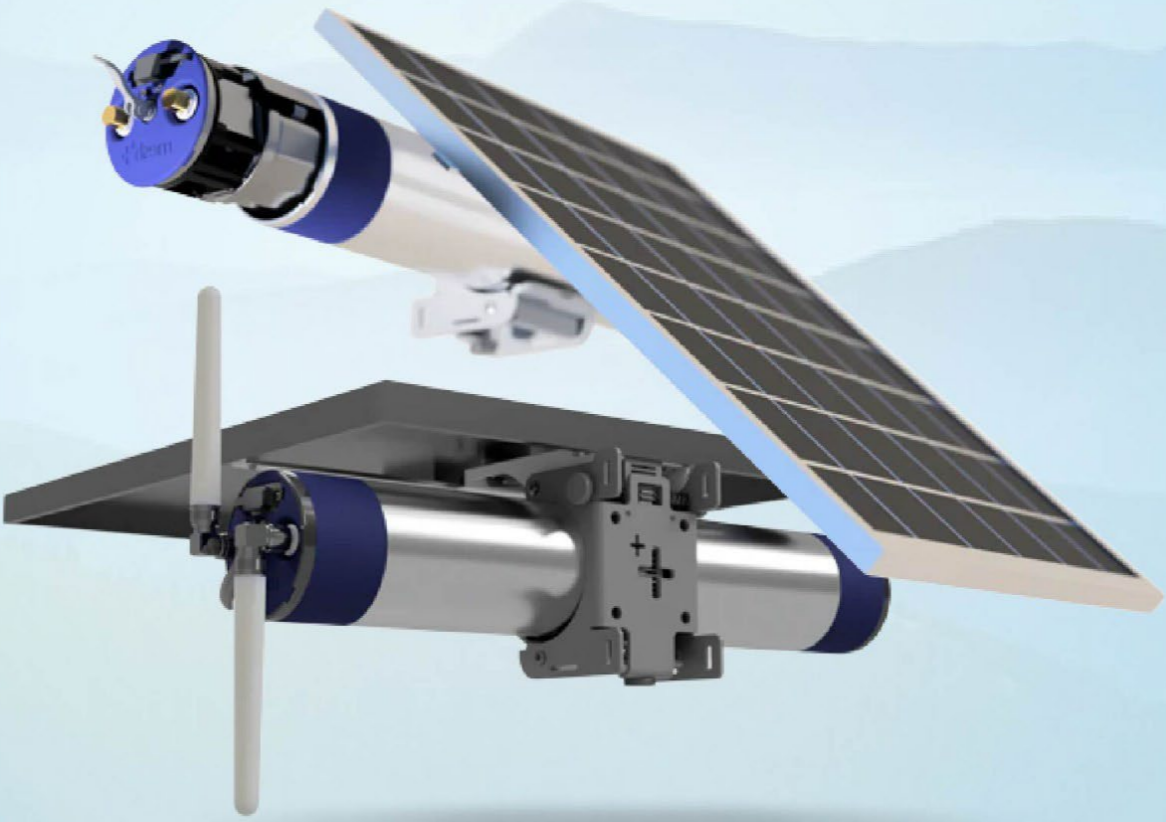
- 👍 Use of clean and renewable energy (solar)
- 👍 Battery reserve of up to 10 days (for stable Internet access)
- 👍 Wi-Fi range of up to 350 meters
- 👍 Swift to deploy (adaptable to various environments)
- 👍 Robust, very durable, and resilient in the toughest conditions.
- 👍 Waterproof and extremely weather resistant
- 👍 Requires minimal maintenance.
- 👍 Troubleshooting can happen without disrupting connectivity for the end user.

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Mesh ++ networks are deployed all over the world! We enable anybody from any background to bring Internet Access to their community - any community! Mesh ++ enables you to bring the Internet Anywhere”, Danny Gardner.

Who is Eligible to Purchase and Use the Devices?

All business entities and individuals (i.e., universities, research institutions, schools, telecommunication companies, Internet Service Providers, hotels, restaurants, cafes, resorts, homes of residences, sports facilities, etc.) that are looking for a sustainable Internet connectivity solution can buy and use the device. As we launch this venture, all interested entities and individuals can send in their orders right away through sales@renu.ac.ug, to be among the first to experience this revolutionary technology that will enable them to scale their networks completely wirelessly without worrying about any power connection issues.



RENU

mesh+

Greening the Internet

3.7% of global greenhouse emissions is from our gadgets and the Internet infrastructure.

#FirstRouters
MadeInUganda

About RENU

RENU is a not-for-profit membership organization owned by various Ugandan education and research institutions. RENU was established in 2006 by leaders of universities and research institutions, with the first aim of providing reliable and affordable Internet connectivity to the research and education community. Over 500 sites (universities, schools, hospitals, research sites, and other tertiary institutions) countrywide are now connected to the RENU Internet network. With the overall goal of improving the quality of research and education in Uganda, RENU now provides other various services to support the digitization of education and research.

About Mesh++

Mesh++ is a Chicago-based IoT company incorporated in 2017 in the USA as manufacturers of solar-powered Wi-Fi routers aimed at solving the last mile connectivity issues with their motto as “Wi-Fi Anywhere”. The company began as a senior design project by Danny Gardner as he finalized his studies at the University of Illinois. Mesh++ gets its namesake from the concept of Internet mesh networking, a system of devices in a geographic area working dynamically to transmit the information as efficiently as possible between one another, then ultimately to a user. Mesh ++ has its headquarters in Chicago, and an outlet in Nairobi but has its technology spread out across many countries in Europe, the USA, and Asia. .