

Solar-Driven Connectivity Revolution

Ubiquitous Connectivity Everywhere!

Network Nexus in Nigeria with Public Wi-Fi



Background

In the dynamic landscape of Nigeria, the digital divide has been a persistent challenge, limiting widespread internet access for a significant portion of the population. Despite the increasing ownership of mobile devices, accessibility and affordability remain key barriers, particularly in rural areas and underserved urban communities.

For years, Nigeria has grappled with persistent power inadequacies, creating an enduring crisis in the country's energy sector. This prolonged challenge not only diminishes the quality of service but also acts as a significant barrier to expanding networks into rural areas. Moreover, it substantially elevates operational costs for network operators, amplifying the complexities of providing reliable services across the nation.

Recognizing the transformative potential of connectivity in fostering economic growth and societal development, the Nigerian government has introduced various initiatives to promote digital inclusion. However, the demand for reliable internet access continues to outstrip available infrastructure. In response to this pressing need, HFCL embarked on a pioneering endeavor, collaborating with local ISP's to implement a comprehensive public Wi-Fi solution.

This innovative endeavor strategically incorporated Smart Solar PoE Power Supply devices, designed to mitigate the impact of erratic power supply on the Access Network, ensuring prolonged operational continuity.

Together the aim was to create accessible Wi-Fi hotspots strategically positioned in high-traffic locations such as marketplaces, educational institutions, public parks, and transportation hubs. This deployment aimed to bridge the connectivity gap by leveraging scalable technology tailored to the unique characteristics of each area, offering seamless and ubiquitous internet access to communities where traditional connectivity options were limited.

In February 2021, Nigeria's mobile internet cost averaged 88 U.S. cents per gigabyte, placing the country 43rd among 230 nations in terms of mobile data pricing, spanning from the least to the most expensive globally.¹

Access to consistent power in Nigeria is below 50% for the population. The majority of households and businesses resort to alternative power sources like generators and inverters due to the unreliability of the national grid.²



Overview

Nigeria, known as Africa's largest oil producer, faces formidable challenges due to its poor internet infrastructure. The country grapples with the demanding task of building a robust connectivity network, complicated by challenging geography. Amidst this backdrop, the demand for internet access for e-commerce, education, and communication surged, highlighting the pressing need for solutions. In a landscape where reliable internet access remains a pressing need, the deployment of public Wi-Fi solutions in Nigeria stands as a pivotal step towards bridging the digital gap.

Plagued by the challenges of erratic power supply, the quest for reliable internet infrastructure takes on an added layer of complexity. The traditional modes of accessing Wi-Fi networks falter in the face of inconsistent electricity, amplifying the pressing need for innovation. Recognizing this hurdle, the demand for a solution capable of delivering uninterrupted connectivity, irrespective of conventional power sources, became paramount. The deployment of public Wi-Fi solutions in Nigeria emerged as a response to escalating demands for e-commerce, education, and communication. This pivotal step called for innovation, seeking a solar-powered solution capable of providing sustained power to the Access Network, ensuring seamless connectivity despite the challenges posed by Nigeria's unreliable power infrastructure.

Internet users in Nigeria reach 109 million, constituting approximately 51% of the population's internet penetration rate.³

In the latest Digital Quality of Life Index (DQL), Nigeria's global ranking fell to 88th place, marking a two-place drop from the previous year.⁴

Through our deployment of public Wi-Fi and Smart Solar PoE solutions in Nigeria, we've tackled power challenges head-on. Our strategic approach ensured uninterrupted internet access, bridging connectivity gaps and optimizing network performance. Coupled with a focus on sustainable solutions, this solution supports reliable connectivity, transforming the digital landscape for enhanced socio-economic growth.

Suneet Saxena
(Senior VP, Sales & Business Development)

Challenge

The primary impediment in providing seamless Wi-Fi connectivity was Nigeria's persistent erratic power supply. This instability hindered network expansion into rural areas and increased operational costs for network operators. The unreliability of electricity hampers the establishment of a robust connectivity network crucial for meeting escalating demands in e-commerce, education, and communication sectors. Limited backhaul options further compound this issue, creating a pressing need for innovative solutions to bridge the digital gap and stimulate socio-economic growth within the nation.

Solution

HFCL strategically deployed a network of indoor and outdoor Wi-Fi Access Points across targeted locations within Nigeria. These access points were positioned in high-traffic areas. The deployment of Indoor Access Points ensured reliable connectivity within confined areas. Meanwhile, Outdoor Access Points were tailored to withstand harsh environmental conditions, providing seamless connectivity in open spaces despite challenging weather.

In addressing the challenges posed by erratic power supply, we integrated Smart Solar PoE Power Supply Devices within the network infrastructure. It operated on the principle of SMPS (Switched Mode Power Supply), converting solar and AC mains input into a constant 48V DC output. It featured a built-in LiFePO4 battery, offering 12 hours of backup for POE equipment, thereby ensuring uninterrupted connectivity even during power outages.

This innovative approach not only ensured consistent operation of the Wi-Fi Access Points but also aligned with environmental sustainability goals, reducing dependency on conventional power sources and contributing to a greener, more resilient network infrastructure. It was more like a clean energy power solution while simultaneously delivering free internet access.

Outdoor Wi-Fi

Wi-Fi 6 Access Point



Indoor Wi-Fi

Wi-Fi 6 Access Point



Smart Power Supply

Solar PoE Power Supply: ILIOS 2000

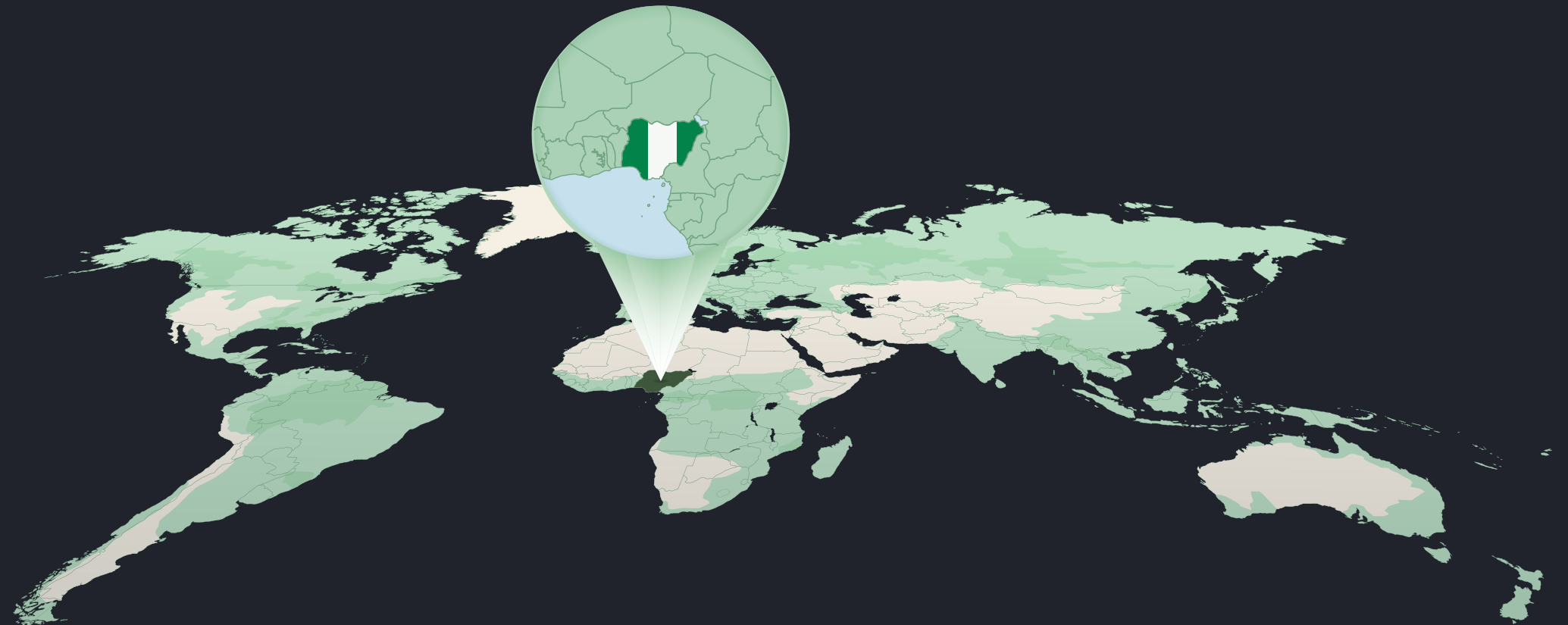


Result

- 01** The deployment of indoor and outdoor Wi-Fi Access Points significantly expanded connectivity reach across targeted locations in Nigeria, bridging the gap for communities with limited connectivity options.
- 02** Despite initial concerns about data costs being prohibitive, the increased availability of public Wi-Fi solutions facilitated greater access to information for individuals who previously found data expenses too burdensome.
- 03** By providing equitable access to information and online resources, these solutions played a crucial role in reducing disparities and fostering digital inclusion among diverse socioeconomic groups, thereby narrowing the divide in information accessibility.
- 04** Integration of Smart Solar PoE power supply devices fortified network stability, mitigating disruptions caused by erratic power supply. Incorporation of solar solution based advanced PoE devices aligned with environmental sustainability goals, reducing dependency on conventional power sources.
- 05** The seamless integration of solutions resulted in a frictionless user experience, eliminating connectivity barriers and streamlining access to internet services. The deployed solutions played a pivotal role in enhancing socio-economic opportunities by providing reliable and accessible internet access for e-commerce, education, and communication.

Conclusion

The deployed public Wi-Fi solution in Nigeria revolutionized connectivity across diverse locations, ensuring seamless access and uninterrupted connectivity for users. By strategically integrating Smart Solar PoE power supply devices, the deployment of public Wi-Fi in Nigeria overcame the persistent hurdle posed by unreliable power sources. This resilient design ensured uninterrupted connectivity despite power interruptions, democratizing internet access and addressing affordability concerns. This comprehensive solution not only optimized network performance but also ushered in a new era of digital inclusion, reducing disparities in information accessibility across socio-economic strata. Overall, this transformative deployment signifies a monumental leap in Nigeria's connectivity landscape, facilitating efficient, secure, and widespread internet access crucial for empowering communities and driving socio-economic progress.



Deployment Images



References

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