veea ✕ LIBERTY LATIN AMERICA

A Novel Approach to Bridging the Digital Divide in Tanara Chepo, Panama

Ciudad Tanara is a planned community in the Chepo district of Panama located 26 miles (42 km) from Tucumen International Airport to the east of Panama City.

The community did not have broadband connectivity and remained largely unserved because the traditional fixed or mobile network service delivery model did not scale economically in these neighborhoods. As a result, children in the community were unable to access online educational content and adults were largely unable to participate in today's digital economy.

A few factors contributed to connectivity being non-viable for Tanara Chepo:

- Costs associated with network infrastructure to the home Customer Premise Equipment (CPE) resulted in negative ROI.
- A significant population in this community was unbanked which made critical to leverage the existing cash-based sales channels that is not tied to a physical location.
- In certain instances, there was no fixed home address to deliver service.
- The community preferred an on-demand subscription model where they could turn service on and off to manage their budgets a day workers.

Veea partnered with **CableLabs**, the leading innovation and R&D lab for the cable industry, and **Liberty Latin America**, a leading communications company operating in over 20 countries across Latin America and the Caribbean, to bring Wi-Fi based home broadband service access to Tanara Chepo. In order to address the digital divide, three key elements had to be addressed: accessibility of the service, cost of the service, and adoption of the service. **In a six-week period**, Veea and Liberty Latin America successfully deployed the first proof-of-concept. They delivered internet service directly to a device or group of devices without the need for an in-home deployed CPE or requiring a fixed household address for broadband service delivery.

The VeeaHub Connectivity Solution

The Veea networking solution enabled Liberty Latin America to deploy internet access without in and out of home network infrastructure or CPE. Unlike hotspot or captive portal solutions, together they provide a complete home network that works with all Wi-Fi devices - including smart TVs, IoT, and home assistant devices.

Project Overview

- **Customer:**
  Liberty Latin America

- **Solution:**
  VeeaHubs

- **Outcomes:**
  - Broadband connectivity without CPE for streaming news, entertainment, and educational content
  - Connectivity delivered directly through the consumer end devices
  - Subscribers have the ability to self-manage their services

Intelligently Connected™

In Tanara Chepo, the houses were grouped along a street with three outdoor access points installed on existing utility poles connected to a Gigabit Passive Optical Network (GPON) terminal. The service was delivered through external access points — VeeaHubs – mounted to the utility poles with the subscriber's devices connected directly to these access points. The access points became the access edge for indoor service with eight homes per access point. These VeeaHubs installed on the utility poles increased network efficiency, reliability, and scalability while optimizing operational costs with efficient data processing at the edge.

The solution is modeled after network components found in a mobile network. A controller provides the logic and policy management. An agent sits in the VeeaHubs that performs the policy enforcement and manages security of all the device connections. This architecture also enables alternate deployment models utilizing edge software defined Wi-Fi access points that provide on-demand virtualized home gateways to the community. It allows operators like Liberty Latin America to customize the delivery of services such as bandwidth, latency, security and other features — per Wi-Fi-enabled device — and to provide a complete home network experience without the need for a CPE, wires, or truck rolls for each subscriber.

Key functionalities include:

- Service to each subscriber was provided directly over Wi-Fi without the need to run any wiring to the subscriber's home.
- The subscriber's connectivity experience resembled a traditional home Wi-Fi experience where they can connect any device including smart TVs, printers, casting devices, tablets, Chromebooks, etc. and discovery and communicate amongst them.
- The subscriber was able to connect any standard Wi-Fi enabled device without having to perform any special procedure on those devices (i.e no captive portal interactions, no MAC address registration, no custom software). The only interaction required on the device is to select the service set identifier (SSID) and enter the Wi-Fi passphrase.
- Liberty Latin America, as the service provider, has the capability to apply rate limits (data rates) by subscriber independently, with the option to provide different service tiers per subscriber.
- The service provider can choose to add extenders for improved indoor coverage (with Wi-Fi as a backhaul from the extender to the outdoor VeeaHub).
- The service provider may use any backhaul technology including standard FTTH/xPON from the APs/shared-CPEs.
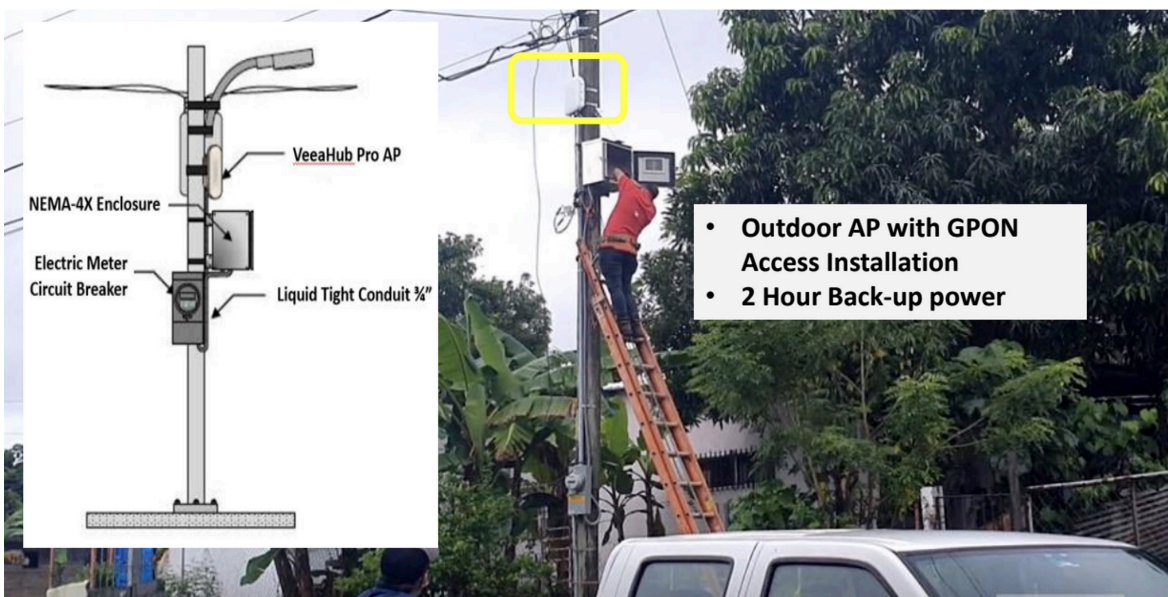
Secure and Easy Subscriber Onboarding

As part of the onboarding process, Liberty Latin America provides each device a unique passphrase which is used to give the device access and robustly identify the device within an account structure self-activated by the customer. With a mobile app, subscribers add a new device to their service and then the app provides an SSID and passphrase for the device which the subscriber enters into the device. When the new device attempts to authenticate with the VeeaHub access point, the VeeaHub performs the necessary cryptographic logic to determine which passphrase was provided by the device. The device completes authentication against the Liberty Latin America backoffice pre-paid payment platform and the AP associates the Wi-Fi session with the device. The VeeaHub signals all other APs of the new device to enable interconnects and roaming.

All access points in the mesh offer identical services, so a subscriber can seamlessly connect to any access point in the group and move between different access points within the group at any time. The access point mesh acts as a single large access point covering the entire area with a single SSID. The Veea solution enables a large number of access points to form a group and cover a larger area like a neighborhood or school campus.

Connected Community: A New Era for Tanara Chepo

The entire service experience — from activation to device management to billing and payment — was simplified to offer a familiar-seeming experience to the subscriber, in a comparable fashion to Liberty's pre-paid mobile service. In Tanara Chepo, most subscribers were accustomed to activating and managing their prepaid mobile plans using prepaid vouchers that they purchased from local stores. The Veea-Liberty solution allowed people to buy multiple time-based scratch cards and have multiple devices on that card.

Veea and Liberty Latin America leveraged the existing voucher-based pre-paid billing system and integrated it with a mobile with single-sign-on to other Liberty digital services. This allowed the subscribers to use the same pre-paid vouchers to either renew their cellular plans or activate their Wi-Fi based home broadband service plan.

- Subscribers use a mobile app that allows them to self-manage their services - creation of a new account, redeeming vouchers, service activation, adding/managing devices and their credentials.
- Subscribers are able to self-manage their subscription to choose how long they would like their service enabled and to suspend service if they do not need it on a given day.
- Subscribers can renew their subscription as and when needed.

With the Veea network, all of a subscriber's devices can "talk" to each other which allows subscribers to stream content from a mobile device, laptop, or tablet to a television, for both entertainment and learning purposes. In fact, the most used app in the Tanara Chepo community has become YouTube, for accessing educational content for children.

Learn More About Digital Inclusion Solutions from Veea

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