VocalTec

Adesemi Nigeria Offers Prepaid Calling Services using VocalTec Platform over Wireless Infrastructure

Using VoIP to Increase Teledensity in Emerging Markets

Case Study

Adesemi Nigeria Ltd. is a leading provider of communications solutions serving 13 states in southern Nigeria

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Contents

Introduction

Nigeria is Africa's most populous country, however the vast majority of its 130 million inhabitants do not have access to a telephone. And those fortunate enough to have a telephone must cope with inferior service and exorbitant prices, as dictated by the incumbent and former monopoly fixed-line carrier NITEL. After a prolonged telecom deregulation process, a number of competitive fixed line and mobile service providers, such as Adesemi Nigeria Ltd. (Adesemi), have begun to offer economical local and long distance services to the "phone-starved" Nigeria public.

VocalTec's implementation of a prepaid, packet-based multi-service platform for Adesemi, as described in this case study, shows the strength of cost-effective, quick-to-deploy packet-based solutions for carriers wishing to generate new revenue streams through the provision of basic telephony and data services to areas with very low teledensity.

Background

Nigerian Market

With a growing domestic market of over 130 million people (the biggest in Africa), a prominent role as a trading hub in West Africa and beyond, and one of the least developed telecommunication networks on the continent, Nigeria is a country of potentially vast opportunities in the communications sector.

NITEL's current fixed line network does not adequately address the needs of the expanding business sector or demand in the residential sector. Out of some 700,000 lines installed, only 492,000 are operational – the vast majority of them concentrated in a few major cities.

Nigeria's teledensity is among the poorest in the world, estimated in 2001 at 0.38 telephones per 100 inhabitants according to analyst reports.

The licensing of three GSM operators in August 2001 was a watershed event for the Nigerian telecom industry, successfully launching Nigeria into the digital world.

In May 2002, the Nigeria Communications Commission, the country's regulatory body, granted licenses to 13 private companies to operate fixed wireless access services. Shortly thereafter, it endorsed Globalcom as the second national operator (SNO), alongside several regional private telephone operators (PTOs).

The onset of competition has also led NITEL to take steps to modernize and upgrade its own network. It is in the midst of implementing of a fiber optic backbone and has announced plans to reach 3 million lines in 2003 and 8 million lines by 2008.

Adesemi Nigeria Business Profile

Adesemi Nigeria Limited is a leading communication solution company. As future leader in the telecom and Internet industry in Nigeria, its products provide enormous revenue generating opportunities for other players in the industry. Adesemi's customer base is spread over 13 states of Southern Nigeria.

Adesemi's various business divisions offer value added services in the provision of Internet access and online services, VPN and VoIP services, payphone, and calling card services. It also has numerous other products which are shared according to product divisions such as cyber cafe franchise, customized software design, development and sale, design and development of e-commerce solutions and rich content information etc.

Adesemi's strategy is to provide high-quality voice and data services at reasonable prices to the Nigerian public and to corporate customers. Branded by Adesemi's Komtone division as Callpoint™, VocalTec's VoIP platform is being used to support CyberCafes and Public Pay Phone services in densely populated urban areas. At a later stage, Adesemi plans to expand these services to all of Nigeria including remote (rural) areas.

Business Challenge and Requirements

To support its business model, Adesemi sought a solution that would enable it to reach the large masses of the population, mainly in urban areas, that do not have basic telephone service.

Adesemi, like most competitive carriers in emerging economies, required a low budget solution enabling the provision of basic telephony service in the shortest possible timeframe. The solution had to be capable of overcoming lack of fixed line infrastructure and physical obstacles (where applicable), as well as facilitating the addition of new advanced services over time.

Adesemi chose a solution based on VoIP, integrated with a Wireless Local Loop (WLL) and VSAT (satellite) infrastructure. VoIP technology, due to its scalability, cost-effectiveness and standards-based interoperability, was a highly suitable solution for the needs of the Nigerian market.

Specifically, the VocalTec solution offered:

- Field-proven prepaid platform with real-time billing and centralized management

- A flexible architecture that enabled Adesemi to support multiple services on the same platform

- Unlimited scalability allowing Adesemi to start small with low entry costs and grow over time

- Rapid deployment capabilities to ensure fast return on investment (RoI)

- Standards-based interoperability with WLL and VSAT vendors to avoid vendor "lock" and enhances service flexibility

Meeting Adesemi's Requirements

VocalTec was able to provide Adesemi with a field-proven multi-service platform supporting local, national long distance and international prepaid calling card voice services over a cost-effective packet voice architecture. VocalTec provides a scalable and granular VoIP solution, which allows Adesemi to **start small with low entry costs** and grow over time.

VocalTec's Voice over IP (VoIP) technology, integrated with Wireless Local Loop (WLL) and satellite remote gateways at the transport layer, provides Adesemi with a **complete solution** by providing the billing (postpaid and prepaid), management and provisioning functions. The VoIP/WLL/satellite solution matches the needs of cybercafes and telecenters in urban areas, as well as the needs of outlying villages, for voice connectivity as well as access to data networks (Internet) for e-mail, file transfer, electronic databases, government and community information systems, market and price information, etc.

> "*VocalTec's Internet-based solution is highly suited to the needs of the Nigerian market. This solution will enable us to achieve mass penetration in urban and remote areas without phones at minimal costs and in the quickest possible time frames. VocalTec is an important component in fulfilling our vision of offering voice and data services that will help to promote economic development throughout Nigeria.*"
>
> **Mr. Ndukwe Kalu, COO at Adesemi**

VocalTec's VoIP-based solution has enabled Adesemi to fully meet its business requirements:

- **Prepaid services** – Prepaid (calling card) services, such as those supported by VocalTec's VoIP platform, ensure the collection of revenues from random users. This platform provides central billing, management and provisioning (load card, card status, etc.) supported by Interactive Voice Response (IVR) functionality on the all gateways. The gateways generate CDRs in real-time and send them to a central VocalTec Gatekeeper, which interfaces with the billing system.

- **Centralized management and provisioning for equipment** - The centralized management capabilities provided as an integral part of VocalTec's complete solution are well adapted for overcoming the distance, physical terrain and infrastructure obstacles characteristic of the emerging Nigerian market.

- **Cost efficiencies resulting from IP infrastructure** – IP infrastructure allows bundling of voice and Internet access, which is a key to cost-efficient operations. Advanced voice compression and least-cost routing optimize bandwidth utilization and lower transport costs (particularly important when using satellite Uplink & Downlink with limited bandwidth).

- **Standard protocols** – VocalTec's proven VoIP architecture is standards-based, facilitating interoperability with other vendors/ports/services and avoiding dependency on one WLL/VSAT vendor. This allows Adesemi to generate revenues immediately (quick deployment) from VoIP traffic, resulting in fast ROI.

- **Quick deployment** - Using VoIP over the wireless backbone is much faster and less costly than digging ditches to lay fiber or cable. VocalTec completed the initial deployment at Adesemi in 2002 in only 6-8 weeks. Building a circuit-based TDM infrastructure requires a point-to-point connection between each last mile exchange, while each point requires its own power source for backup. Using VoIP over the wireless backbone, the most time-consuming portion is the antenna setup. Once the antenna is set up, the relevant equipment is installed in each location throughout the network. Both data and voice (VoIP) can be transmitted via the wireless IP backbone immediately.

- **Modularity and scalability** - VoIP provides a scalable and granular solution, enabling low entry costs and gradual growth. The cost of entering new markets, geographically and/or in terms of types of services, is significantly lower using packet-based networks than traditional circuit-switched networks.

- **Multiple services on a single platform** - VocalTec provides a complete solution that allows Adesemi to add enhanced VoIP-based services, such as Voice VPN at a later stage, with no hardware changes. Moreover, VocalTec's solution is based on standard protocols, giving maximum flexibility in implementing future services from multiple vendors.

VocalTec Solution Description

VocalTec's multi-service platform supports local, national long distance, and international prepaid calling card voice services over a cost-effective packet voice architecture. This is an excellent solution for countries in which most users do not have direct access to a telephone. VocalTec's solution supports phone-to-phone and fax-to-fax calling, while the same platform can also be used to support enhanced services, such as calling card and Voice VPN.

VocalTec provides Adesemi with a cost-effective, pre-paid/post-paid, centrally managed solution for VoIP calling over public or private networks. This solution provides full traditional calling card functionality over IP with superior proven voice quality. Adesemi can bypass the tolls and interconnection charges associated with circuit-switched networks, enjoy low-cost termination rates and expand its service destinations around the world via VocalTec-certified partners. Advanced features include real-time (prepaid) billing and a flexible IVR supporting multiple languages, currencies and call flows. Virtual dialing plans enable Adesemi to support incoming calls to Public Pay Phones.

Network Overview

VocalTec's solution is implemented for Adesemi as part of a multi-vendor network architecture, including WLL and VSAT solution providers. In this deployment, VocalTec's customer premise equipment (CPE) gateways interface WLL equipment provided by Wiman. It is possible to co-locate a WLL base station with a VSAT earth station, which communicates with the satellite.

The initial deployment at Adesemi, which took place in 2002, includes seven Points of Presence (POPs). VocalTec's carrier-class VGW2000 gateways are located in each POP for interfacing the incumbent local carrier, NITEL, and GSM network. VocalTec CPE gateways (VGW8) are deployed at the respective endpoints (CyberCafe, Public Pay Phone or corporate offices), each supporting up to 8 analog lines. The VGW8 can also be

configured to interface the corporate PBX. The POPs are connected to the endpoints via WLL technology. Long distance calls within Nigeria are transmitted between Adesemi's PoPs via satellite (VSAT). Connection to international networks is also supported by the VSAT network.

Network Topology

The installed VSAT/WLL network includes the following major components:

- VocalTec CPE gateways providing connection to the payphones (up to 4 or 8 analog ports per CPE) or PBX

- The WLL equipment to provide local wireless access (Wiman WLL base station and access equipment at cybercafes)

- The VSAT network to support interconnection between POPs (and NOC) and to connect to international networks

- Centralized network management, billing and PSTN connectivity based on VocalTec products (VGW2000, VNM100, VGK1000)

The figure below illustrates the network configuration, including the Network Operations Center (NOC) in Aba and one of the seven PoPs (in this example Lagos) connected to both the NOC and the CyberCafes in its area. Each of the PoPs is configured in the same manner. Note that each PoP as well as the NOC is connected to the local PSTN (NITEL) via the VGW2000 gateway.
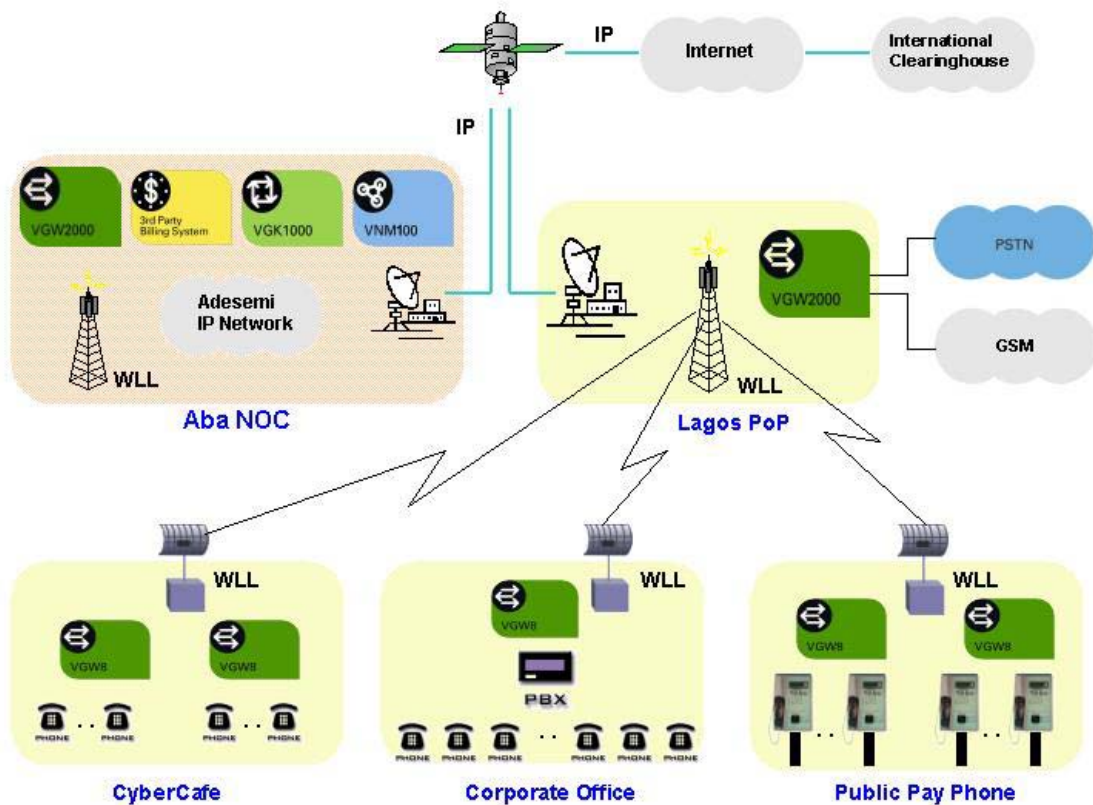
System Components

VGW2000 Gateway

VGW2000 is a high-density, carrier-class telephony gateway that links IP networks with the Public Switched Telephone Network (PSTN). This highly granular and scalable gateway supports from 2 to 16 E1/T1 trunks per box. VGW2000 utilizes an embedded operating system, ensuring enhanced reliability and high performance. This industry-standard gateway supports H.323 and is interoperable with 60% of revenue-generating VoIP ports worldwide.

VGW4/8 CPE Gateway

The VGW4/8 CPE gateway utilizes a rugged, outdoor embedded platform to ensure enhanced reliability and high performance. These gateways include a flexible, customizable multi-lingual Interactive Voice Response (IVR) to support advanced subscriber services, such as calling card. In addition, support for multiple telephony interface types and signaling protocols (e.g., SS7, PRI, E&M, analog) facilitates global deployments. Dynamic IP allocation (DHCP) and Network Address Translation (NAT) support simplify network management and configuration.

VGK1000 Gatekeeper

Serving as the intelligent hub of the IP telephony network, VGK1000 provides a carrier-grade platform for centralized call control, routing, addressing, security and accounting functions. VGK1000 enables service providers to set up a robust and secure Internet telephony service, suitable for large-scale public and corporate networks.

VNM100 Network Manager

VNM100 provides centralized remote configuration and monitoring of gatekeepers, VocalTec gateways and dialing plans and combines excellent provisioning capabilities with ease of use.

About VocalTec

VocalTec Communications Ltd. (VocalTec) is a leading telecom equipment provider offering packet voice solutions for carriers and service providers. As an innovator and provider of packetized telephony solutions since 1995, VocalTec offers a highly evolved revenue-generating product line to the market. With a customer base including the China Telecom PTAs, Deutsche Telekom, Marconi Portugal, Communication Authority of Thailand (CAT), and Data Access in India, our multi-service solutions are commercially deployed in more than 130 countries, powering 25% of the world's revenue-generating international VoIP minutes.

VocalTec's field-proven solutions support network packet tandem services including international and national long distance calling, exchange carrier services and rural telephony, as well as global hosted services including VoIP VPN, IP Centrex/Hosted PBX, conferencing, global call center and calling card services. Essentra™ is a carrier-grade, SIP-based softswitch architecture that integrates the benefits of SIP, MGCP, MEGACO/H.248 and H.323 technologies with complete PSTN/SS7 connectivity.

Learn more about our products and solutions at www.vocaltec.com.