

# Mexico sees its first village cellphone network

September 16 2013, by Mark Stevenson

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In this April 22, 2013 photo, two men use their cellphones while conducting small-scale tests for their town's local independent GSM network in San Juan Yojovi, Mexico. The communications revolution that swept the globe missed Zapotec villages in the mountains of southern Mexico, where making any sort of call meant trudging to a community telephone line and paying what could be a day's wages for a crackly five-minute conversation. In just six months, more than 720 residents have signed up to use the new system. Local calls made on off-the-shelf cellphones are free, and phoning relatives in Los Angeles costs just 20 centavos (1.5 cents) a minute. What's more, every subscriber has a distinct mobile number. (AP Photo/Agustine Sacha)

The communications revolution that swept the globe missed the Zapotec village of Talea de Castro high in the mountains of southern Mexico, where making any sort of call meant trudging to a community telephone line and paying what could be a day's wages for a crackly five-minute conversation.

All that has changed, thanks to an ingenious plan that backers hope can bring connections to thousands of other small, isolated villages around the world.

Using simple radio receivers, a laptop and relatively inexpensive Internet technologies, the people of the village have leapfrogged into the 21st century by setting up what amounts to their own mini-[telecom company](#)—one capable of handling 11 cellphone calls at a time at a small fraction of what they used to pay.

"This has been a project that has really worked in keeping people in touch. Before, people couldn't talk much because it cost so much," said Keyla Ramirez Cruz, a Talea resident who anchors a program on the community radio station and coordinates the new phone system.

Before it was set up, Talea's 2,500 residents would make their calls from the "caseta," a house or shop that has a land line and charges a per-minute fee. There was little privacy, and [international calls](#) cost more than a dollar a minute. It was even worse for [incoming calls](#), which required a runner to answer and tell townsfolk when someone was looking for them.

Now, hardly anyone in Talea uses the caseta.

In just six months, more than 720 residents have signed up to use the new system. Local calls made on off-the-shelf cellphones are free, and phoning relatives in Los Angeles costs just 20 centavos (1.5 cents) a

minute. What's more, every subscriber has a distinct mobile number.

The system uses a small antenna to capture calls with a software-controlled base radio, essentially a generic radio set that can operate more cheaply and simply and use less power because the software is now doing most of the work. Free and open-source software replace complex proprietary cellphone systems to receive, route and bill calls. Those programs are also designed to easily interface with Internet-based services such as Skype, linking the system to the outside world.



In this July 1, 2013 photo, a person holds up a cellular phone running on the TaleaGSM network in San Miguel Talea de Castro, Mexico. The communications revolution that swept the globe missed the Zapotec village of

Talea de Castro high in the mountains of southern Mexico, where making any sort of call meant trudging to a community telephone line and paying what could be a day's wages for a crackly five-minute conversation. All that has changed, thanks to an ingenious plan that backers hope can bring connections to thousands of other small, isolated villages around the world. (AP Photo/Agustine Sacha)

The system has had some hiccups, including poor reception in some of the community's outlying houses, occasional weather-related problems and momentary losses of Internet service. But it has generally worked well, and has proved so popular that the local assembly voted to impose a five-minute automatic cutoff to avoid saturating the lines.

"It's very convenient. The calls are good quality," said Alejandro Lopez Canseco, 21, a member of the town council.

The system was adopted following years of lobbying unsuccessfully for Mexican telecom companies to install cell service.

"They said our community was very small; they needed places with at least 5,000 inhabitants," resident Israel Hernandez said. "But in the mountains of Oaxaca, there aren't many communities of over 5,000."

Fed-up villagers held a traditional Indian assembly in March in Talea's town square, and residents voted to invest about 400,000 pesos (\$30,000) of municipal money in the tiny phone system, most of it for the antenna and radio base station. The system links to the Internet through a local wireless provider, sort of like a cellphone version of Skype or magicJack.

One nonprofit group backing the system, Rhizomatica, says it could be a model for other isolated indigenous villages around the world, where

some 700 million people lack affordable cell service.

"There have been a lot of communities that have been declared no-go zones by the companies, mainly because they can't make any money there. So the question is: How do you get these communities connected?" said Peter Bloom, a leader of Rhizomatica.

Many obstacles remain, including that large companies have bought up the rights to the best parts of the telecommunications spectrum. For the micro systems to work well, they often need to use part of the spectrum owned by somebody else.



In this July 2, 2013 photo, a small road winds through the mountains near San Miguel Talea de Castro, Mexico. Using simple radio receivers, a laptop and relatively inexpensive Internet technologies, the people of the village have leapfrogged into the 21st century by setting up what amounts to their own mini-telecom company - one capable of handling 11 cellphone calls at a time at a small fraction of what they used to pay. (AP Photo/Agustine Sacha)

"Some companies pay a lot of money for these licenses and they might feel threatened," said Kurtis Heimerl, who set up a similar village phone system in Indonesia this year.

But David Burgess, CEO of San Francisco-based Range Networks, which provided much of the technology for Talea's system, suggested large telecom companies could rent out unused bits of spectrum to towns, organizations or small operators who want to provide rural service. After all, regulators in many countries are pressuring telecom companies to provide more universal coverage in unserved regions.

"It gets the regulators off their back on universal service, it's a public relations move, it expands the network," Burgess said. "It allows them to get some revenue ... and it adds a bunch of new subscribers and encourages economic development."

Mexico's leading cellphone company, Telcel, said in a statement that it does provide service to 200,000 communities across Mexico, including some with less than 5,000 inhabitants. It said it was investing almost \$4 billion in a three-year period to improve its network and services in Mexico, though it did not address the Talea case.





In this April 8, 2013 photo, a mini-transmitter is connected to a computer while doing small-scale tests for a local GSM network in Santa Maria Lachixio, Mexico. Residents of this isolated community are following in the footsteps of a neighboring town in the mountains of Oaxaca state that are using a combination of radio base stations, open-source radio software, radio/cell interfaces and voice-over-internet to basically set up their own local cell phone company. (AP Photo/Agustine Sacha)

The system in Talea capitalizes on free and open-source software to receive, route and bill calls that can be downloaded from the Internet and run on a laptop. By sending calls over the internet, the town doesn't have to pay to connect with big commercial carriers, which charge to route each call.

Talea's "people are very happy because they no longer have to wait in line, or go out in the rain," Ramirez Cruz said.

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