

ETHIOPIA MINISTRY OF HEALTH



CASE STUDY

ASTERISK

OVERVIEW

In 2008, as a part of the US Global AIDS initiative, the U.S. government reauthorized \$15 billion from the President's Emergency Plan for AIDS Relief (PEPFAR). The goal of the initiative was building and better coordinating partnerships with other countries in preventing new infectious diseases and implementing accountability measures that focus on the sustainability of newly created health plans. The strategy focused on 15 African, Caribbean, and Asian countries, representing approximately half the world's infections. The Federal Ministry of Health of Ethiopia (FMHE) has been working under this initiative to provide a better communications solution for the people of Ethiopia.

FMHE wants to transform the current paper-based Integrated Disease Surveillance and Response (IDSR) system into a flexible and dynamic IP-based e-solution, driven by Asterisk.

Ethiopia's Ministry of Health Utilizes Asterisk to Improve Accountability and Sustainability of Health Information

Two representatives from FMHE have been leading the effort to transform the current paper-based Integrated Disease Surveillance and Response (IDSR) system in operation since 2006, into a flexible and dynamic IP-based e-solution, driven by Asterisk. A free, open source framework for building communications applications, Asterisk has become the world's most popular telephony software platform. Asterisk turns an ordinary computer into a communications server that can power IP PBX systems, VoIP gateways, conference servers, and a diverse selection of custom solutions. Used by small to large businesses, call centers, and government agencies like the FMHE, there are more than one million highly diverse Asterisk-based communications systems in use, in more than 170 countries.

In the first phase, Asterisk was installed on two servers and Digium analog cards so that Ethiopia's existing analog system was compatible with the IP-based system.

Asterisk Provides A Nationwide Solution

Dr. Wuleta Lemma, Research Assistant Professor at the School of Public Health and Tropical Medicine at Tulane University, and Hiwot Sidilil, IT Director of Innovation with the FMHE identified Asterisk as the most flexible solution and have been heading the effort to complete the project. The plan is to use two Digium Asterisk servers at the FMHE in Addis Ababa as fully web-based telecommunications appliances that will provide FMHE and the people of Ethiopia with numerous benefits.

The FMHE, working through Sidilil and Dr. Lemma, who is supported by Tulane University, have contracted with Network Services and Support, Inc., a Digium preferred partner, to program and configure Asterisk in the two units. "There are actually two phases to the project," says Scott Cechovic, president of Network Services. "In the first phase, we installed Asterisk on the two servers and configured the Digium analog cards so that Ethiopia's existing analog system is compatible with our IP-based system. The Digium analog cards connect Asterisk with analog phone lines, fax machines, and other devices, and make the system compatible with mobile devices such as smartphones and tablets."

"We did look at other options before making our final decision to use Asterisk," Sidilil says. "But Asterisk has a great reputation all over the world and is well-known in many African nations including Ethiopia." In the second phase of the project, Network Services and Support will train Sidilil and his staff on how to install and implement the innovative new system once he gets the Asterisk servers back to Addis Ababa.

Asterisk Rises to Global Healthcare Challenges

First, Asterisk will manage a comprehensive disease-tracking database throughout Ethiopia and other African nations, making the information accessible to global healthcare workers and members of the Centers for Disease Control (CDC) worldwide. It will improve the sharing of vital health information and disease outbreaks throughout their country and others.

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The current analog telephone and paper system is only able to prioritize about 40 diseases, syndromes, and conditions targeted by the International Health Regulations (IHR), and has little ability to recognize possible new findings. These disorders, which include pandemic influenza, cholera, polio, meningitis, viral hemorrhagic fevers, and other acute disease outbreaks, are largely preventable with early detection. Sadly, the inefficiency of the manual system results in untimely delays in updating the information; slow analysis of the trends; delays in responding to the results; and limitations in accessing the laboratory database. These failures often prevent an effective response to disease-related outbreaks leading to illness, death, and disability in African countries.

Currently, a health worker may call into the system and find, for instance, that 12 new cases of influenza have been documented in the city of Tiya over the past couple of weeks; but the process for documenting that information requires a pad of paper and a pencil to write it down. In order to assess the dangers posed by that data and triangulating the outbreak requires a calculator.

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In the FMHE implementation, Asterisk will provide the systems throughout Africa with the capability of easily calling into the comprehensive IDSR system and reporting any detected disease outbreaks. Those findings are entered immediately into the database, which is accessible to all healthcare workers, as well as the CDC, by calling into the system and accessing it via web-interface. Any calculations or compilation of the data is performed by applications integrated into Asterisk, and available via printed reports.

Medical professionals can analyze the findings by investigating where the outbreaks are taking place, what may be causing it, and monitoring the possibility of contagion, so they can respond with the proper level of preparedness. The CDC plays a leading role in designing, developing, implementing, monitoring, and evaluating IDSR data, but their job is simplified significantly by the internet-based reporting capabilities available with Asterisk.

The entire population of Ethiopia will benefit from the Asterisk-driven telecommunications system. Depending upon whether the caller is adding information, retrieving information, or attempting to access and analyze existing information, the auto-attendants and IVRs are configured to ask the caller a series of relevant questions to be answered and recorded. That information is then available for download so that health workers can quickly get the government's attention if there is an emergency or a need to stop or contain dangerous outbreaks or epidemics.

According to Dr. Lemma, who is also Director of the Center for Global Health Equity and the Country Director of the Tulane Ethiopia Project, "At the Ministry of Public Health, we were looking for a system that would give us greater capacity for solving health issues throughout Ethiopia. We wanted to be able to provide more quality data, and to offer more accessibility to the information," she says. "We see a lot of possibility with this Asterisk solution because it is so flexible and offers us long-term sustainability."



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