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Delivering Edubuntu systems to Ghana

ROAD TRIP

In issue 13, we interviewed O'Reilly Open Source Award recipient Elizabeth "Lyz" Krumbach [1]. Recently Lyz went to Ghana to help deploy donated Edubuntu computers in area schools. She shares what her team learned from the experience. **BY ELIZABETH "LYZ" KRUMBACH**

In October of 2012, I was part of an exciting collaboration between Africa ICT Right [2], an NGO in Ghana, and Computer Reach [3], an NGO in the United States, to begin a deployment of 100 computers running Edubuntu to community centers and schools in Ghana (West Africa).

Africa ICT Right aims to "uplift rural communities in Ghana by providing educational and technological resources and training to empower the youth to improve their lives and also bridge the digital gap." Computer Reach describes itself as a technology outreach mission that primarily serves the Pittsburgh, Pennsylvania, area. However, the group's activities have also included hurricane-hit areas in the United States and international efforts in Malaysia, Africa, El Salvador, and Nicaragua. These two organizations recently teamed up as Computer Reach was able to offer 100 Pentium 4

systems with at least 1G of RAM running Edubuntu, an Ubuntu derivate packed with educational programs, for deployment in Ghana by Africa ICT Right with funding from donors in the United States. The organizations agreed to meet on the ground in Ghana to begin deploying the 100 systems, with plans sketched out for future, larger deployments.

The collaboration began when Africa ICT Right Executive Director Daniel Kwaku Ganyoame reached out to Computer Reach Executive Director Dave Sevick to work together to ship the computers to Ghana. Installation of PCs for this deployment began in the spring of 2012, to prepare the systems to ship in August so that they'd arrive in Ghana by early October.

On the Ground in Ghana
On October 10, a US team (Dave Sevick; Nancy Latimer, Education Director for

Computer Reach; Beth Lynn Eicher, FREE Software Director of Computer Reach; and me, a Director at Partimus [4]) left for Ghana.

Over the next two weeks, our advance team met in Ghana with key leaders and representatives from Google, Ashesi University College, Ghana-India Kofi Annan Centre of Excellence in ICT, USAID, the Accra Linux Users Group, the City Waste e-waste recycling center, and other organizations to develop relationships and strengthen the success of this initiative (Figure 1). Beth Lynn Eicher also attended the Free Software and Open Source Foundation for Africa (FOSSFA) meeting, which happened to be occurring while we were there.

Our trip began with a visit to the Street Academy in Accra [5], which had received a deployment of five Edubuntu [6] laptops in March 2012. We met with students and teachers of this school,

Figure 1: Meeting at Google office in Accra, Ghana. From left: Beth Lynn Eicher, Dave Sevick, Estelle Akofio-Sowah (Google), Elizabeth Krumbach, Nancy Latimer, Daniel Kwaku Ganyaome.

which serves less fortunate children. Over the next few days, we met one-on-one with several teachers to review Edubuntu's educational applications and games, and some of its basic administrative tasks (Figure 2).

Next, we set off to visit the Evangelical Presbyterian Church Schools in Ho, a town in southeast Ghana, to check on another previous deployment of Edubuntu laptops. We met with school leaders, and then technology teachers joined us on Saturday morning for training.

Nancy Latimer and I developed training for the schools on the ground in Ghana. Although the training can be adapted for other deployments, we catered it to the needs of the schools we were visiting and the standard Ghanaian curriculum. Training continued during our final days in Ghana with volunteers from Africa ICT Right, who will continue the training as the 100 systems begin being deployed across Ghana.

During our stay in Ghana, we also visited schools that currently do not have the infrastructure to support computers. ICT (information and communications technology) is a required part of the curriculum in Ghana, so schools that don't have access to computers can teach students by explaining computer components in class and using illustrated text books (Figure 3).

Remember those 100 systems we shipped to Ghana in August? They ended up being stuck at the port with some customs issues, but we eventually got them out of the port and into our warehouse in Ghana two days before the US team left Ghana. Because of the shipment delay, we only had enough time for a single deployment, leaving the rest of the deployments to the volunteers at Africa ICT Right, remotely assisted by Computer Reach.

Lessons Learned

Our team learned several lessons about deploying *buntu systems in developing countries, such as Ghana:

- Explaining why we are committed to free and open source software (FOSS) is vital, as is having a solid agreement in place to make sure the systems we deploy keep this software installed. The cost of the software has little meaning in developing countries because copying proprietary software is common and intellectual property laws are rarely enforced. The benefits of FOSS must be explained in terms of security, lack of viruses, easy access to huge repositories of high-quality software, and the benefits of teaching students computer literacy instead of teaching them how to use specific software brands. Without explaining why we chose Edubuntu and having this agreement in place, computer users might be tempted to install proprietary software (such as the Windows operating system), which we saw happen to some systems in the field.

- Application and system training is essential. In addition to understanding the value of FOSS, teachers must recognize the value of the educational software and learn how to incorporate it into their ITC curriculum, as well as science, math, geography, and other lessons. Nancy spent a great deal of time going through the games shipped with Edubuntu, so teachers would have a grade level, subject target, and plan for using them in the classroom (Figure 4). I put together desktop administration documentation, which helps get teachers and administrators familiar with the core basics. We also began shipping a collection of manuals, including some full manuals for OpenOffice and an edition of the Ubuntu Manual.

- Always have a Plan B (which may even turn out to be better than Plan

Figure 2: Nancy Latimer trained teachers at the Street Academy in Accra.

Figure 3: A teacher uses a chalkboard in the ITC class for students at Rightway International, which does not have computers yet.

A).We quickly learned that in Ghana things like time, deadlines, and schedules largely have less value than they do in the United States. Our plan initially had been to complete the deployment of the 100 systems, but the unexpected shipping problems made this goal impossible. Instead, the team scrambled to create a backup plan to visit existing deployments, to spend time on training development, and to solidify local relationships. In the end, team members generally agreed that Plan B allowed us to strengthen the overall deployment. By spending time on existing deployments, we have new appreciation for the importance of system training.

• Have an end-of-life plan in place for the hardware. This may be one of the less obvious lessons, but Computer Reach is dedicated to this goal for all deployments. Many developing countries, particularly those in southern Asia and increasingly ones in Africa, have serious problems with being overwhelmed by e-waste that is polluting their cities and potentially harmful to people who live and work nearby. We do not want machines being used in this deployment to add to the problem. We partnered with the City Waste Group e-waste recycling center, a confirmed eco-friendly e-waste recycler, which partners with raw materials buyers and firms in Europe who can properly process some of the more difficult and dangerous hardware. City Waste Group also helps train workers who collect scrap from the e-waste dumps on how to handle the materials to protect their health, and the group works to help nearby children attend school instead of working at dump sites.

Conclusion

Serving the technology needs of developing countries comes with many obstacles, including financial, logistical, technological, and social. The lessons learned from the challenges faced by our team trip to Ghana will serve these organizations well as the collaboration continues in the future. Volunteers from Computer Reach will stay in close contact with Africa ICT Right and other contacts in Ghana to assist with deployments remotely and arrange future hardware shipments.

Plans are in the works to send another team to Ghana in early 2013 to assist with another computer shipment, to provide ground support, and to serve more schools. ∎

Figure 4: Nancy Latimer leads a training session for teachers from the Evangelical Presbyterian Church Schools in Ho.

INFO

[1] Interview with Elizabeth Krumbach: *http://www.ubuntu-user.com/ Magazine/Archive/2012/14/Interview -with-Elizabeth-Krumbach*

[2] Africa ICT Right: *http://www.africaictright.org*

[3] Computer Reach: *http://computereach.com*

[4] Partimus: *http://partimus.org*

[5] Street Academy in Accra: *http://thestreetacademy.webs.com*

[6] Edubuntu: *http://www.edubuntu.org/*