

DadaabNet Project Report

March 2014



An unprecedented drought and famine across Somalia, coupled with the long-standing civil war, resulted in a massive influx of refugees to Dadaab¹, Kenya during the summer of 2011 and throughout 2012. The refugee camp's population spiked from 300,000 to well over 500,000, resulting in a need for humanitarian organizations to quickly ramp up operations. Given that Dadaab grew to over five times the number of refugees it was originally designed for, there were infrastructure inadequacies and essential service capacity and logistical challenges — all of which could be offset by better connectivity.

Recognizing this critical need, over 16 organizations came together behind an initiative to deliver high-speed, low-cost Internet access via an innovative and replicable network model. With the successful implementation of DadaabNet, aid agencies in Dadaab were provided with the reliable access needed to improve operations and save lives. The high-speed local area network



has enabled shared resources, collaborative communications and response efforts, and an array of workforce and community development programs. Access to DadaabNet has also been extended to refugee youth, presenting an invaluable empowering opportunity for education and vocational training, and, for some, a first chance to connect to the outside world. It may soon provide many with their first access to health care through Tele-Health technologies and virtual access to Doctors.

Project Overview

In August 2011, USAID asked NetHope's Global Broadband and Innovations team to develop a connectivity solution to address the immediate

"When disaster strikes, the immediate needs are obvious: food, water, shelter and medical supplies, but none of these necessities reach survivors without a robust communication network to enable relief workers to save lives."
Lynda Kigera, Save the Children

¹Dadaab is situated in a remote arid region of eastern Kenya close to the Somalia border in Garissa County.

needs and attract local service providers to ensure sustainability and scalability. Utilizing funding from Cisco, USAID, Microsoft and others, NetHope and networking partners Cisco Systems and Inveneo were able to develop an innovative approach to bring affordable and reliable Internet connectivity to Dadaab and build an infrastructure network throughout the refugee camp.

As thousands of refugees crossed the border from Somalia, the number of response agencies and humanitarian workers increased, expanding inter-organizational information sharing and scalability requirements. Bringing broadband improvements to Dadaab started effectively with early engagement of the local stakeholder community to co-create an innovative network architecture, business model and support plan. Developing trusted relationships and delivering solution-specific practical training and localized engagements in the initial network implementation were key elements to ensure successful service introductions and ongoing operations. Kenyan telecommunications companies Orange and Safaricom, with support from local technology experts Dimension Data and Setright, were enlisted as full partners early in the process and invited to participate in engineering and business peer review. Preferred reduced pricing and additional capacity based on demand aggregation and projections were negotiated prior to the onset of the project.

Critical Success Factor 1: Prior to solutions development, requirements were gathered in Dadaab from 17 NGO/UN agencies. A connectivity

assessment and proposal was documented and shared. NetHope members and technology partners were engaged up-front to conduct peer review and recommendations. The following impacts are the results of the implementation of the findings.

Major Impacts of DadaabNet

- 1. A High-Speed Local Network to Support Relief Operations.** Established competitive and reliable shared terrestrial connectivity for the humanitarian organizations and community. Connectivity savings will be measured in the hundreds of thousands in the first two years as agencies transfer their business operations from VSAT to terrestrial.
- 2. Support for Refugee Community and Youth.** Connected five times the number of locations for beneficiaries/refugees than originally committed in addition to entire NGO community for operations & joint collaborative communications. Hundreds of youth have gained access to Internet based training and resources in the first few months; this number is expected to increase into the tens of thousands in the next 12 months and to exceed a hundred thousand in year two.
- 3. Connectivity Savings.** Twenty (20) times reduction in recurring WAN connectivity expense than previously available (VSAT vs. terrestrial pricing), with greater reliability, redundancy and resiliency.
- 4. A Sustainable Network with an Indefinite Lifeline.** Enabled local ownership, support and

Many view the implementation of DadaabNet as the first bridge to creating a more peaceful environment in Dadaab.

“Without having this sort of connectivity among the NGOs, among the youth, we could not make it where we are today...I’d love my children to have peace... peace and a promising life.”
Abdikadir Farah, Dadaab Resident

future development of the Dadaab services. This capacity was developed by pre-qualifying and training local agency ICT staff to provide first-tier support and diagnostics; improving response time to service needs; and increasing the ICT talents of the local workforce.

5. **A Reliable, Scalable Voice and Video Solution.**

Established a reliable data voice and video solution for the humanitarian agencies and the community. NetHope worked with Cisco and Inveneo to ensure the scalability and replicability for other rural areas and refugee camps.

6. **Educational Opportunities to Refugees.**

Through partnership with Norwegian Refugee Council Youth Education Pack, five centers were connected that offer high school and college level diplomas through NRC online programs. This was the first step in the camps' history to connect refugees to the skills and knowledge needed for professional development and growth.

Dadaab Phase 1

Humanitarian compounds and offices are clustered within a 2km radius of each other in a secured compound in Dadaab. An opportunity to establish shared connectivity services and collaborative support for the humanitarian community based on proximity was realized very early in the requirements gathering phase. The NGO and UN agencies operating in Dadaab asserted that the key to a well-coordinated response to the massive influx of refugees was access to timely

and relevant information, supply line logistics and situation/security reports. If connectivity is limited, then information sharing is also limited and collaboration and responsiveness are impeded.

The primary goals for Phase 1 were to:

1. Increase available reliable, affordable terrestrial connectivity and choices of providers.
2. Establish a high-speed reliable local collaboration network (DadaabNet).

With an existing local tower infrastructure and the cluster of humanitarian organizations, it was easy to understand how a shared high-speed local network could be highly and quickly utilized amongst the various agencies involved.

In March 2012, a high-speed local area network, DadaabNet, along with integrated affordable terrestrial Internet services and VSAT failover configurations were designed and implemented as



[photo left] Trainees from Orange Kenya, Inveneo ICIP, Setright, and Dadaab-based IT staffs assemble an Ubiquiti Rocket Dish.

DadaabNet Phase 1.

Critical Success Factor 2: DadaabNet became a catalyst for interagency IT collaboration, information sharing and problem solving in Dadaab.

PHASE 1 RESULTS:

- 1. Provided Multiple Broadband Services to Dadaab.** Increased the reliability of service to Dadaab by providing high-speed dual path, multi-vendor terrestrial connectivity with diversity and redundancy to enable mission critical applications and improve camp operations.
- 2. Reduced Internet Costs.** Negotiated reductions in the cost of terrestrial connectivity by approximately \$500 per month per Mb by partnering with both Orange and Safaricom to provide more diverse and reliable network connectivity and increase bandwidth capacity by 50Mb.
- 3. Introduced Back-Up Internet Connections.** Maintained VSAT as fail-over in the design and configuration provided by Cisco and Inveneo in order to ensure continuous up-time and have third-tier redundancy to the mission critical network while still reducing cost per Mb used.
- 4. Leveraged Resources and Donations from Multiple Providers.** During the implementation, operations and optimization periods more than \$500k was invested in equipment and value-added engineering services for network design, training, local partner engagement



and technical support. The combination of additional in-kind and direct donations enabled the technical and program management support needed to successfully complete, expand and sustain the implementation.

- 5. Ensured Sustainability of Network.** Enabled scalable capacity to ensure a reliable network and repeatable, innovative and cost-effective last mile architecture. This was done through the training of technically prequalified Orange and Dadaab ICT staff in Inveneo technologies (Ubiquiti) and Cisco routing and switching configurations. Newly trained engineers were also included on the installation team side-by-side with Ubiquiti experts from Inveneo & local partner Setright and Cisco's certified local technology partner Dimension Data (with remote configuration support from Cisco).
- 6. Accelerated Migration from VSAT to Terrestrial.** It is expected that by 2014-2015, 90% of the aid agencies will be running mission critical applications on terrestrial services (vs. 99% being run on VSAT in 2011-2012).

[photo above] Trainees are under Inveneo's CTO Andris Bjornson's guidance, to learn safe climbing techniques on 50-meter towers.

Enhanced reliability and the resultant migration from VSAT to terrestrial is in part a result of Safaricom and Orange's commitment to maintain or exceed a 99.95 uptime and share regular performance reports.

- 7. Installed DadaabNet High-Speed Configurations for 10 Agencies.** Enabled better information and collaboration applications amongst humanitarian organizations including CARE, Catholic Relief Services, Kenya Red Cross, Lutheran World Federation, Norwegian Refugee Council, Oxfam, Save the Children, UNHCR, UNICEF and WFP.

Critical Success Factor 3: This project established a Dadaab based UN/NGO interagency collaboration team that works in conjunction with the private sector to sustain and expand DadaabNet service.

Dadaab Phase 2

Dadaab Phase 2 was a partnership between NetHope, USAID, Cisco and Norwegian Refugee Council, with local engineering support from Dimension Data, Setright, International Rescue Committee (Ubiquiti training) and the DadaabNet team.

The primary goals for Phase 2 were to:

1. Expand DadaabNet to five local community centers supporting education, medical programs, Internet access and youth related projects; this goal also included the implementation of value-added applications including VoIP, video conferencing and file services to the target community center.



[photo left] Dadaab residents log on to NRC YEP Center computers -- many of whom are accessing the Internet and setting up Skype and email accounts for the very first time.

2. Optimize operations to improve network reliability, sustainability and scalability by transitioning management to the DadaabNet team and ISPs and developing metrics to evaluate the lasting impact and value of the project.

Critical Success Factor 4: The USAID stated objective was to connect one community center. The DadaabNet team was successful in connecting five centers. Other Dadaab agencies are now planning to expand DadaabNet to other community centers on their own in 2014 and beyond.

PHASE 2 RESULTS:

- 1. Extended Connection to Refugee Community and Provided Value-Added Services.** Established connections to five Dadaab community centers and successfully installed VoIP and value-added services in six humanitarian agencies and two of the community centers. This was accomplished by engaging Cisco Tactical Operations for VoIP

video conferencing and network expansion (community) design, local partner engagement (Dimension Data) and technical support during the implementation phases. The remaining Dadaab community centers and additional humanitarian agencies are quickly enabling these services as well.

2. **Focused on Delivery of Access to Dadaab Youth.** Many Dadaab youth accessed the Internet and created email/Skype accounts for the first time after DadaabNet and VoIP were extended to the Norwegian Refugee Council Youth Center (YEP) in Dadaabtown in May 2013. In November 2013, access to Dadaab youth was expanded when the network was extended to four more refugee community centers in Dadaabtown, IFO, Hagadera & Dagahaley.
3. **Developed Expansion Planning and Strengthened Security Protocols.** Based on current agency and community demand, the team planned to expand DadaabNet by procuring and distributing additional Ubiquiti and Cisco equipment to Dadaab for distance learning, security, online books, etc. with help from International Procurement Agency (IPA) and support from Cisco and UNHCR. The team also utilized additional Cisco camera enabled VoIP to expand the network and enhance security; as a result, visiting staff could enter the humanitarian compound without going to the front gate (using video conferencing to verify guests and credentials).
4. **Increased Network Capacity and Ensured Customer Satisfaction.** Ensured capacity would

keep pace with network support and expansion by training additional technically prequalified Dadaab ICT staff in Inveneo technologies (Ubiquiti) via a NetHope/International Rescue Committee developed Setright reviewed training course in Nairobi. The team also supported operations and a positive customer experience by encouraging the assignment of an Orange customer service representative.

5. **Supported Education Initiatives.** Enabled the launch of NRC distance learning programs in 2014 by deploying video controller equipment to three YEP centers (November 2013) in order to promote education through the Dadaab Refugee Camp and offer hope to its residents.
6. **Leveraged Resources and Donations from Multiple Providers.** The locally trained DadaabNet engineering team collaborates to enable new applications and network installations and provide operations support based on the overall value of the network; this

"We are communicating many things with relatives from Somalia... if they are still fighting, if there is peace... we are communicating that."
Muktasri Marian, Student, NRC YEP Center



[photo left] Two Dadaab residents log on to NRC-YEP Center computers to communicate with friends and family in Somalia.

ongoing work is accomplished without any direct cost to the project. Local training and engineering staff resources are leveraged to utilize the network and applications benefits in the Youth Education Pact Dadaab community programs.

7. Established Indefinite Lifeline for DadaabNet.

Enabled increased service demand, ongoing network expansion and capacity building without ongoing funding and project support from NetHope by negotiating an agreement that Orange will sponsor training and equipment replenishment. Also negotiated a reduction in 2014 bandwidth prices from 260 per Mb to 190 per Mb (November 2013).

Critical Success Factor 5: The DadaabNet team took ownership of the project, defining and implementing new applications, composing joint service provider requests/complaints and managing the equipment and education of the program staff.

Critical Success Factor 6: Orange is interested in repeating the DadaabNet architecture in other locations based on their experience with the technology and business model. Repeatability may be realized with little to no additional interventions.

“It gives us a sense of pride and joy when we look at where we have come from, where we are now, and realizing this is something we can even take to Kakuma to help the Sudanese refugees who are there.” Sally Michelle Ochaka, Orange

annex

Regional Map



DadaabNet Customer List (Phase 1 & 2)



Center Dadaabtown³,
Center Hagadera,
Center Dagahaley,
Center IFO
ICT Center Dadaabtown



The Lutheran World Federation
– A Communion of Churches



³ All community centers are powered by 2Mb shared bandwidth provided by the project for Year One. Ownership is subsequently transferred to NRC to ensure an affordable community business model to achieve long-term sustainability.

Major Contributions

DadaabNet wouldn't have been possible without the diverse base of committed partners and supporters united behind it. Each project partner played an integral role in the network's planning and implementation. The following contributions define the impacts of key entities:

Cisco was a major project contributor across three main focus areas: funding, capacity building and design.

- Contributed project management funding and substantial infrastructure equipment donation for both project phases
- Provided training for local DadaabNet team
- Co-designed the network architecture with Inveneo

USAID Global Broadband and Innovations (GBI) Alliance also provided significant support throughout both project phases and continues to work on solidifying project evaluation practices.

- Helped identify project management funding for Phase I and provided project management funding for Phase 2
- Currently implementing a community impact measurement and evaluation program so the project value can be evaluated over the next two years

Inveneo participated on multiple levels, ensuring engineering support and design, facilitating local involvement and securing substantial donations.

- Provided value engineering support
- Provided last mile solution training for local Orange service provider and DadaabNet interagency teams
- Identified project management funding/donation from an anonymous donor
- Co-designed the network architecture with Cisco

Microsoft monetary contributions to the initial phase of the project were key in supporting effective project management.

Norwegian Refugee Council (NRC) was critical in connecting the network to the community and YEP center refugee youth educational programs.

- Provided value-added network engineering support
- Identified and connected five Dadaab community centers
- Currently working with USAID GBI team to measure and determine lasting impact in the community

Many other organizations provided essential project support through participation on the DadaabNet team or procurement of new services. **United Nations High Commission for Refugees (UNHCR)** and the **World Food Program (WFP)** in particular offered notable contributions through the provision of Dadaab hosting, logistical equipment and management support.

DadaabNet was also supported by local service providers **Orange** and **Safaricom**. With support from local technology experts, these two Kenyan telecommunications companies were enlisted as full partners early on in the project. Orange became a new terrestrial provider and partner in Dadaab and worked with Cisco and Inveneo in developing a new DadaabNet broadband service. Orange also partnered with NetHope to provide new capacity, which enabled local competition and fostered improvement in services overall and prices, thus enhancing network capabilities in support of long-term sustainability and reliability.

Through their respective contributions, all of the above players empowered aid organizations operating in Dadaab including, but not limited to: UNICEF, International Organization for Migration, Care, Kenya Red Cross, Oxfam, International Rescue Committee, Islamic Relief Worldwide, Catholic Relief Services, Save the Children and Norwegian Refugee Council.

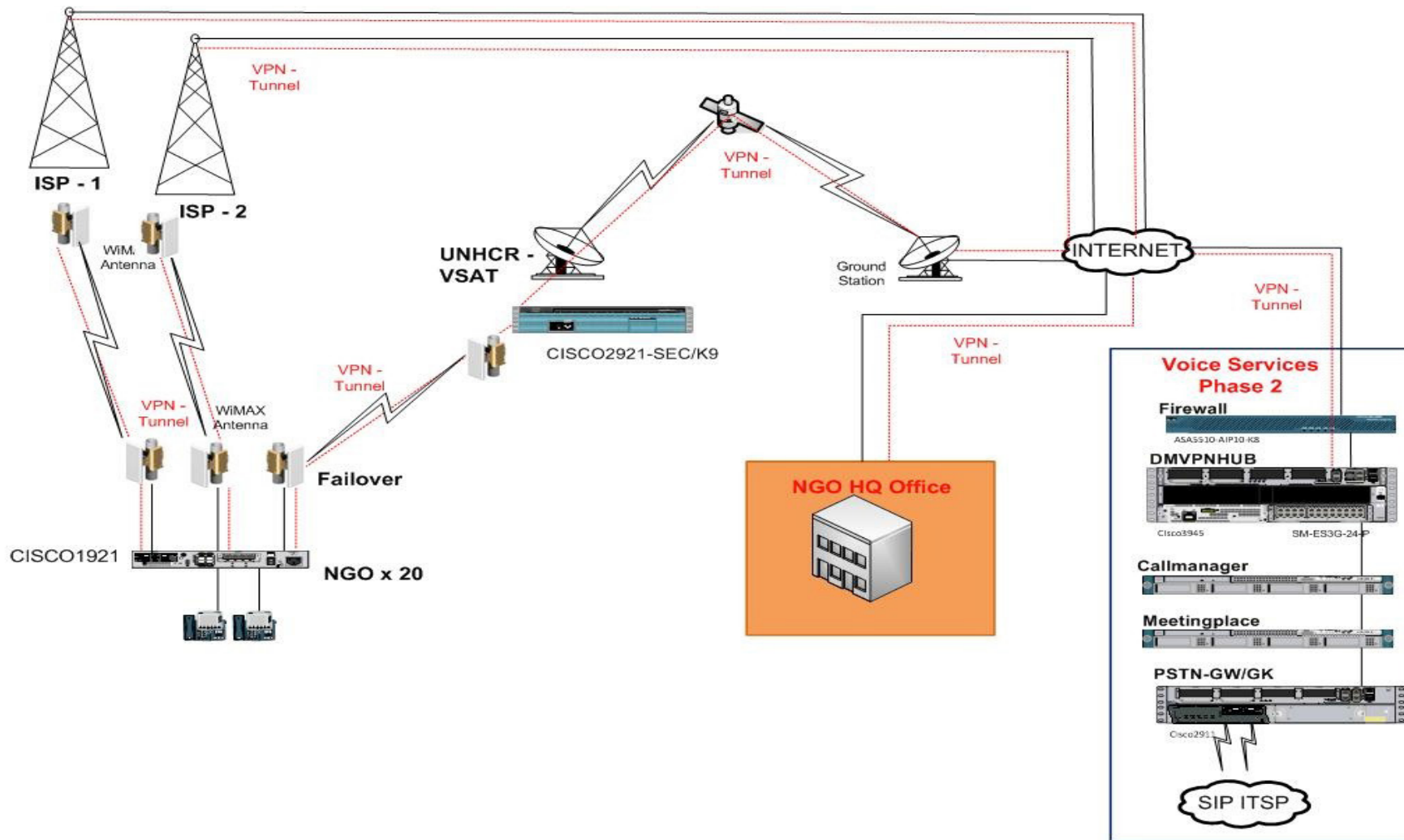
DadaabNet Sponsors & Working Group

Entity	Lead Contact	Project Function	Entity Title
Cisco	Kevin MacRitchie	Sponsor	Vice President
Global Broadband Innovations	Jonathan Metzger	Sponsor	Chief of Party
Inveneo	Kristin Peterson	Sponsor	Chief Executive Officer
Microsoft	Akhtar Badshah	Sponsor	Senior Director
USAID	Joe Duncan	Sponsor	Program Manager
NetHope	Joe Simmons	Project Manager	Global Program Director
Cisco	Matt Altman	Implementing Partner	Senior Engineer
Cisco	Hital Muraj	Implementing Partner	Senior Manager
Dimension Data	Edwin Ngaruiya	Implementing Partner	Engineer
International Procurement Agency	Barry Kroon	Implementing Partner	Managing Director
International Rescue Committee	Nenad Bojovic	Implementing Partner	DadaabNet Training
Inveneo	Mark Summer	Implementing Partner	Chief Technology Officer
Norwegian Refugee Council	Eric Nyawara	Implementing Partner	Senior Lead Engineer
Orange	Sally Ochaka	Implementing Partner	Customer Service Rep
Orange	Gideon Obiero	Implementing Partner	Project Manager
Safaricom	John Logon	Implementing Partner	Chief Technology Officer
Setright	Edwin Maore	Implementing Partner	Engineer
Smoothtel & Data Solutions Ltd.	Eric Macakiage	Implementing Partner	Chief Operating Officer
UNHCR	Evanson Njoroge	Implementing Partner	Senior Engineer
WFP	Donald Magoba	Implementing Partner	Senior Engineer

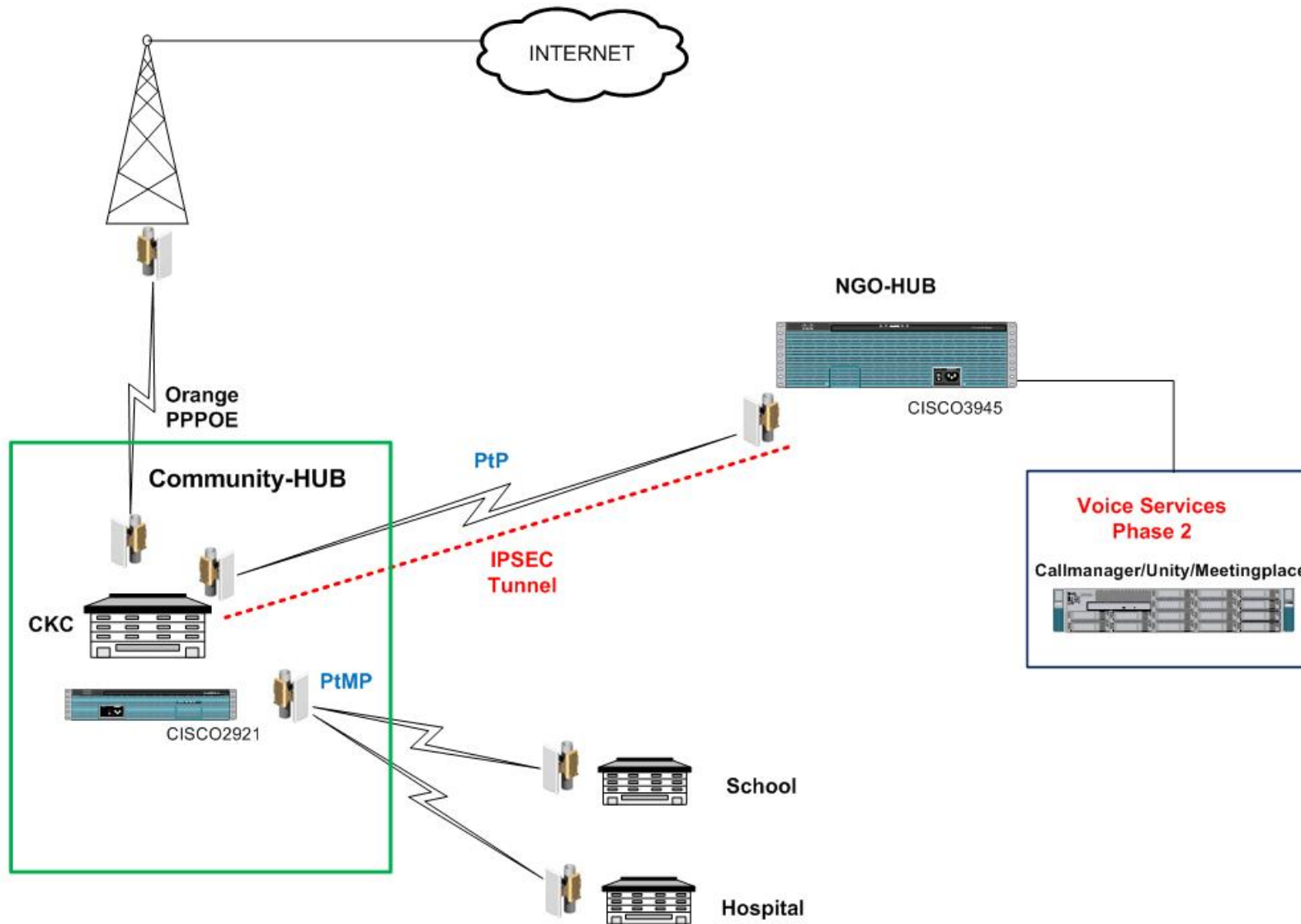
Financials

Project Phase	Item	Cash	In-kind
Phase 1: Create DadaabNet	Equipment	\$50,500	\$401,500
	Logistics/Personnel	\$124,500	
	Other costs	\$50,000	
Total Phase 1	All	\$225,000	\$401,500
Phase 2: Install Community Centers	Equipment	\$35,000	\$150,000
	Logistics/Personnel	\$60,000	\$80,000
	Other costs	\$30,000	\$20,000
Total Phase 2	All	\$125,000	\$250,000
	Total All Phases	\$350,000	\$651,500

Dadaab Phase 1&2 Network Applications Architecture



Dadaab Phase 2 Community Architecture





For more information, visit www.NetHope.org, or contact us at dadaabprogram@nethope.org

View a short video on the impact of DadaabNet: <http://bit.ly/1fdIMmR>

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