Disaster Relief

A compendium of learnings from engagements in Afghanistan, Iraq, Liberia, Iran, Sudan, Guatemala, Indonesia, Sri Lanka, Pakistan, Lebanon

1. Scope

This document attempts to extract the *do's* and *dont's* from the NetHope consortium's experience in addressing information and communication technology (ICT) deployments for its members during eight major disasters in ten countries during its five years of existence.

This document summarizes these learnings into a set of guidelines for the benefit of NetHope member agencies and for the relief community as a whole.

2. Stages of a Disaster

- **Stage 1 – Within hours of disaster striking.** First relief worker(s) arrive on the ground. Urgent and immediate need in hostile environment is to survey and assess damage, transmit pictures, security information, relief materiel and personnel requirements to Head Offices. Agencies decide at this stage how deeply involved they will be with relief efforts. *Example: CRS in sectarian fighting in eastern Congo.*

  This stage is characterized by highly individualized, highly mobile, temporary and transient computing, communication and power solutions

- **Stage 2 – Within two weeks of a disaster striking.** Teams begin to arrive on the scene as risk of disease and malnutrition escalates. Requirements are continuous monitoring of disaster, assessment of victim needs, management of relief material deployment between and across aid agencies, personnel security, application and reporting of donated funds, uploading of case studies, pictures and relief reports. *Example: Relief International in the Iran earthquake in Bam.*

  This stage is characterized by small (up to 10 people), often roving groups who need easy-to-setup-and-takedown computing, communication and power solutions

- **Stage 3 – From one month following a disaster striking to multi-year.** Agencies provide resources for building reconstruction, counseling, family reunification, food distribution, water purification, etc. thus becoming part of the community over a long period of time. *Example: Actionaid in tsunami relief in southern India.*

This stage is characterized by larger (20 or more people) groups in fixed office scenarios, with the potential of moving to different office locations as the situation unfolds

3. Disaster Engagements

NetHope's experience in disaster management is derived from the engagements in the following table:

Disaster	Country	Period	Stage	Agencies	NetHope Contribution
War	Afghanistan	2002	2 & 3	STC CARE MC	VSAT installations in Kabul and Taloqan
War	Iraq	2003	2 & 3	STC CARE MC CRS WV	VSAT and LAN installations in six cities
War	Liberia	2003	2	CCF MC AA CRS Oxfam WV	Satellite/wireless connectivity in Monrovia
Quake	Iran	2004	1 & 2	AA Oxfam STC RI WV MC	RBGAN donations for deployment in Bam
War	Sudan	2004	3	WV Oxfam STC MC	VSAT acquisition
Hurricane	Guatemala	2005	1	CI CARE CCF	Connectivity investigation
Tsunami	Indonesia Sri Lanka	2005/ 6	1, 2 & 3	STC CRS Oxfam WV CCF IRC AA	VSAT RBGAN NRK deployment in 16 locations
Quake	Pakistan	2005	1,2, & 3	AA CARE CRS IRC MC Oxfam STC WV	VSAT deployment in 14 locations
Quake	Indonesia	2006	1	Oxfam Plan WV AA STC CRS CCF	Connectivity investigation
War	Lebanon	2006	2 & 3	World Vision Oxfam CRS CCF Mercy Corps	Connectivity investigation (ongoing at time of writing)

4. Activities during Disasters

Countries	Lead	Activities
Afghanistan	STC	Included as part of NetHope pilot project. CGNET tasked to set up Hughes VSATs
Iraq	STC	Cisco donated routers/switches. RFP-based selection of JDBC to deploy Hughes VSAT deployment
Liberia	CRS	RFP-based selection of Dataquest for Intelsat dish/multiple wireless links
Iran	WV	Diversion of unused Cisco funds from Iraq to fund six RBGANs
Sudan	WV	Questionnaire to field offices. Skylogic VSAT for WV in southern Sudan
Guatemala	CI	Connectivity restored after mudslides. No field deployments
Indonesia Sri Lanka	WV	Intense activity and large donations. Cisco training and deployment support. Strong local chapter formation. 16 Skylogic VSATs, one wireless, 5 Cisco NRKs, several RBGANs deployed in many parts of Sumatra. No field deployment in Sri Lanka as connectivity considered adequate
Pakistan	AA	Intense activity and large donations. Great local chapter coordination. 14 Skylogic VSATs deployed in Kashmir and NWFP provinces, NRKs deemed heavy and technical
Indonesia	Oxfam	2 BGANs deployed at STC in southern Java. Due to closeness of disaster site to Yogyakarta with unimpaired connectivity, no field comms deployed
Lebanon	WV	"Wait and see" during conflict. Activities from Beirut in early stage of reconstruction

5a. NetHope Learning: First Response Connectivity Kit

For stages 1 and 2, the foremost requirement, beyond rescue and treatment of survivors, is the ability of aid workers to communicate with communities and countries for coordination of the relief effort. Local communications are almost always destroyed, inoperable or non-existent after a disaster strikes. There is an urgent requirement for rapid provision of both voice and data communications.

Relief agencies and relief materials descend on disaster area in an uncoordinated manner. Management and coordination of refugee and security assessments and efficient materials distribution is paramount.

NetHope members who have been active in our relief efforts firmly believe that NGOs on the ground require a lightweight "NetHope ICT Kit" they can carry in their baggage to provide instant communications from Day 1 onward.

This kit must have the following features:

- Wireless local connectivity for both voice and data
- Voice communication may be provided by HF radio to a telecom hub and data communication via internet by satellite
- Optional reach up to 100 km (say with booster/repeater)
- Internet access for voice and data
- Acceptable speed and quality
- Cost control capability
- Firewall capability to centrally restrict destination addresses
- Alternate sources of power (solar, car battery)
- Requires no technical expertise to install and operate
- Affordability (both equipment and usage)
- User management capability

Inmarsat's portable BGAN (Broadband Global Area Network) product, based on secure 3G mobile service, has been tested in Indonesia and Lebanon by several NetHope members and has been adopted as the solution to the ICT Kit for NetHope. It has the following features:

- Global coverage across the earth's landmass with Inmarsat satellite launch in December 2006
- Simultaneous voice/data service
- Data transfer speeds up to 492 kbps
- Streaming service up to 256 kbps for live video or videoconferencing
- Standard or Bluetooth phone calling
- Text messaging up to 160 characters

BGAN is available from lightweight single user models to larger versions with higher bandwidth for small teams. The BGAN can withstand challenging environments and extreme temperatures.

NetHope has established a quick BGAN deployment agreement with an Inmarsat distributor for future disaster management.

5b. NetHope Learning: To Engage or Not

A go/no-go decision on whether to engage is taken as early as possible based on perceived value that NetHope can being to an engagement. The decision is affected by:

- The number of aid agencies active in the region (less than four would mean no engagement)
- Robustness of communications facilities after the disaster
- Remoteness of the site – i.e. whether it can be supported by a nearly intact city (e.g. Jogyakarta for the Java quake and Beirut for the southern Lebanon conflict)
- Attitude of the government (licenses, customs waivers, etc) to allow provision of relief ICT equipment from outside the country
- Security of equipment on the ground
- Ability of equipment vendors to provide local installation and maintenance capability

5c. NetHope Learning: Long Term Communications

For stages 2 and 3 of a major disaster, especially in remote regions with many (i.e. 10+) people active in a field office, there is need for higher speed communications at a controlled rate. Satellite phones RBGANs and BGANs charge by the minute and by the megabyte, which can rapidly go beyond affordability in the longer term office deployment scenario. For these stages, a fixed (shared or dedicated) satellite or microwave-based connectivity option is required – at 512 kbps or better. NetHope's agreement with Skylogic provides for this situation.

A Skylogic D-Star satellite station for NetHope has an outbound channel up to 60Mbps and provides a satellite return channel with speeds up to 1.15 Mbps. D-Star supports IP routing, IP multicasting, Quality of Service, and TCP spoofing for 10 Mbps of unicast throughput. D-Star also provides a web-based Network Management Station is simple to operate, easy to configure, provides traffic statistics and call detail records. D-Star provides connectivity up to 1.120 Mbps using an antennas as small as 1 meter depending on the location.

D-Star may be used on Eutelsat's C or Ku band satellite service covering 80% of the world population.

5d. NetHope Learning: Software Applications
Stages 2 and (more so) Stage 3 of a major disaster require software applications in addition to basic voice and data connectivity.

Applications areas for such software include:

- Relief material requesting, ordering, shipping, tracking and distribution
- Refugee family reunification
- Personnel security
- Budgeting, accounting and finance
- Donation application, tracking, accounting and reporting
- On-line web updates
- At-risk employee management
- Local partner management including grant allocations
- Vendor management
- Government liaison

Software needs of NetHope members vary according to their mission focus. NetHope has a strategic agreement with Microsoft for its members' software needs for relief as well as developmental requirements.

5e. NetHope Learning: NetHope Headquarters Relief Committee
Teamwork is key in disaster management. In the NetHope modus operandi teamwork is essential both at headquarters and field level. In the event of a major disaster, NetHope's response at the headquarters level follows these steps:

1. A member, staff, volunteer or sponsor initiates a request for action to the NetHope Relief Operations Manager (ROM) – this should be by email or phone within hours of the disaster occurrence
2. The ROM sends out an urgent "call to arms" to the NetHope membership and sets up a conference call usually within 24 hours of the request for action. This group becomes the Headquarters Relief Committee and the ROM acts as the team leader
3. The conference calls address the below items in its agenda. Meetings are usually held daily in the early stages as the situation unfolds and requirements become clearer. Later frequency gets less until the Headquarters Committee deems its task is completed and disbands itself.
   3.1. Each member's evaluation of the disaster severity
   3.2. Each member's response status
   3.3. Field IT requirements of each member – from this item it can be determined whether a substantial (usually three or more) number of members require NetHope engagement. Else the Headquarters Committee is disbanded and the active members address their needs individually

3.4. Discussion on areas where NetHope can contribute – this includes referrals to relief IT organizations (such as Telecoms sans Frontieres, UNICEF, etc), provision of ICT equipment, acquisition of cash or product grants for ICT equipment
3.5. Identification and (in later meetings) status reports on one-time and recurring costs, technology, deployment locations, shipment and installation status, etc. of ICT equipment from one or more vendors or product donors
3.6. The ROM makes vendors and donors aware of the extreme urgency of the situation and that usual shipping and approval processes have to be superseded for this project
3.7. Identification of in-country partners for equipment installation and training of local staff
3.8. Reporting on contractual, shipping, installation and training status
3.9. Fundraising status
3.10. Identification and (in later meetings) status reports on government regulations for export (OFAC or equivalent), import duties, telecom licenses, transport logistics, etc.
3.11. Report from the in-country Local Relief Committee (see below) either verbally or via the ROM

At the end of the engagement the ROM, with support of the headquarters and local committee leaders, creates a case study of the disaster for the benefit of NetHope and the nonprofit industry.

5f. NetHope Learning: NetHope Local Relief Committee

It has become clear that the NetHope HRC is effective only by working closely with team composed of its members' counterparts in the disaster-affected country. This is the NetHope Local Relief Committee.

For formation of this committee it is essential that:

1. Each Headquarters Committee member identifies its local IT coordinator for the disaster
2. One NetHope member agency agrees to act as lead agency for the disaster in-country
3. The lead agency nominates its IT coordinator as the team leader of the Local Committee
4. The Local Committee team leader works closely with the ROM and pulls together member agencies into the Committee – these are the beneficiaries of NetHope raised product and cash grants for this disaster. The Local Committee may include the local partners of a NetHope agency if all other concerned agencies agree
5. Agenda for the Committee meetings includes:
   5.1. Local member agencies are made aware by the team leader (and if appropriate, by the ROM who attends the meeting via telephone) of what NetHope is doing for them at the headquarters level

5.2. The team leader finds out and briefs members on local government policies that will affect deployment of NetHope procured ICT equipment and advises the members on applications for customs duty waivers, telecom licenses, site preparation, etc. The Local Committee devises a plan for acquiring waivers, licenses and sets up deployment plans before the equipment arrives in the country

5.3. After a local installation partner of each equipment vendor is identified, the Local Committee members meet with this partner and establishes delivery, installation and training schedules at their field offices

5.4. Members are clearly briefed about their responsibilities in regard to the equipmnt being installed – i.e. what is donated and what are their financial and support responsibilities

5.5. The team leader holds meetings as often as possible given the many pressures associated with the disaster

5.6. The team leader acts as liaison with the Headquarters Committee and either attends their telecons or works through the ROM.

5g. NetHope Learning: Field Questionnaire

NetHope is developing a ICT field questionnaire that Headquarters Committee members are encouraged to send to their local representative as they are entering Stage 2 of disaster management. See Appendix A for a sample questionnaire. To expedite and correlate responses we are in process of creating a web version of this questionnaire in junction with the Emergency Communications Board (ECB). The completed questionnaires will be aggregated to arrive at NetHope's overall ICT requirements for each disaster, which in turn will determine fundraising strategy for cash and/or product grants.

5h. NetHope Learning: Fundraising Strategy

The emotional impact of a major disaster in a remote region triggers a willingness in institutions and individuals to donate towards relief work. Based on NetHope's experience in several relief situations – the following should be the strategy for raising funds for future disasters:

- Rapidly aggregate field ICT requirements via email or through the questionnaire to establish the funding pitch
- Large hi-tech and consulting corporations are most likely to donate
- Large quanta of donations from a small number (four or less) donors usually cover NetHope's needs. In view of the time-criticality of the ask, approach through executive level contacts work the best – never a cold call – unless there is a well-established relationship with the donor's community affairs department
- The potential to benefit the world's most reputable and qualified relief agencies and the ability to impact thousands of victims through an experienced consortium with minimal or no overhead provides a compelling appeal
- Responsibilities of NetHope in terms of PR and reporting must be clearly spelled out in the donation letter

5i. NetHope Learning: Deployment Management and Tracking
NetHope has developed a spreadsheet based deployment tracking tool during its tsunami relief work in Sumatra and India. This spreadsheet was updated and distributed to team members by the ROM on a continuous basis until the HRC disbanded. NetHope intends to expand and web-enable this tracking tool. The spreadsheet may be viewed in Appendix B.

One the most critical factors in early stage disaster management is time. It is of vital importance to have appropriate ICT solutions on the ground with the first responder. One of most important aspects of a first response kit is its size and weight allow it to be carried as checked or (preferrably) cabin baggage with the traveller. This prevents the equipment being delayed by shipping and customs procedures.

For larger shipments like VSATs it is imperative local offices of aid agencies involved in relief work approach government authorities for advance approval of satellite licenses, customs waivers, etc. Otherwise, significant delays can occur in this area.

For the same reason, it is important to give selected vendors ample advance notice of large short-fuse orders, especially if discounted prices are expected.

5j. NetHope Learning: Disengagement Criteria
The NetHope HRC disengages from a disaster and disbands itself if all of the following criteria are met:

- All pledged donations have been received and allocated
- All equipment have been ordered and deployed, and training of field personnel has been completed
- All major issues associated with fundraising, equipment procurement and field office empowerment have been addressed
- All necessary reporting to donors and NetHope management has been completed
- The case study of the disaster engagement has been completed
- HRC members agree that the committee adds no further value toward management of the disaster

6. Summary
NetHope has taken a leadership role in the use of Information and Communications Technology for disaster relief management – to the extent its work during the South Asia tsunami was covered as a front page article in the Wall Street Journal on January 5, 2005. Also, NetHope received the prestigious Tech Laureate award for IT in Humanity from the San Jose Tech Museum of Innovation in 2004. NetHope collaborates with many partners on the ground: private, governmental and non-governmental organizations. We also

often work closely with aid agencies who are not members of the NetHope consortium in an effort to bring maximum succor to victims of the disaster.

We hope this whitepaper will contribute significantly to this important humanitarian effort.

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APPENDIX A

Relief IT Questionnaire

(Note: This document is a work in progress. The questionnaire will be web-instrumented shorty in conjuction with the Emergency Communications Board. Fields may be optional in certain sections)

1. Situation Overview

This section should describe:

- Location, nature and scale of emergency
- Critical ICT issues related to the emergency

2. Physical Environment

This section should describe the following elements, insofar as they impact ICT (for example, mountainous terrain will affect radio deployment):

- Terrain
- Climate
- Access

3. Communications Infrastructure

This section should describe the current situation and organizational requirements for:

- Radio (HF)
- Radio (VHF)
- Telephone: Fixed Line
- Telephone: Cell Network
- Internet connectivity (including local ISPs)

These should be described by location, as the situation may differ by area. If possible, cost comparisons should be provided for different vendors, where these exist.

The assessment should also take into account:

- Electricity Supply – type and availability, extent of national grid, reliability of supply, and so on.
- Local Markets – what is available and accessible locally? How do the prices compare to national, regional and global sources?

4. Regulatory Framework

This section should include descriptions of the following:

- Customs Regulations
- License Approval
- Frequency Allocation.
- Which Government Offices need to be approached regarding these and other issues? Give details, including names and contact details.
- What procedures must be gone through for these three?

Are there are any other issues in the country – for example, internet censorship?

5. IT objectives and activities

This section should describe:

- Current agency presence and requirements
- Proposed agency response and requirements

This should include detail on the location and size of current and proposed offices, including staffing levels and resource availability. Based on this, the assessment can be used to develop a plan that covers:

- Objectives for IT staff
- Steps required to achieve those objectives
- Guidelines for implementing those steps

The section must outline the initial planning steps for ICT deployment, although it does not need to be a detailed plan at this stage. Issues to continue might include policies on partnership with local organizations, procurement constraints (for example, due to international sanctions), availability of skilled local staff, and so on.

6. Support Requirements

This section should describe the resources that will be needed to implement the actions described in Section 3.

- Hardware and software requirements – what currently exists in country, and what will need to be bought in externally?
- Staff requirements – how many, what skill set, which locations? How many are already working for the agency and how many will need to be recruited?
- Other support requirements, including policies and procedures

- Outline budget – give details based on the first three requirements above

- Partners (with contact details)
- Asset Management Plans
- Contingency Plans (inc. Disaster Recovery)

Give brief descriptions of each of these, clearly identifying where there are gaps that might affect implementation.

- Other support requirements, including policies and procedures
- Outline budget – give details based on the first three requirements above

- Partners (with contact details)
- Asset Management Plans
- Contingency Plans (inc. Disaster Recovery)

Give brief descriptions of each of these, clearly identifying where there are gaps that might affect implementation.

APPENDIX B

NetHope NRK and VSAT Deployments

updated March 8, 2005

NGO	NGO Loc #	NGO contact	Location	Country	NRK?	NRK Serial #	NRK status	VSAT status	VSAT #	VSAT donation	NRK training
Save the Children	1	Rui Lopes	Banda Aceh	Indonesia	Yes		Returned HQ	No VSAT		No	Done
Catholic Relief Services	1	Igor Nikolovski	Meulaboh	Indonesia	Yes		?	Operational	1	dish, S&I**	Done
Oxfam	1	Fran Boon	Meulaboh	Indonesia	Yes		Returning to HQ	Operational	2	dish, S&I**	Done
Save the Children	2	Rui Lopes	Lhokseumawe	Indonesia	No		N/A	Operational	3	dish only	Not reqd
World Vision	1	Greg Campbell	Lamno	Indonesia	Yes		?	Operational	4	dish only	Done
Christian Childrens Fund	1	John Watts	Banda Aceh	Indonesia	No		N/A	Operational	5	dish only	Not reqd
World Vision	2	Greg Campbell	Meulaboh	Indonesia	No		N/A	Operational	6	dish only	Not reqd
Intl Rescue Committee	1	John Rickard	Meulaboh	Indonesia	Yes		Hold @ NetHope	Operational	7	dish only	Done
Mercy Corps	-	Peter Dickinson	Meulaboh	Indonesia	No		N/A	Hold	-	No	Not reqd
World Vision	3	Greg Campbell	Banda Aceh	Indonesia	No		N/A	Operational	8	dish only	Not reqd
Intl Rescue Committee	2	John Rickard	Calang	Indonesia	No		N/A	Operational	9	dish only	Not reqd
Christian Childrens Fund	2	John Watts	Meulaboh	Indonesia	No		N/A	Operational	10	dish only	Not reqd
Christian Childrens Fund	3	John Watts	Biruen	Indonesia	No		N/A	Operational	11	dish only	Not reqd
Intl Rescue Committee	3	John Rickard	Banda Aceh	Indonesia	No		N/A	Operational	12	No	Not reqd
Intl Rescue Committee	4	John Rickard	Lhoksamawe	Indonesia	No		N/A	Operational	13	No	Not reqd
Save the Children	3	Rui Lopes	Simeuliu	Indonesia	No		N/A	Operational	14	No	Not reqd
Save the Children	4	Rui Lopes	?	Indonesi	No		N/A	Operation	15	No	Not reqd
Save the Children	5	Rui Lopes	?	Indonesia	No		N/A	Operational	16	No	Not reqd
Actionaid	1	Alok Sanjay	Cuddalore	India	Yes		Ship March 5	No VSAT		Inmarsat	AA Chennai

** indicates dish, shipping & installation