

sudoSo you're a journalist about to deploy, or you're already in, a post-disaster zone. What do you need to get the connectivity you need to be able to get your work done, and the subsequent stories out, while in the field? This document assumes you already have an understanding of the vaccinations, physical protections, proper attire, food, water, etc. to take care of yourself and focuses solely on how to get and stay connected.

This is also a living document. As technology and groups change, it is encouraged individuals and organizations making use of this doc continue to update it. A log of changes can be seen by looking at the history, and it is encouraged to name versions once they've settled.

Diagnosing the issue

Figure this out in advance if you can as it might influence what you pack. You can diagnose insitu if you're already there. Broadly speaking, there are three main buckets the disconnection issue will fall into:

1. There *is* connectivity, but it is geographically fragmented and/or too many connections are in one area, leading to issues.
Example: you can connect to the internet at the office, but there isn't a signal at the community center which is a half mile away and can be seen from a window at the office. You want to get the office internet to the the community center.
2. There *has been* connectivity, but it has been completely interrupted.
Example: there was municipal wifi throughout the city, but now it is gone everywhere, likely due to the associated fiber connection into the city being impacted by the earthquake. You want to keep people in touch with each other in the meantime, and a way to quickly get back online when the internet comes back up.
3. If there has *never been* connectivity. This guide does not cover this scenario, although it does benefit from the technologies and techniques developed for this circumstance.

Once you know what the issue is, you'll have a more solid problem statement to take to organizations and individuals actively working to get people connected in the field, who can then hone in on the most appropriate technology which is the most up-to-date, which is also maintainable by whatever individuals assist the effort.

They'll also ask about the climate, where equipment will be housed (indoors or out, for instance), if you can see the sky or the location you're trying to reach, and for how long you need the equipment to work.

Organizations to talk to about tech selection & sharing infrastructure

Many organizations specialize in internet infrastructure, and a few of those even specialize in setting up in post-disaster zones. Reach out to these groups to see if you can share infrastructure if they're deployed to the same place, and if they're not, to talk to them about contextual guidance and tech they might be able to donate or recommend.

[NetHope](#)

NetHope is a consortium of nongovernmental organizations pooling resources towards shared Information Communication Technology (ICT) infrastructure. NetHope had 90 access points in Puerto Rico, in both "official" spaces for responders, but also in community spaces for the

affected population. They set up BGANs and VSATs (more on these later) during the Ebola outbreak. They've written extensively on security in disaster and humanitarian circumstances, understand how to have a network which is open to multiple stakeholder groups, and have significant technical chops. NetHope can serve both scenarios listed above.

Rami Shakra works on the direct connectivity side and can be contacted via
John Crowley works on the crisis informatics side and can be contacted via

[NetHope & Internews - Information as Aid](#)

Still learning about this as it goes live.

[Cisco TacOps](#)

Cisco has a deployable team called Tactical Operations (TacOps) which rapidly sets up ICT infrastructure in crisis. TacOps historically focused on supporting the "official" responders and so their networks were rarely open to a broader population, including journalists. Priority for TacOps support is given to mission-critical public safety, government, and critical infrastructure customers. However, this has changed in the past couple years and so they are worth linking into. Additionally, they have developed go-bags, lists of must-have equipment, security protocols, and a policy around sustainable rotation of staff for these deployments. An organization or set of organizations would need to call on them in order to deploy, rather than an individual or community group activating TacOps. For anything other than an urgent crisis, sending email to tacops-info@cisco.com is the preferred method. Urgent (life safety/property/environment/emergencies) can be reached by sending a message to emergencyresponse@cisco.com (this one pages the duty officer 24/7).

[Telecoms Sans Frontieres](#)

Seem to cover both official responders and communities. Been around 20 years. Don't have direct experience with them, so here's their statement:

Télécoms Sans Frontières is the leading international NGO specialised in technology and telecommunications for humanitarian crises of all kinds. Our teams are made up of telecom and network engineers who are ready to deploy to disaster zones 24/7 thanks to their global presence in Europe, Asia and Americas.

Throughout the years, our areas of intervention have evolved according to the needs of the humanitarian field, however our principal mandate remains to connect the unconnected, be it governments, the United Nations, fellow NGOs, or families who have survived devastating crises.

Today, we are innovators in our field, and develop technologies that are applied to a wide variety of long-term humanitarian issues. We place emphasis on developing tools to respond to a plethora of needs including protection, education and health and nutritional issues. Our unique expertise often sees our teams deployed throughout the world to train national and international bodies in emergency response in the aim of galvanising the impact of global humanitarian aid thanks to technology.

Fondation [Hirondelle](#)

Communication isn't just about internet infrastructure. It's also about trust, and can be done

through non-internet backbone.

Hirondelle has supported radio programming in low resource areas, many affected by conflict such as Mali, Niger and CAR. Radio is relatively cheap and reaches many people. It can be bi-directional as the level of interaction either through text, call in, or live debate makes it much more proximate, and intimate than web based journalism. Hirondelle is also testing bluetooth programming- podcasts really- with “listening centers.” Locals gather at these centers to listen to a program together, to get the file on their own devices, and to start having conversations. They then go out into their communities, transferring the files around. Journalists record new content and return to the listening center to share what they have learned. They have a new project for Rohingya refugees.

For information on the Somali refugee podcasts in Dollo Ado, contact Anne:

anne.moirabennett@gmail.com

For general Hirondelle q's or for the new project for Rohingya refugees in Bangladesh that would be Nicolas Boissez nicolas.boissez@hirondelle.org

IST Research Pulse

SMS gateways, some IVR, all well administered. Ways to communicate with populations. Can also scrape social media, help compile stories. Available to help in deployments.

[Mozilla WINS](#)

Mozilla recently hosted a friendly competition around getting people reconnected in austere and post-disaster zones. These projects will be worth looking at to see which ones mature.

[Emergency Telecoms Infrastructure](#)

Emergency Telecommunications Cluster (ETC) is a global network of organizations that work together to provide shared communications services in humanitarian emergencies. They focus on serving the formal sector, namely the World Food Program and other UN programs. The ETC sets up basic security communications and connectivity to humanitarian actors: security communications (VHF and HF radio networks), information sharing, coordination and collaboration, customer support, and voice + data connectivity.

Who to talk to about tech support

Former Members of the Taj

Much of this guide is influenced by the work of the Synergy Strikeforce at the Taj in Jalalabad. This guesthouse + bar + technical & political team provides a beacon of understanding in how to set up a network (technical and social) useful to journalists. The space offered a place to lodge and a place to gather, lending safety and a place for the exchange of ideas. This bolstered the efforts of journalists, NGOs, and military members who wanted to share stories and unclassified information, but had no other way to do so.

Contact Trevor Ellermann via trevor@ellermann.net

Members of Telecomix or those who have helped with protest networks

While ideally the region of the disaster also supports the free press, it doesn't always. Check with the organizations listed above about what the status is on digital and physical security, especially for journalists. If they express concerns, or if you personally feel a need, connecting with someone who has worked on protest networks will bring an extra layer of security and foresight that more established organizations won't be equipped to consider. These networks are often more piecemeal, built out of what equipment is around and able to be brought back up when some of those pieces are destroyed. This also makes them less robust against environmental elements. Try connecting with a local hackerspace if one exists in the region for support and equipment.

[Information Technology Disaster Resource Center](#)

Helps you figure out what tech you'd benefit from, and helps you use it, remotely or in the field, for disaster response. Cover a wide variety of needs, but also capable for ICT.

<https://www.itdrc.org/contact> They can be activated via email - support@itdrc.org

[Serval Project](#)

If you'll be in close proximity to others and just need to share files, Serval is right for you. It creates a mesh out of the hardware you already have for file transfer and other actions.

All Hazards Disaster Expert Group

A set of folk who tend to work on ICT and related issues during each crisis can be found [here](#).

The sorts of tech they might recommend

Reminder of our two scenarios:

1. There *is* connectivity, but it is geographically fragmented and/or too many connections are in one area, leading to issues.
2. There *has been* connectivity, but it has been completely interrupted.

Power

You have to have power for all the suggestions which follow. Power can come in the form of solar, batteries, generators, fuel, etc. You'll need space to run/place the power source that is safe for the equipment and the people around it (don't run generators inside, don't put a solar panel where a cow can step on it), and to consider replenishing fuel (don't use solar where it's cloudy, don't bring a generator if you can't get more fuel of the proper sort)

Two-way radios

Two-way radios are a way to communicate with other people with radios which are programmed in a similar way (and so they take some coordination in advance). Highly useful for setting up networks and communicating in the meantime, two-way radios are a good balance between cost (they are relatively expensive to rent, let alone buy) and ease of use (as opposed to a local mesh network or local server). You'll need to look into what frequencies are and aren't allowed

in the region you're in, and may find people already using bands you first set up. This is useful in both scenarios.

HAM radio

[AREs and RACEs](#) are how HAMs deal with emergency response. Reach with (if either) of these are present to where you're deploying to, and how to set up to join in on their conversation. Having someone on the team who is HAM licensed (it's fun!) is advised. Thanks and hat-tips (and suggestion to reach out to with further questions) to [Fabienne](#).

Rapid Event ICT

Whether purpose-built like Cisco TacOps and NetHope, or appropriated from commercial event ICT businesses, there are robust (and costly) technical networks which can deploy quickly at scale. These high costs and capacity needs often mean that these networks cannot be left behind in a region. They should be considered as a bootstrap or augmentation to local networks. This is useful when a connection to the region exists already but needs to be extended.

Very Small Aperture Terminal (VSAT)

An in-place satellite uplink via radio dish. Needs to be in-place because they're just under 4 meters. You'll need a clear view of the sky and supporting infrastructure in order to actually use the signal gotten from the VSAT. Use this if in the second scenario.

Broadband Global Area Network (BGAN)

Smaller, more fragile, but able to be ported around version of a VSAT. Fits in a backpack! Expensive! Otherwise pretty ideal for individuals or small groups to connect to the internet when no one else is setting up infrastructure yet or you can't be a part of what's there due to technical or political reasons. Useful in both scenarios.

Point to Point links

If you can see between a location with internet and one without, a point-to-point can be installed. It requires specialized but small hardware. Useful in the first scenario.

Mesh

Can communicate with other devices nearby with similar software installed. Was the darling of the humanitarian sector for awhile, until we figured out mesh is hard and drains batteries. People will recommend this to you, and it can be useful, but be sure you know who is responsible for setting it up and how capacity building will happen around it. Useful in both scenarios for internal coordination, but a plan for bridging to the backbone via physical transfer or a throughpoint needed if internet exists nearby and you want to take the fruits of the mesh labor to the larger internet.

If you have time to set up a mesh network, look at [Commotion Wireless](#). If you can install an app on your (Android) phone in advance, check out [Serval](#). If you need equipment sent in, look at [GoTenna](#).

Things to think about while implementing

Few of the challenges you encounter will actually be technical, and the folk suggested will take good care of you for those technical things. Here are other things to think about as well.

Who is already there

Many of the organizations and individuals mentioned in this paper might already be in the field. Additionally, there are nearly always community groups who can help you understand the lay of the land, the historical issues, etc. You might be talking to them already about your stories - also talk to them about your technical challenges as you may be able to assist each other in ways which are reciprocally beneficial.

Campsite Rule

Aim to leave things better than before you came, and ideally, better than before the crisis. What are the long-term issues of a location? Think about history.

Another thing to consider is if/how to leave equipment behind while building capacity for its use. Leaving things behind can either look like the medial equipment waste left behind in West Africa, or it can look like the Roddenberry Disaster Response Team's establishing (and then leaving) water filtration in locations which may have never had predictable access to potable water. The difference between these is the appropriateness of the tool to the context and the local capacity to repair it.

Having an understanding of the history of a region (often by having existing contacts in that region) is vital to leaving things better than when you got there. Colonialism and paternalism are major factors in how disaster impact populations differently, and to see a circumstance as so dire it's not worth doing the extra work to listen first will exacerbate this.

Creating a Shared Space

One way to contribute to the overall ecosystem (and to encourage stories to come to you) is by hosting a shared space, ideally with the internet connection. The stories will come to you then, too.

Handoff

Think about what happens to the folk who have become reliant upon the connection you've helped set up when you depart. Make a plan, and share that plan with impacted parties.

Local Laws

There are local laws (whether social or formalized/enforced through legal system) which will impact what you can (and can't) do. Learn these laws and norms - yet another reason to be in touch with locals. What are the laws around property and land use? Around data sharing?

References

Research and Analysis Project for UNCLASSIFIED Information Sharing in Afghanistan A Model for U.S. Military and Coalition Commanders, the U.S. Intelligence Community, and U.S. Homeland Security (PDF available upon request, it's super great)

<https://www.internews.org/opinion/puerto-rico-communities-must-be-empowered-locally-relevant-information>

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Emergency Response Communications and Associated Security Challenges:

<https://arxiv.org/pdf/1010.4887.pdf>

Rapid Information and Communication Technology Assessment Team (RTAT):

<http://www.dtic.mil/dtic/tr/fulltext/u2/a620906.pdf>

Cognitive radio for disaster response networks: survey, potential, and challenges:

<https://ieeexplore.ieee.org/document/6940435/>

Connectivity recovery in post-disaster scenarios through Cognitive Radio swarms:

<https://dl.acm.org/citation.cfm?id=2839515.2839578>