

**IBM RESPONSE TO THE SOUTHERN ASIA TSUNAMI
FINAL REPORT**

March 28, 2005

Overview

Introduction

The tsunami that struck Indonesia, Thailand, Sri Lanka, and other Indian Ocean countries on December 26, 2004, was one of the worst natural disasters in history. In a few short hours, the earthquake-triggered waves transformed a beautiful tropical morning into a horrific scene of death and destruction. Hundreds of thousands of people lost their lives; many thousands more became homeless and thousands of children were orphaned. Critical infrastructure was destroyed and villages disappeared into the sea.

As news of the disaster spread, governments, humanitarian organizations, non-governmental organizations, foundations, corporations and individuals began to ask the same question: What can we do to help? The relief effort that grew out of that simple desire, like the disaster itself, was unprecedented.

IBM, driven by our values and our tradition of corporate social responsibility, took a leading role. Though the tsunami struck on a Sunday and at the start of an extended vacation period for many businesses – including IBM, we immediately sprang into action.

IBM's Response

Our first priority was to assess the impact on our employees and their families, including those living in the disaster areas and those who may have been traveling on business or vacation. IBM senior management, lead by the General Manager of IBM's ASEAN Region, immediately formed a team of Country General Managers (CGMs) and senior managers in Security, Human Resources, Corporate Community Relations (CCR), Legal, Client Relationships, Government Programs, Finance and Communications to oversee what was needed.

While IBM Security focused on locating missing or injured employees and Client Relationships contacted all clients in the affected areas to offer support, our CCR Asia Pacific manager immediately convened CCR managers in the countries and at corporate headquarters and the leader of the IBM Crisis Response Team (CRT) to design and coordinate a plan for IBM's overall response to the tragedy. The inclusion of CRT was critical; CRT has had extensive experience in on-site emergency management for more than 70 global disasters in 49 countries.

While the primary focus was on employees, IBM's plan put into action a concurrent step. CGMs quickly offered IBM technology and expertise in the area of crisis response to government leaders. Based on their offer, the governments of each of the four most severely affected countries -- India, Indonesia, Sri Lanka and Thailand -- immediately invited the IBM CRT to come to their countries to provide top-level advice to the national disaster authorities.

Over a period of 10 weeks, the IBM CRT, with IBM employees in the countries, provided essential expertise and technology solutions to assist the governments. Their tremendous efforts helped alleviate a devastating situation. Government and community officials, as well as IBM employees and those directly impacted by the disaster, have been greatly appreciative of IBM's response. The following is a summary of the support IBM provided in each of the four countries.

The value of IBM's contributions totaled US\$3.19M market value.

India

Impact

Impacted areas include the State of Tamil Nadu and its major cities of Nagapattinam, Cuddalore, Pondicherry, and Karikal, as well as the more severely affected Andaman and Nicobar Islands (which encompasses more than 500 islands).

The Indian government estimates that the tsunami resulted in 10,776 dead. Another 5,640 are missing -- 5,554 on the Andaman and Nicobar Islands. According to early January estimates from the World Health Organization, 157,393 dwelling units in 897 villages were damaged, and a total of 642,297 people had been evacuated from an affected population of 3.6 million.

Introduction

IBM India quickly formed an India Crisis Response team that developed a strategy and identified specific areas of need. This team also supported the development of applications for Indonesia, Thailand and Sri Lanka.

Teams were identified on the ground at Nagapattinam, Karikal and Port Blair to facilitate quick deployment of relief efforts. The team's immediate response included collecting relief materials and cash contributions and developing applications to manage and deploy the materials, assess damage at the various sites and manage the relief camps.

Relief efforts at Andaman and Nicobar Islands, which were affected by the earthquake itself and lacked a basic infrastructure, were delayed by a month on the advice of the local authorities.

Technology Deployed and Developed

To support the relief efforts, a suite of software applications was created. Each application was created on Open Source platforms and modular architecture and used the following technologies: Linux as the operating system; mysql database; Apache web server; Tomcat application server; Eclipse as the development environment; Java as the programming language; Struts framework; and CVS as the source code control system.

1. Relief Material Management: This application enables effective and timely tracking and distribution of relief materials to the affected people at the relief centers. This includes inventory management of groceries, ready-to-eat food, medicines, clothes, blankets, and tents across all the storage locations and relief centers and allows workers to instantly search for specific relief materials and analyze the materials required at a particular location. This application also records and tracks the disbursement of the Prime Minister's National Relief Fund to the affected families.
2. Victim Tracking: This application tracks victims in each affected village, uploading images of victims to enable easier and faster identification and classifying their present condition (dead, alive, missing, injured etc.). It also tracks information necessary to assess the damage incurred by a family and decide on the compensation amounts and other relief materials to be disbursed to them.

3. Reports and Statistics: This application provide officials making decisions on relief operations with static and dynamic data at the district level with the number of affected villages, affected victims in each village, gender classification of the affected victims and the overall population of each village.
4. Helpline Service: This tool enabled helpline operators to capture and monitor service requests to closure. Helpline numbers were widely disseminated on TV and other mass media, resulting in significant call volumes.
5. ID Card System: This application is being used by the Andaman government to provide identification cards to victims. The application captures the name and other textual data, fingerprint and photo onto the card, which can be printed and laminated for the survivor. This data is loaded on laptops to back-end databases and collated to allow the government to later access this data if desired and is being interfaced to relief camps so that the information is mapped to the relief camps where survivors are housed.

In addition to the technology and applications described above, IBM donated ThinkPads equipped with biometric technology for producing identification cards for relief camps and for damage assessment data collection in the affected areas. Laptops were also donated to Oxfam India, which is working with rehabilitation activity in the affected areas.

Additional Contributions

IBM employees collected over eight tons of food, clothes, blankets and medicines and dispatched these to the affected areas through the Red Cross. Local IBMers contributed US \$150K to the Red Cross.

IBM also donated KidSmart early learning centers to schools.

Current Status

IBM has completed a smooth transition – including education, training, maintenance and development – of the Tsunami Crisis Management Information System and open system Linux administration training to the Government of India. In addition, the logistics system training has been completed and the system handed over to government operations. (IBM India will provide bug-fix support only.) University students also have been trained on the ID card issuance system.

INDONESIA

Impact

In Indonesia, the worst hit area was the Aceh Province in Sumatra, including the cities of Banda Aceh, Lamno, Teunom, Meulaboh, Calang, Lhoknga, and Leupung. The Ministry of Health puts the number of dead at 122,232, with 113,937 missing. In Aceh, more than 600,000 people lost their homes.

Overview

Immediately after the tragedy, IBM contacted the Indonesian Red Cross to provide technology support to the relief operation under way.

It was clear within the first week that the Indonesian government faced tremendous challenges that could be aided significantly through technology. Following a meeting with the Coordinating Minister for People's Welfare and with support from the IBM Crisis Response Team, IBM in Indonesia provided significant relief contributions to the National Disaster Management Coordination Board headed by Indonesia's Vice President.

The IBM Crisis Response Team also identified a local IBM Critical Incident Support Team to provide relief on the ground.

Technology Developed and Deployed

Soon after visiting the disaster location in Aceh and understanding the challenges on the ground, IBM developed and implemented SIMBA (Aceh Disaster Management System). SIMBA consists of SIMBA POSKO (Aceh Disaster Management System for Relief Organizations), which includes administration support, logistics management, IDP (Internal Displaced Person) Registration, damage assessment; SIMBA CENTRAL (Aceh Disaster Management System for the Government), which includes data consolidation from various relief organizations, Management Information System and a reporting system; and SIMBA PORTAL that includes Government web sites for Aceh disaster information.

The very challenging infrastructure and human resources situation in Aceh required a client server approach, which needed a special application and infrastructure design. To run the application, IBM donated 275 IBM ThinkPads with digital camera that were deployed to various Government departments and NGOs, including the United Nations.; four IBM servers; two satellite communications systems (Secure Wireless Infrastructure System) to support high-speed voice and Internet data communication from various disaster locations in Aceh, along with US\$300K of free air time (both units link with Indonesia government offices in Jakarta); and supporting equipment such as generators and routers.

To ensure the effective use of the system, IBM provided training to volunteers from the government and the United Nations. As of early March, more than 150,000 IDP data had been collected and entered into the system, which is critical for government as well as NGOs in their relief efforts.

In addition to the above, IBM donated seven ThinkPads, one IBM server, six satellite phones, five generators, and a simple logistics application to the Red Cross. IBM also provided Care International with five ThinkPads to support their relief effort. IBM responded to a request from the United Nations Development Program for 20 ThinkPads to assemble several mobile units for United Nations relief teams.

Additional Contributions

To support education in Aceh, IBM rolled out KidSmart early learning centers to 20 schools. IBM also provided 20 ThinkCenter PCs to support practical skills teaching to drop-out students, which was intended to help them to find a job quickly.

Current Status

IBM's SIMBA system has been designated by the government of Indonesia as the approved system for IDP registration and data consolidation and reporting on logistics. IBM is in the process of completing all cross-over training on SIMBA for the Indonesian government and UN technical

support teams. This is the first time such a high level of cooperation has been achieved between multiple agencies and the private sector. IBM will continue to maintain and enhance the system up to March 31, 2005.

Sri Lanka

Impact

Sri Lanka suffered massive coastal damage. The overall death toll for Sri Lanka stands at 30,974. Still missing in Sri Lanka are 4,698 people, and another 100,000 families have been displaced. In rebel-controlled Mulativu, the Liberation Tigers of Tamil Eelam say the number is 1,932 dead with another 1,000 missing.

Introduction

The Sri Lankan Crisis Response Team included 10 crisis experts who contributed nearly 90 man days of effort. The team collected and distributed essential items to those in need in the initial weeks and developed technology applications for short- and long-term relief.

Technology Developed and Deployed

The IBM team installed IBM-donated computers and created a Local Area Network for the Center for National Operations (CNO), which assisted the rescue and relief control center for the country in the initial days and weeks of the crisis. IBM also established and began to run a helpdesk for the CNO, which ran all IT operations for the rescue and relief control center. The support ranged from answering routine application queries to recovering from a debilitating computer virus. The Control Center was at the President's Office and had desks manned by all the relevant support ministries of the Sri Lanka government, NGOs, foreign governments and private sector representatives.

The Crisis Response Team coordinated the roll out of the software solution, SAHANA, an industry open source effort that helped identify the dead and the missing, tracked displaced persons in refugee camps, established the requirements from the field and connected them to the center to enable a better logistics effort, helped authorities keep track of burial sites and developed mid- to long-term rebuilding plans.

As a part of this effort, IBM trained 300 university students on SAHANA and coordinated the data entry effort in the initial 30-days. When it was apparent that there were many data collection efforts and that government departments were not cooperating in data collection in the field, IBM worked with two advertising agencies – Ogilvy & Mather and Leo Burnett – to build an outreach and publicity plan for SAHANA.

IBM also is addressing the mental health and support of children affected by the tsunami. IBM initiated a train-the-trainers program for 70 employees of the National Child Protection Agency (NCPA) in conjunction with Child Trauma Counseling Institute at Harvard University. These trainers are in turn training approximately 1,000 counselors over the next few months. IBM also is donating to the NCPA seven KidSmart early learning centers for children at seven drop-in centers and installed seven desktops for the effective tracking of tsunami-affected children. IBM will donate 11 laptops to the NCPA and together with the Lanka Software Foundation (LSF), a not-for-

profit industry and academic initiative, help build an Open Source software solution to strengthen the crisis response ability of this agency.

Other technology donations included:

- Twenty laptops to Sarvodaya, the largest NGO operating in the country, which was responsible for managing approximately 200 camps at the height of the crisis. IBM is also helping Lanka Software Foundation deploy a subset of SAHANA to strengthen the ability of this NGO to respond to future emergencies.
- Three laptops to MapAction, a not-for-profit organization based in the United Kingdom that helped build maps from the available data for the government during the crisis. These maps assisted the authorities in quickly helping the most affected areas.
- Three laptops to the Ceylon Chamber of Commerce through the government of Sri Lanka to track and assist small and medium-sized businesses.

Additional Contributions

The IBM Crisis Response Team led the development of a conceptual design for creating a new national organizational structure for emergency program management and operations.

IBM also is donating KidSmart early learning centers at NCPA drop-in centers and schools and installed seven desktops for the effective tracking of tsunami-affected children.

Thailand

Impact

Impacted areas include Phuket, Narentorn and surrounding villages. In Thailand, 5,395 are dead, and 2,993 missing. Many of the missing are presumed dead.

Introduction

Since the tsunami disaster, the IBM team – worldwide and local – has been pulling all necessary resources together to help with disaster relief and humanitarian aid. The IBM team worked with the Thai government, relief agencies and various organizations on the relief mission.

The Thai government has appreciated IBM for their global experience in humanitarian efforts, especially its knowledge and expertise in the areas of command and control, security solutions and intelligence perspective.

Technology Developed and Deployed

In the first days, IBM-trained personnel were deployed to provide on-site support for temporary government offices and NGOs. This included IT support for a HelpDesk for the temporary offices of each government and the NGOs. IBM also provided and installed IT equipment (laptops, PCs, servers, printers, scanners, hubs, etc.) at the temporary offices in Phuket for the Norway and Sweden Embassies.

Working closely with IBM business partner Metro System Corporation and the ThaiWebmaster Association, IBM provided support (system infrastructure, administration, application and management support) to build the website at www.thaitsunami.com and its database, which consolidates information of missing/dead/injured people, including photo identification.

IBM also provided 100 laptops equipped with fingerprint readers and Web cameras, to support Pang Nga Relief Center (under the name of MoNRE), the Ministry of Public Health, the Minister of Interior, the Minister of Justice, and the Royal Thai Navy.

IBM contributed IT equipment (servers, PCs) and consolidated the database for the Thai Red Cross to help track all donations from various sources.

IBM provided Vectormax software training and the deployment of 10 IBM ThinkPad laptops to facilitate multimedia conferencing in support of the Tsunami relief rebuilding effort.

Additional Contributions

IBM provided KidSmart early learning centers to schools.

Current Status

IBM is in the process of completing a transfer of responsibility for the operation, maintenance, and support of the ThaiTsunami.com web site by the end of March.