Regional Emergency & Disaster Communications System.

PACIFIC ISLANDS TELECOMMUNICATIONS ASSOCIATION [PITA]
Background and Objectives

• Pacific Island telecommunication services face the risk of disruption by natural phenomena
  – Earth quakes either directly or indirectly via tsunami;
  – Cyclones or typhoons;
  – Lightning strikes; and
  – Volcanic activity

• Both terrestrial & satellite infrastructure may be impacted

• In most cases, disruption of telecommunications services will be localized to one island nation more than others

• A major Tsunami such as the 2003 event that devastated Thailand and surrounding countries, while rare, may destroy infrastructure more than 3,000km from the epicenter

• PITA formed a Working Group in 2005 to develop an emergency / disaster recovery solution for the Pacific to mitigate service disruption from natural phenomena & failures of satellite or terrestrial infrastructure
• Potential Impact of a major tsunami
Emergency/Disaster Recovery Requirements

A fully integrated service restoration solution that:

- Addresses both domestic and international services
- Covers loss of terrestrial and / or satellite backbone services
- Supports essential services (Telephony & IP) during an emergency
- Uses standard building blocks for transmission, switching and customer access to interface with or replace existing network infrastructure
- May be activated automatically or with a minimal level of expertise
- Can achieve critical backbone service restoration within about 24 hours
- Is Cost effective to implement
The OPT network

Rest of the world

Intelsat

Polysat network

Microwave network

Telephone lines

Optical fiber

Bora Bora

Maupiti

Huahine

Tahiti

Moorea

Society Islands

Raiatea

Austral Islands

Tuamotu Islands

Marquesas Islands

Remote Islands

Radio BLU type
PITA Emergency/Disaster Recovery Plans

A. Use Inmarsat BGAN terminals and/or satellite phones for initial emergency communications

B. Purchase a 2.4m SCPC VSAT terminals to re-establish satellite link for rapid deployment from a secure depot

C. Purchase multiple 1.2m VSAT terminals that can be deployed in country

D. Use a Redcomm donated switch to provide call switching in the event of failure of an international gateway switch
Pacific Islands
Telecommunications Association
DAMAGED NETWORK
Antenna Only

Terrestrial Network A

Satellite link

Terrestrial Network B

Key

Voice Switch

Digital Cross Connect used to connect Data and voice on the same transmission bearer

Modulates/Demodulates data to permit transmission over voice network

Pacific Islands
Telecommunications Association
Pacific Islands Telecommunications Association
Emergency Equipment including Modems, Switch, Cross-Connect and routers

EXISTING

Satellite link

Terrestrial Network A

Satellite

DataVoice/IP

Antenna B

Modem

D XC

Common street cabling

DATAVoice/IP

DATA

Voice

Terrestrial Network B

Customer Premises

Damaged Network

Antenna and exchange replaced

Key

Voice Switch

Digital Cross Connect, used to connect data and voice on the same transmission bearer

Modulates/Demodulates data to permit transmission over voice network

Pacific Islands Telecommunications Association
Progress to date

• Satellite phones are deployed in all the Islands and are used to establish initial communications after a disaster hits – there are problems however….

• A 2.4m VSAT antenna, peripheral equipment and generator are stored in NZ ready for deployment

• A Gateway Switch has been donated by a US company called Redcom
The Antenna
Antenna Transport Cases
Transportable Satellite Terminal Schematic Diagram

Indoor Rack Equipment

- Satellite Modem 1
- 4W VDC BUC PSU
- N-type
- 260th EIA-530

Satellite (Spare)
- 4W VDC BUC PSU
- N-type
- 250th EIA-530

Spares
- LBUC
- LNB
- 15 RU "Warrior"
- 19" Rack

Antenna mounted equipment

- Prodelin C-Band 2.4M Antenna
- LNB
- Circular Polariser
- Feedhorn
- Feedhorn & Circular Polariser mounted on feed support

Key
- EIA 530
- L-Band
- Receive

* Low Noise Block Downconverter
** Block Upconverter

Pacific Islands Telecommunications Association
Next Steps

• Training on installation and commissioning of the 2.4m antenna, peripheral equipment and Redcom Switch.

• Purchase of Broadband Global Area Network (BGAN) terminals

• Purchase MUX equipment
BUDGET

- VSAT antenna training is expected to be provided by TNZ at little or no cost.
- Each PI is to send one or two representatives to NZ for training at a cost of $1-2,000 (travel & accommodation).
- BGAN terminals are $10,000 each and the aim is to purchase one terminal per PI.
- Purchase MUX equipment for deployment with the 2.4m antenna for $8,000.