Emergency Communications Overview

10/15/25

American Red Cross

“Why do I need a radio/satellite phone/satellite terminal? My cell phone never lost a signal during the last emergency!”

“I know I need a backup plan, I just don’t know what to get.”

The purpose of different communications systems and when to use them.

- When do you need a radio or satellite connectivity?
- Why are there so many types?
- What are the advantages/disadvantages of each type?
- How much does it cost and how do I use it?

So why are there so many options?

Different systems have different capabilities.

- Purpose
- Adaptability and interoperability
- Audience
- Coverage/Range
- Price
- Ease of use

What are some options?

- **Cellular phones** – If I need to explain this, we got problems.
- **2-Way Radios** – Typically linked though a complex repeater network to provide coverage in a geographic areas
- **Satellite Phones** – Basically a cell phone from the 90’s, except instead of cellular towers, it talks directly with satellites. (Iridium)
- **Satellite Terminals** – Could either be traditional VSAT system (HughesNet) or newer LEO system (Starlink)
- **Amateur Radio** – System that allows licensed individuals to communicate via readily available equipment. Partnerships could exist with ARES, RACES, and other amateur radio clubs.

Questions?

(Gets more detailed form here. Even if you think it's a dumb question, ask anyway!)

Cellular Phones

Questions?

2-Way Radio Systems

Typically linked via repeaters or direct short-range

- Need to be licensed by the FCC for frequencies used.
- Agency can either own private system or use 3rd party to “host” system.
- Comes in traditional analog and digital flavors.
- Tried and true, no bells and whistles
- Handheld, mobile, fixed and remote base units.
- Can run on backup power or generators
- Cost: Varies
- Data: None

Wait...what? Mobile, handheld, remote base?!?!

Handheld	Mobile	Base Station	Remote Base
			
Low power, short range*	High power, medium range	High power, greater range	Medium power, longest range
Very portable Very stealable	Installed in vehicles	Could be permanent or kit	Permanent installed link
Runs on batteries	Runs on vehicle power	Runs on power supply	Grid, solar, battery, generator, etc.

Satellite Phones

Devices used to communicate when regular phones service is unavailable or inoperable

- Started in 1998, with newer satellites being launched since 2017
- Most common unit is the Iridium 9555 ($1400)
- Function similarly to a cell phone, though with a delay
- NHQ has additional satellite phones that may be requested for DROs
- Cost: Very high, around $1-3/minute
- Data: 2.4kbps for 9555, ~2.4kbps for GO!

Questions?

(Thank you for not disconnecting from the call so far. I promise it gets better.)

Satellite Terminals

Geostationary VSAT Systems (GEO)

HughesNet

- Price: ~$100/month & $400 for hardware
- Data: ~20-100mbps (high latency: 600ms)
- Pain to set up

VSAT (other carriers)

- Price: >$1200/month & $20,000+ hardware
- Data: ~2-6mbps (high latency: 600ms)
- A root canal is more enjoyable than setting one up

Satellite Terminals

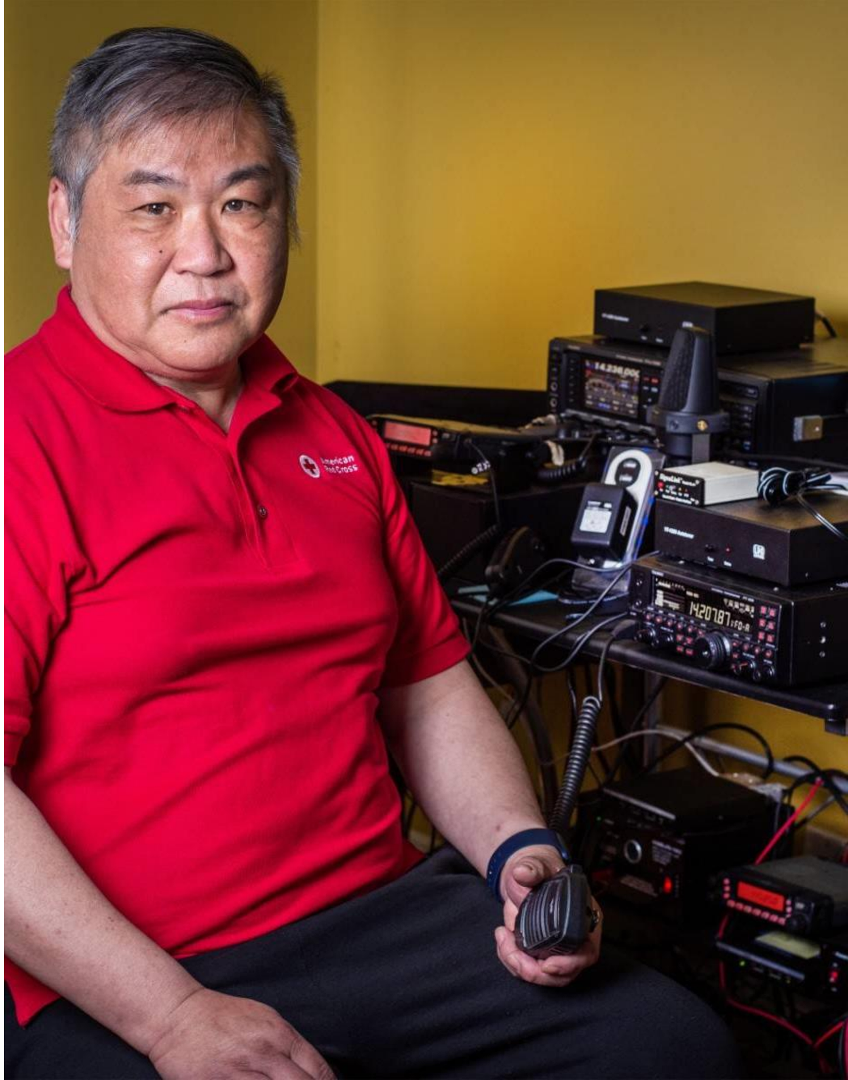
Low Earth Orbit (LEO) Systems

- Data: ~100-300mbps (low latency: 30ms)
- Easy to set up. Possibly easier than a VCR
- **Starlink – Fixed site**
  - Price: $65+/month & $350-2000 for hardware
- **Starlink – Mobile**
  - Price: $50+/month & $300 for hardware
- **Other Providers**
  - Project Kuiper (Amazon) in process

Amateur Radio

Longstanding community of licensed operators, many versed in emergency communications

- Equipment is readily available, along with amateur radio repeaters for disaster use
- Amateur radio operators can be deployed at organization events, food drives, exercises, etc.
- Operators must be licensed through FCC
- Should have relationship in place before the disaster.
- Groups like ARES, RACES, DCS, etc. focus on disaster preparedness and response
- Cost: Minimal



Questions?

BONUS SLIDE!

Bernie’s Recommendation

Starlink Mini System

- USB-C Battery (25,000mAh 100W)
  - Can be used to charge phone and laptop
  - Multiple spares if needed
- Cables: 12V for car and USB-C
- Set up WiFi calling on phone
- Costs:
  - Starlink Mini: $300 ($50/month service)
  - Anker 737 Power Bank: $110
  - 12V and USB-C Cables: ~$40

Contact Information

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Thank you

American Red Cross