

The Dramatic Return of HF



NVIS Communications LLC
HF-NVIS Service Providers

Fallback as opposed to Failover

Primary Operational Mode



Failover Modes



Fallback Modes



- Failover preserves the *primary* operational mode using alternate resources.
- Fallback *replaces* the primary mode with simpler modes when the primary mode is not available.
- Base Layer Fallback is your lowest layer of prepared fallback for when everything else has failed. *It should **not** have components in common with the primary mode.*

Fallback for regional and wide-area communications

Primary systems:

- FirstNet, LTE
- Satellite
- Trunking systems
- ...

Failover Measures

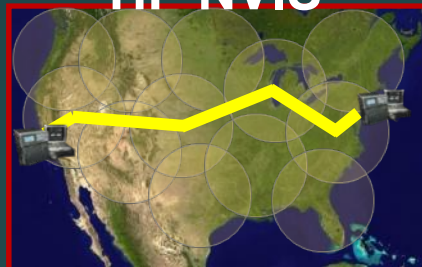


Many layers of alternate resources to keep the systems operational – That's great! However...

Base Layer Fallback is critically needed



HF-NVIS



- Do not believe anyone who says that these primary systems will not fail or that base layer fallback to other modes such as HF and NVIS is not necessary!
- This is wishfully thinking about vulnerabilities and a decade or more out of touch about modern, automated HF-NVIS systems.
- Modern, automated HF-NVIS networks are taking their rightful place as the Base Layer Fallback Mode for federal, state, and local government and for critical infrastructures.

Why do these misconceptions about HF persist?

Common User mental images when HF radio usage is mentioned

- **COMPLICATED TO USE**
- **SUBJECT TO THE WHIMS OF THE ATMOSPHERE**
- **OLD, OUTDATED TECHNOLOGY**
- **SLOW**
- **UNRELIABLE**
- **LOW CAPACITY**
- **EXPENSIVE**
- **BIG / BULKY**



Drawing Courtesy mamamia.au

- Reasons for misconception
 - People uninformed
 - Proponents of other technologies
 - Not abreast of technical innovations in HF
 - Erroneous prior experience or beliefs
 - Conclusions based on misinformation
 - Assumptions are not fact based.

From a presentation by Mark Allen W6PC

Whereas LMR Direct is the base layer fallback for local communications,
HF-NVIS is the base layer fallback for regional and wide areas

Local

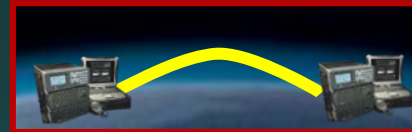
LMR Direct
(or FirstNet devices off network)



Primarily voice for on-scene tactical communications

Regional

HF-NVIS Direct



Voice, chat, email, file transfer for regional command and control

Wide-Area

Wide-area HF-NVIS Fallback Networks
(Patent Pending NVIS Communications)



Primarily email (with attachments) for national strategic management



Think of HF-NVIS as a safety net under our infrastructure-heavy primary systems

- This net looks pretty makeshift
- It's because they built it after the bear got stuck in the bridge.
- We should build ours before we get stuck!

Organizations across many lines of business are building their HF-NVIS networks

Governmental Agencies

- Federal
- State
- Local



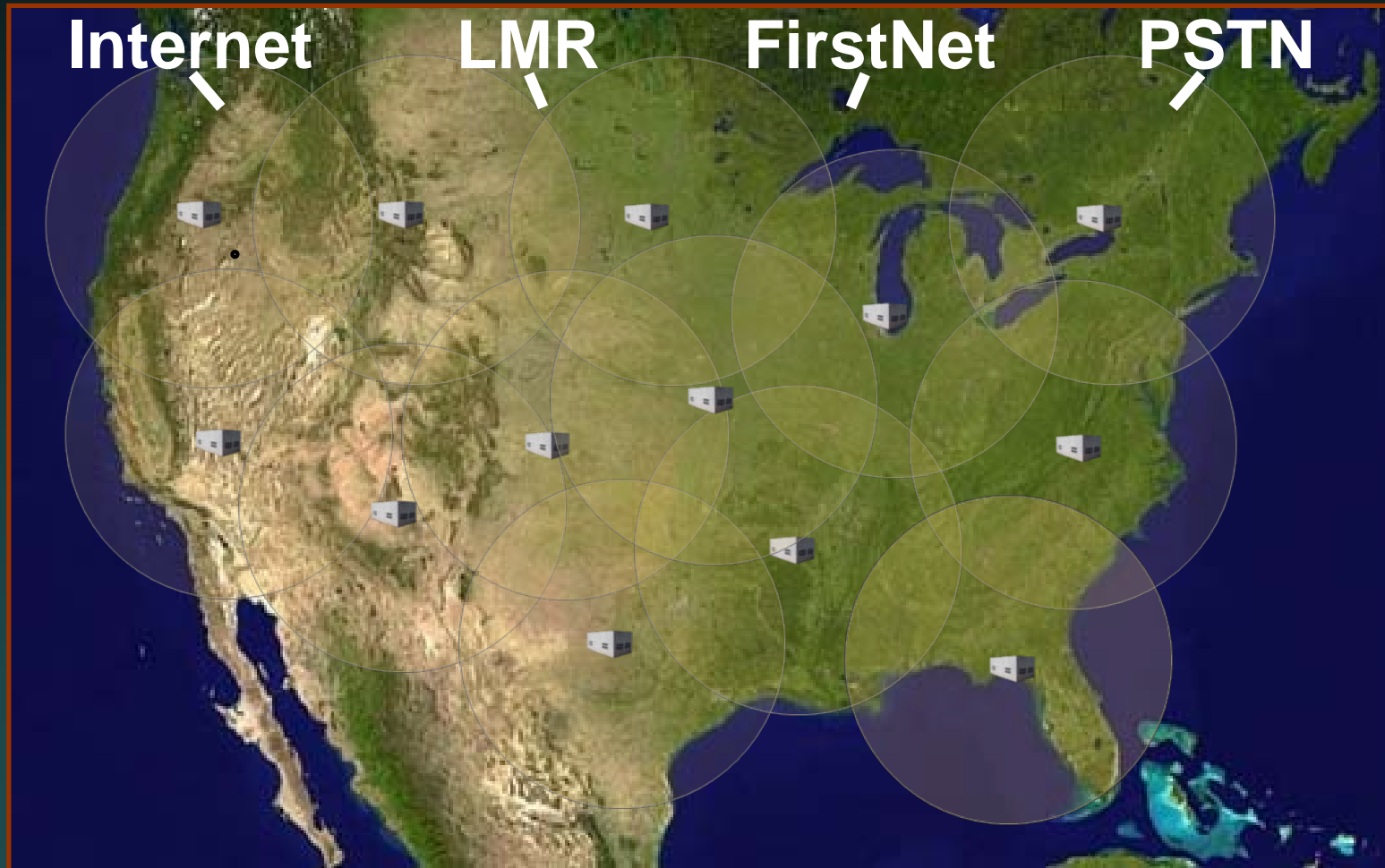
Critical Infrastructures

- Power Authorities
- Gas/Oil pipelines
- Airports
- Hospitals

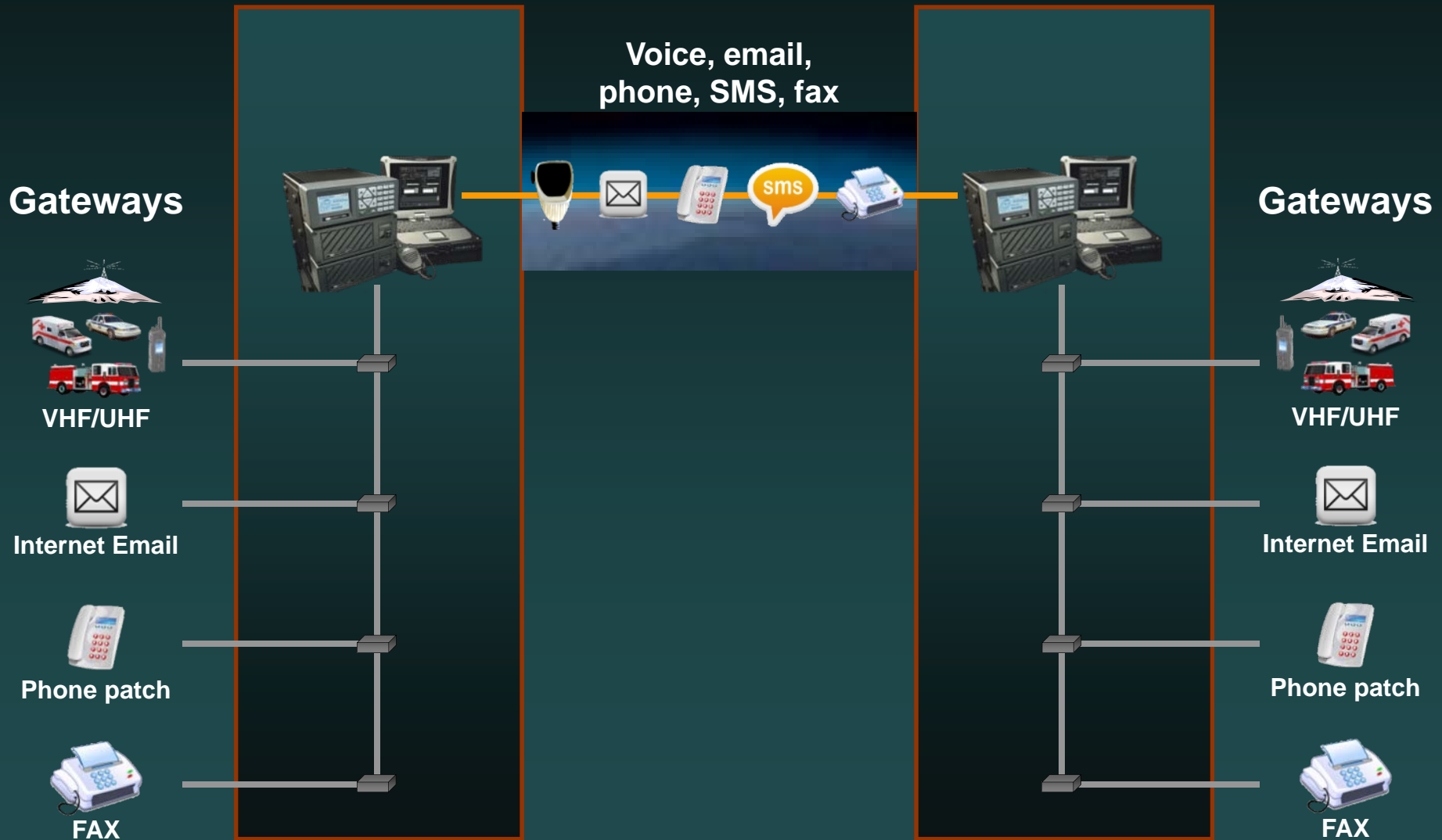


And not just for fallback: They are using HF-NVIS for **primary** communications in areas that do not have communications infrastructure

They want fallback away from other infrastructures



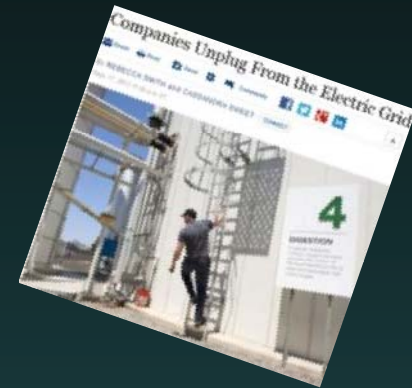
They want gateways to other infrastructure



They want to provide their own communications pathways, “**off the grid**” from public communications infrastructure



This is similar to them going off the electrical grid because they know it is not reliable



We remember the terrorist attack in Morgan Hill, CA that left thousands without cell phone or landline service



Did you know that they also fired hundreds of rounds into the electrical transformers?

How manufacturers should prepare for the revitalization of HF

- Build smaller (LMR sized) base and mobile equipment
- Enhance ALE scalability to large, heavy traffic networks
- Improve antennas for base, mobile, and portable
- Bring prices down to LMR range for public safety
- Align with HF network integrators
- Become involved in large network planning

A satellite-style map of the United States and parts of Mexico and the Caribbean. Overlaid on the map are several semi-transparent, overlapping circles of varying sizes, representing signal coverage areas. The text is centered over the map.

**Let's be ready for the
Emergence of HF-NVIS as the
new Base Layer Fallback mode
for government, Public Safety,
and Critical Infrastructure.**

Thank You

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