



Digital Television (DTV) Datacast for First Responders

Explanation, precedence, and approach

October 2014

DTV Datacast Content

- 1. Benefits of Digital Television (DTV) datacast**
- 2. What is Digital Television (DTV) datacast?**
- 3. Who uses it now?**
- 4. Addendum**
 - a. Backup (DTV applications and technical slides)**

DTV Datacast

Benefits

- **Datacasting is a rare combination of proven technology to manage content and information flows that also comes with its own “existing” delivery network. This combination frees up resources on other networks and assures delivery by not relying on resilient infrastructure that can become congested by other users.**
- **Since the broadcast infrastructure is already financially sustained by a well-established public broadcast television, Datacasting can be very cost-effective to deploy.**
- **Recent national disasters in the United States and Japan showed the resiliency of broadcast television infrastructure at times of significant disruption. In those cases, the broadcast infrastructure remained intact and operational throughout these incidents, while mobile services were severely degraded, overloaded or otherwise inoperable.**
 - **Superstorm Sandy, a more recent U. S. disaster, caused similar communications failures. Flooding and power outages largely compromised the cell and public safety radio systems in southern New York and Northern New Jersey. Television, however, was mostly unaffected due to back up power and redundant systems.**

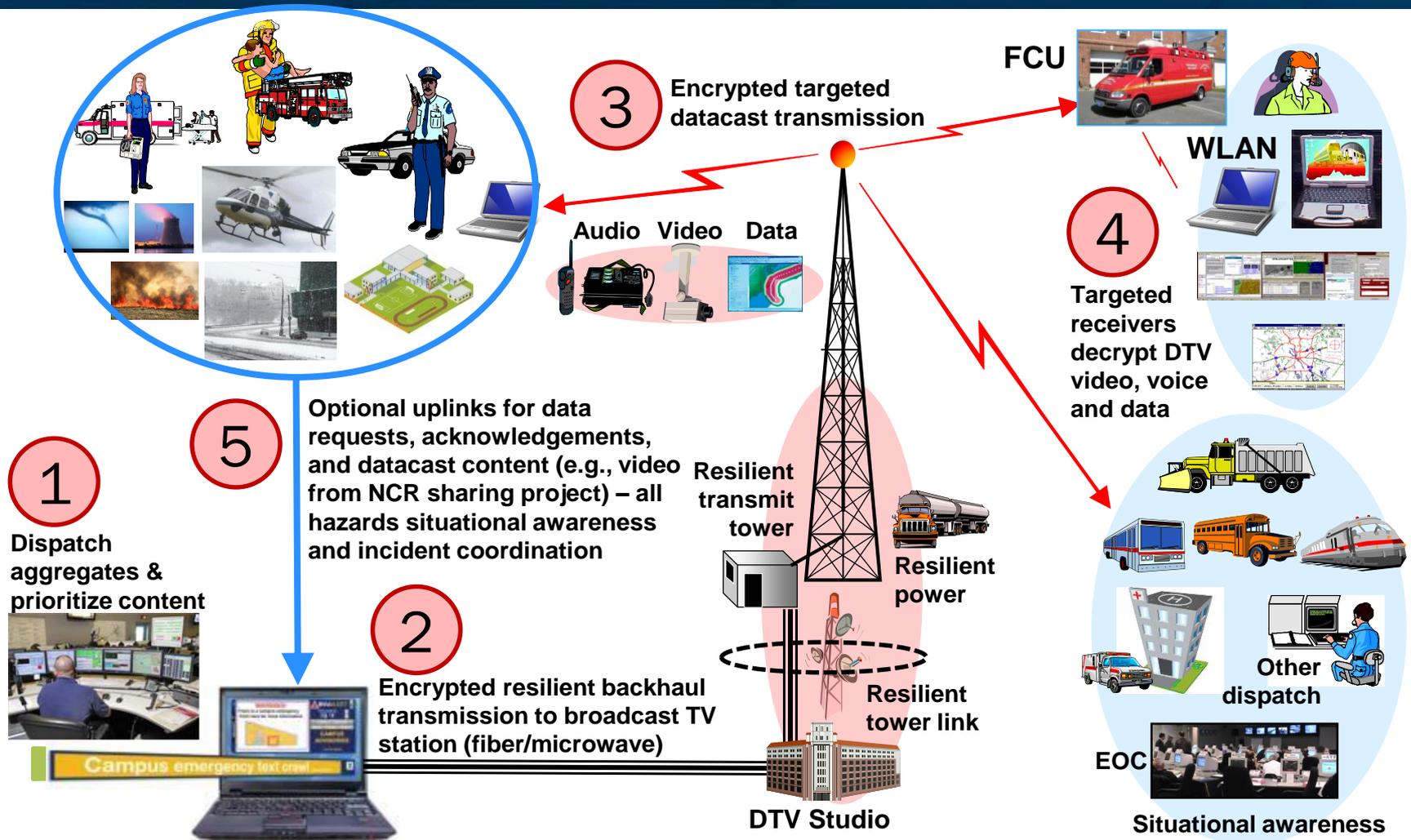
DTV Datacast

Benefits

- This infrastructure is completely independent of all cellular and land mobile radio (LMR) systems and therefore does not suffer the congestion or disaster-survivability vulnerability of these networks.
- Datacasting combines the advantages of IP networks, that is, routing, encryption and receiver targeting, with the following advantages of broadcasting:
 - Wireless metropolitan-wide coverage using resilient infrastructure that is monitored and maintained by professional engineers
 - Natively broadcast multicast – send once receive many – which allows for an unlimited number of users to receive without congestion.
- Datacasting can augment existing public safety communication systems by providing video and data delivery to an unlimited number of users, while maintaining security and controlled distribution. Video and large file delivery could be offloaded from public safety radio systems allowing those systems to be more efficient and reliable for other content.

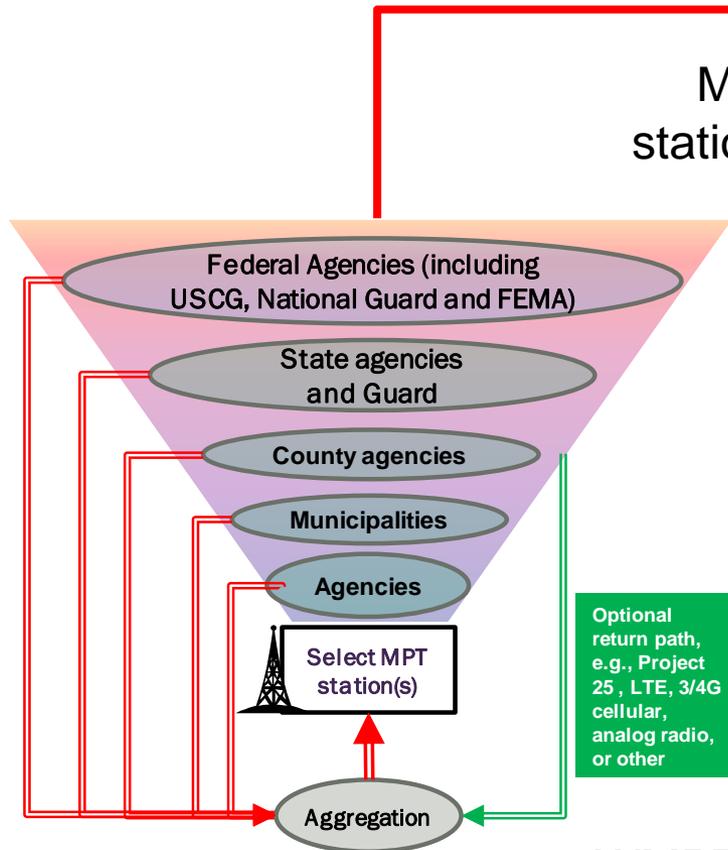
What is Digital Television (DTV) Datacast?

High-level diagram

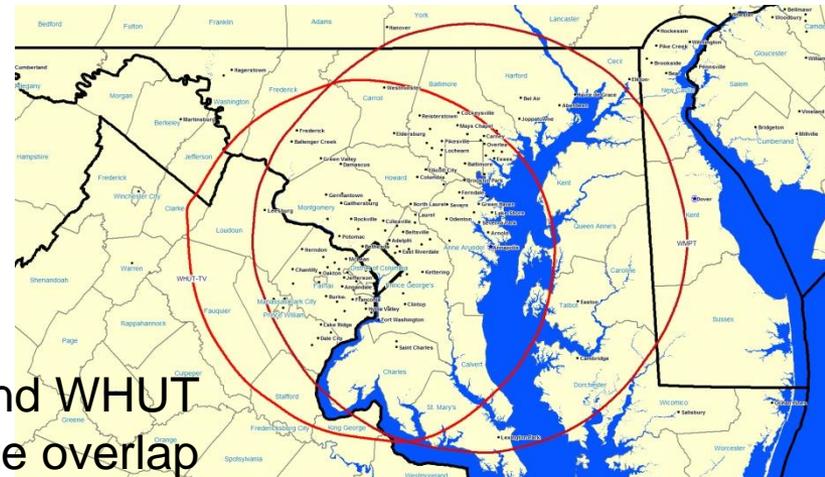
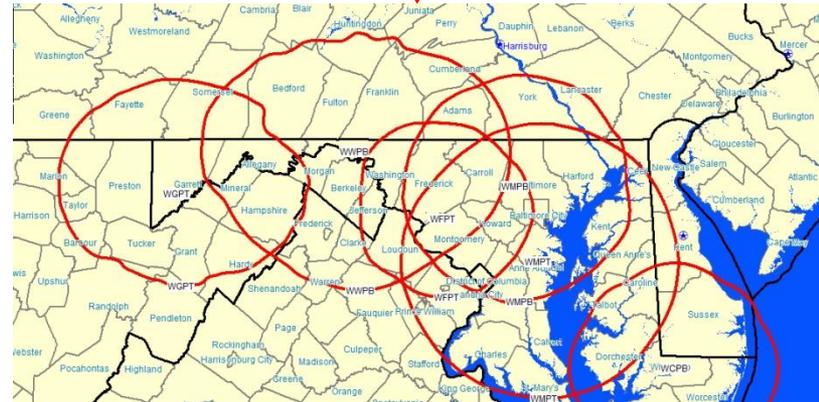


Concept of Operations for Nationwide Datacast

Concept of operations and agency standard operating procedures



MPT stations



WMPT and WHUT coverage overlap

Who Uses It Now?

Operational and trial systems

- In Norfolk, Virginia, similar technology is being deployed to improve response at several institutions of higher learning
- Blueprints, crisis plans, security camera feeds and other data are being aggregated for distribution to local public safety units
- Metrics manage content, prioritize and explore common data that improves awareness across all campuses



Reference: David J. Mulholland, Commander, IT & Communications, United States Park Police

- Supports situational awareness for July 4, 2011/12, celebrations on the National Mall
- U.S. Park Police (USPP) deployed a datacasting to push video and alerts across diverse disciplines and jurisdictions
- Fifteen agencies received relevant video feeds from U.S. Park Police and to dozens more agencies had an incident occurred
- Video highlights from USPP event at <http://www.youtube.com/watch?v=sOMaGKJGGYI>

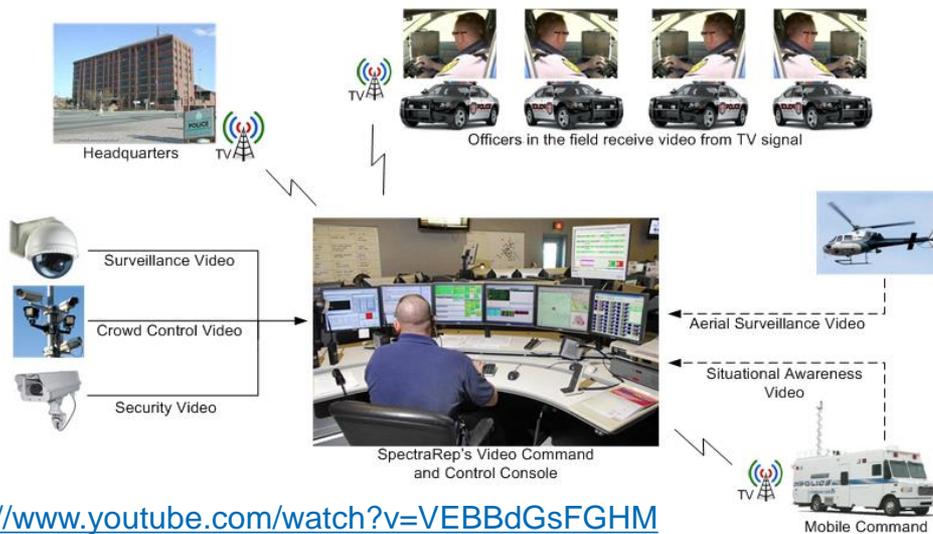
Who Uses It Now?

Las Vegas/Clark County school security system

- Las Vegas, Nevada school security, the Clark County (Las Vegas) Nevada School District operating 370 schools and responsible for over 300,000 students with 12,000 security cameras
- No capability to distribute critical incident response data to police and emergency personnel operating in the field
- KLVX-TV public television signal distributes public safety data throughout the Las Vegas Valley



IncidentONE™



<http://www.youtube.com/watch?v=VEBBdGsFGHM>

Addendum

Backup material

Need for Resilient Broadband Communications

Failure of communications and planning

The Washington Post

Bridge Collapse: Why Did Cell Phones Fail?

by Tom Conlon, posted Aug 4th 2007 at 11:03AM



Getty Images

The Washington Post

Communications Networks Fail Disaster Area Residents

By Arshad Mohammed and Jonathan Krim
Washington Post Staff Writers
Thursday, September 1, 2005; Page D1



The Boston Globe

Three killed, more than 100 injured in marathon blast:

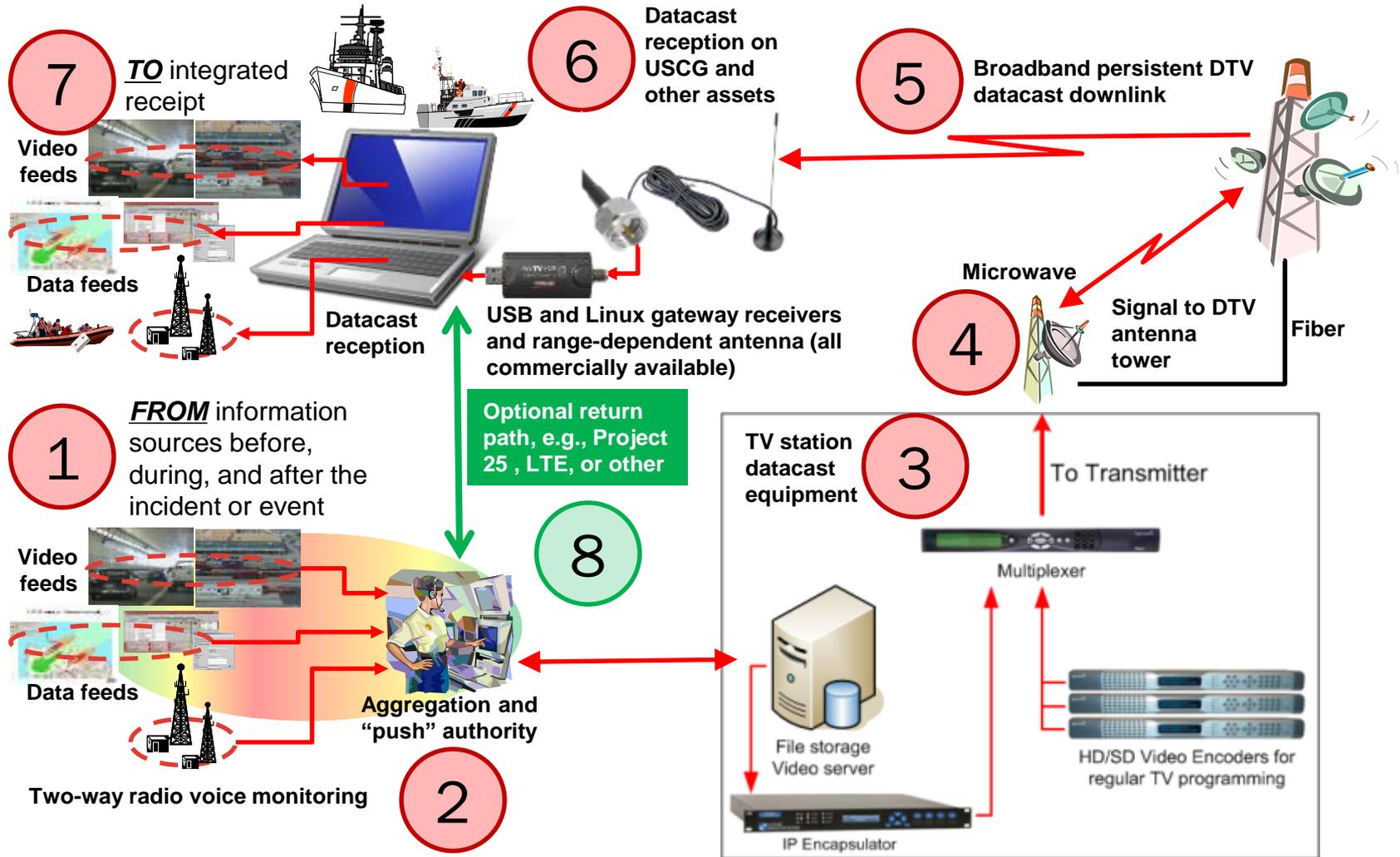
Area is locked down as FBI leads
investigation

By Mark Arsenault, Globe Staff, April 16, 2013



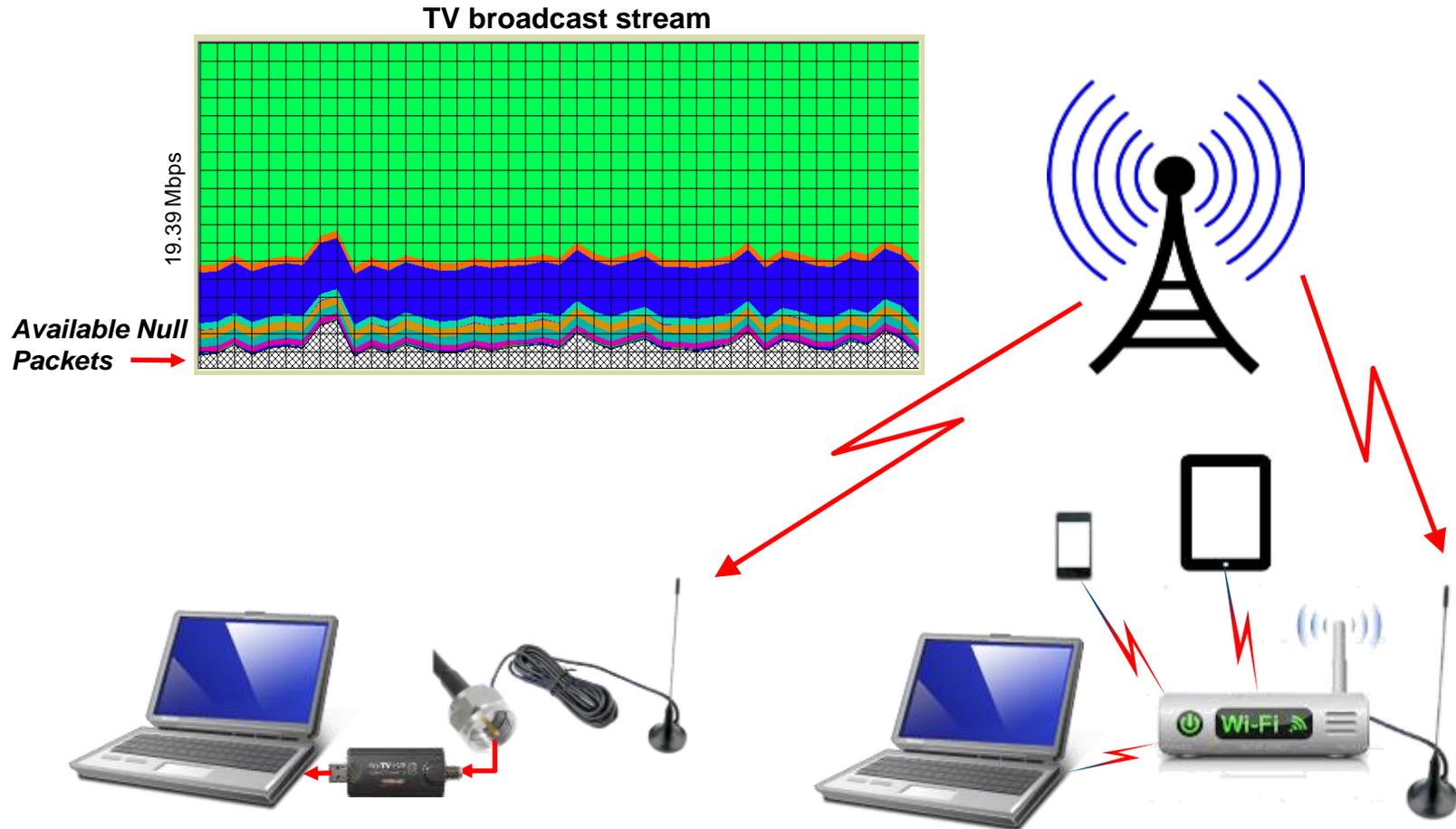
A Datacast Communication System for Public Safety

Encrypted voice, data, video transmission to selected receivers



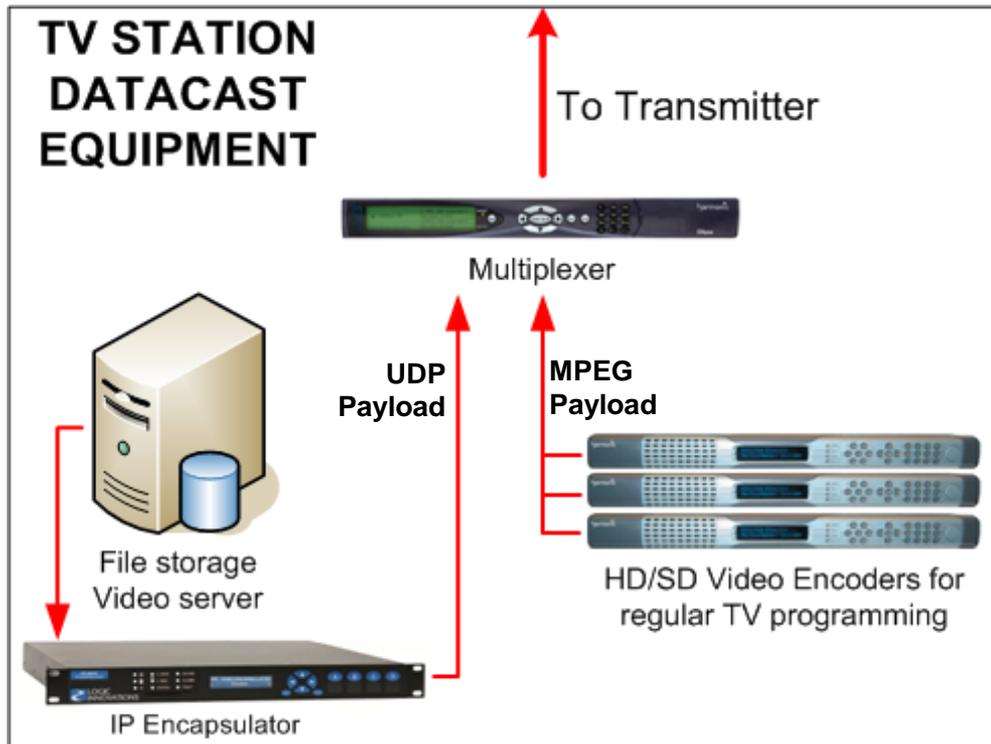
Datacast Packets and Receivers

Encrypted voice, data, video transmission to selected receivers



Datacast Station Equipment

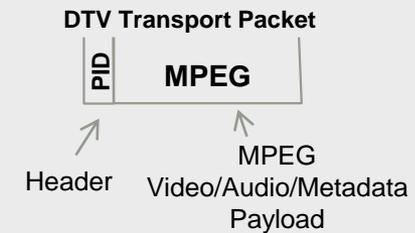
IP encapsulation in the MPEG transport stream



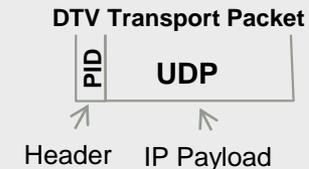
DTV is a stream of MPEG transport packets



DTV has MPEG content in the payload



We substitute encrypted IP packets in the MPEG payload



Datacast Station Equipment With Mobile DTV IP encapsulation in the MPEG transport stream

