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Migrating From Cellular Digital Packet Data

Key Points

- Public safety agencies that use commercial cellular digital packet data (CDPD) will soon be forced to migrate to another method of communication.
- Commercial companies are now offering wireless data services that transmit data at significantly higher speeds than CDPD.
- Several factors should be considered when migrating to a new service, including reliability, bandwidth, subscriber fees, and coverage.
- Private mobile networks consisting of radio frequency network data systems or wireless broadband networks are also viable options.

CDPD Phaseout

The most popular form of network connectivity for public safety agencies, cellular digital packet data (CDPD),[1] will soon be unavailable. Hundreds of agencies are now being forced to stop using the CDPD network they have relied on for years. Citing failing equipment and an insufficient user base, major carriers of CDPD have announced that they will no longer offer or support the service. Yet, many public safety agencies are reluctant to give up CDPD services.

Although CDPD provides slower service than the newer networks, most mobile data application queries have been designed around the limited CDPD bandwidth, which has proved more than adequate for conducting law enforcement-related queries. For example, public safety agencies found CDPD extremely beneficial because it continued to function as normal during major disasters when public communication networks were overwhelmed.

CDPD can be replaced by wireless broadband systems, which are becoming more widely available. Public safety agencies can now plan to migrate to either a commercial or private wireless data network.

Commercial Wireless Data Services

Next-generation commercial wireless data services such as EVDO (Evolution Data Only) are being offered as replacement services by wireless systems operators nationwide. These wireless broadband data services typically provide throughput many times greater than the older CDPD technology—the speed of data transfer on wireless broadband systems is comparable to wired commercial services such as DSL. These services are typically associated with the public Internet, however, and require additional security precautions, such as use of an encrypted VPN (virtual private network).

Private Mobile Network

Using commercial mobile radio service providers is not the only method of connecting to mobile units. Some agencies have chosen to build their

own wireless data networks. These narrowband networks are typically slower than the new cellular services because they operate at speeds similar to CDPD. They usually operate in the 800 MHz band, but may also be found in other frequency bands.[2] Private networks typically cost more to install when compared to the startup costs of leasing a commercial mobile radio service, but they often do not have the same recurring monthly costs associated with cellular service. Additional spectrum in the 700 MHz band, which is slated to be converted to public safety use by 2009, will make high bandwidth or wideband network deployments far more feasible in congested areas.

Building public safety broadband networks using higher frequencies (such as those in the 2.4 GHz or 4.9 GHz bands) has also become quite popular. Due to the high number of access points required, these networks have a significant startup cost. Nevertheless, their broadband capacity makes it possible to offer imaging, realtime video, and other applications in patrol vehicles. Because 2.4 GHz is an unlicensed band, anyone can use the spectrum; on the other hand, 4.9 GHz must be licensed, so only government entities associated with safety can use it. Technology developments, such as those associated with WiFi and WiMAX, are making the deployment of private wireless broadband networks a realistic alternative.

Switching Services

Migrating to wireless broadband services can create significant financial and safety concerns for agencies. The following factors should be considered when migrating to a new service.

- **Reliability.** Sharing commercial networks may reduce reliability because when the public safety sector needs the network the most, it may be degraded or completely overwhelmed by public user activity.
- **Bandwidth.** Newer wideband or broadband network technology can offer considerably greater bandwidth, making it possible to share still video and pictures. Older mobile data computer applications found in many patrol vehicles were designed to run using the lower bandwidth of CDPD services—thus, these applications will often have to be redesigned or replaced to take full advantage of the increased bandwidth.
- **Subscriber fees.** The monthly service fees for increased bandwidth are often greater than those associated with the older CDPD technology. In some cases, existing in-car software cannot take advantage of increased bandwidth, and users may have to pay considerably more for the same functionality.
- **Coverage.** In many cases, newer commercial networks are not completely built out, and many areas may have no coverage, making communication impossible. A coverage map, especially one provided by the carrier, is typically not a reliable indicator of whether mobile units will work in remote areas. In-car testing, in association with service coverage guarantees, is a much better method of assuring coverage.

Outlook

The end of the CDPD era will have significant financial, technical, and operational implications for public safety data communications. The new era should be embraced with an open but informed mind. Increased bandwidth will likely open the door to some exciting new public safety features.

For More Information

- NIJ's Communications Technologies (CommTech) Web site: www.ojp.usdoj.gov/nij/topics/commtech
- Regional National Law Enforcement and Corrections Technology Centers:

  Northeast (Rome, NY) 888–338–0584

  Southeast (Charleston, SC) 800–292–4385

  Rocky Mountain (Denver, CO) 800–416–8086

  Western (El Segundo, CA) 888–548–1618

  Northwest (Anchorage, AK) 866–869–2969

  Rural Law Enforcement Technology Center 866–787–2553

Notes

1. CDPD uses cellular frequencies (800–900 MHz) to transmit data at rates of up to 19.2 Kbps.

2. For more information about frequency allocation, see NIJ InShort, *Radio Spectrum,* NCJ 214962, August 2006.

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