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Hurricane Harvey's Hit on Houston Spurs NextGen 911

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As Hurricane Harvey flooded Houston with over forty inches of rain in late August, 2017, damaging over 40,000 homes, Houston residents in trouble did what they are trained to do – they called 911. But the emergency number struggled with the high rate of calls. At the peak of the storm, the service received 80,000 calls in a 24-hour period. The normal number of calls during such a period is 8,000.

Many people were unable to get through. Those that did were often put on hold while a recording promised that someone would be with them shortly.

Like most 911 systems, Houston's is based on telephone land-line technology. There are thirty 911 centers in the county containing Houston, the largest 911 operation in Texas and one of the largest in the country. Call takers took turns pulling twelve-hour shifts and sleeping in the building during the hurricane – there was no other option. Rerouting calls to 911 centers outside the system is not technically feasible because of the legacy telephone technology.

Next Generation 911 systems (NextGen 911) would make it easy to quickly shift calls to other counties. It also supports SMS text messaging, a boon when hold times are long and battery power is a precious resource.

Current 911 Systems

Around the world, we depend upon emergency numbers for critical police, fire, and medical support. Virtually every country has one or more emergency numbers. In the United States, Canada, Mexico, and many Latin American countries, the emergency number is 911.

Emergency calls are answered by telephone operators or dispatchers. If a call is answered by a telephone operator, the operator will determine the appropriate dispatcher to which to route the call. It is the dispatcher's responsibility for getting the appropriate emergency services to the site.

Stratus Technolgies

When a dispatcher receives a call, he or she must be provided with all of the emergency information and the location of the nearest available emergency vehicles so that appropriate dispatch instructions can be issued. Most emergency call systems (certainly the larger ones) are dependent upon computer-aided dispatch (CAD) systems. These can be large server farms (or virtualized farms) providing multiple applications, such as computer-based telephony, computerized radio control, automatic number verification, location mapping, automatic

emergency vehicle location, and real-time access to dispatch logs and police, fire, rescue, motor-vehicle, and court records.

The first 911 system went into operation in the United States in 1968. Since then, the term “911” has become synonymous with public safety. The formal name for an emergency call center like the U.S. 911 centers is Public Safety Answering Point (PSAP). There are currently over 6,000 PSAPs in the United States, handling an estimated 240 million 911 calls per year.

Next Generation 911 Systems

The current 911 services are based on telephone communications. The receiving operator or dispatcher obtains the details of the emergency from the caller and arranges for emergency services to be dispatched. If the call is from a land line, the address of the caller is generally known. If the call is from a mobile phone, typically only the approximate location is known; and the actual address must be obtained from the caller.

However, with the advent of smart phones, much more information is now available. Callers can communicate via text. They can take still photos and videos showing more detail of the emergency. It is estimated that currently over one-third of 911 calls originate from wireless devices, and the expectation is that this percentage will continue to grow.

The next generation of CAD systems, dubbed NextGen 911, will allow CAD systems to receive, capture, and route digital communications such as photos and text messages received from virtually any communications device to dispatchers and emergency responders. For instance, a caller could take a picture of a tanker carrying hazardous material that is involved in an accident. The photo could be relayed to dispatchers so that they know in advance the type of hazardous material they will be dealing with and can dispatch the appropriate emergency equipment to the site.

If Houston Had NextGen 911

If Houston’s 911 system had been upgraded to NextGen 911, people in trouble could have gotten through to dispatchers much faster via text messaging. They would have been able to send photos of their situation to help first responders in their rescue. They would not have been put on hold while operators worked through the backlog of waiting calls.

I anticipate that Houston’s experience and the experiences of others as they were affected by hurricanes such as Irma and Maria will hasten the adoption of NextGen 911. The benefits are well worth the costs.

Acknowledgement

Information for this article was taken from the following source:

Houston area copes with flooding as Harvey delivers pounding rainfall, *CNN.com*; August 27, 2017.
Harvey highlights issues of aging 911 tech, *Money.CNN*; September 1, 2017.