

City of Tucson The Digital Divide Project

Customer profile



Local government | Tucson, AZ



“With this solution, we are moving Tucson into a leadership position nationally in providing a cost-effective solution that is flexible to provide both city-sponsored internet connectivity and technology that can be leveraged for our smart-city connectivity.”

Collin Boyce

Tucson CIO

Challenges in the way of digital equity for Tucson residents

Like many cities across the country, the City of Tucson has a digital divide problem. The city has several disadvantaged neighborhoods on the north and west sides of the city. Many of the people living in these areas are living in poverty and not able to afford internet service. As an additional challenge, many also live in trailer parks where there is no internet connection available even if they were able to afford it. When people living in poverty are forced to decide whether to spend what little money they have for connectivity, they usually choose a cell phone over internet service as it is deemed more necessary to be able to communicate. Even the lowest cost options from the major internet service providers in the area are cost prohibitive for this community.

Solutions at a glance

- Leveraging advanced 4G/5G hotspots from JMA Wireless and Dell Technologies
- The wider 4G LTE range proved 50MB internet speeds and the smaller 5G circle proved up to 100MB connections
- Rugged 4G/5G to WiFi devices were provided to approved applicants and provisioned with a city supplied SIM card making the network more secure
- Each Dell server supports 4 hotspots to keep deployment costs much lower than the competition

Putting federal dollars to good use

The city considered several options in how to solve this challenge and the urgency was heightened as these communities required connectivity for remote work and school during the COVID pandemic. The city wanted to leverage CARES Act funds for this project which eliminated the option of going with the major telecom or cable providers as these funds could not be used to prepay for services into the future. The city determined that the best solution would be to create and deploy its own wireless network.

City IT leadership considered deploying WiFi hotspots but found that they would need to deploy and maintain approximately 20,000 hotspots to cover the 70 square miles of the metro area helping the disadvantaged community. The city's CIO, Collin Boyce, learned of a new option in a conversation with Dell Technologies. The city could test the use of private 4G/5G CBRS connectivity as a new solution offering from Dell and its wireless 5G partner JMA Wireless. The most intriguing capability of this solution was the much broader area covered by the 4G/5G hotspots as each hotspot could provide wireless connectivity coverage for up to a square mile.

Establishing critical connections with a joint solution

Moving quickly due to the CARES funding deadline, the city tested two CBRS 5G providers to determine which solution could best deliver the results the city was hoping to achieve. After testing both options, the city selected the Dell/JMA solution as the best fit for the city. Boyce said that the selection was based on several factors. First, the deployment and testing went much better with the Dell/JMA product. Secondly, the solution was rapidly set up and functional—a significant benefit as the city needed to work with a provider who could deliver before the CARES Act deadline. Boyce was impressed with their “ability to execute.” He also noted that the pricing for the Dell/JMA solution was much better than the alternate provider.

The testing showed that the solution could deliver the type of internet speeds that the city was hoping to achieve. The 4G LTE connection, which has a wider circle of range, showed 50MB of internet speed and the 5G connection showed as much as 100MB per second inside the smaller coverage radius. Both connections are faster than most wired broadband connections and could provide the needed connectivity to the challenged communities. They also proved that they could cover the 70 square miles with only 80 hotspots due to the increased range of the solution compared to WiFi. Another advantage, the city found, is that each Dell server could manage up to four 4G LTE/5G hotspots so the number of servers needed and overall cost was reduced.

After testing, the city elected to use ruggedized Mi-Fi devices to convert the 4G LTE/5G network into local WiFi hotspots. They found that the rugged devices survived much better in the harsh conditions of the Tucson desert. Each rugged device would be provisioned with a city supplied SIM card making the solution even more secure.

A game-changing outcome for a tech-savvy city

The city is in the process of deploying 40 hotspots and will expand further in 2021. This will provide the needed connectivity for these areas to allow for remote work and school. After announcing the solution, the city has received over 2000 applications from residents of these neighborhoods and is processing them to ensure that the city sponsored free internet service is provided to those most in need.

The city also plans to use this new network for city services to reduce the spend on external carriers. This could save the city significant amounts over time. Lastly, the new network will provide the connectivity needed for the future deployment of “smart” devices which can help the city to gather data and improve city services for the community.

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