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Technology News

Digi Wi-Point 3G Helps Drive Toyota Vehicle Research Forward

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Remote Wi-Fi networks enable more accurate GPS positioning of test vehicles – by means of a router combining 3G and WiFi technology.

Vehicle technology research and development is important to innovations in driver safety applications and other vehicle functionality. The Toyota Technical Center R&D team is dedicated to developing safe and technologically-advanced automobiles. As part of this mission, the group seeks to improve GPS-related vehicle functionality such as route recommendations, traffic updates and advanced features like auto parking and auto pilot.

Because vehicles are in need of highly accurate positioning information to perform such tasks, the Toyota Technical Center needs the most accurate GPS information to test and develop these technologies. GPS information can be affected by issues like satellite behavior, cloud coverage, weather patterns and other variables. Engineers are able to use this information in order to accurately calculate a test vehicle's position. However, satellite and weather information are extremely time sensitive. To allow engineers real-time access to this information while in the test vehicles, Toyota Technical Center deployed the Digi Wi-Point 3G, a PC card based 3G cellular router with integrated Wi-Fi access point. It acts as a cellular-to-Wi-Fi hotspot and provides secure, high-speed Internet access to engineers in the remote test vehicles.

"Our goal is to observe, calculate and broadcast the satellite messages regarding which satellites are behaving poorly to our test vehicles within seconds," said Michael Samples, research engineer, Toyota Technical Center. "In order to provide the most accurate information possible to the vehicles, we must be connected in real-time."

The Digi Wi-Point 3G creates a Wi-Fi network in the test vehicle allowing engineers with a laptop in the car to connect to the Internet and access the real-time GPS information. The Digi Wi-Point 3G creates the Wi-Fi network via a high-speed cellular connection.

Toyota Technical Center considered other wireless solutions including point-to-point wireless radios. Wireless radios proved inefficient, however, because each time a testing vehicle is added a radio must also be added to the base station and the vehicle. Using the Wi-Point 3G, Toyota Technical Center can set up a Web server allowing for multiple clients.

"It's much easier to add another client onto the Web server than adding another radio to the base station," Samples said. "The Digi Wi-Point 3G solves our current problems and should work well for future applications. We find it to be a very good testing and development platform and anticipate using it in other areas of R&D."

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