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VehiclePing Application Form

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This project was completed by Marcel Holder, '13 during the Summer 2013 under the guidance of Dr. Stephen Longo. The project was an implementation that is described below. The contents of this project are proprietary and access is restricted.

Project Description

“Vehicle Ping” (application name) provides a simple user interface that serves as a monitoring and preventative maintenance tool of the WLAN (Wireless Local Area Network) Access Point at a bus garage and for testing connectivity to wireless equipped vehicles.

The primary operation entails executing Ping (a pc network command used to test whether a particular host is reachable across an IP network) requests and capturing ping responses from wireless equipped vehicles. The results are saved in an integrated Microsoft SQL Compact Edition database and analyzed to get an idea of the effectiveness of the WLAN and its status (whether it is working or not working), and to identify vehicles that might have non-working wireless equipment (these are vehicles that continuously fail to respond ping request).

VehiclePing is a Windows form application built in C# using Visual Studio 2010. The application is comprised of seven class objects (see class diagram) and two flat tables, Default_Settings and Vehicle_Ping_Log that sit on Microsoft SQL Compact edition database. It is designed to interact with the wireless network of SEPTA's CARD (Computer Aided Radio Dispatch) system. This network uses private 10.x.x.x IP (Internet Protocol) addresses and is a separate network from SEPTA's primary network. Each vehicle in the fleet has a unique identifier number painted on its side that corresponds to the private IP address that is assigned to that vehicle. The private (10.x.x.x) network address that the Access Point works on was designed by the company that developed and built the CARD system. The Access Point is positioned in the fuel lane of each garage. The fuel lane is where vehicles refuel after the end of their service run and placement of the Access Point guarantees that each vehicle will be in wireless range at some point during the day.