



Benefits and Outcomes

- **Optimize bus performance** by using real time vehicle telemetry
- **Decrease fuel costs** with real time location, speed and idle time tracking
- **Reduce carbon footprint** to cut costs by monitoring mileage and driving patterns
- **Increase field employee productivity** with office-in-the-truck technology enabling access to applications and data in the field
- **Reduce OpEx** with the Mobile WiFi Hotspot allowing multiple mobile devices to share cellular bandwidth

Connected Transportation for Education Solution

Business and Technical Challenges in Bus Management

Transportation managers are under constant pressure to minimize operational costs. There are several approaches to reduce costs that can include an improved miles per gallon (MPG) program, smarter routing and dispatch as well as preventive maintenance. Further, there is a consistent need to improve bus utilization that results in maximizing production and improve the Superintendent's satisfaction.

Transportation managers are increasingly being challenged to improve fleet up time via preventive maintenance. Real-time problem alerting specific to each vehicle provides optimization and cost reductions which are well beyond standard maintenance schedules used in the past. Optimizing driver productivity with a wide array of driver applications and requirements also provides an ongoing challenge when running a large transportation system. Finally, to meet these challenges requires the transportation manager to effectively integrate the vehicle and driver data into the enterprise network and applications.

Optimize Fleet Performance and Minimize Costs Connected Transportation for Education enables a transportation manager to optimize vehicle performance and minimize costs, while seamlessly integrating the bus and driver into existing enterprise systems.

- **Decrease Fuel Costs:** With real time location, speed and idle time tracking, the Cisco solution can provide real time and historical feedback to manage driver behavior to improve fuel expenditure. Real time GPS also reduces fuel consumption by optimizing fleet dispatch.
- **Fleet Up-Time:** Real time vehicle telemetry allows the operator to leverage optimally timed preventive maintenance as well as respond to real time alarms to maintain an always on and available fleet.
- **Real Time Vehicle Tracking:** The Cisco solution allows for real-time vehicle tracking with geo-fencing to enable alarming on an off route or out of region vehicle, automated work orders upon leaving a job site, or optimal dispatching based on location.
- **Data Minimization:** Connecting the vehicle and driver for real time bus improvements can create a significant volume of data that can be both costly to back haul and unwieldy to manage. The Connected School Transportation solution can both minimize data that is sent from the vehicle as well as provide visual representation of the data volume that is returned to the transportation manager.

Solution Components Recommendation

The Connected Transportation for Education solution is often comprised of the following components:

- **Cisco ISR 829:** 829 Industrial Integrated Services Routers are compact, ruggedized, Cisco IOS Software routers with support for integrated 4G LTE wireless WAN and wireless LAN capabilities intended for school transportation vehicles.
- **Davra Ruban Software:** Provides real time monitoring, tracking and management of fleet based assets while managing the large data set that a fleet generates to drive actionable business insights.
- **Instant Connect:** IP based communications and dispatch platform that enables cost effective, large scale fleet to HQ information exchange.
- **Video Surveillance Manager and HD Cameras:** IP based solution that leverages the network to deliver and receive live and recorded video surveillance with excellent scalability, reliability, and bandwidth management.
- **Ignition Sense Technology:** Maintains network device power while ensuring the vehicle battery is not drained.

- **Cisco Cyber Security to the Bus:** The same industry leading cyber security that is secure and easy to deploy in school districts is leveraged in the Connected Transportation for Education solution. The enables the transportation manager to confidently deploy applications with sensitive data to the fleet without compromising ease of deployment or sustainability.
- **Fleet network and application convergence:** With the Connected Transportation for Education solution, no longer are multiple fleet networks required to support a fleet and its driver applications. The vehicle telemetry, location, wireless hotspot, worker applications and others can all be converged onto one Cisco in-vehicle router resulting in lower OpEx with respect to carrier fees, and CapEx with respect to in fleet communications equipment.
- **Enable in-cab applications:** These applications digitize manual driver processes for pre-trip and post-trip reports; automate hours-of-service (HoS) reports to maintain compliance; track and improve CSA scores.

Why Cisco?

The Connected Transportation for Education solution can help transportation managers reduce fuel costs by as much as 10-30% while gaining thousands of hours of more productivity from the fleet and its workforce. The solution can also drive a reduction in employee speeding and citations by up to 80%. The reduction in operational costs and improvements in transportation management and worker efficiency have allowed school districts to achieve an ROI typically in less than one year.

Next Steps

The Connected Transportation for Education Solution is based on the Cisco validated design and architecture for Cisco Connected Mass Transit. To learn more, visit www.cisco.com/go/masstransit.