

## DragonWave solution improves the Capacity and Reliability of Critical Public Transit Systems

# Case Study

### BACKGROUND

Established in 1954, the Toronto Transit Commission (TTC) is a public transport authority that operates subways, buses, streetcars and rapid transit lines in Toronto, Canada.

With average daily ridership exceeding 1.5 million passengers, the TTC operates the third most heavily-used urban mass transit system in North America (behind only the New York City Transit Authority and the Mexico City Metro). The TTC currently oversees 69 subway stations as well as 180 connecting surface routes and employs approximately 11,000 personnel.



### CHALLENGE

As the fastest growing urban center in Canada, the City of Toronto's population has grown from 1.1 million to 5.1 million since the TTC was initially established. Over this time, the TTC has continued to evolve and modernize much of its infrastructure. Unfortunately, the incumbent service provider's aging copper plant had become increasingly unreliable, leading to network outages. In addition, these legacy facilities simply could not scale to meet the TTC's communication requirements which include traditional as well as critical public safety communications.

As a result, the TTC commenced a program in 2009 to improve and modernize their communications infrastructure in order to support rapid deployment of public transit applications and to improve the integration of applications and network infrastructure. This new platform had to provide a high level of reliability for their essential systems, including the Communication Information System (CIS) – a real-time, mission-critical Automatic Vehicle Locating tracking system that provides route management and dispatch functions for surface revenue vehicles and is utilized for emergency response, dynamic scheduling, management reporting, and a passenger information system tool.

The TTC was looking for a highly scalable, carrier-grade solution that offered low latency, high security, rapid and flexible deployments, and the lowest total cost of ownership.

The original consideration was to leverage extensive right of way assets, such as subway tunnels, to deploy a fiber network. Yet, despite this advantage, pulling fiber proved to be an extremely costly and time consuming endeavor. This led the TTC to examine a range of wireless solutions including 802.16d WiMAX point-to-point and Ethernet bridges, operating in the 5.4, 5.8 GHz, and public safety 4.9 GHz RF bands as well as licensed and unlicensed microwave Ethernet systems in 18 and 24 GHz spectrum.

**Driven by a comprehensive modernization program, the Toronto Transit Commission has selected the most advanced technologies, in both its transportation fleet, and its communications network.**



DragonWave Horizon products operate in both licensed and unlicensed radio frequencies between 6 and 38 GHz and deliver the capacity, reliability and latency to support the current and future requirements of enterprise networks.

## HORIZON COMPACT

# Solution

## SOLUTION

After a thorough evaluation process, the TTC selected DragonWave's Horizon® Compact packet microwave solution for several 18 GHz licensed links in the 18 GHz band and unlicensed links in the 24 GHz band.

This solution delivered on all of the TTC's essential requirements including:

- |                                       |   |
|---------------------------------------|---|
| A Highly Scalable Packet Architecture | • The Horizon Compact remotely scales up to 800 Mbps per link.  |
| Zero Footprint, All-Out-door Solution | • An all-outdoor design results in simplified operations, reduced cabling, minimized power consumption and a significant reduction in site leasing costs. |
| Owned and Managed Infrastructure      | • Provides the TTC with much greater flexibility than a leased infrastructure from the incumbent.   |
| Rapid Deployment                      | • The Horizon Compact can be deployed in days, compared to 6 months or longer for wired solutions.  |
| High Reliability                      | • DragonWave's packet microwave systems can be engineered to deliver 99.999% availability.  |

By leveraging and combining the capacity of existing optical fiber assets with the ubiquity, reliability and cost-effectiveness of wireless networks, the Commission is creating a "wireless fiber" platform for the support and creation of emerging and future applications and services. Utilizing the strength and benefits of both fiber-optics and microwave backhaul, this network provides all the performance of wired links – at a fraction of the cost.

## SUCCESS STORY

The DragonWave solution represents a significant improvement in the ROI when compared to fully fiber-based solutions, while providing the scalable level of throughput required by the TTC.

After a successful pilot project, the TTC anticipates moving towards full scale deployment of wireless solutions handling mission critical communications.

“ The DragonWave wireless Ethernet bridge solution met the TTC's technical, physical and environmental requirements. The all outdoor DragonWave radio design is small and compact – everything in one box, delivering high capacity, scalability, reliability, manageability and maintainability, while reducing cabling and streamlining the delivery of traffic.”

- Robert Miller, IT Project Manager at the Toronto Transit Commission



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