



A Pronto Case Study
Train Phoenix : Wi-Fi on Rails



Introduction

Train Phoenix, based in Spain, has created a track record of successfully deploying WiFi on high speed train systems using a satellite based Internet system for high speed backhaul bandwidth. Here we highlight a deployment in Spain, and test results from that deployment in the summer of 2004 on the Renfe Rail system.



Rail WiFi means bringing Internet connectivity to trains, stations, depots and rail employees to provide a high level of service and value add both to the passengers as well as the employees. Wireless Internet access on trains enables them to browse the web, check e-mails and access corporate data via VPN, while traveling.

The train management and operations staff can access mission critical information live via a client extranet that allows to see at a glance which trains are running, whether they are delayed and how many passengers are using wireless Internet.

"We are delighted with the wireless communication solution delivered by Pronto. The new service provides passengers with the ability to get up to the minute travel information, news, check email and access entertainment services. Also onboard railway employees have the convenience of communicating with each other while on the move," says Rafael Chao Foriscot, Executive Director, Train Phoenix.

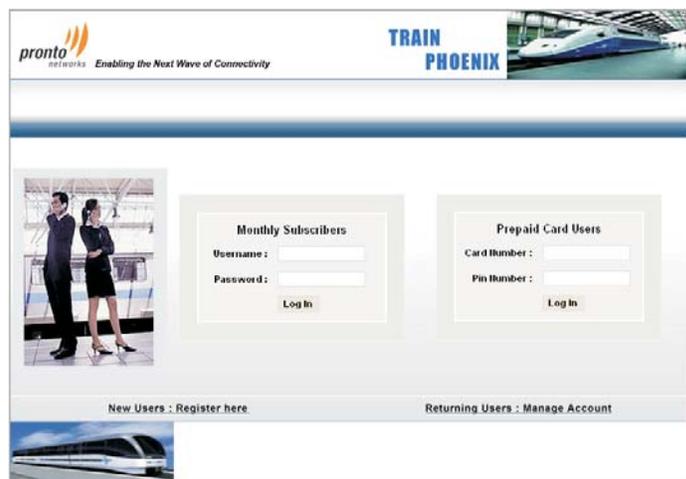
This allows both the passengers as well as the railway employees to be more productive, flexible and efficient in the way they operate.

Business Solution

To access the wireless Internet, the user is required to sign up for the access. The Pronto Service Controller installed within the compartment or in the control car of the train manages the wireless Internet access. At the first login attempt, the user is presented with a "login page" to register using Pronto's Customer Registration Portal. The users have the option of selecting the desired service from a variety of pre-defined options, ranging from a day plan to a monthly pass. After registration the subscriber can now access the Internet. This page can also contain local branding for the subscriber's benefit.



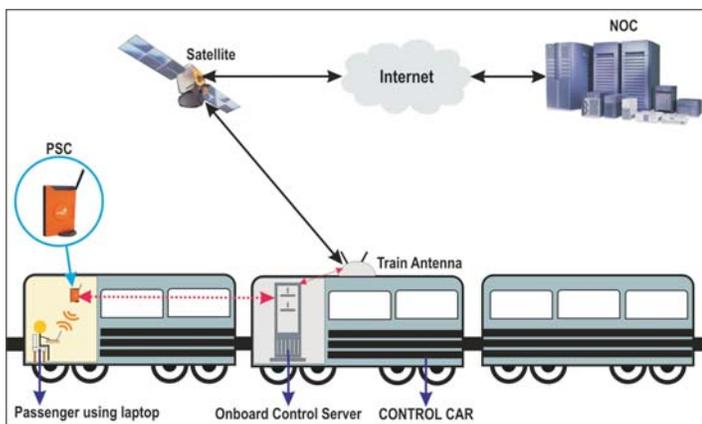
In the Pronto UniFi OSS solution, each PSC is considered a logically distinct "location", and thus one could design "location" specific service offerings, that would be unique to a specific route (e.g. Madrid to Barcelona), or be unique to a specific time period, or even unique to a specific coach on the train. This capability greatly enhances the flexibility of the service offering for Train Phoenix.





Network Description

The network architecture included WiFi coverage inside the train using Pronto's Service Controllers (PSC) installed in the coaches, with multiple subtending Access Points providing the radio coverage. All the access points in the controllers were connected to a single satellite antenna installed on the roof of one of the coaches (called the "Control Car") of the train. The PSC is also installed in this "Control Car".



During a test run on a train running between Seville, Madrid, and Barcelona, the satellite uplink was able to sustain bandwidth rates of 3.5 to 1.8 Mbps downstream and 0.9 Mbps upstream at an average train speed between 100-175 mph with speed sometimes reaching 200 mph. The network demonstrated an 85% coverage uptime, despite the fact that the terrain and the topology of the route had a number of changes in elevation, etc.

Benefits for Train Phoenix

- **100% connectivity** - No drop in connection except while passing through tunnels but the signal is recovered with 1 or 2 seconds
- **Internet acceleration** - Smart caching, superior data packet management and traffic shaping for best performance

- **Total security** - VPN support, SSL encryption of authentication data, DoS detection
- **Authentication** - Credit card, online/offline prepaid cards, RADIUS, Boingo, Ipass, configurable promotional access, etc.
- **System management / Remote reach** - Usage Monitoring, system information and automatic updates
- **Ruthless Preemption** - where the service providers can enforce different bandwidth rates for different user categories
- **24x7 Customer Service** - Pronto offered a 24x7 Help Desk to assist Wi-Fi users with problems related to Internet access
- **Support for customized services** - that minimize upfront investment and ongoing maintenance costs

The Result

"We are very excited about rolling out Pronto's wireless Internet solution. Not only will it enable our valuable business passengers to be even more productive on-board, but it is sufficiently robust and easy-to-use that we believe it will prove highly attractive to our leisure customers" says Rafael Chao Foriscot, Executive Director, Train Phoenix.



Providing such value-add has attracted new passengers onto the trains and has increased revenues to the service provider as well as the railway operator. At the same time this facility has helped to enhance employee productivity.



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