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The WiFi-enabled Airport

Recently, terms such as "smart airports" and "e-ports" have been coined. CableNet believes that the introduction of a common-use Wireless LAN (WLAN) into an airport paves the way for profound changes in the way airports operate and how they serve the traveling public. They also present the opportunity to grow non-airline revenues helping to buffer airports from the financial woes of their major tenants. The purpose of this white paper is to explore some of these changes and the opportunities they present.

Airports are truly unique venues. They possess the diverse communications needs of what have come to be called public hotspots, large and small businesses, retail establishments and public safety agencies. Each of these segments has its own requirements in terms of reliability, security, bandwidth utilization and quality of service. Fortunately, common-use WLANs can be logically partitioned into what are called virtual LANs (VLANs) so that each of these segments can be securely cordoned off from the other giving the appearance to the end user that they are on their own private WLAN. Furthermore, they can have administrative rights that enable them to manage their own VLAN with regard to such things as access policies and individual-user class of service. With this basic WLAN technology, the door is now open for the airport to offer a rich set of services that greatly improves the travel experience and makes the airport a better place in which to do business.

Services to the Public

Today, most Wireless Internet Service Providers (WISPs) are only providing basic high-speed Internet access. To CableNet, that is just the tip of the iceberg. As that service becomes more of a commodity over the next few years, we believe we must be prepared to offer new value-added services to ensure the continued growth of the shared revenue stream. What are some of these services?

- **Network printing** – studies have shown that getting something printed while on the road ranks as the #1 problem to traveling professionals. This service would allow users to send documents over the WLAN to be printed at designated printers installed in the airport without the need for special cables or software in the laptop.

- **Location-based services** – technology exists that enables us to precisely determine where someone is when they turn on their WiFi-enabled device in the airport. Wayfinding services not only allow end users to locate things such as ATMs, food courts and specific retail establishments, but also concessionaires can present very targeted promotions and

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advertising to individuals who are in close proximity to their shops. One of our airports is thinking about enabling travelers to order food while sitting in the gatehold rooms and have it delivered to them since their exact location is known. Location-enabled applications open the possibility of a whole host of opt-in services making the travel experience far less stressful. In addition to the inherent security features provided by this technology, Location-based services can enhance the degree of collaboration and mobility interaction for a host of new application possibilities.

- **Rich - media services** – today, users only partially benefit from the high speeds presented by the WiFi technology because the link going outside of the airport to the Internet operates at a much lower speed than that of the WLAN thus acting as a throttle. Higher speed links can be installed, but that is cost prohibitive. CableNet believes a better way is to store certain kinds of content locally within the airport so that applications such as streaming video or gaming become very feasible for large numbers of users. Our WiFi networks will not only support 802.11g (the legacy standard) running at 54 Mbps, but also the just-introduced 802.11n running at 300 Mbps and in some implementations even higher. We would approach a content company (or companies) to have them offer to the passengers the ability to either stream a movie for viewing while in the airport or download it for subsequent viewing while on the plane. We also believe that these rich-media services will broaden the addressable market to include consumers and teenagers hooked on interactive video games. The IPv6 protocol will further enhance media services by offering flexible choices for online education and personal media with true collaboration and consumer plug-play ease.

- **Voice over WiFi (VoWiFi)** – CableNet believes that this will be a truly disruptive technology. Think of it as a way to recover some of that lost payphone revenue. Voice over WiFi is a subset of the more popular service known as Voice over IP (VoIP). Turk Telecom and others have recently announced this service to their customers and there are dozens of smaller companies already doing so. What this means is that users can make voice calls through their laptop, dual mode phones or PDA when connected to the WLAN. There are dozens of applications within the airport on the private side that we will mention later in this paper. VoWiFi is a major ingredient in a "plug-and-play" airport. Carriers have identified the importance of VoIP in their strategy. We already see a wealth of multimode 3G/WiFi phones and pure WiFi devices entered into the market.

Services to the Airport and Its Tenants

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Listed below are some of the potential applications available to serve all of the airport-based businesses including the Authority itself:

Airlines

- Roving Agents
- Curb-side check-in
- Mobile boarding pass readers
- Wireless CUSS terminals
- Baggage tracking and reconciliation
- Wheelchair dispatch
- Ramp operations
- Aircraft maintenance
- Paperless cockpit

Concessionaires

- Internal operations On-the-job training Remote surveillance
  Wireless point of sale systems High-speed Intranet access Inventory management

- Customer-facing applications
  Loyalty programs
  Promotions and on-line advertising On-line duty free shopping
  F&B applications (e.g., tableside checkout and ordering)
  Location-based services

Security Agencies

- Mobile cameras and DVRs
- Streaming real time images to handheld PDAs
- Connectivity at check points
- Wireless telematics and biometrics
- Secure instant messaging

In-Airport Contractors

- Wireless m-commerce
- High-speed file transfers (CAD drawings, spread sheets)
- Corporate Intranet access
- E-mail

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- Project management
- Asset tracking

Others

- While the CUTE concept may not work for all airlines or all terminals, the use of the WLAN greatly increases the flexibility needed for CUTE to work well if implemented. VoWiFi phones completely eliminate the need for wired connections. Calls are made to the individual, not to a telephone tethered to the wall. Boarding pass readers can be cart-mounted and rolled around as needed.

- If the "Trusted Traveler" program is adopted, the very personal marketing capability that WiFi presents would allow the airport to extend further amenities to these individuals via their laptops or PDAs.

These are but a few of an extensive list of possible uses of the WLAN. In general, making applications wireless tends to make them more useful and improves efficiency because they become mobile and instantly accessible wherever you are in the airport.

Summary

The installation of a common-use WLAN in an airport greatly enhances the travel experience of the passengers, and makes the airport a better place in which to do business for the tenants. The same benefits that are driving enterprises to install WLANs can now be extended to airport-based businesses. The increasing dwell times being experienced by passengers and their meeters and greeters no longer has to be non-productive or boring. Travelers will more readily have access to important travel information thereby reducing the stress of travel.

Airports will be perceived as places to shop and conduct business meetings, not just ports of travel. Finally, WiFi systems will further decrease the Airport's reliance on airline revenue and create direct value to the airport passenger.