

2011

BizTechReports.Com

Editorial Director:

Lane F. Cooper

Research Director:

Felix Gorrio

Case Study: EastBanc Technologies Unifies Data from Multiple Transit Systems Using Windows Azure

Providing accurate data to every single bus stop is no easy task. But in producing this simple piece of paper that hangs on every pick-up location, transit authorities have created a tremendous database of information that is extremely useful to their constituents...as long as all goes as planned.

EastBanc Technologies Unifies Data from Multiple Transit Systems Using Windows Azure

Introduction:

Founded in 1999, EastBanc Technologies is a Washington, DC-based software development and system integration company focusing on Mobile Application Development, Enterprise Portal Solutions, Service Oriented Architecture, and Business Intelligence for its diverse set of customers ranging from large multi-national companies, or government agencies to innovative technology start-ups.

Having worked closely with one of its larger customers, the Washington Metropolitan Area Transit Authority (WMATA), to develop transit data applications, EastBanc Technologies' engineers realized that the internal data used by all regional transit operators to monitor their transportation networks could be aggregated to help travellers in planning trips across networks. The result is the Public Transit Data Community (PTDC), a cloud-based, Software-as-a-Service (SaaS) solution launched in September 2010.

Situation

Municipal transit authorities all over the world understand the power of a schedule. Perhaps no public-service agency spends as much time trying to figure out how to present complex information (such as public transportation schedules) in as simple a manner as possible in as many places as possible. Providing accurate data to every single bus stop is no easy task. But in producing this simple piece of paper that hangs on every pick-up location, transit authorities have created a tremendous database of information that is extremely useful to their constituents...as long as all goes as planned.

Throw in some snow, a traffic accident or a construction project, however, and all bets are off. And communicating these disruptions to citizens who count on public transportation to get to work, or catch a connection to a long-distance carrier (such as an inter-city train or plane) has always been a challenge.

It should therefore come as no surprise that transportation authorities have eyed with interest the rapid proliferation of mobile devices as a way to let people know, and react to unanticipated changes in otherwise normal routines. Recently, WMATA partnered with EastBanc Technologies to develop a system that extends this mobile, dynamic connectivity beyond their immediate borders. This effort has led to the creation of the Public Transit Data Community (PTDC).

One of the biggest hurdles that small businesses face when launching a Web-based service like PTDC is the high startup cost of infrastructure to support their services' back-end processes. As a result, EastBanc opted to develop PTDC as a cloud-based system using the Microsoft Windows Azure cloud computing platform.

“Existing transit applications typically use data from only one source or one transport system,” says Bill Conforti, Vice President, EastBanc Technologies. “The idea for PTDC is to aggregate data from as many transit operators as possible, which is especially useful in the case of overlapping metro areas. New trip planning applications can help commuters traveling from local routes in DC to local routes in Baltimore, for example, with real-time visibility into all the regional routes and operators that connect the two.”

By exposing transit data for public consumption, EastBanc hopes to foster a development community that not only will create new applications leveraging the value of inter-system transit data from the National Capital Region, but will also drive other transport authorities from other regions to make available their own transit data through PTDC.

Ultimately, such independently developed applications could help transport operators such as WMATA to improve transparency and system performance, as well as to provide better service to passengers and increase ridership.

One of the biggest hurdles that small businesses face when launching a Web-based service like PTDC is the high startup cost of infrastructure to support their services' back-end processes. As a result, EastBanc opted to develop PTDC as a cloud-based system using the Microsoft Windows Azure cloud computing platform.

“Using a cloud is a great way to jump-start a services business, because there’s no hardware to buy, and no data center to lease,” says Evgeny Popov, EastBanc Chief Architect, Microsoft Solutions. “The cloud model makes it very easy to focus on development and roll out the services as easily as possible.”

Operating the PTDC system on a cloud-based, multi-tenant, SaaS architecture allows EastBanc to keep costs down while providing the flexibility and scalability needed to bring aboard new data sources. “We want to make it affordable for transit agencies and operators to participate” Conforti says.

PTDC is a Windows Azure cloud-based Software-as-a-Service solution for publishing mass transit data on the Web in a variety of open formats for free consumption by people and applications. The system draws its datasets from disparate transit operators and hosts them within a SQL Azure environment.

Solution

PTDC's software and API developed by EastBanc runs in a Microsoft Windows Azure environment and allows developers to easily integrate PTDC's transit data sets into original software applications that can themselves be served to the public through the cloud for consumption on personal computers or mobile devices.

"We were interested in a Microsoft cloud environment because we found that Windows Azure was convenient to use and gave us an easy way to build Web-services applications and deploying them back to the cloud," explains Popov.

PTDC is a Windows Azure cloud-based Software-as-a-Service solution for publishing mass transit data on the Web in a variety of open formats for free consumption by people and applications. The system draws its datasets from disparate transit operators and hosts them within a SQL Azure environment.

"PTDC allows transit authorities to achieve data transparency at a fraction of the cost of an internal implementation," Conforti says. "At the same time, PTDC increases value by connecting Public Transportation Agencies with a creative community whose applications will promote and enhance their services."

"The real differentiator lies in the API, which our team developed, as well as in the sample applications that will help developers to create their own applications based on that data," Conforti adds.

The data made available by the PTDC website can support numerous applications such as intelligent trip planning software that uses real-time inputs – such as vehicle positions, crowd patterns, arrivals, and incidents.

This real-time information is downloaded to PTDC's cloud as often as every 20 seconds from disparate transit organizations, including DC Circulator and WMATA's Metrorail and Metrobus.

PTDC's data engines also collect static information – such as routes and schedules – on a daily basis. Combined, these real-time and static data sets allow PTDC's transit applications to view the entire transit environment made up by the participating systems. Such applications could be designed to run on mobile devices, giving travelers on-the-spot visibility into their commuting routes.

Aggregating data from multiple operators not only enhances visibility into an entire region's transportation landscape – making resulting applications more useful – but it also increases the number of users and developers that want to consume the collective data sets.

PTDC's API provides access to operators' transit data in various formats such as Atom, JSON, GeoRss, and KML. Compliance with the Open Data Protocol (OData) provides rich capabilities that independent developers can build into their applications. The system's Data Collector Service receives an agency's data feeds and adds them to a Microsoft SQL Azure database. Agencies can also manually upload their data if they choose. As soon as data gets into the SQL Azure database in the cloud, it becomes available to PTDC's users through its OData API service.

PTDC's Itinerary Evaluator Service uses proprietary algorithms to calculate the best routes between geographical points using all available public transportation options, user preferences and real-time data. The entire system (including Data Collector, SQL Azure databases, Itinerary Evaluator and OData API service) works on the Microsoft Windows Azure Platform. This cloud platform resolves infrastructure maintenance and system scalability issues regardless of the number of agencies providing data or applications that are put in place.

"Developers can access our environment for free under our terms and conditions, and they can create their own applications which they can provide for free or sell to the market," Conforti says.

Benefits

PTDC's primary advantage over existing transit applications is that it brings together data sets from disparate transit operators that traditionally have functioned as stovepipes.

"WMATA's legacy trip-planning tools were not as effective because they only process data from WMATA's own transit system, but they cannot integrate data from outside operators such as Virginia Railway Express (VRE) or local bus lines, for example," Conforti says.

Aggregating data from multiple operators not only enhances visibility into an entire region's transportation landscape – making resulting applications more useful – but it also increases the number of users and developers that want to consume the collective data sets.

"If every transportation authority does this as a stovepipe, there's no leverage. But if you combine data from multiple operators in one metropolitan area, the potential number of users is much higher, so more developers will be interested in building on that," says Popov.

PTDC's Windows Azure architecture keeps the entire system affordable for EastBanc while providing the critical service assurance and scalability the system will need to expand

Additionally, the ability to host and publish transit data as a third-party is critical to EastBanc's value proposition because it allows transportation operators to easily and affordably expose their data to value-added applications without having to manage the necessary processes themselves.

"WMATA is in the business of running a transportation network," Popov explains. "They're not in the business of hosting data and fostering a developer community. PTDC enables transportation authorities to take advantage of a common service for publishing their data so they can focus on their core business."

PTDC's Windows Azure architecture keeps the entire system affordable for EastBanc while providing the critical service assurance and scalability the system will need to expand, Popov points out.

"We got a really good SLA for our service, and we don't need to maintain a data center ourselves," he says. "It's cheap compared to the costs of a data center. And using the Microsoft Azure hosting is scalable to handle the loads that we're expecting on our API when we grow."

"More and more agencies are realizing that their internal data has value beyond their walls, and this type of service allows them to maximize the value they can get from that data," Conforti notes.

"Their data is an untapped resource that can benefit citizens while potentially creating added value for the organizations that own it by exposing it to developers. If new applications from PTDC can make travel more predictable and stress-free—thereby increasing the satisfaction of travelers and encouraging them to travel more with little or no cost to the transit operators, that's a major benefit to the entire market."

###

About Microsoft and Partners

For more information about Microsoft products and services, call the Microsoft Sales Information Center at (800) 426-9400. In Canada, call the Microsoft Canada Information Centre at (877) 568-2495.

Customers who are deaf or hard-of-hearing can reach Microsoft text telephone (TTY/TDD) services at (800) 892-5234 in the United States or (905) 568-9641 in Canada. Outside the 50 United States and Canada, please contact your local Microsoft subsidiary. To access information using the World Wide Web, go to: www.microsoft.com

For more information about PTDC products and services, call (202) 295-3000 or visit the Web site at: www.eastbanctech.com