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## Move to open-loop transit payments “inevitable” in North America

By Robin Arnfield  
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After several years of open-payments trials, North American transit schemes are gearing up to make the jump from closed-loop payments to open-loop at their electronic fare gates. Robin Arnfield reports

In their current implementation, North American transit schemes use proprietary electronic fare platforms, where passengers add funds to contactless prepaid cards from cash or open-loop cards. Passengers tap these closed-loop cards at subway station faregates or buses' fareboxes.

However, closed-loop card systems are costly to maintain and lack an easy upgrade path to emerging technologies such as Near Field Communications (NFC) cellphone payments, says John Mavriyannakis, senior manager, consulting at Deloitte Canada.

“The move to open loop is something we’re seeing across the board in North America,” says Mavriyannakis. “Transit schemes almost *have* to migrate to open-loop, because of the high costs of closed-loop as well as privacy concerns about closed-loop cardholder data.”

“Shifting to open-payments saves considerable costs, for example from reduced cash-handling and theft as well as closed-loop card lifecycle management and customer service,” says Nasreen Quibria, a payments consultant with Logica.

“With open-loop, the cost of installing the payment acceptance system is born by the banks, not the transit scheme,” Mavriyannakis says. “Also, the banks are responsible for upgrading the transit acceptance infrastructure to new technologies such as NFC.”

## Procurement phase

“Now that several open-loop transit pilots have been completed, US transit schemes are embarking on the lengthy process of procuring and deploying open-loop systems,” says Randy Vanderhoof, executive director of the Smart Card Alliance (SCA), a US-based industry association.

The most prominent US open-loop trial took place during June-November 2010 in the New York transit area, involving the Metropolitan Transportation Authority (MTA), the Port Authority of New York & New Jersey/PATH (Port Authority Trans Hudson) and NJ Transit. In the trial’s first phase, which took place in 2006, only contactless MasterCards issued by Citi were tested. But in the 2010 pilot, contactless MasterCard and Visa cards from other issuers could be used. MasterCard sponsored both phases, while VeriFone supplied contactless reader technology.

“The NYC trial was a success,” says Walter Allen, national sales manager for VeriFone’s vertical markets group. “It proved that the MTA can accept open-loop cards at turnstiles at the authorisation speed it requires. Now there are requests for proposals (RFPs) from Washington DC and Chicago for open-loop transit systems. The awards for these RFPs will be made by early 2012.”

Vanderhoof says that NYC is one year into a four-year open-loop upgrade to its entire transit system, and that it is close to completing installation of an open-loop system for its buses. “Based on the length of time it has taken NYC to move to open-payments, I estimate that in 2015 there will be four or five major US cities operating open-loop transit schemes,” he says.

## Dual-purpose

For the foreseeable future, North American transit schemes will continue to offer closed-loop cards alongside open-loop acceptance. “Due to the need to cater for unbanked and underbanked consumers, as well as special fares such as people with disability or government-assisted transit passes, transit schemes will have to operate closed-loop systems plus open-payments,” says Vanderhoof.

“A solution for unbanked and underbanked transit passengers is for banks to issue open-loop general-purpose reloadable (GPR) prepaid cards,” says Walter Allen, national sales manager for

VeriFone's vertical markets group. "But to gain acceptance in transit, these GPR prepaid cards need to become widely available and their fees have to be low."

Transit schemes implementing electronic fares for the first time plan to offer passengers the choice of closed-loop cards or open-payments. TransLink, the regional transit scheme for Vancouver, Canada, is working with San Diego, California-based Cubic Transportation Systems on a C\$171 million (US\$168 million) electronic fare system consisting of Compass, a reloadable closed-loop card, as well as acceptance of open-payments.

Mike Madill, TransLink's vice president of enterprise initiatives, says TransLink began installing electronic faregates at its train stations in summer 2011. He says that people using bank cards to pass through the faregates will pay a standard single fare, while Compass cardholders will benefit from discounts as well as the ability to load monthly passes onto their cards. "We aim to go to pilot in October 2012, with the system becoming fully operational in March 2013," Madill says.

The Southeastern Pennsylvania Transportation Authority (SEPTA) also plans to offer closed-loop and open-payments. According to the *Philadelphia Inquirer*, SEPTA will announce the winner of a contract to supply a US\$100 million electronic fare system encompassing open-loop cards and proprietary contactless cards in November 2011. The project, which is expected to take three years, will eventually lead to NFC cellphones being accepted as well.

## NFC

Quibria says North American transit schemes are lagging behind foreign transit schemes in their adoption of NFC payments. "Globally, the transit industry is moving towards NFC," she says.

"Until now, the lack of NFC phones has delayed NFC deployment by US transit schemes," admits Mohammad Khan, president of contactless payments technology vendor ViVOtech. "But there are now an increasing number of NFC phones in issue, and 2012 will see particularly strong growth in NFC."

"Transit payments could become a value-added usage case for NFC-enabled cellphones," says John O'Brien, an IDC Canada senior analyst. "NFC also sets the stage for transit schemes to deploy new business models leveraging travel-related data for discount offers. Commuters who

are flexible about when they use transit, could be sent texts offering reduced prices if they take trains either before or after rush hour. This will result in new revenues, as seats that would have been empty are now generating fares.”

“Transit schemes could establish NFC payments partnerships with retailers located near their stations,” says Quibria. “This would enable the transit schemes to share in these retailers’ revenues from purchases by passengers.”

## **Google and Isis**

In 2011, two rival NFC payments initiatives, Google Wallet, whose initial partners are Google, MasterCard, First Data and Citi, and Isis, a joint venture between AT&T Mobility, T-Mobile USA and Verizon Wireless, were launched in the US.

“Google Wallet and Isis have potential in the US contactless transit environment,” says Alistair Newton, research vice president and industry services director, banking and investments services at Gartner. “But NFC adoption in transit will need a high-profile deployment to attract usage, for example the NYC transit network. Another benefit of transit schemes adopting NFC is that this will lead to other sectors embracing NFC payments.”

“Visa believes open-loop contactless transit systems can help pave the way for a broader deployment of NFC and contactless payments in general,” says Sandy Thaw, Visa’s senior business leader, product development and management.

In October 2011, NJ Transit became the first US transit system to accept payment by Google Wallet, testing the technology on seven bus routes and at New York Penn Station and Newark Airport Station. NJ Transit is also offering open-loop contactless card payments on the same bus routes and at Newark Airport Station.

## **EMV**

One drawback with transit schemes migrating to contactless open-loop cards is the fact that most US cardholders only have contact-based cards.

“Based on reported supplier shipments, the SCA estimates there are around 100 million contactless cards in the US out of a total US market of 750 million cards in issue,” says

Vanderhoof. However, this doesn't take into account regional variations in contactless card distribution by issuers.

"In the North-eastern US, JPMorgan Chase has the largest market share, and it has issued more contactless cards than any other bank by far," Vanderhoof says. "So the number of contactless cards showing up in transit hubs in NYC, Philadelphia and Washington DC could be higher than elsewhere in the US."

Moves by US issuers to expand their contactless card rollout are likely to be combined with migration to EMV. In August 2011, Visa announced a migration plan offering incentives to encourage US merchants and acquirers to migrate to EMV and contactless card acceptance by 2015. Visa's initiative is expected to be followed by American Express, Discover and MasterCard, spurring industry-wide migration to contactless EMV cards in the US.

But Newton warns that, because of all the stakeholders involved, moving the US to EMV will realistically take five to seven years.

"EMV will be an issue for US open-loop transit schemes in the next five years, but EMV and NFC/contactless are hitting at the same time," says George Peabody, director, emerging technologies advisory service at Mercator Advisory Group. "Given that simultaneity, EMV isn't a big deal, it's just one thing to plan for."

Transit schemes are already building a requirement for EMV compliance into the RFPs they are requesting for open-payments systems, says VeriFone's Allen.

## **Authorisation**

A key challenge of open-loop transit payments is ensuring that authorisation speeds are acceptable to passengers, particularly with the move to EMV. Closed-loop transit cards are typically authorised within 300 milliseconds, as there is no requirement to communicate with external issuers and acquirers.

A common feature of US open-payments transit pilots is a dual-stage authorisation process for open-loop cards. When an open-loop card is used at a turnstile, it undergoes an immediate validity check on a hot card database held by the transit scheme, which issuers update in real-

time. Alternatively, the check can be done using a system operated by Visa or another card network, which was the model adopted by MasterCard in the NYC 2010 open-payment trial.

“In the NYC trial, the criterion was that this check should take no more than 300 milliseconds,” says Allen. “The average was 500 milliseconds, but the difference between 300 and 500 milliseconds isn’t perceptible to riders.”

If the card is not on a hotlist, the passenger is allowed to proceed. However, should the subsequent full authorisation check with the issuer reveal that the card is invalid or out-of-funds, the card will be blocked against further usage on the transit system.

In September 2011, PATCO (Port Authority Transit Corp.), the Philadelphia to Southern New Jersey transit scheme, launched a 12-month open-payment trial. “In the PATCO trial, when an open-loop card is used at the turnstile for a pay-as-you-go trip, the card’s eligibility is verified against a hotlist hosted by Cubic before access is granted,” says Pradip Mistry, vice president, engineering at Cubic. (James, Cubic is acting as system integrator for PATCO.) “Payments are aggregated for pay-as-you-go trips into a single payment transaction and approved by the issuing bank on a daily basis.”

Initially, the only card accepted during the pilot is a PATCO-branded GPR Visa prepaid card. In February 2012, the trial will be widened to any Visa-branded contactless credit or debit card as well as contactless cards from other card schemes.

## **Salt Lake City**

Salt Lake City, Utah is the first North American city to implement open-loop transit payments. The Utah Transit Authority (UTA) launched its system in January 2009, having previously operated a cash-based paper ticketing system.

During the 2006-2007 and 2007-2008 ski seasons, UTA ran an open-loop pilot involving its buses taking skiers to local ski resorts. “The reason for testing open-payments on ski buses was that we only wanted to install open-loop card readers on a set number of bus routes,” says UTA spokesperson Gerry Carpenter. “Also, we wanted to test the system with out-of-state visitors who would be using open-loop cards.”

When UTA implemented its open-payment system on its 500 buses and 35 transit stations, its criterion was that its contactless readers had to accept open-loop cards as well as proprietary cards such as student and corporate IDs. “The readers accept all open-loop contactless cards including Discover Network’s Zip,” says Carpenter. “They are able to validate proprietary ID cards to see if they have been deactivated, for example because a worker has left their employer. Google has tested Google Wallet application on our system and found that it works. Isis plans to test its NFC technology on our system during 2012, with commercial rollout taking place in 2013.”

UTA currently has a flat fee structure, with riders paying a single adult fare for unlimited distance. “We plan to leverage our open-payment system to introduce distance-based pricing,” says Carpenter. “We already ask riders to tap their cards when they board and leave trains and buses and when they make transfers. All our buses and trains have GPS, so we can identify where customers get on and off.”

## Toronto

One stand-out from the general migration to open-payments is the Toronto Transit Commission (TTC), whose train and bus networks handle 85 percent of the Greater Toronto area’s 6 million daily transit passengers.

In Southern Ontario, the Presto contactless closed-loop card system is used across the GO Transit bus and train network plus eight other transit systems (James - this is not counting the TTC, which currently has 11 stations accepting Presto cards).

“The TTC had wanted to remain separate from Presto and convert its non-reloadable monthly fare-pass system into an open-payments platform,” says Jacqueline Chilton, a partner at Glenbrook Partners Payments Strategy Consulting.

“We felt Presto was too expensive to implement and not sufficiently flexible,” says Brad Ross, the TTC’s corporate communications director. “Open-loop’s advantage was that there would be no capital costs for the TTC to implement the hardware and software. The infrastructure cost would be handled by the banks who would also manage the open-payments processing.”

In summer 2010, the TTC called for RFPs for open-payments. However, in October 2010, newly-elected Toronto mayor Rob Ford decided to cancel the open-loop project and integrate the TTC with Presto. "Currently, 11 TTC stations accept Presto, and the TTC plans to fully implement Presto on its network within the next three years," says Ross.

"Ford said it didn't make sense to have two separate transit card systems in Ontario – Presto and an open-loop platform in Toronto," says Chilton.

"Presto does plan ultimately to migrate to open-loop, Ross says. "At some point, there will be a Presto open-loop trial."

"The next generation of Presto will be able to accept open-loop contactless cards for pay-as-you-go transactions as well as NFC payments in the next three years," Presto says on its website.

"Open-loop is a win-win for transit schemes and banks. Transit schemes want to give existing riders more options for payment, and bank card issuers see transit agencies as fertile new ground to increase card usage."

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