

Standardizing Protocols to lower industry costs and drive innovation

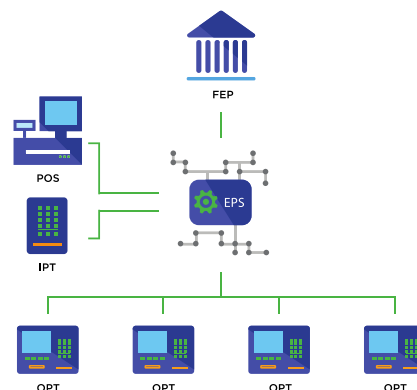
Introduction

While it could be said that standardization limits creativity / innovation, in the case of integrating systems for common functions, nothing could be further from the truth.

In the retail petroleum systems provider space, the complexity of EMV, contactless payments, PCI, and other security requirements are driving a significant amount of specialization requiring vendor companies to focus on their core competencies. This focus often means that companies are pruning their product portfolios and prioritizing the product components that they can deliver best, rather than an end to end system. Retailers have also seen that end to end solutions often come with inflated prices, limited flexibility and restricted innovation, as competition is absent and compromised performance may be a result.

This results in solutions which generally have multiple vendor components driving the need for complex integrations through the use of APIs or protocols. For a system to deliver its full benefit, the supplier on one or both sides of the protocol must do some work to deliver the intended value of the integration.

For example, to enable outdoor payments, an Outdoor Payment Terminal (OPT) will usually connect to an Electronic Payment Server (EPS) which talks to a Front End Processor (FEP) to manage the routing and settlement of the payment with the payment network. The payment system must also be integrated with the POS and the dispensers, both physically and logically.



Without collaboration within the industry, lack of standardized protocols results in a large number of integration efforts between OPT, EPS and FEP suppliers where countless resources are expended simply in the effort of getting the various vendor systems to talk to each other. This integration effort resource cost translates into higher industry costs and risk, more quality issues, and less investment

in key strategic elements that can drive more revenue for the merchant's business and improve customer engagement.

This article will discuss the industry costs associated with protocol developments and how standards can help to minimize these costs, improve quality in the industry, and help retailers spend more time focusing on their customers and customer strategies rather than on protocol variation and integration. The example of the integration of an OPT is used to demonstrate the issues, although they are common, to a greater or lesser extent, to all integration activities.

Variation = Cost

For those who have studied and implemented various quality systems that have emerged throughout the decades, you see one very common theme ... variation drives increased costs and risks. This truth emerges from the fact that variation means you lose control of the basis for the work and you can't measure the deviation.

Having large variations in the implementation of payment integrations around the world is a source of inefficiency and expense in the retail fuel industry. Some of this is driven by national requirements and the commercial requirements of the payment organizations. However, a large part of this can be controlled by standardizing the technical interfaces, whenever possible. Also, where no standard exists, there is a risk of further divergence as features that may have little real benefit are explored (sometimes having been tried before by others), requiring further development and bringing no return, feeding into the overall business costs.

We will look at the protocol costs to the industry in a variety of ways:

- Costs of developing and maintaining a protocol
- Protocol costs factored as a part of integration / certification expense
- Opportunity costs underlying protocol investments

Supplier: The cost of developing and maintaining a protocol

There is a significant amount of resource applied by suppliers in the development of a protocol, in particular when significant modifications are required to meet ongoing changes to specifications and emerging standards. The variations of the underlying implementations of EMV in different countries, for example, require additional protocol extensions, features and implementations to ensure that these variations can be accommodated for retailers operating in multiple countries.

The process of developing a protocol requires analysis and design by architect-class individuals in the supplier organization. These are individuals with deep knowledge of the industry, security, and the underlying payment technologies that need to be exposed through a protocol layer. However, once the original design has been completed, a larger team is engaged in the process of developing, qualifying, and documenting the protocol for its use. This stage still involves the architecture team, but now engages engineers, quality assurance engineers, and technical writers in the process of implementing the new specification.

As with most logical developments, once a protocol is first implemented, it is constantly iterated to meet the emerging needs and changes to requirements in the industry. This too requires teams of people who are committed to updating, qualifying, documenting, and certifying changes to the protocol.

The development and management of a communication protocol is an expense that must be undertaken within any industry that has devices that must talk to each other (the API if you will). However, it is the multiplier of the number of suppliers that have to pursue bespoke developments, bespoke test automation, bespoke documentation, and bespoke certifications which creates a heavy cost to the industry. Over a 5 year period, this is easily a \$2 million expense taken to each supplier's bottom line. This does not include all the lost opportunity costs of using these critical resources to deliver value added features or the cost of maintaining the right resource base to support these developments.

Each additional bespoke protocol that a supplier must build and maintain bears this expense. This expense to the industry could be reduced so that it is only borne once for all suppliers, with a concerted effort of retailer support and engagement, especially in markets that are pursuing significant protocol shifts, like the US in its migration to a new EMV based standard.

The creation of a protocol is the first step in this process of integrating systems. In a particular retailer implementation, suppliers need to work together on the implementation of a protocol to deliver a final payment solution. This involves time and skilled effort to explain and understand the proposed protocol on each side, potentially with some changes being required. This would only be needed once if a standard were being used, compared to each time that alternative protocols are integrated. The last step to the process, is to certify the integrated solution with the card acquiring system, and in the case of EMV, L3 certification which is another driver for additional industry expenditure that could be minimized through standardization.

Supplier and Retailer: Protocol costs associated with integrations / certifications

Once a protocol has been defined (between the OPT and EPS), it is combined with other systems components and the requirements of a specified acquiring organization to complete a L3 certification – end to end certification of all card types. This process usually consumes a variety of resources on the part of the certifying authority, retailer, POS provider, and OPT provider. As a rule of thumb, L3 certifications will cost the industry roughly \$1 million per bespoke set of component suppliers (OPT/EPS/FEP). In a hypothetical market comprising 3 OPT vendors, 4 POS/EPS vendors, and 10 acquiring bank certifications where retailers wanted access to the capabilities of all vendors in the market, this would lead to as many as 120 L3 certification runs, and more than \$65 million in industry costs, just to validate end to end functionality with proprietary protocols.

HOW \$1 MILLION TURNS INTO \$65+ MILLION

SCENARIO EXAMPLE
OPT Suppliers: 3
EPS Suppliers: 4
FEPs: 10



TASKS	Protocol Development	Protocol Implementation	Integration	Test Host Integration	Host Certification	TOTALS
FOR A SINGLE RETAILER/OPT/EPS	\$100k	\$200k	\$200k	\$400k	\$100k	\$1 million
INDUSTRY MULTIPLIER	X # of OPT Suppliers combinations	X # of OPT / EPS supplier combinations	X # of OPT / EPS supplier combinations	X # of OPT / EPS suppliers / Retailer combinations	X # of OPT / EPS suppliers / Retailer combinations	N/A
INDUSTRY COSTS	\$300k	\$2.4 million	\$2.4 million	\$48 million	\$12 million	\$65.1 million
WITH A STANDARD	\$1 million	\$1.2 million	\$1.2 million	\$18 million	\$12 million	\$33.4 million

By contrast a well architected standard OPT protocol and certification process which eliminates the variations between the OPT and EPS vendors, could reduce certification and integration costs by tens of millions of dollars across the industry. Additionally, standardization between the EPS and the payment FEP and an appropriate certification body could reduce these costs even further by simplifying the final certification. Finally, reducing the number of certifications required has the additional benefit of reducing the time to market for new features for the entire market.

For both the supplier and retailer, the costs of these protocol developments and certification costs extend beyond the technical implementations into the area of labor costs. Additional costs will be incurred in having to maintain and support a larger workforce required to qualify equipment and systems that comes with non-standard interfaces that may perform in unexpected ways. Also, any differences in the way that equipment or systems operate that are driven by the protocol design may lead to higher training costs for field staff and confusion for customers. The skill sets required to integrate multiple bespoke systems without a common protocol is specialized and requires experience and training. This leads to additional costs associated with finding and recruiting skilled resources, training up less skilled resources, and costs of keeping talent within organizations. In the end, this amounts to hundreds of thousands of dollars spent on HR related activities in addition to the millions spent on implementations that could easily be consolidated through the development of a single standard and certification process.

The reality is that retailers are not likely to bear the cost of implementing each of these integration combinations, but will have to make trade-off decisions, based on feature sets of OPT vendors. When

the process to evaluate the capabilities of each OPT become too much of a burden and alternatives become limited or costly, then retailers are forced down a path of compromise and accepting that they will have limited functionality. They have to evaluate their opportunity costs – another set of costs that could be reduced through standardization and reduced certification – to see whether the compromise is acceptable.

Supplier: The opportunity cost of certifying (or not certifying) more than one vendor

In addition to the direct cost driven by the bespoke protocol implementations, retailers are also burdened through other costs to their business. Generally, these can be characterized as the opportunity costs of not having a single standard. Examples include all the features and capabilities that a retailer forgoes because they do not want the expense of another certification and all the business benefits lost due to late delivery of integrations due to the complexity and time required to implement and certify different equipment using unique protocols.

Many retailers are looking to OPTs to be an extension of their brand as a key customer engagement device. Various OPT vendors are working on technologies to enable these capabilities. However, the features focus and prioritization may be different for different vendors, meaning that retailers may not get the features that they want at the time that they want them. The easiest way to enable retailers to have full access to these capabilities is to remove any obstacles for quickly integrating the OPT and testing its capabilities. If each vendor has its own protocol, it becomes a significant investment for the retailer to pay for an integration, just to test its capabilities. **If the OPT protocol was standardized, a retailer could quickly prove out their business case for selecting the vendor which provides the best match of capabilities with their business needs.** When these integrations cannot be completed due to the excessive cost, additional opportunity costs present themselves in various forms such as:

- Settling on a sub-optimal set of features and having a limited opportunity to enhance this
- Being locked in with a single vendor due to other system component choices
- Late delivery of key business functionality that drives bottom line results

Additionally, with large retail chains, it is nearly always inevitable that there will be more than one combination of suppliers for end to end payments within the store chain. As such, there are likely to be protocol variations that also exist within the chain. As many retailers are striving to have similar customer experiences, regardless of the suppliers used in the solution, there is a cost to providing and updating bespoke protocols to perform in a similar way. When this is not accomplished, the chain loses brand consistency and delivers an inferior customer experience across stores which use components from different suppliers.

Another major opportunity cost for retailers involves the procurement benefits that they can enjoy by being able to select equipment and systems on features, performance and cost, rather than on compatibility grounds. If different protocols have to be integrated this may deter the buyer from selecting the best priced and/or best performing components. This can also be reflected in long term operating benefits – reliability and maintenance costs. Finally, the workforce deployed on these efforts could also be working on other business opportunities, potentially bringing other benefits to the retailer's operations or customers that could have led to lower costs, greater volumes or higher profits.

While opportunity costs do not always drive visible bottom line results to a business, they do manifest as costs across the business. Delayed rollouts, frustrated customers, procurement challenges and missed functionality all result in various costs to the business. These are the elements that are difficult to measure, but certainly result in tangible impacts to the retailer organization. **If a standardized interface were available, with common certification, new features could be added faster, at lower cost and require less testing.**

Conclusion: Costs to the industry = costs to the retailer

This article has focused on the high level costs caused by the inefficiencies of not having standard protocols for devices in the fuel retail industry. These costs manifest themselves in a variety of ways, including the costs of developing the protocols, certifying the various integrations, and the opportunity costs of having to make trade-offs between various component suppliers. Ultimately, these costs become the burden of the retailers who are implementing systems using components from different sources in their efforts to deliver a seamless outdoor payment experience at an affordable cost.

The good news is that these costs are avoidable through collaboration of retailers and suppliers working together to establish a standard and a certification process which drives common implementations between suppliers. This standardized approach significantly decreases the costs to suppliers and retailers alike, but must be driven as an industry initiative across all parties. Instead of investing tens of millions in costs and tens of thousands of resource hours to achieve compatibility between non-standard interfaces, retailers and their suppliers could invest in more lucrative directions for the industry, drive innovation that improves the profitability of businesses and reduce their costs to the benefit of their customers.