Credit Card Payments Processing using SAP Digital Payment Add-on for FIAR Process – Case Study

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Abstract: **Integral to contemporary economies, digital payments have reshaped how individuals and businesses manage financial transactions. As technology continues its relentless progress, the realm of digital payments will undergo further transformations, providing people worldwide with increasingly secure and convenient choices.**

Today, customers have the choice of closed wallets, semi-closed wallets, and open wallets, but venturing into this business requires both technical expertise and substantial investment. Success in the realm of digital payments is achievable through a sound business strategy aligned with Payment Card Industry Data Security Standards (PCI DSS).

In the modern business landscape, connecting with multiple Payment Service Providers (PSPs) for seamless payment processes has been challenging. Until now, a comprehensive solution for integrating consumer applications, both SAP and non-SAP, with multiple PSPs and managing real-time payments effectively was lacking.

The SAP digital payments add-on addresses these challenges, offering flexibility by supporting multiple real-time digital payment methods and enabling automatic reconciliation through seamless PSP integrations. It enhances security by eliminating the need to store sensitive credit card data in SAP S/4HANA and non-SAP systems, simplifying PCI compliance. This solution empowers businesses to embrace diverse digital payment methods while ensuring security, flexibility, and efficiency.

This paper is intended to assist enterprises in making an informed choice when selecting digital payment through the SAP Digital Payment add-on. This cloud-based Software-as-a-Service (SAAS) tool facilitates the development of digital payment processing, making it more secure, efficient, and adaptable to diverse customer needs. The company successfully navigated the challenges of modern payment processing and emerged with an enhanced payment system that positions it for continued growth and success in the global marketplace.

Keywords: **SAP Digital Payment add-on, SAP S/4 HANA, Payment service Providers.**

I. INTRODUCTION

The SAP digital payments add-on (SaaS Product) is a Public Cloud service running on the SAP Business Technology Platform, which acts as a hub between consumer applications and PSPs. This solution seamlessly integrates with several Payment Card Industry Data Security Standard (PCI DSS)-certified payment service providers (PSPs), some of which offer data for reconciliation within SAP S/4HANA Finance.
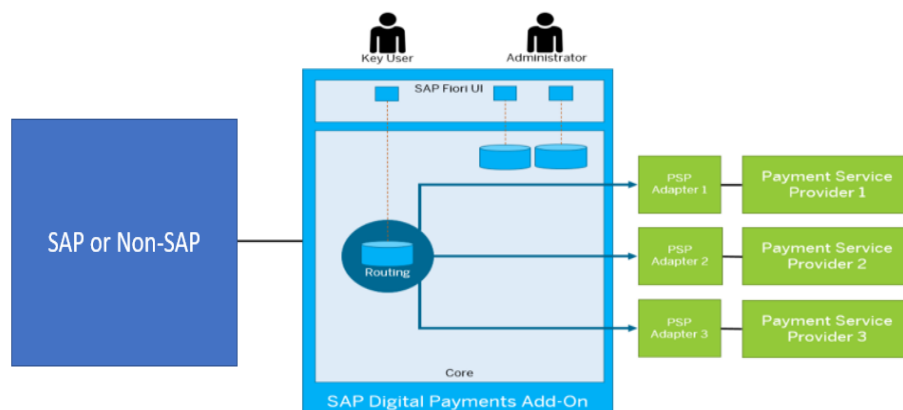
The SAP digital payments add-on facilitates integration with both SAP and non-SAP systems and provides the flexibility to incorporate multiple digital payment methods through easy integration with various PSPs, all without the need to store

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sensitive card information in SAP or non-SAP order management and billing systems. In this section, we'll briefly explore the significance of this solution in customer implementation projects and introduce you to the SAP digital payments add-on.

II. COMPETENCES

1. Digital Payment add-on Architecture: The SAP digital payments add-on empowers numerous SAP and non-SAP consumer applications to facilitate secure and efficient real-time processing of digital payments using various incoming payment methods, including credit cards and external options like PayPal. It achieves this by enabling these SAP and non-SAP consumer applications to seamlessly integrate with several certified SAP partners, which are also PCI-certified Payment Service Providers (PSPs), through stable and standardized interfaces.

- **Consumer application:** The communication between the consumer application and the customer account in the SAP Business Technology Platform (SAP BTP) works using REST Web services and is generally triggered by the consumer application.

- *SAP digital payments add-on on SAP BTP: The SAP digital payments add-on processes the requests from the consumer application and routes them to the relevant external payment service provider (PSP). The add-on contains one 'core' adapter and one adapter for each PSP.*

- *Payment service provider: The SAP digital payments add-on and the external PSPs communicate using Web services. Most of this communication is synchronous.*

2. Account Set up: The following steps are required to set up an account for the Digital Payment add-on in BTP (Business Technology Platform).

- Creating Sub Account in the Global Account.

- Configure the identity provider (IDP) and set up authentication.

- Subscribing to the SaaS Tenant to the SAP Digital payment add-on.

- Creating Role collections and assigning them to user Groups

- Enabling Machine to Machine communication (M2M)
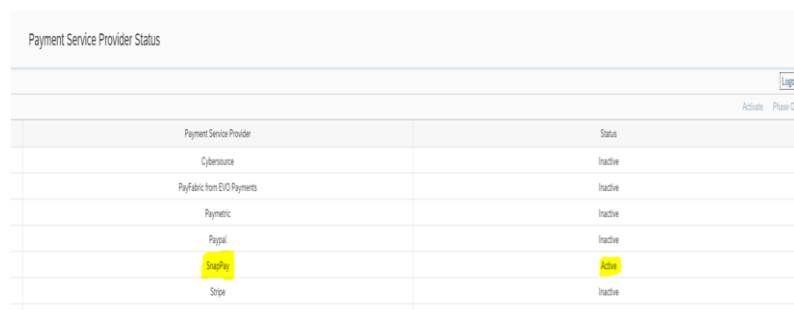
3. Payment Cards Payment Processing Features:

- Payment card creation

- Payment card deletion

- Payment card payment authorization

- Payment card payment authorization cancellation

- Payent card payment reauthorization

- Payment card payment settlement

- Payment card payment refund

- Digital payment advice

- Payment card preparation

- Payment card payment authorization preparation

- Payment card and payment card payment authorization preparation

4. Activating PSPs: After creating your account, it is necessary to activate the adapter(s) corresponding to your selected Payment Service Provider(s) to integrate them with the SAP Digital Payments add-on. Each PSP is linked to its own dedicated adapter.

URL for PSP Activation would be based on the data center. *The below URL is for the US East data center.*

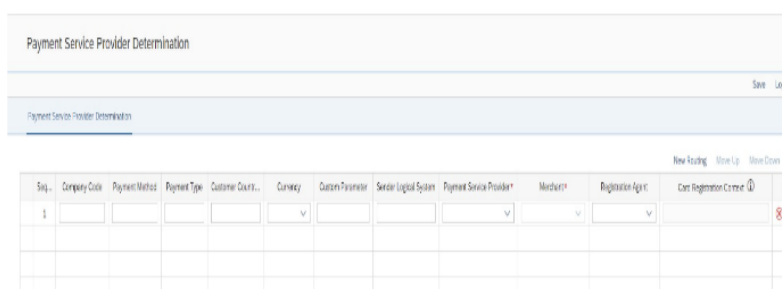*https://<subdomain>.digitalpayments-sap.cfapps.us10.hana.ondemand.com/pspStatus/index.html*

5. Payment Service Provide Determination: To facilitate the dynamic selection of payment service providers for specific transactions, certain configurations need to be established. This procedure is referred to as payment service provider determination, or simply PSP determination.

Payment service provider determination is applied in the following situations:

- Identifying the appropriate PSP for tokenizing a payment card during the registration process.

- Selecting the PSP's merchant account for payment card authorization.

- Establishing the PSP's merchant account in specific refund scenarios where the merchant account information is not initially available.

The URL for the PSP Determination for US East Data Center.

https://<subdomain>.digitalpayments-sap.cfapps.us10.hana.ondemand.com/pspDetermination/index.html

6. Merchant Mapping: When using SAP S/4HANA Cloud alongside the SAP digital payments add-on for digital transactions, you will establish accounts with your payment service providers (PSPs). These accounts can be customized to meet your business needs, such as having separate accounts for each online store or currency. The identifiers for these accounts at the PSP are known as 'merchant IDs.'

Each digital payment transaction is linked to a specific merchant ID. The SAP digital payments add-on determines the PSP and merchant ID for a transaction based on rules defined during the configuration process. SAP S/4HANA Cloud transmits the relevant criteria, such as card registration, payment authorization, or payment initiation, in the initial step. Once determined, the PSP and merchant ID remain consistent throughout the entire process.

If desired, you can also replicate the structure of PSP merchant IDs in SAP S/4HANA Cloud Financial Accounting. The SAP digital payments add-on enables you to consolidate multiple merchant IDs to form a 'merchant ID alias.' This alias consists of a set of PSP and merchant ID pairings. Within SAP S/4HANA Cloud, a merchant ID alias is represented as a virtual bank account.

7. Setting up Digital Payment Advice Processing: Payment advice information processing relies on data supplied by Payment Service Providers (PSPs). The SAP Digital Payments add-on retrieves this data from PSPs at regular intervals, stores it, and delivers it to the consumer application upon request. Each transaction is assigned a special status to prevent duplicate processing.

To obtain payment advice data from PSPs, it is necessary to execute scheduled jobs. While on-demand retrieval of payment advice information from PSPs is feasible, it is generally more common to schedule periodic job runs.

The job scheduling interfaces vary among PSPs. SAP provides user interfaces for job scheduling in the cases of PayPal and Stripe (using the Stripe V1 adapter).

8. *Allowlist for URL's:* You can generate a comprehensive list of external URLs that the SAP Digital Payment add-on can utilize for redirection purposes. This compilation may consist of diverse external web addresses to which the add-on will redirect users or processes. The act of creating this list ensures that the SAP Digital Payment add-on adeptly guides activities or gains access to external resources in accordance with the specified URLs. In essence, compiling this list enhances the efficiency of the SAP Digital Payment add-on in managing redirections and external interactions.

9. *Business Processes Support with SAP Digital Payment add-on:*

a) Process Sales orders through standard Card type, which includes VISA, MASTER CARD, AMEX, and DISCOVER.

b) The process of Card Payment during sales order creation is static. The authorization amount will be read by the PSP provider on the total sales amount, which will be treated as an authorized hold amount on the provided Credit cards.

c) Single or multiple cards can be processed during the sales order creation level.

d) Validation of L2/L3 during the SAP DP process will lower the interchange rates and provide merchants with a lower processing cost.

e) Validation of L2 information is determined based on the type of the company business (commercial, corporate, purchasing, or government (for example, State Firm) or federal which will have a lower interest rate by default.

f) There might be exceptions like state-specific where Eleven states—California, Colorado, Connecticut, Florida, Kansas, Maine, Massachusetts, New York, Oklahoma, and Texas—and Puerto Rico have laws that prohibit merchants from charging consumers with surcharges on credit card transactions.

g) For the above statement, address validation is important for the customers who process their payments from the above states apart from their type of business specified in Point 5. The actual amount will be authorized against the sales order when the Invoice is generated.

h) Final settlement on the digital payment will be processed through banks when reconciliation of invoice postings happens through positing on the respective GL postings.

10. Other Possible Business Process Scenarios:

i. One-time customer is when the customer pays for the service rendered by the company or vendor when the payment process is done through a card connected either with a single card or by multiple card types.

ii. Release orders based on the Contract for instance (like subscriptions), will process their payments periodically through credit card processing.

iii. Partial processing of sales orders through Credit card processing.

iv. Standard complete processing of sales orders through the SAP digital payment process.

III. CONCLUSION

The implementation of SAP's Digital Payment add-on for payment cards and external payment processing represents a significant step in the digital transformation journey for organizations. This transformative path offers a multitude of advantages, including seamless integration with SAP and non-SAP order management systems, support for multiple Payment Service Providers (PSPs) through stable interfaces, substantial reduction in audit costs, instant access to new PSPs and payment methods, significant decrease in manual effort required for payment processing, and the ability to leverage SAP S/4HANA account receivables (FI-AR) and contract accounting (FI-CA) functionality for the automated splitting of charges and taxes during digital payment processing. This adoption holds excellent potential for organizations seeking to enhance their digital payment capabilities.

Furthermore, SAP provides a wealth of resources to aid in customer implementation projects, enabling businesses to harness the full potential of its digital payment capabilities efficiently in their operations.

In a rapidly evolving digital landscape, SAP Digital Payment add-on positions businesses to stay competitive and adaptable. As organizations continue to embrace digital transformation, SAP's comprehensive solution for Digital Payments plays a pivotal role in driving success, growth, and resilience in an ever-changing business environment.

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