भारतीय राष्ट्रीय भुगतान निगम

NATIONAL PAYMENTS CORPORATION OF INDIA

RuPay Contactless Ideathon

(1.2)

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1 CONTACTLESS PAYMENTS

Contactless payments are simply payment transactions that require no physical connection between the consumer payment device and the physical POS terminal. A contactless payment is one application of contactless smart chip technology.

Contactless payment is a fast, easy and secure way of payment. Contactless payments are becoming increasingly common on a range of devices including:

- Pre-paid, debit, charge and credit cards
- Stickers, Key fobs
- Wearable devices, such as watches and wristbands
- Mobile devices, such as smartphones and tablets

The underlying technology for all of these devices is the same. The contactless device contains an antenna so that when it is touched against a contactless terminal, it securely transmits transaction information.

Why contactless payments?

- Speed and convenience - market research studies report that the average transaction time in POS has been reduced by 30% to 40%.
- Contactless debit cards are 63% faster than normal cash transactions and 53% faster than the normal card transactions.
- Contactless payment systems use sophisticated chip technology and multiple levels of encryptions to guarantee a safe and secure transactions.

An over-arching Vision for payment systems in recent times has been the need to ensure greater adoption of electronic payments and migrate towards becoming a “less-cash” society. Contactless payments is the future of payment industry in India. Faster, convenient and secure payment is the need of the hour. Contactless payments have seen wide acceptance since its launch in recent past.

Banks, who dominate the card payment space, are making big bets on contactless cards in face-to-face transactions. This follows RBI's decision to allow transactions of up to Rs 2,000 without a PIN or a signature for contactless cards, which use the near field communication (NFC) technology. Banks are free to set this threshold anywhere less than Rs. 2000.

2 EXECUTIVE SUMMARY

NPCI has defined specification, which is based on dual interface contact and contactless specification. NPCI developed specifications are open standards, interoperable and scalable and can be adopted by all card schemes. RuPay Contactless cards have been developed to offer vendor agnostic, secured, user friendly and cost effective ecosystem of low value payments to facilitate building a cashless transaction environment.

2.1 Objectives of RuPay Contactless

The contactless payments landscape is in its nascence in India. NPCI could sense a huge undercurrent of excitement for contactless solutions especially in areas such as low value payments, hence, took appropriate steps. The objective of RuPay Contactless specification is

1) To provide a mechanism for including Low Value Payments (LVPs) within the gambit of electronic payments.
2) To deliver a product that addresses the concerns of Indian customers taking into consideration the Indian Banks & Merchants
3) To motivate Indian customers to switch from cash to electronic payments

2.2 Product Description

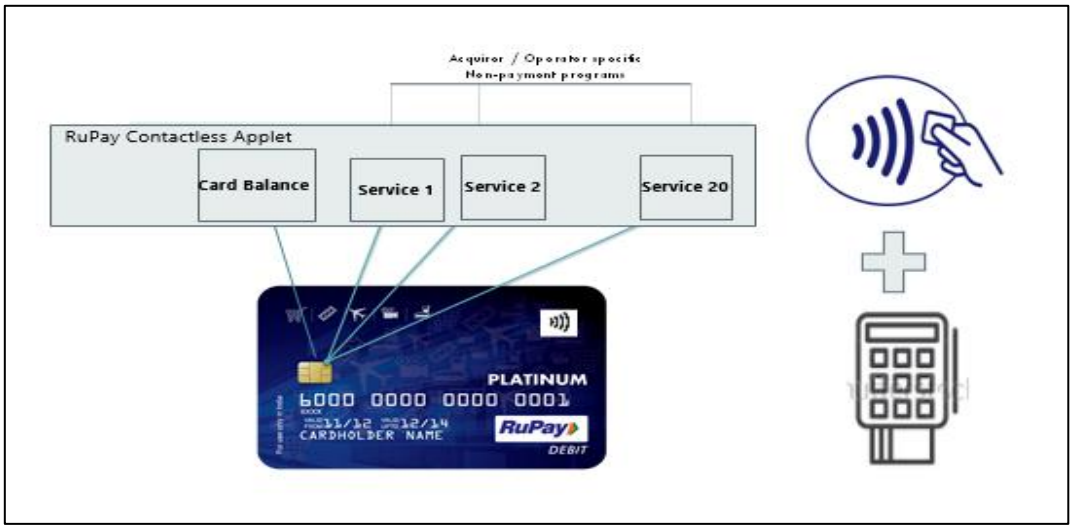

Figure 1: Product Description

Apart from the standard contact POS, E-commerce and ATM transaction, these cards can also be used to perform contactless transactions at POS machines. The key features of RuPay Contactless product areas under

Key Functions	RuPay Contactless Proposition
Card Type	• Can be issued as Debit, Credit & Prepaid card
Standard	• EMV standard in Contact mode • RuPay proprietary specifications in contactless mode
Device Interface	• Supports both offline(Contactless) & online(Contact & Contactless) transactions
Use cases	• High value payments in modern Retail • Low value payments in Transit, Toll ,Parking & Retail
Card Balance	• Provision of storing balance on the card • Card balance can be topped up via cash & through online account

Storage Space	• Provision for storing Acquirer or transit operator specific information or business rule e.g. seasonal pass
Security	• Underlying technology is EMV which is adopted globally to safeguard against frauds
Channels	• Can be used at ATM,POS and Ecommerce website to make payments

2.3 Benefits Of RuPay Contactless

Customers	Acquirer/Operators
• One card for all small & large payments across various categories; No need to carry multiple cards for different usage • Super quick with contactless transactions enabled on the card • Digital trail for all transactions • No need to stand in a queue • Secured with EMV Technology; Gold standard of card payments	• Unified cards to support offline and online transaction modes; contactless ability • Common standards for standardized operating cost • Savings on card lifecycle management cost • Reduced operating cost on account of lower cash handling, infrastructure & manpower cost

3 PRODUCT COMPONENTS

3.1 Issuance

Customers can get these contactless cards over the counters of the transit operator or else Customer can also approach banks issuing RuPay Contactless cards. Issuer Bank is responsible for issuance of RuPay Contactless cards to the customers.

3.1.1 Service

The RuPay dual interface card comes with a special feature that enables aacquirers or operators to own independent memory blocks on the payment device. These blocks of memory are referred to as “Service areas“ or compartment. Below are the unique features of the service:

1. Each service area/compartment or memory block on the card can be accessed only by acquirer/service operator who owns that service area
2. There may be multiple independent service areas on the same payment device catering to different business implementations of same or multiple acquirers.
3. NPCI recommends maximum 20 services on card to ensure maximum performance of card with minimum optimization.

4. Each Service can store a maximum data of 96 bytes hence the Service Area must be equal to the maximum number of services to be supported multiplied by 96 bytes.
5. Acquirers/service operators may write their own specific programs or data called “services” such as transit, loyalty, parking, etc. in this area as per their business needs and as per agreements with the card Issuer
6. Service area in card will be referred by a unique “service ID” which will be managed and provided by NPCI to any operator/Merchant.
7. Service can be written on the card post issuance of card

3.1.1.1 Service Architecture

This section explains the architecture of Service Compartment and the associated elements. For each Service created on the Card, a data is generated and stored in the Service area specific to that service. A Card maintains a unique Service Directory which contains information about the services present in the Service Area. Composition of Service Directory Header is as defined below:

1) **Service Version :**This indicates the version of Service feature.
2) **Service Label** : This is the concatenation of Card Number and Card sequence number. Terminal may use this data for blacklist and torn transaction processing.
3) **Service Limit** : This is the maximum number of Services allowed to be created on the Card.

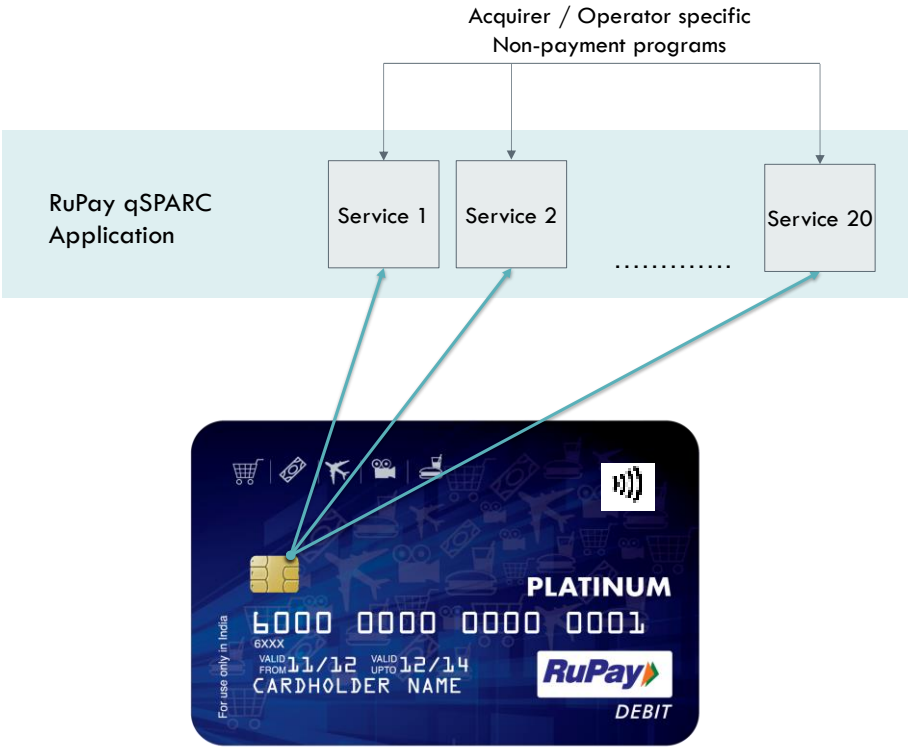

Figure 2: Service Architecture

3.1.1.2 Service ID

Each successfully created service is assigned with a unique ID henceforth referred to as Service ID. Service ID allocation will be done by Service Owners in consultation with Service allocation authority (NPCI). This ID will be used by the terminal to select a service. Each Service Id must be unique; once the Service Id is taken on the card, service with the same ID can't be created. Service Directory is stored on the card to include the list of the services available on the card.

3.1.2 Balance

3.1.2.1 Types of Balances

This section provides a high-level overview of the balance offered by the product . RuPay Contactless product allows two types of balances Global balance and Local balance.

Balance Type	Specific To	Description
Account Balance	Issuer	• Limit and rules to maintain this balance will be as per the bank policy applicable for Debit/Credit/Prepaid card • This balance will be utilized during online transactions e.g. retail purchase, ATM (cash withdrawal) and ECOM
Global Balance	Card	• The global balance is maintained at the card level. • Issuer is responsible for management of this balance • This balance is utilised during offline transactions

4 CONTACTLESS ACCEPTANCE

In order to accept RuPay Contactless Cards, the terminal ecosystem has to be enabled for both contact and contactless. While for Contact transactions existing RuPay application will suffice, for Contactless transaction the acquirer will have to inject the RuPay contactless kernel and build their respective applications.

4.1 Acceptance

RuPay contactless dual interface card is currently designed for domestic market only.

5 RUPAY CONTACTLESS USE CASES

The RuPay Contactless specifications offer solutions across various segments as covered in next section. This is further in line with the National Common Mobility Card program as per the mandate from Ministry of Urban Development.

5.1 Retail

Retail stores get huge customers crowd and many times there are long queues at the billing counter. In such situations, RuPay Contactless Cards will provide convenience to customers as they can make the payment using this card within a fraction of second without any requirement of PIN. This will be helpful to both customers as well as retail outlets for having an efficient billing system.

There are various loyalty programs which are offered by retailers based on the shopping behaviour of customers. City like Bengaluru has the highest per capita annual modern retail expenditure at INR 16,191 crore. Following table gives an indication of modern retail in India:-

Per Capita Modern retail Expenditure (2015) in INR, Crore

Mumbai	NCR	Bengaluru	Top Urban centres
7519	11290	16191	8635

Source: Knight Frank research

5.2 Transit Fare Payment System

Every city has the plan of integrated traffic management system. This includes projects like Bus Rapid Transit system, City bus services, and Metro rail as well as monorail. There are more than 100 Public Transport operators in country and there are many Metro/Monorail projects under construction. The existing ticketing system at these PTOs includes mainly cash payment which poses various limitations to customers as well as PTOs. In view of the same, there is a need to digitize the fare payments in the ticketing system. With this RuPay Contactless cards, the customer can make fare payment in offline transaction mode within less than a second. The service area feature offers the proposition to use the same card as monthly passes as well.

This solution has already been implemented and launched on prepaid card platform by Kochi Metro, BMTC Bengaluru and Ahmedabad Smart City.

5.3 Toll Payments

Toll payment is one of the key pain areas for customers due to involved waiting time. Majority of the customers use to make the cash payment at toll plaza. Digitizing the toll payment is one of the key objectives for smart cities.
Toll payment digitization should take care of two prerequisites:

1. **Network Independency**: There are many tolls which are in such areas where there are issues related to network connectivity. RuPay contactless cards can be used for doing offline payment at RuPay certified terminals at toll booths.
2. **Minimal Transaction time:** Tap and pay functionality with no pin requirement will make payment at toll booths just a matter of seconds. This will also reduce the cash handling burden of toll plaza and provide immense convenience to customers.

5.4 Smart Cities

There are more than 100 cities which have been selected for development into smart cities.

RuPay Contactless cards can be used to pay bills and other payments at civic bodies in the city. This will reduce the cash dependency and reduce the cash leakage. In addition, the same card can be used for payment at transit operators, in retail stores, toll and smart parking in smart cities.

5.5 Parking Payments

The interoperability feature of RuPay contactless cards will enable the cardholders to use the same card at parking areas. This will offer the proposition of Tap and pay with minimum transaction time without pin.

5.6 Campus Payments

There are various campuses across education, entertainment, government bodies etc. where there are huge dependencies on low value cash payments. RuPay contactless cards offer the unique proposition to digitize and reduce their burden of cash handling. The same card issued to the customers by banks can be used to pay in campuses for various use cases e.g. canteen, library, in-campus outlets etc. This will also help campuses to get digitized with minimal investment in line with the recent directive of Government of India regarding digital payment.

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