Certainly! Let's explore **Track 1, Track 2, and Track 3** — what they are, their formats, differences, usage, and examples. These are magnetic stripe data formats defined by **ISO/IEC 7813** and used in card transactions (also found in EMV contact/contactless cards).

Overview of Tracks

Track	Data Type	Max Length	Format	Use Case
1	Alphanumeric	79 chars	ASCII	Airline + general credit cards
2	Numeric only	40 digits	BCD (compressed)	Financial & ATM use
3	Numeric only	107 digits	BCD	Rarely used (loyalty, debit cards)

Track 1 – Alphanumeric (Format B)

- Defined by ISO/IEC 7813.
- Contains more detailed info than Track 2.
- Alphanumeric (A–Z, 0–9, and some symbols).

Format:

pgsql

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Start Sentinel (1 char): %

Format Code (1 char) : B

Primary Account Number: Up to 19 digits

Field Separator (1 char): ^

Name : Up to 26 chars (LAST/FIRST)

Field Separator (1 char): ^

Expiration Date : YYMM (4 digits)

Service Code : 3 digits

Discretionary Data : Variable length

End Sentinel (1 char) :?

LRC (1 char) : Longitudinal Redundancy Check (not always shown)

Example:

perl

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%B1234567890123456^DOE/JOHN ^2512101000000000000000000

Breakdown:

- %B: Start and format code.
- 1234567890123456: PAN (card number).
- DOE/JOHN: Cardholder name.
- 2512: Expiry date (Dec 2025).
- 101: Service code.
- 000000000000: Discretionary data.

Track 2 – Numeric Only (ISO Format 2)

- Most commonly used for financial transactions.
- Same info as Track 1 but in compact format.

Format:

yaml

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Start Sentinel:;

PAN: Up to 19 digits

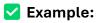
Separator :=

Expiration: 4 digits (YYMM)

Service Code: 3 digits

Discretionary: Variable

End Sentinel:?



ini

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;1234567890123456=25121010000000000000?

Breakdown:

- ;: Start.
- 1234567890123456: PAN.
- =: Separator.
- 2512: Expiry (Dec 2025).
- 101: Service code.
- · Rest: Discretionary data.
- Most EMV cards include Track 2 Equivalent Data (Tag 57) inside chip.

Track 3 – Rarely Used (Custom Format)

- Up to 107 digits.
- May include PIN offset, currency units, loyalty points, etc.
- Originally used on older debit or stored value cards.

Example (format varies by issuer):

diff

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+1234567890123456=251210112345678901234567890123456?

Many cards today don't store Track 3 data.

Service Code (used in Track 1 & 2)

Digits Meaning

1st digit – Interchange 1 = International; 2 = National only

2nd digit – Authorization 0 = Normal; 2 = Chip required

3rd digit – Restrictions 0 = No restrictions; 1 = No ATM

Example:

101 → International, normal auth, no restrictions

Summary: Key Differences

Feature	Track 1	Track 2	Track 3
Type	Alphanumeric	Numeric only	Numeric only
Used by	Airlines + banking	g Banking	Legacy loyalty/debit
Length	79 characters	40 digits	107 digits
Availability	y Often present	Always presen	t Rarely used

If you want me to **decode a real Track 1 or Track 2 data** from your logs or card simulator dumps, feel free to paste it (mask sensitive PAN values if needed).

You said:

explain service code

ChatGPT said:

Let's dive into the **Service Code** — a 3-digit numeric code found in Track 1 and Track 2 of magnetic stripe or EMV cards.

What is the Service Code?

The **Service Code** is a 3-digit number that provides instructions on:

- 1. Interchange rules (where and how the card can be used),
- 2. Authorization requirements,
- 3. Cardholder verification methods (CVMs),
- 4. **Technology limitations** (e.g., magnetic stripe only or chip required).

It's encoded within the Track 1 and Track 2 data structures.

Location in Tracks

■ Track 1 Format (ISO/IEC 7813):

php-template

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%B<PrimaryAccountNumber>^<Name>^YYMM<ServiceCode><DiscretionaryData>?

Example:

css

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%B1234567890123456^DOE/JOHN^25121010000000000000?

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Service Code

■ Track 2 Format:

markdown

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;1234567890123456=251210100000000000000?

 $\uparrow\uparrow\uparrow$

Service Code

Structure of Service Code

Each of the **three digits** represents a different instruction:

Digit Position Meaning

1st Interchange & Technology Type of card usage (magstripe, chip, etc.)

2nd Authorization Processing Whether PIN is required, online/offline capability

3rd CVM / Restrictions Whether card can be used internationally, restrictions

Detailed Breakdown of Service Code Digits

First Digit: Interchange / Technology

Digit Meaning

- 1 International interchange OK, magnetic stripe
- 2 International interchange OK, chip
- 5 National interchange only, magnetic stripe
- 6 National interchange only, chip
- 7 Private network only
- 9 Test card only

Second Digit: Authorization Processing

Digit Meaning

- 0 Normal, no restrictions
- 1 Must use online authorization
- 2 Reserved
- 5 Must use PIN verification
- 6 Offline transactions OK (no online required)

Third Digit: CVM / Usage Restrictions

Digit Meaning

- 0 No restrictions
- 1 PIN required
- 2 Goods and services only (no cash access)
- 3 ATM only
- 4 Cash only
- 5 Reserved
- 6–7 Reserved
- 9 Test transactions only

Examples of Full Service Codes

Service Code	Meaning
101	Magnetic stripe, international, online authorization required, PIN required
201	Chip, international, online only, PIN required
221	Chip, international, online only, PIN required
520	Magnetic stripe, national only, online authorization optional, no CVM required

EMV Cards and Service Code

In EMV chip cards, service code is still included for **backward compatibility**, especially when fallback to magstripe is needed.

Summary

- Service code governs how and where a card can be used.
- Track 1 & Track 2 both hold this information.
- Each digit provides information about technology, authorization, and usage restriction.