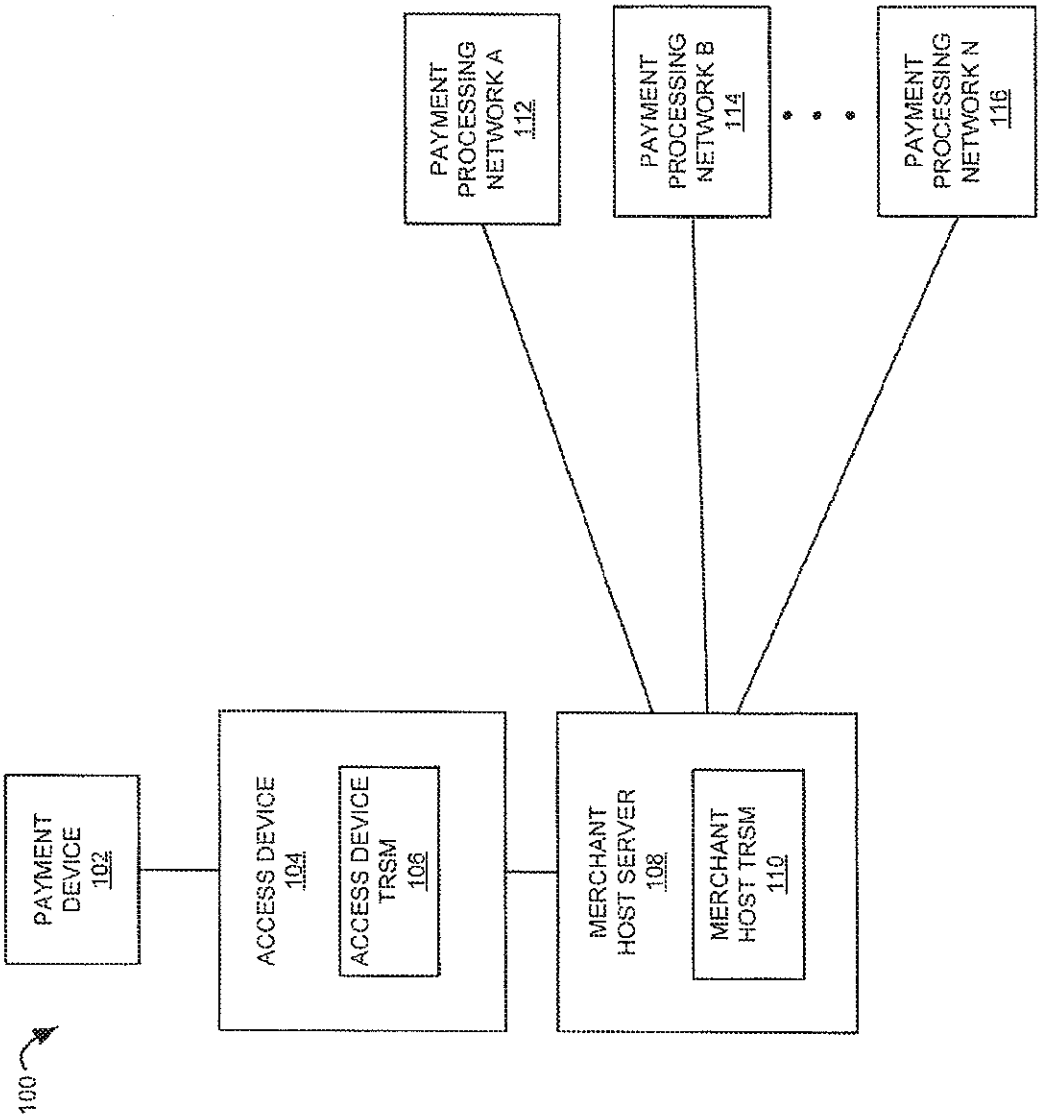

PAYMENT PROCESSING NETWORK A 112
PAYMENT PROCESSING NETWORK B 114
PAYMENT PROCESSING NETWORK N 116
PAYMENT DEVICE 102
ACCESS DEVICE 104
ACCESS DEVICE TRSM 106
MERCHANT HOST SERVER 108
MERCHANT HOST TRSM 110
100

FIG. 1

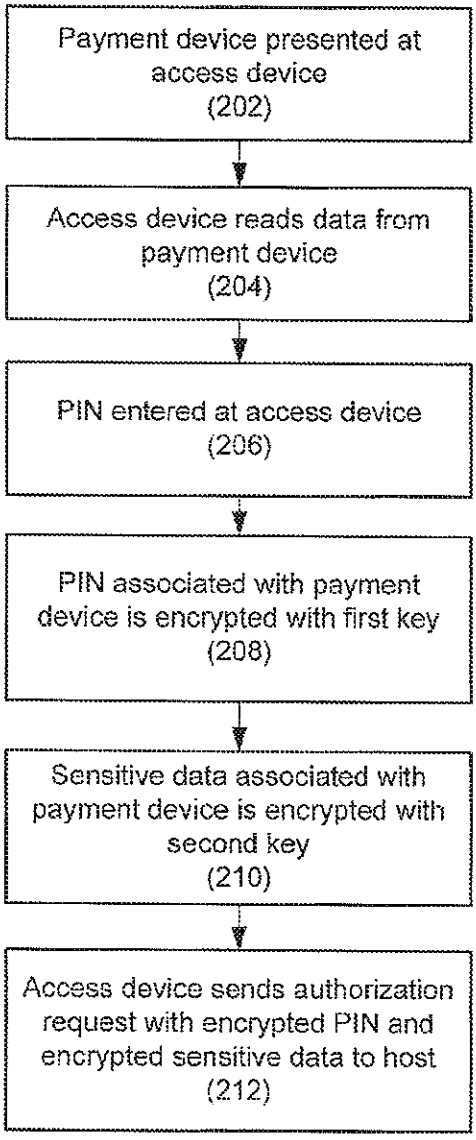

Payment device presented at access device (202)
Access device reads data from payment device (204)
PIN entered at access device (206)
PIN associated with payment device is encrypted with first key (208)
Sensitive data associated with payment device is encrypted with second key (210)
Access device sends authorization request with encrypted PIN and encrypted sensitive data to host (212)

*FIG. 2*

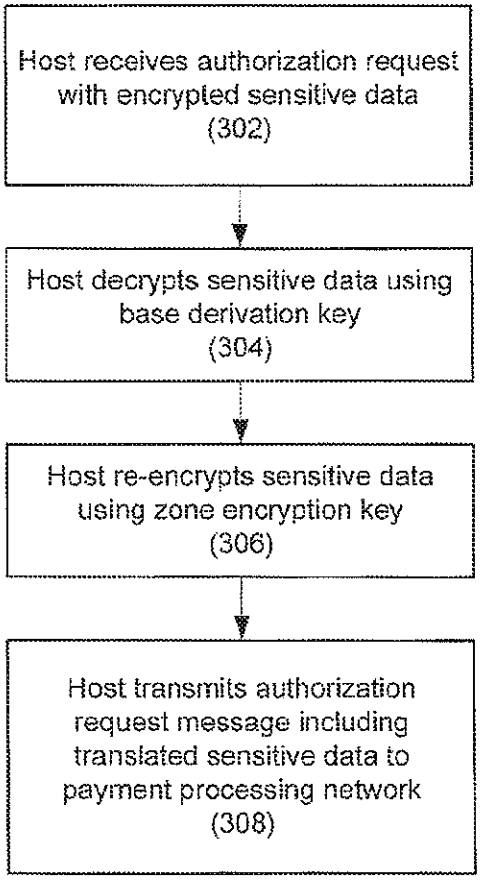

Host receives authorization request with encrypted sensitive data (302)
Host decrypts sensitive data using base derivation key (304)
Host re-encrypts sensitive data using zone encryption key (306)
Host transmits authorization request message including translated sensitive data to payment processing network (308)

*FIG. 3*

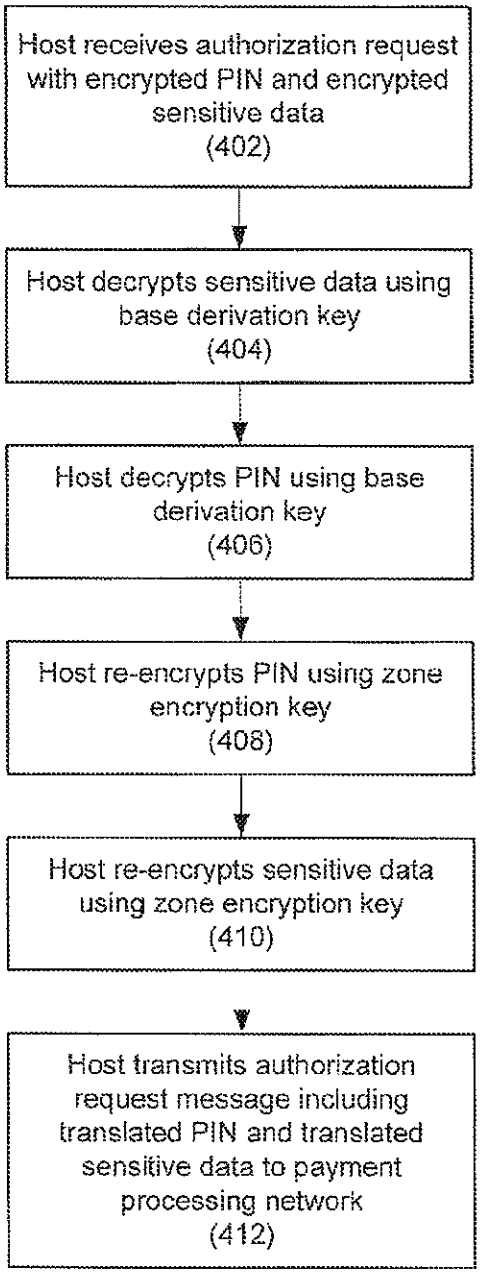

Host receives authorization request with encrypted PIN and encrypted sensitive data
(402)
Host decrypts sensitive data using base derivation key
(404)
Host decrypts PIN using base derivation key
(406)
Host re-encrypts PIN using zone encryption key
(408)
Host re-encrypts sensitive data using zone encryption key
(410)
Host transmits authorization request message including translated PIN and translated sensitive data to payment processing network
(412)

*FIG. 4*

| Symbol | Description | Character code / No. of characters |
|---|---|---|
| STX | Start sentinel | % |
| FC | Format code | B |
| PAN | Primary Account Number | up to 19 digits |
| FS | Separator | ^ |
| NM | Name | 2 to 26 characters |
| FS | Separator | ^ |
| ED | Expiration date | four digits or ^ |
| SC | Service code | three digits or ^ |
| DD | Discretionary data | balance of characters |
| ETX | End sentinel | ? |
| LRC | Longitudinal redundancy check (see ISO/IEC 7811-2) | 1 character |
| | Maximum record length | 79 alphanumeric characters |

FIG. 5

| Symbol | Description | Character code / No. of characters |
|---|---|---|
| STX | Start sentinel | ; |
| PAN | Primary Account Number | up to 19 digits |
| FS | Separator | = |
| ED | Expiration date | four digits or = |
| SC | Service code | three digits or = |
| DD | Discretionary data | balance of available digits |
| ETX | End sentinel | ? |
| LRC | Longitudinal redundancy check (see ISO/IEC 7811-2) | 1 digit |
| | Maximum record length | 40 numeric digits |

*FIG. 6*

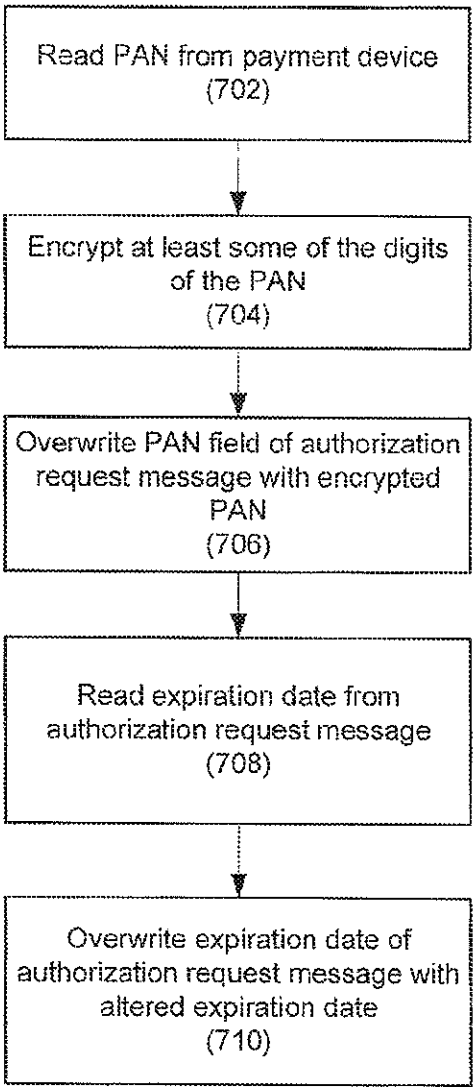

Read PAN from payment device
(702)
Encrypt at least some of the digits of the PAN
(704)
Overwrite PAN field of authorization request message with encrypted PAN
(706)
Read expiration date from authorization request message
(708)
Overwrite expiration date of authorization request message with altered expiration date
(710)

*FIG. 7*

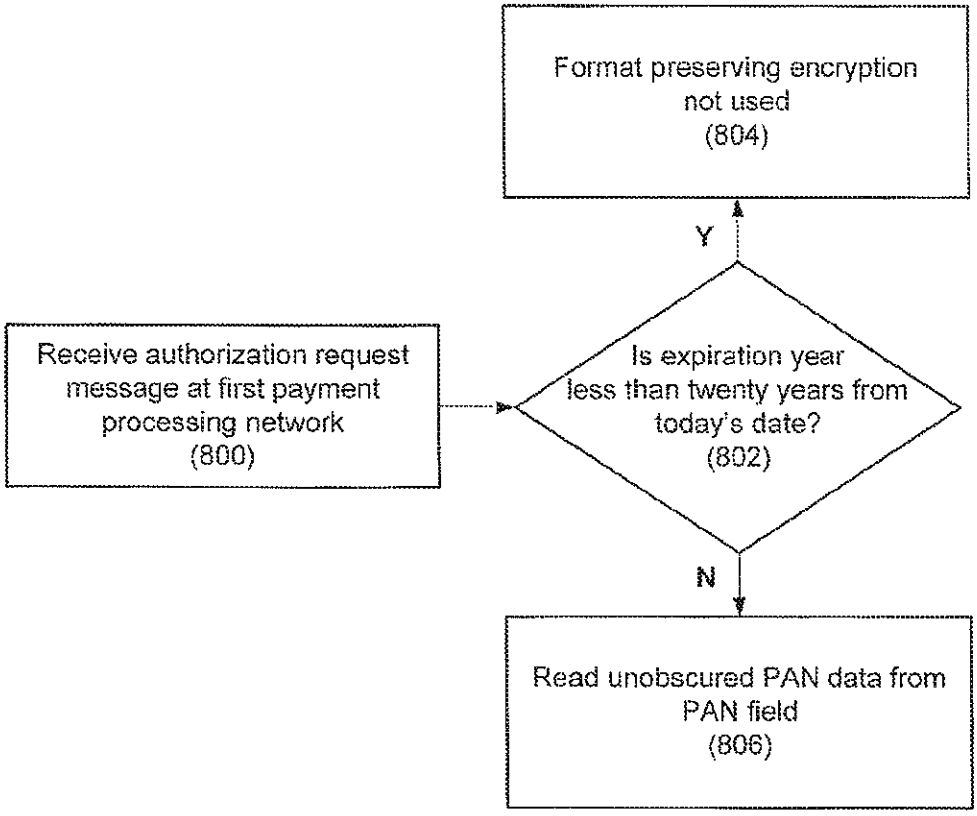

Format preserving encryption not used (804)
Y
Receive authorization request message at first payment processing network (800)
Is expiration year less than twenty years from today's date? (802)
N
Read unobscured PAN data from PAN field (806)

FIG. 8

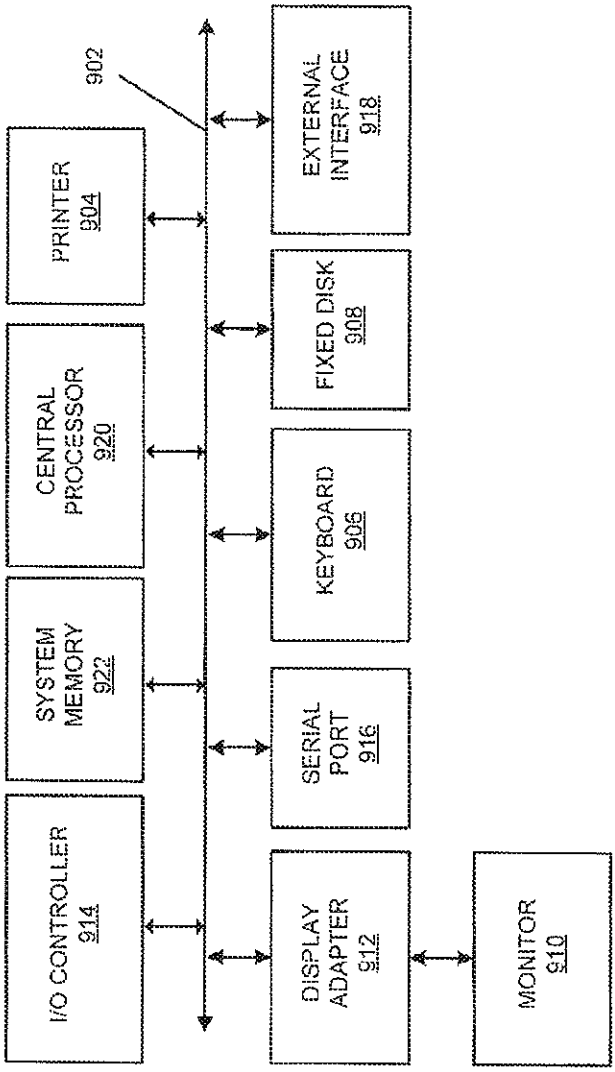

902
PRINTER 904
CENTRAL PROCESSOR 920
SYSTEM MEMORY 922
I/O CONTROLLER 914
EXTERNAL INTERFACE 918
FIXED DISK 908
KEYBOARD 906
SERIAL PORT 916
DISPLAY ADAPTER 912
MONITOR 910

FIG. 9