

GCIS Hash-to-Password Recovery & Cryptographic Side-Channel Report

CHARGE ANALYSIS - OVERVIEW

INDIVIDUAL VALUES (32 characters):

```

'1' -> -1 '5' -> -1 '7' -> -1 '8' -> -1
'9' -> -1 'A' -> -1 'B' -> -1 'D' -> -1
'E' -> -1 'F' -> -1 'G' -> -1 'I' -> -1
'J' -> -1 'L' -> -1 'M' -> -1 'P' -> -1
'S' -> -1 'T' -> -1 'U' -> -1 'X' -> -1
'Y' -> -1 'b' -> -1 'd' -> -1 'e' -> -1
'f' -> -1 'n' -> -1 'q' -> -1 'r' -> -1
's' -> -1 'w' -> -1 'x' -> -1 'Y' -> -1

```

TOTAL: $32x - 1$, $0x + 1$

SIGNIFICANT (100.0% uniform charge) - Dominant charge: -1

PATTERN CONSISTENCY ANALYSIS

```
=====  
32/32 bytes show 100% pattern consistency  
RESULT: All password bytes have UNIQUE, CONSISTENT sign patterns
```

STATISTICAL SUMMARY

Pearson Correlation: 1.0000
Bit-Sign Agreement: 100.00%

INPUT DATA

Password: 81Y7E9wMy5X dbsIrDJnAqTxPfSFBL eGU

Password Bitstring:

00111000 00110001 01011001 00110111 01000101 00111001 01110111 01001101 01111001 00110101
01011000 01001100 01100010 01110011 01001001 01110010 01000100 01001010 01101110 01000001
01100001 01010100 01111000 01010000 01100110 01010011 01000010 01000110 01000001 01001100 01100101
01000111 01010101

Layer 1 (es16): 1024 bits

Bitstring:

Sign sequence (complete):

+1, +1, -1, -1, +1, +1, +1, -1, -1, -1, -1, +1, +1, -1, -1, -1, +1, +1, -1, +1, -1, -1, -1, -1, -1, +1, +1, +1, -1, +1, +1, -1

Layer 2 (es17): 2048 bits

Bitstring:

Sign sequence (complete)

PAGE 2: LAYER DATA + CHARGE DETAILS

LAYER: es16 (1024 bits)

Bitstring:

Sign sequence: +1, -1, +1, -1, +1, -1, +1, -1, +1, -1, +1, -1, +1, -1, +1, -1, +1, -1, -1, -1, +1, +1, +1, -1, +1, -1, -1, -1, +1, -1, -1, +1, ...

Character positions and charges:

```
'1' @ 29->-1, 137->-1, 142->-1, 310->-1 -> Charge: -1
'5' @ 409->-1, 462->-1, 572->-1, 903->-1 -> Charge: -1
'7' @ 158->-1, 209->-1, 745->-1, 791->-1 -> Charge: -1
'8' @ 302->-1, 378->-1, 494->-1, 992->-1 -> Charge: -1
'9' @ 242->-1, 315->-1, 500->-1, 691->-1 -> Charge: -1
'A' @ 595->-1, 638->-1, 653->-1, 847->-1 -> Charge: -1
'B' @ 665->-1, 838->-1, 962->-1 -> Charge: -1
'D' @ 23->-1, 41->-1, 548->-1 -> Charge: -1
'E' @ 67->-1, 221->-1, 422->-1, 701->-1 -> Charge: -1
'F' @ 155->-1, 387->-1, 742->-1, 779->-1 -> Charge: -1
'G' @ 114->-1, 252->-1, 325->-1, 375->-1, 688->-1 -> Charge: -1
'I' @ 45->-1, 530->-1, 539->-1, 644->-1 -> Charge: -1
'J' @ 48->-1, 552->-1, 630->-1, 939->-1 -> Charge: -1
'L' @ 27->-1, 135->-1, 346->-1, 400->-1 -> Charge: -1
'M' @ 337->-1, 394->-1, 407->-1, 533->-1 -> Charge: -1
'P' @ 53->-1, 845->-1 -> Charge: -1
'S' @ 75->-1, 133->-1, 555->-1 -> Charge: -1
'T' @ 51->-1, 73->-1, 131->-1, 248->-1 -> Charge: -1
'U' @ 71->-1 -> Charge: -1
'X' @ 14->-1, 892->-1 -> Charge: -1
'Y' @ 35->-1, 86->-1, 450->-1 -> Charge: -1
'b' @ 16->-1, 30->-1, 190->-1, 349->-1 -> Charge: -1
'd' @ 37->-1, 321->-1, 403->-1, 697->-1, 783->-1 -> Charge: -1
'e' @ 10->-1, 285->-1 -> Charge: -1
'f' @ 452->-1, 459->-1, 518->-1 -> Charge: -1
'n' @ 159->-1, 210->-1, 792->-1 -> Charge: -1
'q' @ 379->-1, 495->-1 -> Charge: -1
'r' @ 243->-1, 501->-1, 876->-1 -> Charge: -1
's' @ 316->-1, 692->-1, 899->-1 -> Charge: -1
'w' @ 199->-1, 437->-1, 607->-1, 915->-1 -> Charge: -1
'x' @ 0->-1, 60->-1, 203->-1, 264->-1 -> Charge: -1
'y' @ 125->-1, 237->-1, 256->-1, 297->-1 -> Charge: -1
```

LAYER: es17 (2048 bits)

Bitstring:

```

Character positions and charges:
'1' @ 442->-1, 647->-1, 871->-1, 1069->-1 -> Charge: -1
'5' @ 22->-1, 76->-1, 184->-1, 234->-1 -> Charge: -1
'7' @ 218->-1, 876->-1, 987->-1, 1052->-1 -> Charge: -1
'8' @ 721->-1, 929->-1, 1027->-1 -> Charge: -1
'9' @ 422->-1, 573->-1, 628->-1, 652->-1 -> Charge: -1
'A' @ 108->-1, 149->-1, 240->-1, 483->-1 -> Charge: -1
'B' @ 192->-1, 847->-1, 1075->-1, 1297->-1 -> Charge: -1
'D' @ 176->-1, 479->-1, 619->-1, 799->-1, 1563->-1 -> Charge: -1
'E' @ 560->-1, 730->-1, 885->-1, 949->-1 -> Charge: -1
'F' @ 750->-1, 852->-1, 1185->-1, 1607->-1, 1759->-1 -> Charge: -1
'G' @ 595->-1, 1289->-1, 1567->-1, 1732->-1, 1772->-1 -> Charge: -1
'I' @ 90->-1, 512->-1, 584->-1, 613->-1 -> Charge: -1
'J' @ 474->-1, 515->-1, 860->-1, 1391->-1 -> Charge: -1
'L' @ 13->-1, 67->-1, 228->-1, 923->-1 -> Charge: -1

```

'M' @ 143->-1, 313->-1, 793->-1, 936->-1 -> Charge: -1
'P' @ 190->-1, 238->-1, 845->-1, 893->-1 -> Charge: -1
'S' @ 311->-1, 1237->-1, 1328->-1, 1396->-1 -> Charge: -1
'T' @ 188->-1, 746->-1, 891->-1, 1225->-1 -> Charge: -1
'U' @ 197->-1, 332->-1, 734->-1, 835->-1, 889->-1 -> Charge: -1
'X' @ 82->-1, 157->-1, 968->-1, 1430->-1 -> Charge: -1
'Y' @ 564->-1, 766->-1, 1132->-1, 1302->-1 -> Charge: -1
'b' @ 443->-1, 970->-1, 995->-1, 1070->-1 -> Charge: -1
'd' @ 47->-1, 856->-1, 1162->-1, 1401->-1, 1488->-1 -> Charge: -1
'e' @ 525->-1, 901->-1, 1134->-1, 1304->-1 -> Charge: -1
'f' @ 231->-1, 566->-1, 768->-1, 772->-1, 1832->-1 -> Charge: -1
'n' @ 219->-1, 258->-1, 321->-1, 338->-1 -> Charge: -1
'q' @ 222->-1, 402->-1, 437->-1, 452->-1 -> Charge: -1
'r' @ 28->-1, 98->-1, 203->-1, 372->-1 -> Charge: -1
's' @ 324->-1, 653->-1, 665->-1, 687->-1 -> Charge: -1
'w' @ 299->-1, 364->-1, 368->-1, 1093->-1 -> Charge: -1
'x' @ 269->-1, 466->-1, 599->-1, 708->-1 -> Charge: -1
'y' @ 293->-1, 740->-1, 758->-1, 1500->-1, 1907->-1 -> Charge: -1

=====

PASSWORD BYTE SIGN PATTERNS

=====

BYTE 0 | ASCII: '8' | Bit Pattern: 00111000
Found at 7 location(s)
SIGN PATTERN: -1 -1 +1 +1 +1 -1 -1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 1 | ASCII: '1' | Bit Pattern: 00110001
Found at 17 location(s)
SIGN PATTERN: -1 -1 +1 +1 -1 -1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 2 | ASCII: 'Y' | Bit Pattern: 01011001
Found at 9 location(s)
SIGN PATTERN: -1 +1 -1 +1 +1 -1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 3 | ASCII: '7' | Bit Pattern: 00110111
Found at 10 location(s)
SIGN PATTERN: -1 -1 +1 +1 -1 +1 +1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 4 | ASCII: 'E' | Bit Pattern: 01000101
Found at 15 location(s)
SIGN PATTERN: -1 +1 -1 -1 -1 +1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 5 | ASCII: '9' | Bit Pattern: 00111001
Found at 15 location(s)
SIGN PATTERN: -1 -1 +1 +1 +1 -1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 6 | ASCII: 'w' | Bit Pattern: 01110111
Found at 16 location(s)
SIGN PATTERN: -1 +1 +1 +1 -1 +1 +1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 7 | ASCII: 'M' | Bit Pattern: 01001101
Found at 18 location(s)
SIGN PATTERN: -1 +1 -1 -1 +1 +1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 8 | ASCII: 'y' | Bit Pattern: 01111001
Found at 13 location(s)
SIGN PATTERN: -1 +1 +1 +1 +1 -1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 9 | ASCII: '5' | Bit Pattern: 00110101
Found at 13 location(s)
SIGN PATTERN: -1 -1 +1 +1 -1 +1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 10 | ASCII: 'X' | Bit Pattern: 01011000
Found at 6 location(s)
SIGN PATTERN: -1 +1 -1 +1 +1 -1 -1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 11 | ASCII: 'd' | Bit Pattern: 01100100
Found at 10 location(s)
SIGN PATTERN: -1 +1 +1 -1 -1 +1 -1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 12 | ASCII: 'b' | Bit Pattern: 01100010
Found at 16 location(s)
SIGN PATTERN: -1 +1 +1 -1 -1 -1 +1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 13 | ASCII: 's' | Bit Pattern: 01110011
Found at 11 location(s)
SIGN PATTERN: -1 +1 +1 +1 -1 -1 +1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 14 | ASCII: 'I' | Bit Pattern: 01001001
Found at 12 location(s)
SIGN PATTERN: -1 +1 -1 -1 +1 -1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 15 | ASCII: 'r' | Bit Pattern: 01110010
Found at 13 location(s)
SIGN PATTERN: -1 +1 +1 +1 -1 -1 +1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 16 | ASCII: 'D' | Bit Pattern: 01000100
Found at 8 location(s)
SIGN PATTERN: -1 +1 -1 -1 -1 +1 -1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 17 | ASCII: 'J' | Bit Pattern: 01001010
Found at 14 location(s)
SIGN PATTERN: -1 +1 -1 -1 +1 -1 +1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 18 | ASCII: 'n' | Bit Pattern: 01101110
Found at 10 location(s)
SIGN PATTERN: -1 +1 +1 -1 +1 +1 +1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 19 | ASCII: 'A' | Bit Pattern: 01000001
Found at 14 location(s)
SIGN PATTERN: -1 +1 -1 -1 -1 -1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 20 | ASCII: 'q' | Bit Pattern: 01110001
Found at 14 location(s)
SIGN PATTERN: -1 +1 +1 +1 -1 -1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 21 | ASCII: 'T' | Bit Pattern: 01010100
Found at 15 location(s)
SIGN PATTERN: -1 +1 -1 +1 -1 +1 -1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 22 | ASCII: 'x' | Bit Pattern: 01111000
Found at 19 location(s)
SIGN PATTERN: -1 +1 +1 +1 +1 -1 -1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 23 | ASCII: 'P' | Bit Pattern: 01010000
Found at 9 location(s)
SIGN PATTERN: -1 +1 -1 +1 -1 -1 -1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 24 | ASCII: 'f' | Bit Pattern: 01100110
Found at 8 location(s)
SIGN PATTERN: -1 +1 +1 -1 -1 +1 +1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 25 | ASCII: 'S' | Bit Pattern: 01010011
Found at 11 location(s)
SIGN PATTERN: -1 +1 -1 +1 -1 -1 +1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 26 | ASCII: 'F' | Bit Pattern: 01000110
Found at 9 location(s)
SIGN PATTERN: -1 +1 -1 -1 -1 +1 +1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 27 | ASCII: 'B' | Bit Pattern: 01000010
Found at 9 location(s)
SIGN PATTERN: -1 +1 -1 -1 -1 -1 +1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 28 | ASCII: 'L' | Bit Pattern: 01001100
Found at 14 location(s)
SIGN PATTERN: -1 +1 -1 -1 +1 +1 -1 -1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 29 | ASCII: 'e' | Bit Pattern: 01100101
Found at 9 location(s)
SIGN PATTERN: -1 +1 +1 -1 -1 +1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 30 | ASCII: 'G' | Bit Pattern: 01000111
Found at 10 location(s)
SIGN PATTERN: -1 +1 -1 -1 -1 +1 +1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

BYTE 31 | ASCII: 'U' | Bit Pattern: 01010101
Found at 6 location(s)
SIGN PATTERN: -1 +1 -1 +1 -1 +1 -1 +1
CONSISTENCY: 100.0%
BIT-SIGN MATCH: 100.0%

=====