

Features for Call Detail Recording

Call Detail Recording Central (CDRC)

Output formats

- Compressed Output Format for Call Details – Output via Application Programming Interface (V.24)

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-----
0          1          2          3          4          5          6          7          8          9          1          1
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
-----
1 Date (8 digits)
|          2 Time (8)
|          |          3 Trunk (3)
|          |          |          4 internal station number (6 digits)
|          |          |          |          5 Ring duration (5)
|          |          |          |          |          6 Call duration (8)
|          |          |          |          |          |          7 Station number (25)
|          |          |          |          |          |          |          8 Call charges (11) (blank in U.S.)
|          |          |          |          |          |          |          |          9 Information element (2)
|          |          |          |          |          |          |          |          |          10 ACCT (11)
|          |          |          |          |          |          |          |          |          |          11 MSN (11)
|          |          |          |          |          |          |          |          |          |          |          12 Seizure code (5)
|          |          |          |          |          |          |          |          |          |          |          |          LCR route (2)
|          |          |          |          |          |          |          |          |          |          |          |          |          ...
|          |          |          |          |          |          |          |          |          |          |          |          |          |          ...
V          V          V V          V          V          V          V          V          V          V          V          V          V
11.12.0008:23:23 4      16      00:05:2302317324856      12 2      902725 841      (1)
11.12.0009:12:45 3      18      00:01:23834756      34 212345678901      2      (2)
11.12.0009:25:34 2      1100:34      1      (3)
11.12.0010:01:46 1      12      00:12:5383726639046287127384      5 2
11.12.0010:03:42 2      14      05:42:4338449434444495598376      245 2
11.12.0010:23:24 2      15      00:02:221234567890123412????      83 2      (4)
11.12.0011:12:45 3      18      00:01:23834756      34 2
12.12.0012:23:34 3      1200:1500:03:12      1      (5)
12.12.0012:23:50 4      11      00:03:583844733399      7 2
12.12.0013:23:54 3      17      00:02:233844733399      8 5      (6)
12.12.0014:05:24 3      18      00:01:23834756      31 2
12.12.0014:38:43 2      12      00:03:242374844      63 2      (7a)
12.12.0014:43:33 3      12      00:00:255345545556      5 2      (7b)
12.12.0014:44:12 2      12      00:12:122374844      12 8      (7c)
12.12.0014:44:12 3      12      00:12:125345545556      10 8      (7d)
12.12.0014:56:24 2      12      00:23:462374844      84 2      (7e)
13.12.0009:43:52 1      5      00:01:0539398989983      76 4      (8)
14.12.0012:23:34 1      600:1400:02:3427348596872347569036      3      (9)
** 100 calls lost **      (10)
15.12.0009:44:34 4      15      00:02:12189????      23 2
15.12.0009:56:33 3      14      00:05:451283394495      28 2
15.12.0012:20:26 1      12      0230298007766      0      (11a)
15.12.0012:23:34 1      1200:3400:02:340230298007766      1      (11b)
15.12.0013:43:25 3      15      00:05:2408972212345      1      (12a)
15.12.0013:43:25 4      15      00:05:240231471154321      74 9      (12b)
15.12.0013:45:28 4      18      0230298007252      0      (13a)
15.12.0013:45:28 4      32      0230298007252      0      (13a)
15.12.0013:45:28 4      16      0230298007252      0      (13a)
15.12.0013:46:18 4      1600:50      0230298007252      1      (13b)
15.12.0013:49:28 4      16      00:00:0002317324856      2      (14)
01.01.0000:00:00 8      23 2      (15)
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Explanation of the sample entries shown on Page 10-20:

- (1) Outgoing connection from stn 16 on trunk 4 using the MSN "902725". End of call at 8:23:23 on 12/11/00. Duration of the call: 5 minutes, 23 seconds. Number called: 02317324856. Accrued call charge pulses: 12. The seizure code "841" was used for call setup.
- (2) Outgoing connection with 11-digit account code (ACCT) "12345678901". Route "2" was used for LCR.
- (3) Unanswered incoming call without station number (missing origin address, active station number suppression CLIR at calling station).
- (4) Outgoing connection with suppression of the last 4 digits.
- (5) Incoming connection with ringing and call duration.
- (6) Forwarded call.
- (7) Int/ext/ext conference:
 - (7a) Stn 12 sets up a first external call on trunk 2 ("2374844"),
 - (7b) Stn 12 sets up a second external call on trunk 3 ("5345545556"),
 - (7c) Stn 12 is involved in a conference with trunk 2 and
 - (7d) with trunk 3.
 - (7e) Trunk 3 drops out of the conference. The call on trunk 2 is treated like a normal outgoing call.
- (8) Outgoing connection (other services).
- (9) Incoming connection (other services).
- (10) Loss message: 100 records were lost.

Errors which prevent call data output on the V.24 interface can be caused by the following, for example:

 - Connected device is turned off or suffers a power failure
 - Printer is out of paper
 - Printer is offline
 - Printer has a paper jam
 - CDRC output is interrupted by CDB output
 - Interface cable is defective or incorrect

In these or similar cases, the call records accumulated during this time are buffered in the system. The first 300 (HiPath 3750 and HiPath 3700), 150 (HiPath 3550 and HiPath 3500) or 50 (HiPath 3350, HiPath 3250 and HiPath 3300 [not for U.S.]) records can be buffered.

Additional records are only counted by the system and then discarded. If the connection can be restored to the connected device, a loss message indicating the number of lost records (that is, 100 calls lost) is issued after the buffered records are output.

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- (11) Incoming call with transmitted caller station number:
 - (11a) Caller list: When the call arrives, an information line is immediately output indicating the date, time, trunk, station number, incoming external station number (if available), and information element "0" (used, for example, with a PC: start database search -> message appears on station's monitor).
 - (11b) Station 12 accepted the call after a ringing duration of 34 seconds. This line is output at the end of the call.
- (12) Call forwarding with an external destination:
 - (12a) Incoming call for station 15 on trunk 3 with transmitted station number, no ringing duration due to call forwarding (see 12b),
 - (12b) Call forwarded (12a) to trunk 4 for station number 0231471154321, 74 call charge pulses (not for U.S.) have accrued for the forwarded call.
- (13) Incoming call to subscriber group (stations 18, 32, and 16):
 - (13a) The three entered stations are called simultaneously; they are listed in the order in which they were entered in the group (the second station is listed first).
 - (13b) The call was not accepted by any group member. After the call has ended, a line is output indicating the ringing duration for the last called or entered station.
- (14) Outgoing connection attempt (CDRC outgoing without connection) from stn 16 on trunk 4 at 13:49:28 on 12.15.2000. Number dialed: 02317324856.
- (15) Output after a power failure or reset: 23 call detail units on trunk 8 were present before the power failure.

When a power failure or reset occurs, the call charges accrued for each trunk are stored in nonvolatile system memory (CDRT).

The system checks for consistency between the output and internally stored data following a power failure or system restart. The system also checks to determine whether call charges are still stored that have not yet been output via the V.24 (RS-232) interface. If this is the case, the system outputs a data line using the format illustrated in the example (15) for each affected trunk: (output does not include station number).

● **Compressed Output Format for Call Details – Output via LAN Interface**

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-----
0          1          2          3          4          5          6          7          8          9          0          1
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
-----
1 Date (8 digits)
|
|   2 Time (8)
|   |
|   |   3 Trunk (3)
|   |   |   4 internal station number (6 digits)
|   |   |   |   5 Ring duration (5)
|   |   |   |   |   6 Call duration (8)
|   |   |   |   |   |   7 Station number (25)
|   |   |   |   |   |   |   8 Call charge pulses (11) (blank in U.S.)
|   |   |   |   |   |   |   |   9 Information element (2)
|   |   |   |   |   |   |   |   |   10 ACCT (11)
|   |   |   |   |   |   |   |   |   |   11 MSN (11)
|   |   |   |   |   |   |   |   |   |   |   12 b = Seizure code (5)
|   |   |   |   |   |   |   |   |   |   |   |   13 LCR route (2)
|   |   |   |   |   |   |   |   |   |   |   |   |   ...
|   |   |   |   |   |   |   |   |   |   |   |   |   |   ...
V   V   V V V V   V   V V V   V   V V   V   V V
13.12.99;08:23:23;4;16;;00:05:23;02317324856;12;2;12345678901;902725;841;;
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 Call detail records can be output via a LAN interface using two different settings:

- DOS mode (carriage return (CR), line feed (LF)) = default or UNIX mode (line feed (LF)) at the end of a call data record.
- Separators (“;” = default or “|”) between the logical elements of a call data record; the record is no longer position-oriented.

Table 10-1 Compressed Output Format—Explanation of Output Fields (Sheet 1 of 7)

| Field position | Fields (V.24 output only) | Definition | Number of characters | Orientation |
|----------------|---------------------------|---|----------------------|-------------|
| 1 | 1 to 8 | Date at end of call: DD.MM.YY (DD = day, MM = month, YY = year) | 8 | Left |
| 2 | 9 to 16 | Time at end of call segment or an unanswered incoming call: hh:mm:ss (hh = hours: value range 00 - 23, mm = minutes: value range 00 - 59, ss=seconds: value range 00 - 59) | 8 | Left |
| 3 | 17 to 19 | Trunk: Trunk number Value range 1 - 120 | 3 | Right |

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Table 10-1 Compressed Output Format—Explanation of Output Fields (Sheet 2 of 7)

| Field position | Fields (V.24 output only) | Definition | Number of characters | Orien tation |
|-----------------------|----------------------------------|--|-----------------------------|---------------------|
| 4 | 20 to 25 | Station: Internal station number Value range: 000000 - 999999 (missing digits are replaced by spaces.) In the case of unanswered calls, this is the last station called (as in a hunt group, call forwarding, call forwarding—no answer). With group call, this is the last station entered. In the case of answered calls, it is the station that accepted the call. A programmed SNO prefix (with networking only) is not output. If the internal numbering was converted to a maximum 6-digit numbering plan, the converted station number is output. | 6 | Right |
| 5 | 26 to 30 | Ringing duration of an incoming external call: mm:ss (mm = minutes: value range 00-59, ss = seconds: value range 00 - 59) The system displays all incoming calls as long as the output of ringing duration has been configured in the system. If a counter overflow occurs (duration > 59:59), "59:59" is output. A change in date or time during system operation can result in this situation. | 5 | Left |
| 6 | 31 to 38 | Duration of the call or call segment: hh:mm:ss (hh = hours: value range 00 - 23, mm = minutes: value range 00-59, ss = seconds: value range 00 - 59) If a connection has not been established for an incoming call, 8 spaces are output here. If a counter overflow occurs (duration > 23:59:59), "23:59:59" is output. | 8 | Left |

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Table 10-1 Compressed Output Format—Explanation of Output Fields (Sheet 3 of 7)

| Field position | Fields (V.24 output only) | Definition | Number of characters | Orientation |
|----------------|---------------------------|--|----------------------|-------------|
| 7 | 39 to 63 | Dialed or received external station number (if available): nnnnnnnnnnnnnnnnnnnnnnnnnnnnnnn (n = dialed or received character: value range 0 ... 9, *, #, ?) Output occurs for incoming and outgoing calls (if available). With outgoing calls, the dialed station number or, if available, the station number transmitted via COLP is displayed. In the case of an active data protection function, the last four digits dialed are replaced by the symbols. If no station number information is available, 25 spaces are output. | 25 | Left |

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Table 10-1 Compressed Output Format—Explanation of Output Fields (Sheet 4 of 7)

| Field position | Fields (V.24 output only) | Definition | Number of characters | Orientation | | | | | | | | | | | |
|---------------------|--|--|----------------------|--------------------|--|------|---------|--------|--|---|---------|---|--|----|-------|
| 8 | 64 to 74 | <p>Call charge pulses for a call segment: zzzzzzzzzz (blank spaces in U.S.) (z = digit: value range 0 - 9) You can select either call charge pulses or call charge amounts. Use the call charge factor, which is defined as a currency amount (including a mandatory surcharge) for each call charge unit or pulse, to convert call charge pulses to monetary amounts (see Section 10.11, "Call-Charge Display With Currency (not for U.S.)"). Setting the call charge factor:</p> <ul style="list-style-type: none"> • With calculation detail: call charge factor = 100% + mandatory surcharge • Without calculation detail: call charge factor = amount/unit + mandatory surcharge <p>The system records the call charges with or without a surcharge depending on the calculation detail (Section 10.11):</p> <table border="1" data-bbox="427 1305 1043 1621"> <thead> <tr> <th data-bbox="427 1305 600 1402" rowspan="2">Call Charge Display</th> <th colspan="2" data-bbox="600 1305 1043 1352">Computing accuracy</th> </tr> <tr> <th data-bbox="600 1352 826 1402">With</th> <th data-bbox="826 1352 1043 1402">Without</th> </tr> </thead> <tbody> <tr> <td data-bbox="427 1402 600 1509">Pulses</td> <td data-bbox="600 1402 826 1509">HiPath arithmetic units output without surcharge</td> <td data-bbox="826 1402 1043 1509">Call charge pulses output without surcharge</td> </tr> <tr> <td data-bbox="427 1509 600 1621">Amounts</td> <td data-bbox="600 1509 826 1621">HiPath arithmetic units output with surcharge</td> <td data-bbox="826 1509 1043 1621">Monetary amounts output with surcharge</td> </tr> </tbody> </table> <p>The system outputs data whenever call charges accrue for the call segment (even with transferred calls). If no call detail information is available, these 11 characters remain blank.</p> | Call Charge Display | Computing accuracy | | With | Without | Pulses | HiPath arithmetic units output without surcharge | Call charge pulses output without surcharge | Amounts | HiPath arithmetic units output with surcharge | Monetary amounts output with surcharge | 11 | Right |
| Call Charge Display | Computing accuracy | | | | | | | | | | | | | | |
| | With | Without | | | | | | | | | | | | | |
| Pulses | HiPath arithmetic units output without surcharge | Call charge pulses output without surcharge | | | | | | | | | | | | | |
| Amounts | HiPath arithmetic units output with surcharge | Monetary amounts output with surcharge | | | | | | | | | | | | | |

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Table 10-1 Compressed Output Format—Explanation of Output Fields (Sheet 5 of 7)

| Field position | Fields (V.24 output only) | Definition | Number of characters | Orientation |
|----------------|---------------------------|---|----------------------|-------------|
| 9 | 75 to 76 | <p>Information element: additional information Value range: 0 - 9 Meaning:</p> <ul style="list-style-type: none"> ● 1 = Incoming connection (voice/3.1 kHz audio call) ● 2 = Outgoing connection (voice/3.1 kHz audio call) ● 3 = Incoming connection (other services) ● 4 = Outgoing connection (other services) ● 5 = Incoming connection forwarded ● 6 = Outgoing connection forwarded ● 7 = Int/ext/ext conference with incoming connection/transit through external transfer ● 8 = Conference with outgoing connection/transit through external transfer ● 9 = Outgoing connection via call forwarding to an external destination ● 0 = Call information (caller list) is output immediately when an incoming call is received (output can be suppressed). This can be used, for instance, for a database search by a PC. When multiple stations are called, a line is output for each individual station (without ring duration, call duration, call detail information). | 2 | Right |

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Table 10-1 Compressed Output Format—Explanation of Output Fields (Sheet 6 of 7)

| Field position | Fields (V.24 output only) | Definition | Number of characters | Orientation |
|-------------------|---------------------------|---|----------------------|-------------|
| Continuation of 9 | 75 to 76 | <ul style="list-style-type: none"> • +20 = Offset as a code for call setup charges (connection setup without call duration) • +30 (HiPath 3000/HiPath 5000 V1.0 and later) = offset as an ID for a follow-up data record in the case of <ul style="list-style-type: none"> – call duration > 24 h. – contiguous call segments with the same line/station number (for example, after transferring a call, after clearing a conference). Can occur in combination with offset +40. • +40 = Offset for a data record with transit code (by an extension in the subsystem). Can occur in combination with offset +30. • +50 = Offset as a code for DISA calls • +70 = combination of offsets +30 and +40 | 2 | Right |
| 10 | 77 to 87 | Account code (ACCT) entered by the user for this call: ppppppppppp p = ACCT digit: value range 0 - 9) If an ACCT has not been entered, 11 spaces are output. If the ACCT is shorter than 11 digits, the remaining characters are filled with spaces. | 11 | Left |
| 11 | 88 to 98 | MSN used: mmmmmmmmmmm (m = MSN digit: value range 0 - 9) Information is displayed if the user has programmed an MSN key. Non-existent characters are replaced by spaces. If MSN information is not available (as in a point-to-point connection), 11 spaces are output instead of these characters. | 11 | Right |
| 12 | 99 to 103 | Seizure code used, access code: bbbbbb (b = digit of the seizure code: value range 0 - 9) Non-existent characters are replaced by spaces. | 5 | Right |

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Table 10-1 Compressed Output Format—Explanation of Output Fields (Sheet 7 of 7)

| Field position | Fields (V.24 output only) | Definition | Number of characters | Orientation |
|-----------------------|----------------------------------|--|-----------------------------|--------------------|
| 13 | 104 to 105 | LCR route used: rr (r = digit of the dialed route: value range 0 - 9) Non-existent characters are replaced by spaces. | 2 | Right |
| 14 | 106 to 107 | PRI nodal service: nn (n = digit: value range 0 - 9) Non-existent characters are replaced by spaces. | 2 | Right |
| 15 | 108 | PRI WATS band: w (w = digit: value range 0 - 9) If no information is available, a space is output. | 1 | – |
| 16 | 109 to 112 | PRI Carrier Identification Code (CIC): cccc (c = CIC digit: value range 0 - 9) Non-existent characters are replaced by spaces. | 4 | Right |
| 14 | 106 to 107 | U.S.-specific fields are filled with blanks in other countries. | 2 | Right |
| 15 | 108 | | 1 | – |
| 16 | 109 to 112 | | 4 | Right |
| 17 | 113 to 114 | End of line control character (carriage return [CR], line feed [LF]) | 2 | – |

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- Long Output Format for Call Data

 The header in the long output format is output in the language used across the system. After 62 lines have printed (including header), a form feed (FF) is carried out and the next page begins with a header.

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-----
Date Time Trk Stn Call Duration Station number Amount I
11.12.93 08:23:23 4 16 00:05:23 02317324856 20.23 2
11.12.93 09:12:45 3 18 00:01:23 834756 0.69 2
11.12.93 09:25:34 2 11 00:34 1
11.12.93 10:01:46 1 12 00:12:53 83726639046287127384 413.69 2
-----
```

Table 10-2 Long output format - explanation of output fields

| Field | Fields | Definition | Number of characters | Orientation |
|----------------|----------|---|----------------------|-------------|
| Date | 1 to 8 | see table, field position 1 | 8 | Left |
| Time | 10 to 17 | see table, field position 2 | 8 | Left |
| Trk | 19 to 21 | see table, field position 3 | 3 | Right |
| Stn | 23 to 28 | see table, field position 4 | 6 | Right |
| Call | 30 to 34 | see table, field position 5 | 6 | Left |
| Duration | 36 to 43 | see table, field position 6 | 8 | Left |
| Station number | 45 to 64 | Dialed or received external station number (if available):nnnnnnnnnnnnnnnnnnnn (n = dialed or received character: value range 0 ... 9, *, #, ?) see also table, field position 7 | 20 | Left |
| Amount | 66 to 76 | Call charge amount for a call segment: zzzzzzzzzz (blank spaces in U.S.) (z = digit: value range 0 - 9) The system outputs data whenever call charges accrue for the call segment (even with transferred calls). If no call detail information is available, these 11 characters remain blank. A comma (,) separates the amount from the decimal places. | 11 | Right |
| I | 78 to 79 | see table, field position 9 | 2 | Right |
| - | 80 to 81 | End of line control character (carriage return [CR], line feed [LF]) | 2 | - |