NORTEL NETWORKS

Preside Multiservice Data Manager

MDP Data Formats

Reference

241-6001-810

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Contents

About this document

This guide provides network operating personnel with a description of the following data types for Passport:

- accounting and performance
- outage
- availability

Note: In this document, Passport is used as a generic term that includes all Passports Enterprise, Carrier, and Wireless. Where the Management Data Provider (MDP) handles Passports differently, the Passport series is identified.

This data is generated by Nortel Networks switches and transferred to a Management Data Provider (MDP) which converts the data to one, or more, of the following formats:

- Published Format (PF)
- Bulk Data Format (BDF)
- ASCII format

The MDP transfers converted data to customer hosts, as specified during switch configuration on the MDP.

“Supported data conversion formats” (page 12) shows the data conversion format supported for each switch data type.

Table 1
Supported data conversion formats

DataType	Passport format
accounting	PF/BDF
statistics	BDF
logs	BDF
alarms	BDF
SCN	BDF
outage	BDF
availability	BDF/ASCII
SRS	BDF

Gen refers to data that is not switch type specific.

The following topics are discussed in this section:

Who should read this document and why

This document is useful for personnel who process accounting and performance data from Passport switches. Network administrators can use this document to locate useful switch and network diagnostic data.

What you need to know

You must have had some exposure to both computers and network concepts. Basic computer literacy is required to operate a Management Data Provider. You must know how to use a keyboard and a mouse, what a menu is, and how to start applications from a menu using a mouse.

A Management Data Provider (MDP) resides on a UNIX workstation. You should be familiar with a UNIX editing facility so that you are able to modify files. You should be familiar with SUN workstations, the UNIX operating system, and X.25 network communications.

Network management knowledge of networks that include Nortel Networks switches is required.

How this document is organized

This document contains the following sections:

- "Published Format accounting records" (page 17) describes the Published Format of Passport accounting records.
- "Passport BDF accounting records" (page 63) describes Bulk Data Format (BDF) Passport accounting records.
- "Passport statistics, alarm, log, and scn data" (page 175) describes the Bulk Data Format of Passport performance records.
- "Outage records" (page 405) describes the Bulk Data Format of outage records.
- "Availability report records" (page 407) describes the Bulk Data Format of availability records.
- "Statistics Retrieval System records" (page 409) describes the Bulk Data Format of SRS records.
- "File processing audit records" (page 415) describes the fields contained by file processing audit report records.

What's new in this document

The Passport performance metrics have been documented according to the records generated by the Passports.

In this release, a new document has been created to contain only Passport-specific reference information.

Text conventions

This document uses the following text conventions:

- `nonproportional spaced plain type`

  Nonproportional spaced plain type represents system generated text or text that appears on your screen.

- **`nonproportional spaced bold type`**

  Nonproportional spaced bold type represents words that you should type or that you should select on the screen.

- *italics*

  Statements that appear in italics in a procedure explain the results of a particular step and appear immediately following the step.

  Words that appear in italics in text are for naming.

- `[optional_parameter]`

  Words in square brackets represent optional parameters. The command can be entered with or without the words in the square brackets.

- `<general_term>`

  Words in angle brackets represent variables which are to be replaced with specific values.

- UPPERCASE,lowercase

  In MDM, uppercase and lowercase letters that appear in UNIX commands and parameters must be matched exactly. The system matches upper and lowercase characters differently.

- |

  This symbol separates items from which you may select one; for example, ON|OFF indicates that you may specify ON or OFF. If you do not make a choice, a default ON is assumed.

- ...

  Three dots in a command indicate that the parameter may be repeated more than once in succession.

The term absolute pathname refers to the full specification of a path starting from the root directory. Absolute pathnames always begin with the slash (/) symbol. A relative pathname takes the current directory as its starting point, and starts with any alphanumeric character (other than /).

Related documents

This section lists documents to which you can refer, including the following subjects:

- "General" (page 15)
- "Passport 6000" (page 16)
- "Passport 7000/15000" (page 16)

General

241-6001-101 *Preside MDM Engineering Guide*
241-6001-303 *Preside MDM Administrator Guide*
241-6001-309 *Preside MDM Management Data Provider User Guide*

This NTP also contains references to *SunSoft* applications publications, copies of which can be obtained by contacting Sun Microsystems at the following address:

Sun MicroSystems Inc.
2550 Garcia Avenue,
Mountain View, CA 94043
United States of America

The SunSoft applications publications referred to in this document are as follows:

- *SPARC, Installing Solaris Software*
- *SunLink HSI/P x.x User's Guide*

Passport 6000

For a list of documents, see 241-6401-001 *Passport 6400 Documentation Guide*.

Passport 7000/15000

For a list of documents, see 241-5701-001 *Passport 7400, 15000, 20000 Documentation Guide*.

Chapter 1
Published Format accounting records

A Management Data Provider (MDP) can convert Passport raw accounting records to *Published Format (PF) or Bulk Data Format (BDF)* records before transferring them to a Billing customer host. This section describes the Published Format and includes:

Published Format overview

Each record has accounting information of both the calling and called ends. Each record has a variable length format that contains a *common (fixed)* portion, followed by an *optional* portion.

The *optional* portion may contain none, one, or more optional facility sections. An optional facility section contains information (fields) of an optional facility used on a call. An optional facility section for a particular optional facility does not appear in the optional portion of a Published Format accounting record if that optional facility is not used on the call. If none of these optional facilities are used, then the Published Format accounting record contains no optional sections following the fixed portion of the accounting record.

File-naming conventions

Published Format files are Passport accounting files stored in the dump directory. The following sections describe the file-naming conventions for Passport PF files.

File names for Published Format files are different according to the selected setting of the Published Format backward compatibility option. For more information about the Published Format backward compatibility option, see 241-6001-309 *Preside MDM Management Data Provider User Guide.*

- "Backward compatibility option enabled" (page 18)
- "Backward compatibility option disabled" (page 19)

Backward compatibility option enabled

If the Published Format backward compatibility option is enabled:

- Passport hourly files contain data already appended to the daily file.

  Pp_TPACT<?>.mmddHHO (opened file)
  Pp_TPACT<?>.mmddHH (closed file)

- the daily file

  TPACT<?>.mmdd

  Note: The daily Published Format file contains both Passport and DPN accounting records if both DPN and Passport switches exist in the network.

where:

`mm` indicates the month the file was received

`dd` indicates the day the file was received

`HH` indicates the hour the file was received

`MM` indicates the minute the file was received

`O` indicates the file is open

? is a variable indicating one of

- N a non-duplicate file—the accounting record is unique. This typically occurs for single-ended accounting.
- D a duplicate file—a matching accounting record exists from both ends of the call. This typically occurs for double-ended accounting.
- F a file containing corrupted raw accounting records. These files contain records that cannot be processed further and have to be analyzed by experts in Passport accounting.

Backward compatibility option disabled

If the Published Format backward compatibility option is disabled the Published Format filenames are as follows:

<family|switch_type>_<dataType>_<date_time>_<nodeID>_<seq#>.<?>.<ext>

where:

<family|switch_type> family is one of the Passport families.

<dataType> data_type is *acc* for accounting.

<date_time> is the date and time the file was opened on the switch.

- For Passport 7000/15000, this field contains YYYYMMDDThhmmss (YYYY=year, MM=month, DD=day, T=date/time delimiter, hh=hour, mm=minute, ss=seconds).
- For Passport 6000, this field contains MMDDhhmm (MM=month, DD=day, hh=hour, mm=minute)

<nodeID> is the *nodeID* of the Passport switch that generated the data.

<seq#> is a file sequence number assigned by a switch.

? is a variable indicating one of

- N a non-duplicate file—the accounting record is unique. This typically occurs for single-ended accounting.
- D a duplicate file—a matching accounting record exists from both ends of the call. This typically occurs for double-ended accounting.

- F a file containing corrupted raw accounting records. These files contain records that cannot be processed further and have to be analyzed by experts in Passport accounting.

<ext> is *pf_err* for a file that stores records that cannot be converted successfully (the error file is stored in the appropriate dump directory). This value is *pf* for a Published Format file.

Field formats

Accounting record fields are in one of the following COBOL-readable formats:

PIC X( )	Character
COMP	Binary
COMP-3	Packed decimal with two BCD digits per byte and the sign is contained in the right-most four bits of the right-most byte. The valid BCD digits are digits 0 through 9. In the Published Format accounting record, the COMP-3 fields have value H.C (that is, positive) or value H.D (that is, negative) for the sign nibble.

Note: The COBOL COMP field format does not indicate the possible value range for that field. For example, a 9(5) COMP field does not mean that the field can have values up to 99999, and a 9(4) or 9999 COMP field does not mean that the field can have values up to 9999. As used in COBOL programs, these COBOL formats are used to indicate the number of bytes of data to be read for that field or the storage necessary to store all the possible values of the field. Refer to the descriptions of the fields in this document or other documents, and functional specifications for the valid ranges or formats of the fields.

Common fields

This section describes the *common (fixed) fields* in a Published Format accounting record.

The terms *calling* and *called* are used as part of some of the field names. The term *calling* end refers to that part of the switch interface that initiated the call request. The term *called* end refers to that part of the switch interface that

received the call request. For permanent virtual circuits (PVCs), the Master end initiated the call. For switched virtual circuits (SVCs), the calling device initiated the call.

Table 2
Common portion of a Published Format accounting record

Offset (bytes)	Passport field names	Field size (bytes)	Cobol format
0	recLen	2	PIC 9999 COMP
2	recordType	2	PIC 9999 COMP
4	vintageNumber	1	PIC S9 COMP-3
5	startDate	4	PIC S9(7) COMP-3
9	startTime	4	PIC S9(7) COMP-3
13	endTime	4	PIC S9(7) COMP-3
17	timeFlag	2	PIC 9999 COMP
19	callingNodeIdentifier	4	PIC 9(5) COMP
23	callingPortIdentifier	2	PIC X(2)
25	callingNpi	1	PIC S9 COMP-3
26	callingAddressLength	2	PIC 9999 COMP
28	callingAddress	8	PIC S9(15)COMP-3
36	callingDlci	2	PIC 9999 COMP
38	callingDse	2	PIC 9999 COMP
40	callingServiceType	2	PIC 9999 COMP
42	callingReceiveWindow and callingSendWindow	1 1	PIC 9999 COMP
44	callingCustomerIdentifier	2	PIC X(2)
46	calledNodeIdentifier	4	PIC 9(5) COMP
50	calledPortIdentifier	2	PIC X(2)
52	calledNpi	1	PIC S9 COMP-3

(Sheet 1 of 3)

Table 2 (Continued)
Common portion of a Published Format accounting record

Offset (bytes)	Passport field names	Field size (bytes)	Cobol format
53	calledAddressLength	2	PIC 9999 COMP
55	calledAddress	8	PIC S9(15)COMP-3
63	calledDlci	2	PIC 9999 COMP
65	calledDse	2	PIC 9999 COMP
67	calledServiceType	2	PIC 9999 COMP
69	calledReceiveWindow and calledSendWindow	1 1	PIC 9999 COMP
71	calledCustomerIdentifier	2	PIC X(2)
73	callReferenceNumber	4	PIC 9(8) COMP
77	collectFlags	2	PIC 9999 COMP
79	facilityFlags	2	PIC 9999 COMP
81	callingCalledPktSize and calledCallingPktSize	1 1	PIC 9999 COMP
83	callingCalledThruput and calledCallingThruput	1 1	PIC 9999 COMP
85	clearCause	2	PIC X(2)
87	diagnosticCode	2	PIC 9999 COMP
89	transitDelay	2	PIC 9999 COMP
91	segmentSizeIndex	2	PIC 9999 COMP
93	tdaRates	2	PIC 9999 COMP
95	localUserResets	4	PIC 9(5) COMP
99	localEgressSegments	4	PIC 9(8) COMP

(Sheet 2 of 3)

Table 2 (Continued)
Common portion of a Published Format accounting record

Offset (bytes)	Passport field names	Field size (bytes)	Cobol format
103	localIngressSegments	4	PIC 9(8) COMP
107	elapsedTime	4	PIC 9(8) COMP
(Sheet 3 of 3)			

Common field descriptions

This section describes the *common (fixed) fields* of a Published Format accounting record:

recLen The length of the accounting record in bytes, which includes the optional facility portion but excludes this *rec_len* field.

recordType This field defines the type of accounting record.
1 = Accounting record
2 = Time change record

vintageNumber This number indicates the version of the Published Format accounting record used. The value of this field is set to 4 for a Published Format accounting record.

BCD Char.	Item	Hex Value
1	Vintage Number	4
2	Sign	C or D

startDate: This is the start date of the period accounted for in the record. It is in the format `0YYMDD`. The first character is either 0 or 1; 0 indicates the 20th century (19xx) and 1 indicates the 21st century (20xx).

BCD Char.	Item	Hex Value
1	Century	0 or 1
2-3	Year (YY)	00 - 99
4-5	Month (MM)	01 - 12
6-7	Day (DD)	01 - 31
8	Sign	C

startTime: Represents the starting time of the period accounted for in the record. For SVC, *start time* is the time when the call request packet was created. For PVC, *start time* is set by the Master VC when the master call request is formatted. On subsequent accounting records, *start time* corresponds to the end time of the previous record. If Time of Day Accounting (TODA) is used, *start time* (and *end time*) correspond to times set in the schedule.

It is in the format *hhmmss0*. The last digit is set to zero.

BCD Char.	Item	Hex Value
1-2	Hour (hh)	00 - 24
3-4	Minute (mm)	00 - 59
5-6	Second (ss)	00 - 59
7	Padding	0
8	Sign	C

endTime: Represents the end of the period accounted for in the record. If Time of Day Accounting (TODA) is used, *end time* in non-final records is the time of the TODA period. For 12-hour accounting, *end time* in non-final records is the time when the 12-hour timer expires at the charged end. On final accounting records, *end time* is the time when the disconnect packet is first received. If Time of Day Accounting (TODA)

is used, *end time* (and *start time*) correspond to times set in the schedule (provisioned on the Passport switch with the *Collector/accounting* component and the *collectionTimes* field).

The *end time* field is in the format *hhmmss0*, similar to *start time*.

timeFlag: This field is currently not used and the value is set to zero.

callingNodeIdentifier: This number uniquely identifies the node, in an autonomous network, where the call originates. The node identifier (nodeID) can be any integer between 1 and 4095.

callingPortIdentifier: A 16-bit field that identifies the physical port number where the call originates. The PE portion is set to the logical processor (LP) number, PO is set to the physical port number of the interface used, and PI is set to zero. For details, refer to “Passport port identifier” (page 26).

The Calling Port Number is 16 bits long and has the following format:

— PE Number is represented in the first 5 bits of the first byte of the calling port number.

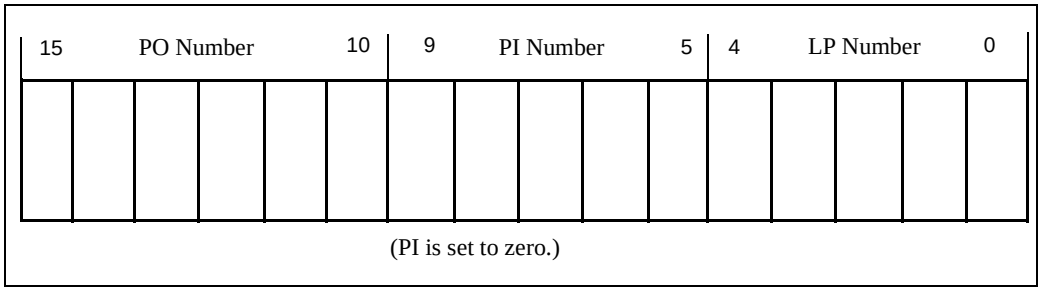
— PI Number is represented in the next 5 bits of the calling port number.

— PO Number is represented in the last 6 bits of the second byte in the calling port number.

Note: If VirtualFramer is provisioned, the PO Number will always be set to 3F.

Information for the *callingPort Identifier* field may also appear in a record with the following three fields: *callingPEIdentifier*, *callingPIIdentifier,* and *callingPOIdentifier.* The *callingPEIdentifier* field actually refers to an LP when it appears in a Passport record.

Figure 1
Passport port identifier



callingNpi: This field is the Numbering Plan Indicator that indicates the numbering plan used in the calling address.
0 = X.121 numbering plan
1 = E.164 numbering plan
other = undefined

BCD Char.	Item	Hex Value
1	Numbering plan index	0 - 1
2	Sign	C

callingAddressLength: The length of the callingAddress field in bytes.

callingAddress: The number of digits in the calling address (DNA) field. The maximum is 15. It also contains the full address field of the calling address (DNA), including the DNIC (first four digits) for X.121 or Country Code for E.164 address. The field is left-justified with trailing zeroes.

BCD Char.	Item	Hex Value
1-15	Digits	0 - 9
16	Sign	C

callingDlci: The Logical Channel Number of the calling end. The value ranges from 0 to 4095. For frame relay service, the valid range is 16 to 1007.

callingDse: This is the Data Service Exchange (DSE) of the calling end. The value ranges from 0 to 255. For transit/incoming X.75 SVC calls, the calling DSE information is valid only if the calling tariff is absent from the accounting record. DSE is defined in the DNA component on Passport.

callingServiceType: The service supported by the port used by the calling end-user. The value ranges from 0 to 255. For transit/incoming X.75 SVC calls, the calling service type information is valid only if the calling tariff is absent from the accounting record. This number is defined as accountClass in the DNA component on Passport.

callingReceiveWindow and **callingSendWindow**: This two-byte field consists of the values for the calling end local transmit and receive window sizes, arithmetically combined. The low-order byte contains the value for the calling end local transmit window size and the high-order byte contains the value for the calling end local receive window size. Both the calling end local transmit and receive window sizes have values ranging from 1 to 7. For SVC, this field is only populated for X.25 and X.75 services. All other services have the value zero. For PVC, this field is populated as provided in the PVC envelope, for all services.

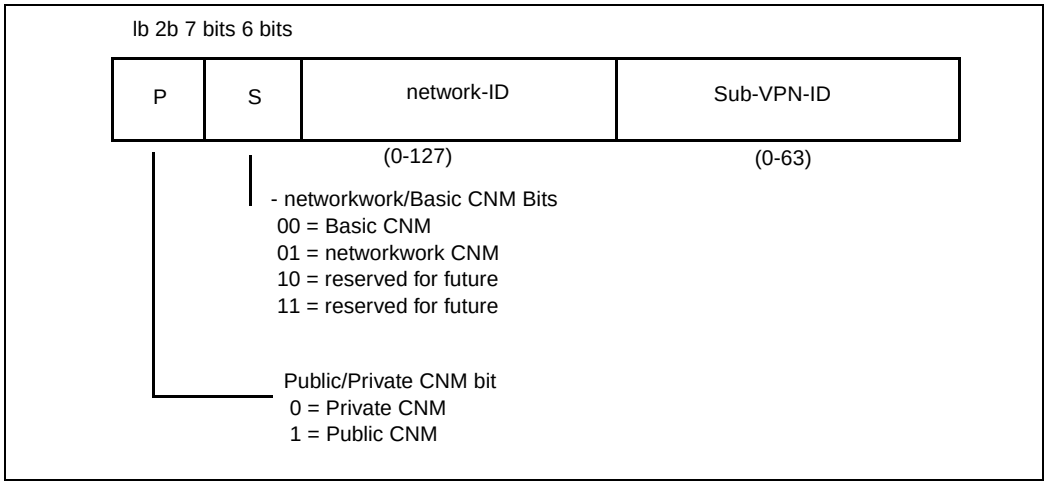
Note: For frame relay service, these values are not relevant and should be ignored. These fields do not apply because frame relay uses the lightweight virtual circuit instead of the flow-controlled virtual circuit.

callingCustomerIdentifier: This field is used as an optional identifier for the calling end of the call in the Customer Network Management (CNM) and Virtual Private Network environment. The value in this field is taken from the Customer Network Management Identifier (CID) field in the DNA-CUG envelope for the access line. The value zero is the default value reserved for all ports that are not associated with a Virtual Private Network and for which

CNM is not provided.

The field range is 0 - 8191. The format of this 16-bit field is:

Figure 2
16 bit field format



calledNodeIdentifier: This number uniquely identifies the node, in an autonomous network, where the call terminates. The node identifier (nodeID) can be any integer between 1 and 4095.

calledPortIdentifier: A 16-bit field that identifies the physical port number where the call terminates. The PE portion is set to the logical processor (LP) number, PO is set to the physical port number of the interface used, and PI is set to zero. For details, refer to “Passport port identifier” (page 26).

The Called Port Number is 16 bits long and has the following format:

— PE Number is represented in the first 5 bits of the first byte of the called port number.

— PI Number is represented in the next 5 bits of the called port number.

— PO Number is represented in the last 6 bits of the second byte in the called port number.

Information for the *calledPort Identifier* field may also appear in a record with the following three fields: *calledPEIdentifier, calledPIIdentifier,* and *calledPOIdentifier*. The *calledPEIdentifier* field actually refers to an FP when it appears in a Passport record.

calledNpi: This field is the Numbering Plan Indicator that indicates the numbering plan used in the called address. The field format is similar to the *calling NPI* field.
0 = X.121 numbering plan
1 = E.164 numbering plan
other = undefined

calledAddressLength: This is the length of the calledAddress field in bytes.

calledAddress: The number of digits in the called address (DNA) field. The maximum is 15. It also provides the full address field of the called address (DNA), including the DNIC (first four digits) for X.121 or

Country Code for E.164 address. The field is left-justified with trailing zeroes. The field has a maximum of 15 digits. The field format is similar to the *calling address* field.

calledDlci: The Logical Channel Number of the called end. The value ranges from 0 to 4095. For frame relay service, the range is 16 - 1007.

calledDse: This is the Data Service Exchange (DSE) of the called end. The value ranges from 0 to 255. For outgoing/transit X.75 SVC calls, the called DSE information is valid only if the called tariff is absent from the accounting record. DSE is defined in the DNA component on Passport.

calledServiceType: The service supported by the port used by the called end-user. The value ranges from 0 to 255. For outgoing/transit X.75 SVC calls, the called service type information is valid only if the called tariff is absent from the accounting record. This number is defined in the DNA_CUG envelope as accountClass.

calledReceiveWindow and **calledSendWindow**: This two-byte field consists of the values for the called end local transmit and receive window sizes, arithmetically combined. The low–order byte contains the value for the called end local transmit window size and the high-order byte contains the value for the called end local receive window size. Both the called end local transmit and receive window sizes have values that range from 1 to 7. For SVC, this field is only populated for X.25 and X.75 services. All other services have the value zero. For PVC, this field is populated as provided in the PVC envelope, for all services. The field range is 0 to 8191.

Note: For frame relay service, these values are not relevant and should be ignored. These fields do not apply because frame relay uses the lightweight virtual circuit instead of the flow-controlled virtual circuit.

calledCustomerIdentifier: This field is used as an optional identifier for the called end of the call in the Customer Network Management (CNM) and Virtual Private Network environment. The value in this field is taken from the provisioning data for the access line, or more specifically, from the Customer Network Management Identifier (CID) field in the DNA-CUG envelope for the access line. The value zero is the default value

reserved for all ports that are not associated with a Virtual Private Network and for which CNM is not provided. The format of this 16–bit field can be found in “16 bit field format” (page 28).

callReferenceNumber: This field is a randomly generated number.

collectFlags: This is a field containing 15 one-bit flags. The flags, starting from bit 0 (the least significant bit), are as follows:

1. BIT 0 - WHO CLEARED (flags_calledCleared)
2. BIT 1 - WHO GENERATED (flags_calledGenerated)
3. BIT 2 - UNIQUE (flags_unique)
4. BIT 3 - CALL REACHED DATA TRANSFER (flags_reachedDataTransfer)
5. BIT 4 - FIRST RECORD FOR THIS CALL (accountingRecord_first)
6. BIT 5 - LAST RECORD FOR THIS CALL (accountingRecord_last)
7. BIT 6 - TERMINATOR IS GATEWAY(gateWay_originator)
8. BIT 7 - ORIGINATOR IS GATEWAY (gateWay_terminator)
9. BIT 8 - COLLECTION FOR BILLING (CALLING END) (callingCollectReason_bill)
10. BIT 9 - COLLECTION FOR TEST (CALLING END) (callingCollectReason_test)
11. BIT 10 - COLLECTION FOR STUDY (CALLING END) (callingCollectReason_study)
12. BIT 11 - COLLECTION FOR AUDIT (CALLING END) (callingCollectReason_audit)
13. BIT 12 - COLLECTION FORCED (CALLING END) (callingCollectReason_force)
14. BIT 13 - CALL DEFLECTION
15. BIT 14 - SPARE

16. BIT 15 - (not used - always set to zero)

These one-bit flags have the values 1 or 0 depending whether they are turned on or off. The values of the 15 one–bit flags are explained as follows:

1 WHO CLEARED:

0 - Cleared from calling end
1 - Cleared from called end

The callCleared bit is initialized to 0 on the calling end and initialized to 1 on the called end. If the call is cleared on the local switch, that switch retains its value for the callCleared bit and sends a disconnect message to the other end. When a switch receives a disconnect message, the switch takes the value for the callCleared flag from the remote end.

2 WHO GENERATED:

For SVC:
0 - Generated from calling end
1 - Generated from called end

For PVC:
0 - Generated from master end
1 - Generated from slave end

3 UNIQUE:

0 - Possible duplicate, both ends may have generated the accounting record
1 - No duplicates, only one end has generated the accounting record

4 CALL REACHED DATA TRANSFER:

0 - Call does not reach data transfer at both ends
1 - Call reached data transfer at both ends

5 FIRST RECORD FOR THIS CALL:

0 - Not first record for the call
1 - First record for the call

6 LAST RECORD FOR THIS CALL:

0 - Not last record for the call
1 - Last record for the call

7 TERMINATOR IS GATEWAY:

0 - Terminator is not Gateway
1 - Terminator is Gateway

8 ORIGINATOR IS GATEWAY:

0 - Originator is not Gateway
1 - Originator is Gateway

9 COLLECTION FOR BILLING (CALLING END):

0 - Not collected for billing purposes
1 - Collected for billing purposes

10 COLLECTION FOR TEST (CALLING END):

0 - Not collected for test purposes
1 - Collected for test purposes

11 COLLECTION FOR STUDY (CALLING END):

0 - Not collected for study purposes
1 - Collected for study purposes

12 COLLECTION FOR AUDIT (CALLING END):

0 - Not collected for audit purposes
1 - Collected for audit purposes

13 COLLECTION FORCED (CALLING END):

0 - collection not forced by calling end
1 - collection forced by calling end

14 CALL DEFLECTION

0 - Call not deflected
1 - Call deflected

15 SPARE:

Bit 14 is a spare reserved for future use. It is set to zero.

facilityFlags: This is a field containing 15 one–bit flags. The flags, starting from bit 0 (the least significant bit), are as follows:

1. BIT 0 - REVERSE CHARGING (flags_calledEndCharging)
2. BIT 1 - FAST SELECT
3. BIT 2 - RESTRICTED RESPONSE
4. BIT 3 - PRIORITY(flags_highPriority)
5. BIT 4 - PERMANENT VIRTUAL CIRCUIT(flags_pvcType)
6. BIT 5 - USER DATA ON CALL REQUEST(flagsuserDataInCallReq)
7. BIT 6 - HUNT GROUP(flags_hunted)
8. BIT 7 - CALL REDIRECTION(flags_redirected)
9. BIT 8 - COLLECTION FOR BILLING (CALLED END)(calledCollectReason_bill)
10. BIT 9 - COLLECTION FOR TEST (CALLED END)(calledCollectReason_test)
11. BIT 10 - COLLECTION FOR STUDY (CALLED END)(calledCollectReason_study)
12. BIT 11 - COLLECTION FOR AUDIT (CALLED END)(calledCollectReason_audit)
13. BIT 12 - CALLED END COLLECTION REASON VALID(flags_collReasonValid)
14. BIT 13 - COLLECTION FORCED (CALLED END)(calledCollectReason_force)
15. BIT 14 - SPARE
16. BIT 15 - (Not used - always set to zero)

These one-bit flags have the values 1 or 0 depending whether they are turned on or off. The values of the 15 one-bit flags are as follows:

1 REVERSE CHARGING:

0 - Charged to calling end
1 - Charged to called end

2 FAST SELECT:

0 - Not a fast select call
1 - A fast select call

3 RESTRICTED RESPONSE:

0 - Restricted response option not used
1 - Restricted response option used

4 PRIORITY:

0 - Normal priority
1 - High priority

5 PERMANENT VIRTUAL CIRCUIT:

0 - SVC call
1 - PVC call

6 USER DATA ON CALL REQUEST:

0 - No user data on call request
1 - User data on call request

7 HUNT GROUP:

0 - Call has not been hunted
1 - Call has been hunted

8 CALL REDIRECTION:

0 - Call not redirected
1 - Call redirected

9 COLLECTION FOR BILLING (CALLED END):

0 - Not collected for billing purposes
1 - Collected for billing purposes

10 COLLECTION FOR TEST (CALLED END):

0 - Not collected for test purposes
1 - Collected for test purposes

11 COLLECTION FOR STUDY (CALLED END):

0 - Not collected for study purposes
1 - Collected for study purposes

12 COLLECTION FOR AUDIT (CALLED END):

0 - Not collected for audit purposes
1 - Collected for audit purposes

13 CALLED END COLLECTION REASON VALID:

0 - Called end collection reasons are not valid
1 - Called end collection reasons are valid

14 COLLECTION FORCED (CALLED END):

0 - collection not forced by called end
1 - collection forced by called end

15 SPARES

Bit 14 is a spare reserved for future use. It is set to zero.

callingCalledPktSize and **calledCallingPktSize**: This two-byte field consists of the values of the packet size sent from the calling DTE to the called end and packet size sent from the called DTE to the calling end, arithmetically combined. The low-order byte contains the value of the packet size sent from the calling DTE to the called end. The value is the base 2 logarithm of the actual packet size. The high-order byte contains the value of the packet size sent from the called DTE to the calling end. The value is the base 2 logarithm of the actual packet size.

Note: For frame relay service, these values are not relevant and should be ignored. These fields do not apply because frame relay uses the lightweight virtual circuit instead of the flow-controlled virtual circuit.

callingCalledThruput and **calledCallingThruput**: This field contains the throughput classes of packets sent from the calling DTE to the called end, and vice versa, arithmetically combined. The low-order byte contains the throughput class of the packet sent from the calling DTE to the called end and the high-order byte contains the throughput class of the packet sent from the called DTE to the calling end.

Note: For frame relay service, these values are not relevant and should be ignored. These fields do not apply because frame relay uses the lightweight virtual circuit instead of the flow-controlled virtual circuit.

Refer to “Throughput classes” (page 37)for throughput classes.

Table 3
Throughput classes

Value of low-order or high-order byte	Throughput class (bit/s)
0 - 2	Reserved
3	75
4	150
5	300
6	600
7	1200
8	2400
9	4800
10	9600
11	19200
12	48000
13	64000
14 - 15	Reserved

clearCause: This a clear cause indicator. It indicates the reason for a call termination. For additional details, refer to 241-1001-509 *DPN-100 Call Clear, Reset and Diagnostic Codes*.

diagnosticCode: This a clear diagnostic indicator. It is set to zero (0) on non-final records, and to the network diagnostic code of the call clear on the final record. For additional details, refer to 241-1001-509 *DPN-100 Call Clear, Reset and Diagnostic Codes*.

transitDelay: This field is to be used in the future to indicate transit delays. The value is currently set to zero.

segmentSizeIndex: This field gives the segment size used on the call. The value in this field is the base 2 logarithm of the actual segment size.

tdaRates: The field is currently not used and the value is set to zero.

localUserResets: Count of the customer-caused reset request packets, transmitted and received. The value ranges from 0 to 65535.

localEgressSegments/Frames: Number of Egress data segments/frames received from the network. The value ranges from 0 to 16777215. For all calls, the segments/frames received field in the accounting record is calculated for the data received in the data packets. For all calls, the segments/frames received field in the accounting record is calculated for the data received in the *interrupt* and *interrupt confirmation* packets. Only for Fast Select calls (both restricted and unrestricted response), the segments/frames received field in the accounting record is calculated for the data received in *call request*, *call confirm (accept)*, and *clear request* packets. Non–Fast Select calls do not count the segments/frames in these

three packets. For all the packets mentioned above, the calculation of segments/frames is performed in a common manner (based on the segment size index).

For *best effort delivery* services such as frame relay, the count is recorded at the entry and exit points to and from the network.

localIngressSegments/Frames: Number of Ingress data segments/ frames sent to the network. The value ranges from 0 to 16777215. For all calls, the segments/frames sent field in the accounting record is calculated for the data sent in the data packets. For all calls, the segments/ frames sent field in the accounting record is calculated for the data sent in the *interrupt* and *interrupt confirmation* packets. Only for Fast Select calls (both restricted and unrestricted response), the segments/frames sent field in the accounting record is calculated for the data sent in *call request*, *call confirm (accept)*, and *clear request* packets. Non-Fast Select calls do not count the segments/frames in these three packets. For all the packets mentioned above, the calculation of segments/frames is performed in a common manner (based on the segment size index).

For *best effort delivery* services such as frame relay, the count is recorded at the entry and exit points to and from the network.

elapsedTime: Duration of the call in 0.1 second increments. This time interval is started when the call request is processed. If the call does not reach the data transfer stage, *elapsed time* is set to zero. *Elapsed time* represents a true measure of the accounting period. It is measured independently of *start time* and *end time*. Since *start time* and *end time* can be changed externally by adjusting the clock, *elapsed time* can be shorter or longer than the difference between *start time* and *end time*. This difference can show as much as 60 seconds on accounting records for the VCs that are idle (carry no traffic) and when TODA is used and is caused, in this case, by an internal TODA detection mechanism. When the 12 hour accounting period is complete, *elapsed time* is exact or differs by a few seconds from 12 hour duration.

Time change records

Time change records contain fields that describe events caused by a change of time on the switch. When the time on the switch is adjusted by 2 seconds, or more, the time change record is issued and sent as part of the accounting stream. The time change record is used to keep track of clock changes on the switch and to explain potential inconsistencies in accounting records.

The *Time change record fields* in a Published Format accounting record have the following format:

Table 4
Time change records

Offset (bytes)	Passport field names	Field size (bytes)	Cobol format
0	recLen	2	PIC 9999 COMP
2	recordType	2	PIC 9999 COMP
4	vintageNumber	1	PIC S9 COMP-3
5	oldDate	4	PIC S9(7) COMP-3
9	oldTime	4	PIC S9(7) COMP-3
13	newDate	4	PIC S9(7) COMP-3
17	newTime	4	PIC S9(7) COMP-3
21	namsId	4	PIC 9(5) COMP

Time change record field descriptions

This section describes the *Time change record fields* of a Published Format accounting record:

recLen: The length of the accounting record in bytes, which includes the optional facility portion but excludes this *rec_len* field.

recordType: This field defines the type of record. This field is set to 2 for time change records.

vintageNumber: The version of the Published Format accounting record used. The value of this field is set to 4 for a Published Format accounting record.

BCD Char.	Item	Hex Value
1	Vintage Number	4
2	Sign	C or D

oldDate: The date on the switch before the time was adjusted.It is in the format `0YYMDD`. The first character is either 0 or 1; 0 indicates the 20th century and 1 indicates the 21st century.

oldTime: The time on the switch before the time was adjusted.

newDate: The date on the switch after the time was adjusted. It is in the format `0YYMDD`. The first character is either 0 or 1; 0 indicates the 20th century and 1 indicates the 21st century.

newTime: The time on the switch after the time was adjusted.

Accounting records are generated if the time change skips over the time set in Time of Day Accounting (TODA). For example, if TODA is set to 15:00 hours and the time change goes from 14:59 to 15:05, accounting records are generated. The TODA time is defined in the *collectionTimes* field of the *Collector/Accounting* component.

namsId: The NAMS ID of the switch that issued the time change record. The value of the NAMS ID is provisioned on the switch.

Optional fields

If an *optional* facility is used on a call, the information on the optional facility is captured in the optional facility section of the accounting record. If the optional facility is not used on the call, then that particular optional facility section will not appear in the accounting record for that call.

Every optional facility has a two-byte *code/length* field in the first two bytes. The low-order byte of this field contains the *length* value for the optional facility section and the high-order byte contains the *code* value. The *length* value gives the length of the optional facility section, excluding this *code/length* field. The *code* value identifies the optional facility section.

The terms *calling* and *called* are used as part of some of the optional field names. The term *calling* end refers to that part of the switch interface that initiated the call request. The term *called* end refers to that part of the switch interface that received the call request. For PVCs, the Master end initiated the call. For SVCs, the calling device initiated the call.

"Optional facility section code values" (page 42) lists the optional facilities selections and the code values that identify the optional facility sections.

Table 5
Optional facility section code values

Optional facility section	Code value
NUI	1
Inter-network	2
Original Called Address	3
GAS	4
National CUG	5
International CUG	6
Sensor identifier	7
X.75 interface identifier	8
Gateway type	9
Videotex	10
Routing class of service (RCOS)	11
Extended national Address	12
Frame relay Accounting - Local	13
Frame relay Accounting - Remote	14

The optional facility sections may appear in the accounting record in any order. The user's software that processes the accounting records can identify the optional facility sections that need to be processed using the *code* values. The user's software should be coded to ignore the optional facility sections with unwanted or unknown *code* values, if they are present in the accounting

record, by skipping over the number of bytes specified by the *length* value. In this way, new optional facility sections can be added to the accounting record in future, without impacting the user's software.

NUI option

The *NUI* option contains the information on the Network User Identification used on the call. Passport uses the Calling Card NUI with a length of 8 bytes. The NUI Optional Facility Section has the following format:

Table 6
NUI optional facility section

Offset (bytes)	Passport field names	Field size (bytes)	COBOL format
0	Not in Passport		
2	Not in Passport		
3	Not in Passport		
			or
		8	PIC S9 (15) COMP-3
	Not in Passport		
		Type of NUI	Format
		Calling card NUI	PIC 9(15) COMP-3
		Suppress-ed NUI	(no NUI value)

code/length: This field contains a *code* value and a *length* value, arithmetically combined. The *code* value identifies the optional facility section and the *length* value indicates the length of the optional facility section, excluding this field. The low-order byte contains the *length* value for the optional facility section and the high-order byte contains the *code* value that identifies the optional facility section. The value of LENGTH is:

1+n (fort DPN-100 NUI) or
9 (for Calling Card NUI) or
1 (for Suppressed NUI).

nuiType: This field identifies the type of Network User Identification field that follows this field:
1 - DPN-100 NUI
2 - Calling Card NUI
3 - Suppressed NUI

BCD Char.	Item	Hex Value
1	NUI Type	1, 2, 3
2	Sign	C

nui: This field contains a Calling Card NUI with the following format. A value of H.00 is placed in the first byte of the NUI field in the accounting record. H.00 signals that the remaining 7 bytes consist of Calling Card NUI information.

Table 7
Calling Card NUI

BCD Char.	Item	Hex Value
1	Padding	0
2-15	Digits	0-9
16	Sign	C (all valid digits)
		D (has invalid digits)

Table 8
Nibble description

0-1	H.00	(signals Calling Card information in the following bytes)
2		Indicates whether NUIOP is in effect. Possible Values: 0 = not used 1 = NUIOP not in effect 2 = NUIOP in effect

Table 8 (Continued)
Nibble description

3		Indicates what information is present in nibbles 4-5. Possible Values: 0 = not used 1 = CCSAN present 2 = Error Code present 3 = CSDI present 4 = PSDI present 5 = PIN restricted
4-5		Contents depend on the contents of nibble 3. See “Nibble 4-5 description” (page 45)
6-15		Indicates Billing. Value is a 10-digit billing number

Table 9
Nibble 4-5 description

Nibble 3 content	Nibble 4-5 content	Description
0	00	Padding (not used)
1	two digits	CCSAN
2	01	Unexpected Component Sequence
	02	Unexpected Data Value
	03	Unavailable Network Resource
	04	Missing Record
	05	Reply Overdue
	06	Data Unavailable
3	01	No PIN assigned
	03	Service Denial on CCAN
4	02	Service Denial on PIN due to threshold exceeded
	03	Service Denial on PIN due to nonpayment
5	01	PIN restricted

Suppressed NUI has a length of zero.

Inter-network option

Original called address option

The *Original called address* option provides the original called address if the call was redirected or hunted. The Original called address has the following format:

Table 10
Original called address optional facility section

Offset (bytes)	Passport field names	Field size (bytes)	Cobol format
0	code/length	2	PIC 9999 COMP
2	originalNpi	1	PIC S9 COMP-3
3	originalAddrLen	2	PIC 9999 COMP
5	originalAddress	8	PIC S9(15)COMP-3

code/length: This field contains a *code* value and a *length* value, arithmetically combined. The *code* value identifies the optional facility section and the *length* value indicates the length of the optional facility section, excluding this field. The low-order byte contains the *length* value for the optional facility section and the high-order byte contains the *code* value that identifies the optional facility section. The value of LENGTH = 11.

origNpi: This field is the Numbering Plan Indicator to indicate the numbering plan used in the original called address. This field has the same format as the *callingNpi* field.

origAddrLen: This indicates the length of the address (DNA) in the *origAddr* field. The maximum is 15.

origAddr: Indicates the original called address (called address before the called DTE address was modified). The actual called DTE address is recorded in the *calledAddress* field. This field has the same format as the *calledAddress* field.

GAS option
National CUG option
International CUG option
Sensor identifier option
X.75 interface identifier option
Gateway option

Videotex option

Routing class of service option
Extended national address option
Frame Relay option

The Published Format for *Frame relay* option is the base part of the traditional Published Format, plus two frame relay-specific optional facilities, and one Original Called Address optional facility (when call redirection is supported).

All frame relay usage data is contained in two optional sections: the local (calling) section and the remote (called) section. The local section contains the last snapshot of frame relay data from the local (calling) end taken by the frame relay protocol. The remote section contains the last snapshot of frame relay data from the remote (called) end taken by the frame relay protocol.

The terms *calling* and *called* are used as part of some of the frame relay field names. The term *calling* refers to the calling end, which is that part of the switch interface that initiated the call request. The term *called* refers to the called end, which is that part of the switch interface that received the call request. For PVCs, the Master end initiated the call. For SVCs, the calling device initiated the call.

In normal conditions, the calling end will generate both the calling and the called records, and the called end will not generate any records. In unusual circumstances, such as when the trunk is down, the calling end will generate both calling and called records, and the called end will also generate both calling and called records. However, the remote section may be accurate only up to the last count exchange, which could take place up to 15 minutes prior.

For the byte counts described, the frame header, frame trailer, DLCI header, and CRC bytes are not included.

For further details on frame relay refer to one of the following documents:

- Passport 6000
  - see the Passport 6000 documents; refer to 241-6401-001 *Passport 6400 Documentation Guide*
- Passport 7000/15000
  - see the Passport 7000/15000 documents; refer to 241-5701-001 *Passport 7400, 15000, 20000 Documentation Guide*

Local (calling) part of Frame Relay option

"Remote (called) part of the overall frame relay snapshot" (page 55)shows the optional facility for the local (calling) part of the overall frame relay snapshot.

Table 11
Local (calling) part of the overall frame relay snapshot

Offset (bytes)	Passport field names	Field size (bytes)	Cobol format
0	code/length	2	PIC 9999 COMP
2	flags	2	PIC 9999 COMP
4	callingCir	4	PIC 9 (8) COMP
8	callingEir	4	PIC 9(8) COMP
12	callingEgressBytes	8	PIC 9(16) COMP
20	callingIngressBytes	8	PIC 9 (16) COMP
28	callingEirEgressBytes	8	PIC 9(16) COMP
36	callingEirIngressBytes	8	PIC 9(16) COMP
44	callingEgressFrames or callingEgressSegments	4	PIC 9(8) COMP
48	callingIngressFrames or callingIngressSegments	4	PIC 9(8) COMP

(Sheet 1 of 2)

Table 11 (Continued)
Local (calling) part of the overall frame relay snapshot

Offset (bytes)	Passport field names	Field size (bytes)	Cobol format
52	callingEirEgressFrames or callingEirEgressSegments	4	PIC 9(8) COMP
56	callingEirIngressFrames or callingEirIngressSegments	4	PIC 9(8) COMP
60	calling Discarded Frames or calling Discarded Segments	4	PIC 9(8) COMP
64	calling Discarded Bytes	8	PIC 9(16) COMP
(Sheet 2 of 2)			

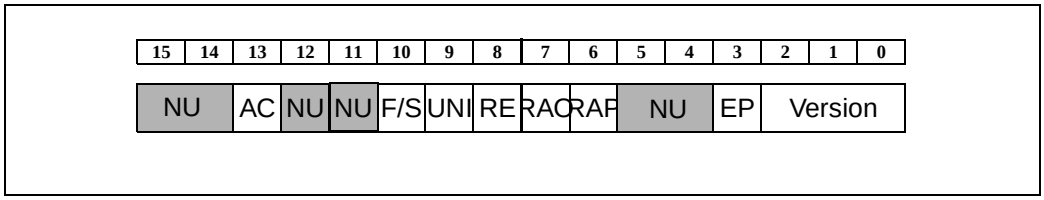
Local (calling) Frame Relay field descriptions. The following are the field descriptions for the local (calling) portion of the frame relay option.

code/length: The *code* value and a *length* value, arithmetically combined. The *code* value identifies the optional facility section and the *length* value indicates the length of the optional facility section, excluding this field. The low-order byte contains the *length* value for the optional facility section and the high-order byte contains the *code* value that identifies the optional facility section.

Note: The value of CODE is 13.

flags: This 16-bit field contains values for call characteristics. The layout of the bits are explained below.

Figure 3
Layout of the “Flags” field



The acronyms shown in the layout of the flags field are defined as follows:

Note: For further details on any of the flags fields, refer to the frame relay documents listed in “Frame Relay option” (page 48).

Version: the version number of the accounting record. As new fields are added, the version number is incremented. That is, if a new release of software contains new fields, the version number will be incremented to indicate that new fields exist in the record. The range is 000 - 111.

EP (callingClassOfService_emissionPri): the emission priority. The emission priority lets you choose between two distinct classes of services. This value is provisioned. If set to 1, high emission priority is selected for low delay. If set to zero, normal emission priority is selected.

NU: This field is not used. It is not defined.

RAP (callingRateAdaptation_provisioned): The rate adaptation is a congestion control mechanism. This value is provisioned. If set to 1, the rate adaptation was provisioned “on”. If set to zero, the rate adaptation was provisioned “off”. Rate adaptation can only be turned on if rate enforcement is also turned on.

RAO (callingRateAdaptation_occured): If set to 1, rate adaptation occurred on the interface. If set to zero, rate adaptation did not occur on the interface during this accounting report interval.

RE (callingRateAdaptation_enforced): the rate enforcement. Rate Enforcement prevents one user from using an inequitable share of the network's resources by ensuring that user traffic follows the provisioned CIR and EIR rates. If set to 1, the rate enforcement was provisioned "on". If set to zero, the rate enforcement was provisioned "off".

UNI (flags_callingUni): If set to 1, the interface is UNI. If set to zero, the interface is NNI.

F/S: If set to 1, the accounting record contains frame counts. If set to zero, the accounting record contains segment counts.

AC (flags_callingAbit): If set to 1, the A-bit to or from the interface was changed on the interface during the current accounting period. If set to zero, the A-bit was not changed.

callingCir: The calling end provisioned CIR (Committed Information Rate). It is rounded up to the next 800 bits per second.

callingEir: The calling end provisioned EIR (Excess Information Rate). It is provisioned as excessive burst size and is rounded up to the next 800 bytes per second.

callingEgressBytes: The total number of bytes received at the calling end dlci. This is the number of bytes sent by frameRelay dlci to the application. With no congestion and no errors, this number will be equal to the total number of ingress bytes (calledIngressBytes) at the called end of vc connection. The value for this field is metered at point E as shown in "Accounting meter reference points" (page 61).

callingIngressBytes: The total number of bytes sent at the calling end dlci. This is the number of bytes sent by the application to frameRelay dlci. With no congestion and no errors, this number will be equal to the total number of egress bytes (calledEgressBytes) at the called end of vc connection. Only good frames are passed to dlci from the application. The frames discarded due to CRC error are not included in this count. It

does include the count *callingDiscardBytes*. The value for this field is metered at point A as shown in “Accounting meter reference points” (page 61).

callingEirEgressBytes: The total number of EIR bytes received from the network at the calling end with discard eligibility bit set. This total is included in the value of *callingEgressBytes* at the called end of the connection. Note that the discard eligibility bit can be set by application or by frameRelay. The value for this field is metered at point D as shown in “Accounting meter reference points” (page 61).

callingEirIngressBytes: The total number of EIR bytes sent to the network at the calling end from the application to frameRelay dlci. This total is included in *callingIngressBytes* value. It is the number of bytes or frames that have the discard eligibility bit set by the application. The value for this field is metered at point C as shown in “Accounting meter reference points” (page 61).

callingEgressFrames and **callingEgressSegments**: The total number of frames/segments sent at the calling end. This is the total number of frames/segments sent by frameRelay dlci to the application. Frames or segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component. A billing system uses the F/S flag to determine whether this count reports frames or segments. The value for this field is metered at point E as shown in “Accounting meter reference points” (page 61).

callingIngressFrames and **callingIngressSegments**: The total number of frames/segments sent at the calling end. This is the number of frames/segments sent by the application to frameRelay dlci. The frames discarded due to CRC error are not included in this count. The frames or segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component. The value for this field is metered at point A as shown in “Accounting meter reference points” (page 61).

callingEirEgressFrames or **callingEirEgressSegments**: The total number of EIR frames/segments received at the calling end. This is the total number of frames/segments received by frameRelay dlci from the

network with the discard eligibility bit set. This number is included in the *callingEgressFrames/callingEgressSegments*. Note that the discard eligibility bit can be set by the application or by frameRelay. The frames or segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component. A billing system uses the F/S flag to determine whether this count reports frames or segments. The value for this field is metered at point D as shown in "Accounting meter reference points" (page 61).

callingEirIngressFrames or **callingEirIngressSegments**: The total number of EIR frames/segments sent to the network at the calling end. This is the total number of frames/segments sent by the FrameRelay dlci to the network with the discard eligibility bit set. Note that the discard eligibility bit can be set by the application or by frameRelay. The frames or segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component. A billing system uses the F/S flag to determine whether this count reports frames or segments. The value for this field is metered at point C as shown in "Accounting meter reference points" (page 61).

callingDiscardedFrames or **callingDiscardedSegments**: The number of Ingress frames/segments discarded at the calling end for the following reasons: A-Bit is off, Ingress frame is too long, Ingress frame is too short, or discarded due to rate enforcement. The value for this field is metered at point B as shown in "Accounting meter reference points" (page 61).

callingDiscardedBytes: The number of Ingress bytes discarded at the calling end for the following reasons: rate enforcement, A-Bit is off, Ingress frame is too long, or Ingress frame is too short. The value for this field is metered at point B as shown in "Accounting meter reference points" (page 61).

Note: **callingTransferPriority**: is not converted to Published Format.

Remote (called) part of Frame Relay option

"Remote (called) part of the overall frame relay snapshot" (page 55)shows the optional facility for the remote (called) part of the overall frame relay snapshot.

Note: The formats of the remote and local fields are identical, they differ only in the value of the code sub-field.

Table 12
Remote (called) part of the overall frame relay snapshot

Offset (bytes)	Passport field names	Field size (bytes)	Cobol format
0	code/length	2	PIC 9999 COMP
2	flags	2	PIC 9999 COMP
4	calledCir	4	PIC 9 (8) COMP
8	calledEir	4	PIC 9(8) COMP
12	calledEgressBytes	8	PIC 9(16) COMP
20	calledIngressBytes	8	PIC 9 (16) COMP
28	calledEirEgressBytes	8	PIC 9(16) COMP
36	calledEirIngressBytes	8	PIC 9(16) COMP
44	calledEgressFrames or calledEgressSegments	4	PIC 9(8) COMP
48	calledIngressFrames or calledIngressSegments	4	PIC 9(8) COMP
52	calledEirEgressFrames or calledEirEgressSegments	4	PIC 9(8) COMP
56	calledEirIngressFrames or calledEirIngressSegments	4	PIC 9(8) COMP

(Sheet 1 of 2)

Table 12 (Continued)
Remote (called) part of the overall frame relay snapshot

Offset (bytes)	Passport field names	Field size (bytes)	Cobol format
60	calledDiscardedFrames or calledDiscardedSegments	4	PIC 9(8) COMP
64	calledDiscardedBytes	8	PIC 9(16) COMP

(Sheet 2 of 2)

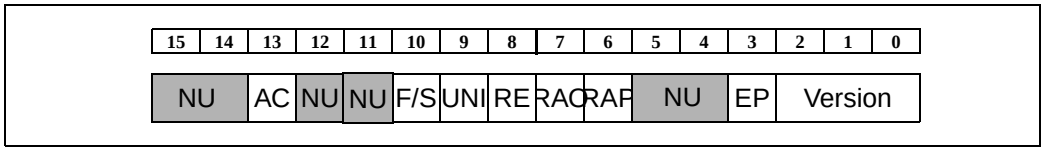
Remote (called) Frame Relay field descriptions. These are the field descriptions for the remote (called) portion of the frame relay option.

code/length: The *code* value and a *length* value, arithmetically combined. The *code* value identifies the optional facility section and the *length* value indicates the length of the optional facility section, excluding this field. The low-order byte contains the *length* value for the optional facility section and the high-order byte contains the *code* value that identifies the optional facility section.

Note: The value of CODE is 14.

flags: This 16-bit field contains values for call characteristics. The layout of the bits are explained as follows.

Figure 4
Layout of the "Flags" field



The acronyms shown in the layout of the flags field are defined as follows:

Note: For further details on any of the flags fields, refer to one of the frame relay documents listed in “Frame Relay option” (page 48).

Version: the version number of the accounting record. As new fields are added, the version number is incremented. That is, if a new release of software contains new fields, the version number will be incremented to indicate that new fields exist in the record. The range is 000 - 111.

EP (calledClassOfService_emissionPri): the emission priority. The emission priority lets you choose between two distinct classes of services. This value is provisioned. If set to 1, high emission priority is selected for low delay. If set to zero, normal emission priority is selected.

NU: This field is not used. It is not defined.

RAP (calledRateAdaptation_provisioned): The rate adaptation is a congestion control mechanism. This value is provisioned. If set to 1, the rate adaptation was provisioned “on”. If set to zero, the rate adaptation was provisioned “off”. Rate adaptation can only be turned on if rate enforcement is also turned on.

RAO (calledRateAdaptation_occured): If set to 1, rate adaptation occurred on the interface. If set to zero, rate adaptation did not occur on the interface during this accounting report interval.

RE (calledRateAdaptation_enforced): the rate enforcement. Rate Enforcement prevents one user from using an inequitable share of the network’s resources by ensuring that user traffic follows the provisioned CIR and EIR rates. If set to 1, the rate enforcement was provisioned “on”. If set to zero, the rate enforcement was provisioned “off”.

UNI (flags_calledUni0): If set to 1, the interface is UNI. If set to zero, the interface is NNI.

F/S: If set to 1, the accounting record contains frame counts. If set to zero, the accounting record contains segment counts.

AC (flags_calledAbit): If set to 1, the A-bit to or from the interface was changed on the interface during the current accounting period. If set to zero, the A-bit was not changed.

calledCir: The called end provisioned CIR (Committed Information Rate). It is rounded up to the next 800 bits per second.

calledEir: The called end provisioned EIR (Excess Information Rate). It is provisioned as excessive burst size and is rounded up to the next 800 bytes per second.

calledEgressBytes: The total number of bytes received at the called end dlci. This is the number of bytes sent by frameRelay dlci to the application. With no congestion and no errors, this number will be equal to the total number of ingress bytes (callingIngressBytes) at the calling end of vc connection. The value for this field is metered at point E as shown in “Accounting meter reference points” (page 61).

calledIngressBytes: The total number of bytes sent at the called end dlci. This is the number of bytes sent by the application to the frameRelay dlci. With no congestion and no errors, this number will be equal to the total number of egress bytes (callingEgressBytes) at the calling end of the virtual circuit connection. Only good frames are passed to dlci from the application. The frames discarded due to CRC error are not included in this count. It does include the count *calledDiscardBytes*. The value for this field is metered at point A as shown in “Accounting meter reference points” (page 61).

calledEirEgressBytes: The total number of EIR bytes received from the network at the called end with the discard eligibility bit set. This total is included in the value of *calledEgressBytes* at the called end of the connection. Note that the discard eligibility bit can be set by the application or by frameRelay. The value for this field is metered at point D as shown in “Accounting meter reference points” (page 61).

calledEirIngressBytes: The total number of EIR bytes sent to the network at the called end from the application to frameRelay dlci. This total is included in the *calledIngressBytes* value. It is the number of bytes

or frames that have the discard eligibility bit set by the application. The value for this field is metered at point C as shown in “Accounting meter reference points” (page 61).

calledEgressFrames and **calledEgressSegments**: The total number of frames/segments sent at the called end. This is the total number of frames/segments sent by frameRelay dlci to the application. The frames or segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component. A billing system uses the F/S flag to determine whether this count reports frames or segments. The value for this field is metered at point E as shown in “Accounting meter reference points” (page 61).

calledIngressFrames and **calledIngressSegments**: The total number of frames/segments sent at the called end. This is the number of frames/segments sent by the application to frameRelay dlci. The frames discarded due to CRC error are not included in this count. The frames or segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component. The value for this field is metered at point A as shown in “Accounting meter reference points” (page 61).

calledEirEgressFrames or **calledEirEgressSegments**: The total number of EIR frames/segments received at the called end. This is the total number of frames/segments received by the frameRelay dlci from the network with the discard eligibility bit set. This number is included in the *calledEgressFrames/calledEgressSegments*. Note that the discard eligibility bit can be set by the application or by frameRelay. The frames or segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component. A billing system uses the F/S flag to determine whether this count reports frames or segments. The value for this field is metered at point D as shown in “Accounting meter reference points” (page 61).

calledEirIngressFrames or **calledEirIngressSegments**: The total number of EIR frames/segments sent to the network at the called end. This is the total number of frames/segments sent by the frameRelay dlci to the network with the discard eligibility bit set. Note that the discard eligibility bit can be set by the application or by frameRelay. The frames

or segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component. A billing system uses the F/S flag to determine whether this count reports frames or segments. The value for this field is metered at point C as shown in "Accounting meter reference points" (page 61).

calledDiscardedFrames or **calledDiscardedSegments**: The number of Ingress frames/segments discarded at the called end for the following reasons: rate enforcement, A-Bit is off, Ingress frame is too long, or Ingress frame is too short. The value for this field is metered at point B as shown in "Accounting meter reference points" (page 61).

calledDiscardedBytes: The number of Ingress bytes discarded at the called end for the following reasons: A-Bit is off, Ingress frame is too long, Ingress frame is too short, or discarded due to rate enforcement. The value for this field is metered at point B as shown in "Accounting meter reference points" (page 61).

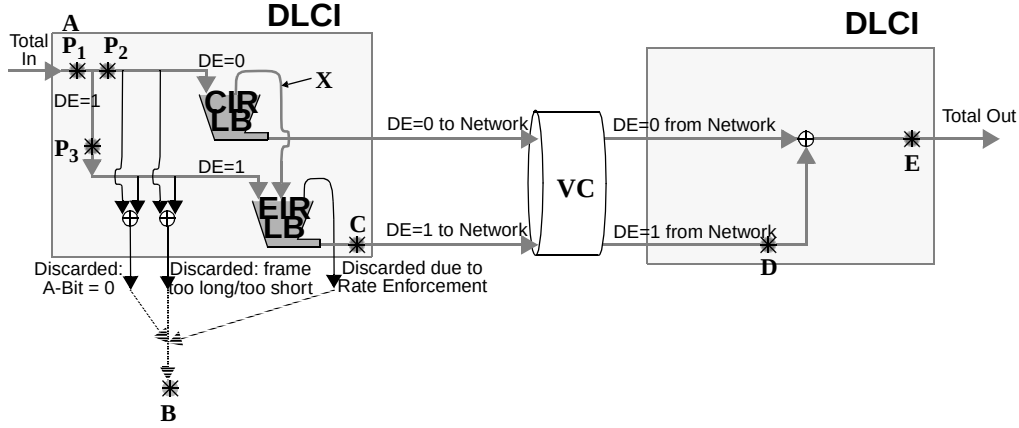
Note: **calledTransferPriority**: is not converted to Published Format.

Accounting meter reference points

The traffic at a DLCI or a virtual circuit (VC) is metered at reference points as shown in "Accounting meter reference points" (page 61). Although only traffic in one direction is shown, the same metering of the DLCI-VC-DLCI set is done in both directions.

"Accounting meter reference points" (page 61) depicts only those traffic metering reference points at which accounting data is collected. In addition to values collected by the accounting meter, real-time statistics contains other data, such as the number of bytes/frames discarded when A-Bit is off, the number of frames discarded due to the frame being too short, the number of bytes/frames discarded due to the frame being too long, or the number of bytes/frames discarded due to rate enforcement.

Figure 5
Accounting meter reference points



Meter reference points:

A - Total number of ingress bytes (frames/segments)
B - The total number of discarded bytes (frames/segments)
C - The number of EIR bytes sent to the network (frames/segments)
D - The number of EIR egress bytes (frames/segments)
E - The total number of egress bytes (frames/segments)

P_1 - The total ingress PWM
P_2 - The cir ingress PWM
P_3 - The eir ingress PWM

LB - Leaky Bucket
✳ - Meter Reference Point
X - Frames with DE-Bit is set by Passport

Chapter 2
Passport BDF accounting records

This section describes Passport BDF accounting records:

The BDF conversion of Passport accounting records uses schema files to interpret the binary switch data. A schema file is required for each record type of a data type generated by each switch type. Schema files cannot be modified.

The BDF conversion of Passport accounting records also uses record description files (RDF) to specify the record format of the converted metric data. RDFs are used to control which fields are converted and their field position in the converted record. RDFs can be modified using the MDP Administration Client; see 241-6001-309 *Preside MDM Management Data Provider User Guide*

> ***Note:*** Nortel Networks recommends the customization of BDF records. Customizing BDF record content ensures that only those fields required by down-stream processing (billing and performance analysis

applications) are converted and transferred. Depending on your requirements, BDF record customatization can provide substantial MDP performance gains.

The terms *calling* and *called* are used as part of some of the field names. The term *calling* end refers to that part of the switch interface that initiated the call request. The term *called* end refers to that part of the switch interface that received the call request. For permanent virtual circuits (PVCs), the Master end initiated the call. For switched virtual circuits (SVCs), the calling device initiated the call.

Time change

Time change records describe a change of time on the switch. If the time on the switch is adjusted by 2 seconds, or more, a time change record is issued and sent as part of the accounting stream. The time change record tracks clock changes on the switch and can be used to explain potential inconsistencies in accounting records.

New accounting records are generated if the time change skips over the time set in Time of Day Accounting (TODA). For example, if TODA is set to 15:00 hours and the time change goes from 14:59 to 15:05, new accounting records are generated. The TODA time is defined in the collectionTimes attribute of the Collector/Accounting component.

"Time change fields" (page 64) describes the Passport accounting fields applicable to Passport BDF Time change accounting records.

Table 13
Time change fields

Field name	Field type	Field value	Field description
switchType	str	pp	The type of switch that generated this record.
dataType	str	acc or acc_DMId_RDFv	Identifies this record as being an accounting record. If configured, can include: Data Model Identifier (DMId) and RDF version (RDFv).

(Sheet 1 of 3)

Table 13 (Continued)
Time change fields

Field name	Field type	Field value	Field description
recordIdentifier	int	always = 6	Identifies this record as being a time change record.
recordType_first	bit	0 = not first record 1 = first record	Indicates whether or not this is the first call accounting record for a call.
recordType_last	bit	0 = not last record 1 = last record	Indicates whether or not this is the last call accounting record for a call.
oldDate	time		This is the previous date and time on this Passport switch. Uses a format `YYYYMMDDThhmmss`, where: `YYYY` indicates the year, `MM` is for the month, `DD` is for the day, `T` indicates the beginning of the time data, `hh` is for the hour, `mm` is for the minute, and `ss` is for the seconds. May also contain a format of `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is for the microseconds. A zero value in any of the time fields causes the field to be truncated. The `T` indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the `T` indicator).

(Sheet 2 of 3)

Table 13 (Continued)
Time change fields

Field name	Field type	Field value	Field description
newDate	time		This is the new date and time on this Passport switch. Uses a format `YYYYMMDDThhmmss`, where: `YYYY` indicates the year, `MM` is for the month, `DD` is for the day, `T` indicates the beginning of the time data, `hh` is for the hour, `mm` is for the minute, and `ss` is for the seconds. May also contain a format of `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is for the microseconds. A zero value in any of the time fields causes the field to be truncated. The `T` indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the `T` indicator).
namsId	int		The namsID of the Passport switch that generated this record.

(Sheet 3 of 3)

Frame relay

This section describes the fields applicable to Passport frame relay accounting records.

In normal conditions, the calling end generates both the calling and the called records, and the called end does not generate any records. In unusual circumstances, such as when the trunk is down, the calling end generates both calling and called records, and the called end also generates both calling and called records. However, the remote (called) fields may be accurate only up to the last count exchange, which could take place up to 15 minutes prior.

> ***Note:*** Byte counts in this section do not include bytes from the frame header, frame trailer, DLCI header, and CRC.

For more information about accounting record generation, see 241-5701-900 *Passport 7400, 15000, 20000 Frame Relay UNI Guide*.

Peak Water Mark (PWM)

This record contains Peak Water Mark (PWM) fields that record the peak byte usage on the network side of the interface when Time of Day Accounting (TODA) is provisioned.

Consider the following:

- If TODA is not running, peak water mark fields are not included in the accounting record.
- You can select the peak water mark monitoring interval period in the modulewide provisioning data component.
- For each DLCI, the peak byte usage for CIR, EIR, and total traffic, as well as the interval in which the peak occurs are recorded. The terms *calling* and *called* refer to the interface at the calling and called end on the connection.
- The peak water mark fields can be used to validate the provisioned value of CIR and EIR against actual usage, resulting, possibly, in the re-engineering of the provisioned parameters. The frame header, frame trailer, DLCI header and CRC bytes are not included. LMI frames are also not included.

- When you use DE=0 or DE=1 traffic, but not both, the total peak water mark byte counts are the same as the CIR byte counts or the EIR byte counts.

"Frame relay" (page 68) describes the frame relay BDF fields.

Table 14
Frame relay

Field name	Field type	Field value	Field description
switchType	str	pp	The type of switch that generated this record.
dataType	str	acc or acc_DMId_RDFv	Identifies this record as being an accounting record. If configured, can include: Data Model Identifier (DMId) and RDF version (RDFv).
recordType_first	bit	0 = not first record 1 = first record	Indicates whether or not this is the first call accounting record for a call.
recordType_last	bit	0 = not last record 1 = last record	Indicates whether or not this is the last call accounting record for a call.

(Sheet 1 of 34)

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
recordIdentifier	int	0=gvcVintage4 1=frsVintage4 2=frsLocalCounts 3=frsLocalAnd RemoteCounts 4=frsShortLocal Counts 5=frsShortLocal AndRemote Counts 100=PVC interworking 101=SVC interworking 103=IpConnection	Identifies the type of Passport frame relay accounting record. gvcVintage4 is the fixed part of a record for VC. frsVintage4 is the fixed part of a record for frame relay. This record is generated when egressAccounting is set to 'no'. frsLocalCounts - this record is generated when egressAccounting is set to 'yes', but the egress protocol is not running. This record includes the fixed part and a local snapshot. frsLocalAndRemoteCounts - this record is generated when the egress protocol is running. This record has the fixed part and local (calling) and remote (called) snapshots. frsShortLocalCounts - this record is obsolete and will not be generated. frsShortLocalAndRemoteCounts - this record is obsolete and will not be generated. PVC interworking is an accounting record for a PVC between Passport and BNX frame relay interfaces across an IP backbone. This record is generated for BNX interworking connections when egressAccounting is set to 'yes'. SVC interworking - this record is obsolete and will not be generated. IpConnection is an accounting record for an IP-optimized DLCI.

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callType_gateway	bit	0 = not a Gateway 1 = is a Gateway	Indicates whether or not this call terminates at a gateway. Not applicable to type 100 or 101 records.
callType_localNetwork	bit	0 = not a Gateway 1 = is a Gateway	Indicates whether or not this call originates at a gateway. Not applicable to type 100 or 101 records.
callReferenceNumber	int	T = 0 (SVC) T = 1 (PVC) century/year or month/day or hour/minutes	A random number based on date and time. This call identifier is generated when the in-service PE becomes in-service. The significant byte is set to seconds as generated by the current date/time of the PE. The callReferenceNumber is incremented for each outgoing call.
callingNodeIdentifier	int	256 - 49151	This attribute identifies the calling (originating) node (Passport) by a unique number assigned to each node in the ModuleData component.
callingCustomerIdentifier	int	0 - 8191	An optional identifier for the calling end of the call in the Customer Network Management (CNM) and Virtual Private Network environment. The value in this field is taken from the Customer Network Management Identifier (CID) field in the DNA-CUG envelope for the access line. The value 0 is the default value reserved for all ports that are not associated with a Virtual Private Network and for which CNM is not provided.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingPortIdentifier	int	0 - 65535	The function processor number used by the service issuing the accounting record for the calling (originating) part of the call. If the port information is from DPN, then the pe, port and pi numbers are encoded as 5, 5, 6 bits..
callingNpi	int	0=X.121 1=E.164 other=undefined	The Numbering Plan Indicator indicates the numbering plan used in the calling address.
callingAddress	bcd		The calling address (DNA) of the call. This field is 0-15 digits in length and is left-justified with trailing zeroes.
callingDlci	int	0 - 4095 Frame Relay: 16 - 1007	The Logical Channel Number of the calling end.
calledNodeIdentifier	int	256 - 49151	This attribute identifies the called (terminating) node (Passport) by a unique number assigned to each node in the ModuleData component.
calledCustomerIdentifier	int	0 - 8191	An optional identifier for the called end of the call in the Customer Network Management (CNM) and Virtual Private Network environment. The value in this field is taken from the Customer Network Management Identifier (CID) field in the DNA-CUG envelope for the access line. The value 0 is the default value reserved for all ports that are not associated with a Virtual Private Network and for which CNM is not provided.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledPortIdentifier	int	0 - 65535	The function processor number used by the service issuing the accounting record for the called (terminating) part of the call. If the port information is from DPN, then the pe, port and pi numbers are encoded as 5, 5, 6 bits..
calledNpi	int	0=X.121 1=E.164 other=undefined	The Numbering Plan Indicator indicates the numbering plan used in the called address.
calledAddress	bcd		The called address (DNA) of the call. This field is 0-15 digits in length and is left-justified with trailing zeroes.
calledDlci	int	0 - 4095 Frame Relay: 16 - 1007	The Logical Channel Number of the called end.
segmentSizeIndex	int	0 - 16	The segment size index provisioned on the module. It is used to calculate the number of segments sent and received in the accounting record. Two to the power of segmentSizeIndex is equal to the segment size (in bytes) provisioned in the VirtualCircuitSytem component. For example, if the segment size is 128, then segmentSizeIndex is 7.
clearCause	int	160 = network congestion 176 = timer expired at the TODA 177 = remote user clear 180 = remote process error	Indicates the reason for a call termination. For more information, see 241-5701-900 *Passport 7400, 15000, 20000 Frame Relay UNI Guide*.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
diagnosticCode	int		This is the clear diagnostic indicator. It is set to zero (0) on non-final records, and to the network diagnostic code of the call clear on the final record. For more information, see 241-5701-900 *Passport 7400, 15000, 20000 Frame Relay UNI Guide*.
callingCir	int		The calling end provisioned CIR (Committed Information Rate). This rate is rounded up to the next 800 bits per second.
callingEir	int		The calling end provisioned EIR (Excess Information Rate). This rate is provisioned as excessive burst size and is rounded up to the next 800 bytes per second.
callingServiceType	int	0 - 255	Indicates the service supported by the port used by the calling end-user. For transit/incoming X.75 SVC calls, the calling service type information is valid only if the calling tariff is absent from the accounting record. This number is defined as accountClass in the DNA component.
callingCollectReason_bill	bit	0 = not for billing 1 = for billing	Indicates whether or not this record is for billing purposes.
callingCollectReason_test	bit	0 = not for testing 1 = for testing	Indicates whether or not this record is for testing purposes.
callingCollectReason_ study	bit	0 = not for study 1 = for study	Indicates whether or not this record is for study purposes.
callingCollectReason_audit	bit	0 = not for audit 1 = for audit	Indicates whether or not this record is for audit purposes.
callingCollectReason_force	bit	0 = not forced 1 = forced	Indicates whether or not data collection was forced by the calling end.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingDse	int	0 - 255	The Data Service Exchange (DSE) of the calling end. For transit/incoming X.75 SVC calls, the calling DSE information is valid only if the calling tariff is absent from the accounting record. DSE is defined in the DNA component.
callingRateAdaptation_ provisioned	bit	0 = off 1 = on OR “EIR only”	Rate adaptation is a congestion control mechanism. This value is provisioned. Rate adaptation can only be turned on if rate enforcement is also turned on.
callingRateAdaptation_ occured	bit	0 = none 1 = occurred	Indicates rate adaptation occurances on the interface.
callingRateAdaptation_ enforced	bit	0 = off 1 = on	Rate Enforcement prevents one user from using an inequitable share of the networks resources by ensuring that user traffic follows the provisioned CIR and EIR rates. This value is provisioned.
callingClassOfService_ emissionPriority	bit	0 = normal 1 = high	The emission priority allows you to choose between two distinct classes of services. This value is provisioned.
calledCir	int		The called end provisioned CIR (Committed Information Rate). This rate is rounded up to the next 800 bits per second.
calledEir	int		The called end provisioned EIR (Excess Information Rate). This rate is provisioned as excessive burst size and is rounded up to the next 800 bytes per second.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledServiceType	int	0 - 255	Indicates the service supported by the port used by the called end-user. For transit/outgoing X.75 SVC calls, the called service type information is valid only if the called tariff is absent from the accounting record. This number is defined as accountClass in the DNA_CUG envelope.
calledCollectReason_bill	bit	0 = not for billing 1 = for billing	Indicates whether or not this record is for billing purposes.
calledCollectReason_test	bit	0 = not for testing 1 = for testing	Indicates whether or not this record is for testing purposes.
calledCollectReason_ study	bit	0 = not for study 1 = for study	Indicates whether or not this record is for study purposes.
calledCollectReason_audit	bit	0 = not for audit 1 = for audit	Indicates whether or not this record is for audit purposes.
calledCollectReason_force	bit	0 = not forced 1 = forced	Indicates whether or not data collection was forced by the called end.
calledDse	int	0 - 255	The Data Service Exchange (DSE) of the called end. For transit/outgoing X.75 SVC calls, the calling DSE information is valid only if the called tariff is absent from the accounting record. DSE is defined in the DNA component.
calledRateAdaptation_ provisioned	bit	0 = off 1 = on	Rate adaptation is a congestion control mechanism. This value is provisioned. Rate adaptation can only be turned on if rate enforcement is also turned on.
calledRateAdaptation_ occured	bit	0 = none 1 = occurred	Indicates rate adaptation occurances on the interface.
(Sheet 8 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledRateAdaptation_ enforced	bit	0 = off 1 = on	Rate Enforcement prevents one user from using an inequitable share of the networks resources by ensuring that user traffic follows the provisioned CIR and EIR rates. This value is provisioned.
calledClassOfService_ emissionPriority	bit	0 = normal 1 = high	The emission priority allows you to choose between two distinct classes of services. This value is provisioned.
flags_calledEndCharging	bit	0 = calling end 1 = called end	Indicates to which end the call is charged.
flags_highPriority	bit	0 = normal 1 = high	Indicates the call priority.
flags_pvcType	bit	0 = SVC 1 = PVC	Indicates if call is SVC or PVC.
flags_hunted	bit	0 = not hunted 1 = hunted	Indicates if call has been hunted or not.
flags_redirected	bit	0 = not redirected 1 = redirected	Indicates if call has been redirected or not.
flags_calledGenerated	bit	SVC: 0 = calling end 1 = called end PVC: 0 = master end 1 = slave end	Indicates which end generated this call accounting record.
(Sheet 9 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
flags_calledCleared	bit	0 = calling end 1 = called end	The callCleared bit is initialized to 0 on the calling end and initialized to 1 on the called end. If the call is cleared on the local switch, that switch retains its value for the callCleared bit and sends a disconnect message to the other end. When a switch receives a disconnect message, the switch takes the value for the callCleared flag from the remote end.
flags_unique	bit	0 = possible duplicate 1 = no duplicate	Indicates the possible duplication of a call accounting record, or confirms that only one end of a call generated an accounting record. If set to 0, the generation mode is set to both ends.
flags_reachedDataTransfer	bit	0 = does not reach data transfer at both ends 1 = reached data transfer at both ends	Indicates data transfer state.
flags_collReasonValid	bit	0 = invalid 1 = valid	Indicates validity of called end collection reasons. Set to 0 if other end not responding (for example, connection clears due to trunk or remote node failure).
flags_userDataInCallReq	bit	0 = no user data 1 = user data	Indicates if user data on call request is available.
flags_callingUni	bit	0 = NNI 1 = UNI	Indicates a user-network or network-network interface.
flags_calledUni	bit	0 = NNI 1 = UNI	Indicates a user-network or network-network interface.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
flags_callingAbit	bit	0 = no change 1 = changed	Indicates whether or not the A-bit to or from the interface was changed on the interface during the current accounting period.
flags_calledAbit	bit	0 = no change 1 = changed	Indicates whether or not the A-bit to or from the interface was changed on the interface during the current accounting period.

(Sheet 11 of 34)

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
startTime	time		This is the start time of the period accounted for in the record. It is in the format YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is day, T is start of the time data, hh is hour, mm is minute, and ss is seconds. May contain a `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds. A zero value in any of the time fields causes the field to be truncated. The `T` indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the `T` indicator). For SVC, *startTime* is the time when the call request packet was created. For PVC, *startTime* is set by the Master VC when the master call request is formatted. On subsequent accounting records, *startTime* corresponds to the end time of the previous record. If Time of Day Accounting (TODA) is used, *startTime* (and *endTime*) correspond to times set in the schedule.

(Sheet 12 of 34)

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
endTime	time		This is the end time of the period accounted for in the record. It is in the format YYYYMMDDThhmmss, where: YYYY indicates the year, MM is for the month, DD is for the day, T indicates the beginning of the time data, hh is for the hour, mm is for the minute, and ss is for the seconds. May also contain a format of `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is for the microseconds. A zero value in any of the time fields causes the field to be truncated. The T indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the T indicator). If Time of Day Accounting (TODA) is used, *endTime* in non-final records is the time of the TODA period. For 12-hour accounting, *endTime* in non-final records is the time when the 12-hour timer expires at the charged end. On final accounting records, *endTime* is the time when the disconnect packet is first received.
(Sheet 13 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
endTime (continued)			If Time of Day Accounting (TODA) is used, *endTime* (and *startTime*) correspond to times set in the schedule (provisioned on the Passport switch with the *Collector/accounting* component and the *collectionTimes* attribute).
elapsedTime	int		Duration of the call in 0.1 second increments. This time interval is started when the call request is processed. If the call does not reach the data transfer stage, *elapsed time* is set to zero. *Elapsed time* represents a true measure of the accounting period. It is measured independently of *startDateTime* and *endTime*. Since *startDateTime* and *endTime* can be changed externally by adjusting the clock, *elapsed time* can be shorter or longer than the difference between *startDateTime* and *endTime*. This difference can show as much as 60 seconds on accounting records for the VCs that are idle (carry no traffic) and when TODA is used and is caused, in this case, by an internal TODA detection mechanism. When the 12-hour accounting period is complete, *elapsed time* is exact or differs by a few seconds from 12 hour duration.

(Sheet 14 of 34)

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingEgressBytes	L_int		The total number of bytes received at the calling end dlci. This is the number of bytes sent by frameRelay dlci to the application. With no congestion and no errors, this number is equal to the total number of ingress bytes (*calledIngressBytes*) at the called end of vc connection.
callingIngressBytes	L_int		The total number of bytes sent at the calling end dlci. This is the number of bytes sent by the application to frameRelay dlci. With no congestion and no errors, this number is equal to the total number of egress bytes (*calledEgressBytes*) at the called end of vc connection. Only good frames are passed to dlci from the application. The frames discarded due to CRC error are not included in this count. This number does include the count *callingDiscardBytes*.
callingEgressFrames			The total number of frames sent at the calling end. This is the total number of frames sent by frameRelay dlci to the application. Frames to be counted are provisioned as attribute unitsCounted in the *ModuleData VirtualCircuitSystem* component.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingIngressFrames	L_int		The total number of frames sent at the calling end. This is the number of frames sent by the application to frameRelay dlci. The frames discarded due to CRC error are not included in this count. Frames to be counted are provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
callingEgressSegments	L_int		The total number of segments sent at the calling end. This is the total number of segments sent by frameRelay dlci to the application. Segments to be counted are provisioned as attribute unitsCounted in the *ModuleData VirtualCircuitSystem* component.
callingIngressSegments	L_int		The total number of segments sent at the calling end. This is the number of segments sent by the application to frameRelay dlci. Segments to be counted are provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
callingEirEgressBytes	L_int		The total number of EIR bytes received from the network at the calling end with discard eligibility bit set. This total is included in the value of *callingEgressBytes* at the called end of the connection. The discard eligibility bit can be set by the application or by frame relay.
(Sheet 16 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingEirIngressBytes	L_int		The total number of EIR bytes sent to the network at the calling end from the application to the frame relay dlci. This total is included in *callingIngressBytes* value. This field includes the number of bytes or frames that have the discard eligibility bit set by the application.
callingEirEgressFrames	L_int		The total number of EIR frames received at the calling end. This is the total number of frames received by frameRelay dlci from the network with the discard eligibility bit set. This number is included in *callingEgressFrames*. The discard eligibility bit can be set by application or by frameRelay. Frames to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
callingEirIngressFrames	L_int		The total number of EIR frames sent to the network at the calling end. This is the total number of frames sent by frameRelay dlci to the network with the discard eligibility bit set. The discard eligibility bit can be set by application or by frameRelay. Frames to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingEirEgressSegments	L_int		The total number of EIR segments received at the calling end. This is the total number of segments received by frameRelay dlci from the network with the discard eligibility bit set. This number is included in *callingEgressSegments*. The discard eligibility bit can be set by application or by frameRelay. Segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
callingEirIngressSegments	L_int		The total number of EIR segments sent to the network at the calling end. This is the total number of segments sent by frameRelay dlci from the network with the discard eligibility bit set. The discard eligibility bit can be set by application or by frameRelay. Segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
callingDiscardedBytes	L_int		The number of Ingress bytes discarded at the calling end for one of the following reasons: rate enforcement, A-Bit is off, Ingress frame is too long, or Ingress frame is too short.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingDiscardedFrames	L_int		The number of Ingress frames discarded at the calling end for one of the following reasons: rate enforcement, A-Bit is off, Ingress frame is too long, or Ingress frame is too short.
callingDiscardedSegments	L_int		The number of Ingress segments discarded at the calling end for one of the following reasons: rate enforcement, A-Bit is off, Ingress frame is too long, or Ingress frame is too short.
calledEgressBytes	L_int		The total number of bytes received at the called end dlci. This is the number of bytes sent by frameRelay dlci to the application. With no congestion and no errors, this number is equal to the total number of ingress bytes (*callingIngressBytes*) at the calling end of vc connection.
calledIngressBytes	L_int		The total number of bytes sent at the called end dlci. This is the number of bytes sent by the application to frameRelay dlci. With no congestion and no errors, this number is equal to the total number of egress bytes (*callingEgressBytes*) at the caling end of vc connection. Only good frames are passed to dlci from the application. The frames discarded due to CRC error are not included in this count. This number does include the count *calledDiscardBytes*.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledEgressFrames			The total number of frames sent at the called end. This is the total number of frames sent by frameRelay dlci to the application. Frames to be counted are provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
calledIngressFrames	L_int		The total number of frames sent at the called end. This is the number of frames sent by the application to frameRelay dlci. The frames discarded due to CRC error are not included in this count. Frames to be counted are provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
calledEgressSegments	L_int		The total number of segments sent at the called end. This is the total number of segments sent by frameRelay dlci to the application. Segments to be counted are provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
calledIngressSegments	L_int		The total number of segments sent at the called end. This is the number of segments sent by the application to frameRelay dlci. Segments to be counted are provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
(Sheet 20 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledEirEgressBytes	L_int		The total number of EIR bytes received from the network at the called end with discard eligibility bit set. This total is included in the value of *calledEgressBytes* at the called end of the connection. The discard eligibility bit can be set by the application or by frame relay.
calledEirIngressBytes	L_int		The total number of EIR bytes sent to the network at the called end from the application to the frame relay dlci. This total is included in *calledIngressBytes* value. This field includes the number of bytes or frames that have the discard eligibility bit set by the application.
calledEirEgressFrames	L_int		The total number of EIR frames received at the called end. This is the total number of frames received by frameRelay dlci from the network with the discard eligibility bit set. This number is included in *calledEgressFrames*. The discard eligibility bit can be set by application or by frameRelay. Frames to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
(Sheet 21 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledEirIngressFrames	L_int		The total number of EIR frames sent to the network at the called end. This is the total number of frames sent by frameRelay dlci to the network with the discard eligibility bit set. The discard eligibility bit can be set by application or by frameRelay. Frames to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
calledEirEgressSegments	L_int		The total number of EIR segments received at the called end. This is the total number of segments received by frameRelay dlci from the network with the discard eligibility bit set. This number is included in *calledEgressSegments*. The discard eligibility bit can be set by application or by frameRelay. Segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
calledEirIngressSegments	L_int		The total number of EIR segments sent to the network at the called end. This is the total number of segments sent by frameRelay dlci from the network with the discard eligibility bit set. The discard eligibility bit can be set by application or by frameRelay. Segments to be counted is provisioned as attribute *unitsCounted* in the *ModuleData VirtualCircuitSystem* component.
(Sheet 22 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledDiscardedBytes	L_int		The number of Ingress bytes discarded at the called end for one of the following reasons: rate enforcement, A-Bit is off, Ingress frame is too long, or Ingress frame is too short.
calledDiscardedFrames	L_int		The number of Ingress frames discarded at the called end for one of the following reasons: rate enforcement, A-Bit is off, Ingress frame is too long, or Ingress frame is too short.
calledDiscardedSegments	L_int		The number of Ingress segments discarded at the called end for one of the following reasons: rate enforcement, A-Bit is off, Ingress frame is too long, or Ingress frame is too short.
callingTotalPwmBytes	L_int		The calling end peak water mark for the total number of ingress bytes. This peak occurs at the interval *callingTotalPwmIntervalNumber*. If the value of this attribute is zero (no traffic), *callingTotalPwmIntervalNumber* is also zero.
(Sheet 23 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingEirPwmBytes	L_int		The calling end peak water mark for the number of ingress bytes carried on frames with DE-bit = 1. The DE-bit is set by the users equipment. This peak occurs at the interval *callingEirPwmIntervalNumber*. If the value of this attribute is zero (no traffic), *callingEirPwmIntervalNumber* is also zero.
callingCirPwmBytes	L_int		The calling end peak water mark for the number of ingress bytes carried on frames with DE-bit = 0. The DE-bit is set by the users equipment. This peak occurs at the interval *callingCirPwmIntervalNumber*. If the value of this attribute is zero (no traffic), *callingCirPwmIntervalNumber* is also zero.
calledTotalPwmBytes	L_int		The called end peak water mark for the total number of ingress bytes. This peak occurs at the interval *calledTotalPwmIntervalNumber*. If the value of this attribute is zero (no traffic), *calledTotalPwmIntervalNumber* is also zero.
(Sheet 24 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledEirPwmBytes	L_int		The called end peak water mark for the number of ingress bytes carried on frames with DE-bit = 1. The DE-bit is set by the users equipment. This peak occurs at the interval *calledEirPwmIntervalNumber*. If the value of this attribute is zero (no traffic), *calledEirPwmIntervalNumber* is also zero.
calledCirPwmBytes	L_int		The called end peak water mark for the number of ingress bytes carried on frames with DE-bit = 0. The DE-bit is set by the users equipment. This peak occurs at the interval *calledCirPwmIntervalNumber*. If the value of this attribute is zero (no traffic), *calledCirPwmIntervalNumber* is also zero.
(Sheet 25 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingTotalPwmInterval Number	int		The number of the PWM (peak water mark) interval in which the *callingTotalPwmBytes* occurred. If no traffic is sent (*callingTotalPwmBytes* is zero), the value of this attribute is also zero. The maximum possible value is 720 if *peakWaterMarkInterval* is set to one minute and the accounting period measured is 12 hours. Normally, the value of this attribute starts at one. The value is relative to the *collectionTimes* attribute, together with the *peakWaterMarkInterval* attribute in the *Collector* component. For example, if *collectionTimes* is set to 16:00 and the value of *callingTotalPwmIntervalNumber* is reported as four and the attribute *peakWaterMarkInterval* in the *Collector* component is set to 5 minutes, then peak traffic happened between 16:15 and 16:20.
(Sheet 26 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingEirPwmInterval Number	int		The number of the PWM (peak water mark) interval in which the *callingEirPwmBytes* occurred. If no traffic is sent (*callingEirPwmBytes* is zero), the value of this attribute is also zero. The maximum possible value is 720 if *peakWaterMarkInterval* is set to one minute and the accounting period measured is 12 hours. Normally, the value of this attribute starts at one. The value is relative to the *collectionTimes* attribute, together with the *peakWaterMarkInterval* attribute in the *Collector* component. For example, if *collectionTimes* is set to 16:00 and the value of *callingEirPwmIntervalNumber* is reported as four and the attribute *peakWaterMarkInterval* in the *Collector* component is set to 5 minutes, then peak traffic happened between 16:15 and 16:20.
(Sheet 27 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
callingCirPwmInterval Number	int		The number of the PWM (peak water mark) interval in which the *callingCirPwmBytes* occurred. If no traffic is sent (*callingCirPwmBytes* is zero), the value of this attribute is also zero. The maximum possible value is 720 if *peakWaterMarkInterval* is set to one minute and the accounting period measured is 12 hours. Normally, the value of this attribute starts at one. The value is relative to the *collectionTimes* attribute, together with the *peakWaterMarkInterval* attribute in the *Collector* component. For example, if *collectionTimes* is set to 16:00 and the value of *callingCirPwmIntervalNumber* is reported as four and the attribute *peakWaterMarkInterval* in the *Collector* component is set to 5 minutes, then peak traffic happened between 16:15 and 16:20.
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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledTotalPwmInterval Number	int		The number of the PWM (peak water mark) interval in which the *calledTotalPwmBytes* occurred. If no traffic is sent (*calledTotalPwmBytes* is zero), the value of this attribute is also zero. The maximum possible value is 720 if *peakWaterMarkInterval* is set to one minute and the accounting period measured is 12 hours. Normally, the value of this attribute starts at one. The value is relative to the *collectionTimes* attribute, together with the *peakWaterMarkInterval* attribute in the *Collector* component. For example, if *collectionTimes* is set to 16:00 and the value of *calledTotalPwmIntervalNumber* is reported as four and the attribute *peakWaterMarkInterval* in the *Collector* component is set to 5 minutes, then peak traffic happened between 16:15 and 16:20.
(Sheet 29 of 34)			

Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledEirPwmInterval Number	int		The number of the PWM (peak water mark) interval in which the *calledEirPwmBytes* occurred. If no traffic is sent (*calledEirPwmBytes* is zero), the value of this attribute is also zero. The maximum possible value is 720 if *peakWaterMarkInterval* is set to one minute and the accounting period measured is 12 hours. Normally, the value of this attribute starts at one. The value is relative to the *collectionTimes* attribute, together with the *peakWaterMarkInterval* attribute in the *Collector* component. For example, if *collectionTimes* is set to 16:00 and the value of *calledEirPwmIntervalNumber* is reported as four and the attribute *peakWaterMarkInterval* in the *Collector* component is set to 5 minutes, then peak traffic happened between 16:15 and 16:20.
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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledCirPwmInterval Number	int		The number of the PWM (peak water mark) interval in which the *calledCirPwmBytes* occurred. If no traffic is sent (*calledCirPwmBytes* is zero), the value of this attribute is also zero. The maximum possible value is 720 if *peakWaterMarkInterval* is set to one minute and the accounting period measured is 12 hours. Normally, the value of this attribute starts at one. The value is relative to the *collectionTimes* attribute, together with the *peakWaterMarkInterval* attribute in the *Collector* component. For example, if *collectionTimes* is set to 16:00 and the value of *calledCirPwmIntervalNumber* is reported as four and the attribute *peakWaterMarkInterval* in the *Collector* component is set to 5 minutes, then peak traffic happened between 16:15 and 16:20.
originalNpi	int	0=X.121 1=E.164 other=undefined	This Numbering Plan Indicator indicates the numbering plan used in the original called address.

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
originalAddress	bcd		This field includes the number of digits in this field (the maximum is 15 digits) and the original called address (DNA). originalAddress is the calledAddress before the DTE adress was modified. This field includes the DNIC (first four digits) for X.121 or Country Code for E.164 address. This field is left-justified with trailing zeroes.
originalServiceType	int	0 - 255	The service supported by the calling end port. This value is provisioned on each interface *Dna* as *accountClass*.
callingTransferPriority	int	0 - 15 Supported by Passport frame relay: 0, 6, 9, 11.	The transfer priority is a preference specified by an application according to its time-sensitivity requirement. Frames with high transfer priority are served by the network before the frames with normal priority. The frame relay transfer priority in Passport determines characteristics: trunk queue (among interrupting, delay, throughput), routing metric (between delay and throughput) and frame relay egress queues (between high and normal priority).

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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
calledTransferPriority	int	0 - 15 Supported by Passport frame relay: 0, 6, 9, 11.	The transfer priority is a preference specified by an application according to its time-sensitivity requirement. Frames with high transfer priority are served by the network before the frames with normal priority. The frame relay transfer priority in Passport determines characteristics: trunk queue (among interrupting, delay, throughput), routing metric (between delay and throughput) and frame relay egress queues (between high and normal priority).
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Table 14 (Continued)
Frame relay

Field name	Field type	Field value	Field description
circuitId	string		A unique string, set by the operator, that identifies the call for accounting purposes. Downstream processing uses this attribute to correlate accounting records issued at different nodes in the network. Normally, this attribute is provisioned with the same value at both ends of the connection. This attribute is optional, available for FrUni and FrNni PVCs, and is part of the enhanced accounting data for FrUni and FrNni PVC DLCIs. The default is no call correlation tag against the DLCI. For single sided accounting with the Egress Protocol on, the call correlation tag specifies the call correlation tag value provisioned at the local interface. There is no call correlation tag for the remote DLCI in the record. For double sided accounting, the accounting records generated at each end contain the local call correlation tag value.
callingIpAddress	IP		The calling IP address of the frame relay interface for the connection. The field format is ###.###.###.###.
calledIpAddress	IP		The called IP address for the connection. The field format is ###.###.###.###.
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ATM

"ATM fields" (page 102) describes the Passport ATM accounting fields.

Table 15
ATM fields

Field name	Field type	Field value	Field description
switchType	str	pp	The type of switch that generated this record.
dataType	str	acc or acc_DMId_RDFv	Identifies this record as being an accounting record. If configured, can include: Data Model Identifier (DMId) and RDF version (RDFv).
recordIdentifier	int	always = 20	Identifies this record as being an ATM accounting record.
recordType_first	bit	0 = not first record 1 = first record	Indicates whether or not this is the first call accounting record for a call.
recordType_last	bit	0 = not last record 1 = last record	Indicates whether or not this is the last call accounting record for a call.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
callConnId	char	32 characters	First 20 bytes indicate the NSAP address of the originating interface. The next 4 bytes indicate the VPI and VCI at the originating connection point. The last 4 bytes represent the counter that is incremented by the interface to ensure that this ID is unique, even when the same VPI and VCI are reused by the interface during the same billing interval. The remaining bytes are zeros. They are used only for padding and are not apart of the call ID. This attribute may be used by downstream processing systems to correlate the accounting records issued for the same call at different interfaces (nodes) in the network. For SVCs (switched virtual connections) and S-PVCs (soft permanent virtual connections), the callConnId is generated by the switch and is unique for every call in the network. For PVCs (permanent virtual connections), the callConnId is provisioned in the correlationTag attribute of the AtmIf Vcc Vcd or AtmIf Vpc Vpd component.
callingCollectReason_bill	bit	0 = not for billing 1 = for billing	Indicates whether or not this record is for billing purposes.
callingCollectReason_test	bit	0 = not for testing 1 = for testing	Indicates whether or not this record is for testing purposes.
callingCollectReason_ study	bit	0 = not for study 1 = for study	Indicates whether or not this record is for study purposes.
callingCollectReason_audit	bit	0 = not for audit 1 = for audit	Indicates whether or not this record is for audit purposes.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
callingCollectReason_force	bit	0 = not forced 1 = forced	Indicates whether or not data collection was forced by the calling end.
calledCollectReason_bill	bit	0 = not for billing 1 = for billing	Indicates whether or not this record is for billing purposes.
calledCollectReason_test	bit	0 = not for testing 1 = for testing	Indicates whether or not this record is for testing purposes.
calledCollectReason_ study	bit	0 = not for study 1 = for study	Indicates whether or not this record is for study purposes.
calledCollectReason_audit	bit	0 = not for audit 1 = for audit	Indicates whether or not this record is for audit purposes.
calledCollectReason_force	bit	0 = not forced 1 = forced	Indicates whether or not data collection was forced by the called end.
callingServiceType	int	0 - 255	Indicates the service type of the interface that generated the accounting record. The value is provisioned in field *accountClass* for each ATM interface (under the UNI or IISP component). This field is present only for incoming calls.
calledServiceType	int	0 - 255	Indicates the service type of the interface that generated the accounting record. The value is provisioned in field *accountClass* for each ATM interface (under the UNI or IISP component). This field is present only for outgoing calls.
callingDse	int	0 - 255	Defines the Data Service Exchange associated with the ATM interface. This attribute reflects the value provisioned in field *serviceExchange* of component UNI or IISP. This field is present only for incoming calls.

Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
calledDse	int	0 - 255	Defines the Data Service Exchange associated with the ATM interface. This attribute reflects the value provisioned in field *serviceExchange* of component UNI or IISP. This field is present only for outgoing calls.
callOrigMethod	int	0 = pt-to-pt 1 = pt-to-mpt 2 = mpt-to-pt 3 = mpt-to-mpt	Indicates call origination characteristics: point-to-point (pt-to-pt), point-to-multipoint (pt-to-mpt), multipoint-to-point (mpt-to-pt), multipoint-to-multipoint (mpt-to-mpt).
callType	int	0 = PVC 1 = PVPC 2 = SVC 3 = SPVC 6 = SVP 7 = SPVP	Indicates the type of call: PVC (permanent virtual connection), PVPC (permanent virtual path connection), SVC (switched virtual connection), SPVC (soft permanent virtual connection), SVP (switched virtual path), or SPVP (soft permanent virtual path).
connPointType	int	0 = originating 1 = intermediate 2 = terminating	Indicates the type of connection point that generated the call record: originating, intermediate or terminating. This field can be used by downstream processing systems when correlating two or more records for the same call.
atmInterfaceNumber	int		The number of the ATM interface that generated the accounting record.
callVpi	int		The VPI of the connection point at the interface where the accounting record is generated.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
callVci	int		The VCI of the connection point at the interface where the accounting record is generated.
atmCallTermCauseValue	int		The call termination cause value as defined by the ATM Forum UNI 3.1 specification. For non-final records, this value is 0.
callTermInSetup	int		Indicates unsuccessful call attempts.
cellCountValidityFlag	int	0 = invalid 1 = valid	Indicates the validity of the cell counts in this accounting record.
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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
startTime	time		This is the start time of the period accounted for in the record. The format is YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is day, T is start of the time data, hh is hour, mm is minute, and ss is seconds. May also contain `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds. In the first accounting record for a call, this field is the time the call was set up. In subsequent records, this field is the time the current accounting collection interval started. When TODA is enabled, the collection intervals are delimited by the entries in the TODA schedule (the Col/accounting collectionTimes field). When TODA is disabled, they are delimited by a timer that expires every 12-hours (per call). A zero value in any of the time fields causes the field to truncate. The T indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds truncate) and `19970627T000000` displays as `19970627` (all of the time fields are truncated, including the T indicator).
(Sheet 6 of 23)			

Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
endTime	time		This is the end time of the period accounted for in the record. The format is YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is day, T is start of the time data, hh is hour, mm is for minute, and ss is seconds. May also contain `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds. In non-final accounting records, this field represents the time the current accounting collection interval ended. In the final record for a call, this field represents the time the call was cleared. When TODA is enabled, the collection intervals are delimited by the entries in the TODA schedule (the Col/ accounting collectionTimes field). When TODA is disabled, they are delimited by a timer that expires every 12-hours (per call). A zero value in any of the time fields causes the field to be truncated. The T indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the T indicator).

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
elapsedTime	int		The duration of the accounting interval in 0.1 second increments. This is the true duration of the accounting interval, measured independently of the start and end time (since start time and end time can be affected by the adjustment of the clock, elapsed time can be shorter or longer than the difference between them). For calls terminated in setup the elapsed time is set to 0.
callingNsapAddr	hex		The NSAP address of the calling party. This field is not included for PVC calls.
calledNsapAddr	hex		The NSAP address of the called party. This field is not included for PVC calls.
callingNsapSubAddr	hex		The saved NSAP address of the calling party. This address is restored when leaving the public network.
calledNsapSubAddr	hex		The saved NSAP address of the called party. This address is restored when leaving the public network.
callForwPcrClp0	L_int		The Peak Cell Rate (PCR) for the connection in the forward direction, for high-priority cells (with CLP=0). The value is in cells per second.
callForwPcrClp01	L_int		The Peak Cell Rate (PCR) for the connection in the forward direction, for all cells (with CLP=0 or CLP=1). The value is in cells per second.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
callForwScrClp0	L_int		The Sustained Cell Rate (SCR) for the connection in the forward direction, for high-priority cells (with CLP=0). Holds the minimum cell rate for a call for UBR+ connections. The value is in cells per second.
callForwScrClp01	L_int		The Sustained Cell Rate (SCR) for the connection in the forward direction, for all cells (with CLP=0 or CLP=1). The value is in cells per second.
callForwMbsClp0	L_int		The Maximum Burst Size (MBS) for the connection in the forward direction, for high-priority cells (with CLP=0). The value is in cells per second.
callForwMbsClp01	L_int		The Maximum Burst Size (MBS) for the connection in the forward direction, for all cells (with CLP=0 or CLP=1). The value is in cells per second.
callForwQos	int	0 - unspecified QoS 1 - QoS Class 1 2 - QoS Class 2 3 - QoS Class 3 4 - QoS Class 4	The quality of service (QoS) for the connection in the forward direction. The values conform to the ATM Forum UNI 4.0 specification.
callBackPcrClp0	L_int		The Peak Cell Rate (PCR) for the connection in the backward direction, for high-priority cells (with CLP=0). The value is in cells per second.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
callBackPcrClp01	L_int		The Peak Cell Rate (PCR) for the connection in the backward direction, for all cells (with CLP=0 or CLP=1). The value is in cells per second.
callBackScrClp0	L_int		The Sustained Cell Rate (SCR) for the connection in the backward direction, for high-priority cells (with CLP=0). Holds the minimum cell rate for a call for UBR+ connections.The value is in cells per second.
callBackScrClp01	L_int		The Sustained Cell Rate (SCR) for the connection in the backward direction, for all cells (with CLP=0 or CLP=1). The value is in cells per second.
callBackMbsClp0	L_int		The Maximum Burst Size (MBS) for the connection in the backward direction, for high-priority cells (with CLP=0). The value is in cells per second.
callBackMbsClp01	L_int		The Maximum Burst Size (MBS) for the connection in the backward direction, for all cells (with CLP=0 or CLP=1). The value is in cells per second.
callBackQos	int	0 - unspecified QoS 1 - QoS Class 1 2 - QoS Class 2 3 - QoS Class 3 4 - QoS Class 4	The quality of service (QoS) for the connection in the backward direction. The values conform to the ATM Forum UNI 4.0 specification.
ingressCellCountClp0	L_int		The number of high priority cells (with CLP=0) received from the link during the accounting period.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
ingressCellCountClp01	L_int		The total number of cells (with CLP=0 or CLP=1) received from the link during the accounting period.
egressCellCountClp0	L_int		The number of high priority cells (with CLP=0) tranmitted on the link during the accounting period.
egressCellCountClp01	L_int		The total number of cells (with CLP=0 or CLP=1) transmitted on the link during the accounting period.
ingressDiscardedClp0	L_int		The number of cells or packets (with CLP=0) received from the link and discarded (not transmitted to the switch) during the accounting period. The count is expressed in packets when AAL5 is being used to be consistent with existing operational measurements.
ingressDiscardedClp01	L_int		The total number of cells or packets (with CLP=0 or CLP=1) received from the link and discarded (not transmitted to the switch) during the accounting period. The count is expressed in packets when AAL5 is being used to be consistent with existing operational measurements.
egressDiscardedClp0	L_int		The number of high priority cells or packets (with CLP=0) received from the switch and discarded (not transmitted on the link) during the accounting period. The count is expressed in packets when AAL5 is being used to be consistent with existing operational measurements.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
egressDiscardedClp01	L_int		The total number of cells or packets (with CLP=0 or CLP=1) received from the switch and discarded (not transmitted on the link) during the accounting period. The count is expressed in packets when AAL5 is being used to be consistent with existing operational measurements.
callTrafficMgmt_tagFwd	bit	0 = disabled 1 = enabled	The traffic management policy in effect for the call in the forward direction: tagging (setting CLP=1) or dropping cells.
callTrafficMgmt_tagBwd	bit	0 = disabled 1 = enabled	The traffic management policy in effect for the call in the backward direction: tagging (setting CLP=1) or dropping cells.
callBestEffort	int	0 = best effort off 1 = best effort on	Indicates if "best effort" was requested in the call setup message.
callingCustomerIdentifier	int	0 - 8191	An optional identifier for the calling end of the call in the Customer Network Management (CNM) and Virtual Private Network environment. The value in this field is taken from the Customer Network Management Identifier (CID) field in the DNA-CUG envelope for the access line. The value 0 is the default value reserved for all ports that are not associated with a Virtual Private Network and for which CNM is not provided.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
calledCustomerIdentifier	int	0 - 8191	An optional identifier for the called end of the call in the Customer Network Management (CNM) and Virtual Private Network environment. The value in this field is taken from the Customer Network Management Identifier (CID) field in the DNA-CUG envelope for the access line. The value 0 is the default value reserved for all ports that are not associated with a Virtual Private Network and for which CNM is not provided.
callingNodeIdentifier	int	256 - 49151	This attribute identifies the calling node by a unique number assigned to each node. This value is provisioned in the attribute namsId of the component ModuleData. For SVCs and SPVCs, this attribute is present only for incoming calls. For PVCs, only calledNodeIdentifier is present for both incoming and outgoing calls.
calledNodeIdentifier	int	256 - 49151	This attribute identifies the called node by a unique number assigned to each node. This value is provisioned in the attribute namsId of the component ModuleData. For SVCs and SPVCs, this attribute is present only for outgoing calls. For PVCs, only calledNodeIdentifier is present for both incoming and outgoing calls.
(Sheet 13 of 23)			

Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
minimumCtd	int		The minimum calculated cell transfer delay value for this connection. This field is expressed in units of microseconds. Cell transfer delay is calculated as half of the measured segment round trip delay of a loopback cell. The minimumCtd value is generated for SPVC and SPVP connections if the ctdCalculation attribute of the AtmIf component is on and the segSwitchSideLoopback attribute value is on for the connection. The value is 0 if the switch-side loopback is not functioning.
maximumCtd	int		The maximum calculated cell transfer delay value for this connection. This field is expressed in units of microseconds. Cell transfer delay is calculated as half of the measured segment round trip delay of a loopback cell. The maximumCtd value is generated for SPVC and SPVP connections if the ctdCalculation attribute of the AtmIf component is on and the segSwitchSideLoopback attribute value is on for the connection. The value is 0 if the switch-side loopback is not functioning.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
averageCtd	int		The average of all calculated cell transfer delay values for this connection. This field is expressed in units of microseconds. Cell transfer delay is calculated as half of the measured segment round trip delay of a loopback cell. The averageCtd value is generated for SPVC and SPVP connections if the ctdCalculation attribute of the AtmIf component is on and the segSwitchSideLoopback attribute value is on for the connection. The value is 0 if the switch-side loopback is not functioning.
sampleSizeCtd	int		The number of loopback cells sampled for cell transfer delay calculations The sampleSizeCtd value is indicated for SPVC and SPVP connections if the ctdCalculation attribute of the AtmIf component is on and the segSwitchSideLoopback attribute value is on for the connection.
lFwdTotalUserCellTxClp0	L_int		The total number of cells (with CLP=0) transmitted from the local side in the forward direction during the accounting period. This value is included if Performance Monitoring is enabled on the link side.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
lFwdTotalUserCellTxClp01	L_int		The total number of cells (with CLP=0 or CLP=1) transmitted from the local side in the forward direction during the accounting period. This value is included if Performance Monitoring is enabled on the link side.
lFwdTotalUserCellRxClp0	L_int		The total number of cells (with CLP=0) received on the remote side in the forward direction during the accounting period. This value is included if Performance Monitoring is enabled on the link side.
lFwdTotalUserCellRxClp01	L_int		The total number of cells (with CLP=0 or CLP=1) received on the remote side in the forward direction during the accounting period. This value is included if Performance Monitoring is enabled on the link side.
lFwdTotalPmCellDiscard Count	L_int		The total number of Performance Monitoring cells discarded in the forward direction. This value is included if Performance Monitoring is enabled on the link side.
lBwdTotalUserCellTxClp0	L_int		The total number of user cells (with CLP=0) transmitted from the remote side in the backward direction. This value is included if Performance Monitoring is enabled on the link side.
lBwdTotalUserCellTxClp01	L_int		The total number of user cells (with CLP=0 or CLP=1) transmitted from the remote side in the backward direction. This value is included if Performance Monitoring is enabled on the link side.

(Sheet 16 of 23)

Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
lBwdTotalUserCellRxClp0	L_int		The total number of user cells (with CLP=0) received on the local side in the backward direction. This value is included if Performance Monitoring is enabled on the link side.
lBwdTotalUserCellRxClp01	L_int		The total number of user cells (with CLP=0 or CLP=1) received on the local side in the backward direction. This value is included if Performance Monitoring is enabled on the link side.
lBwdTotalPmCellDiscard Count	L_int		The total number of Performance Monitoring cells discarded in the backward direction. This value is included if Performance Monitoring is enabled on the link side.
lArTotalTime	L_int		The total time, in seconds, used to calculate the Availability Ratio. This value is included if Performance Monitoring is enabled on the link side.
lArAvailableTime	L_int		The total time, in seconds, that a connection was available.This value is included if Performance Monitoring is enabled on the link side.
sFwdTotalUserCellTxClp0	L_int		The total number of cells (with CLP=0) transmitted from the local side in the forward direction during the accounting period. This value is included if Performance Monitoring is enabled on the switch side.
(Sheet 17 of 23)			

Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
sFwdTotalUserCellTxClp01	L_int		The total number of cells (with CLP=0 or CLP=1) transmitted from the local side in the forward direction during the accounting period. This value is included if Performance Monitoring is enabled on the switch side.
sFwdTotalUserCellRxClp0	L_int		The total number of cells (with CLP=0) received on the remote side in the forward direction during the accounting period. This value is included if Performance Monitoring is enabled on the switch side.
sFwdTotalUserCellRx Clp01	L_int		The total number of cells (with CLP=0 or CLP=1) received on the remote side in the forward direction during the accounting period. This value is included if Performance Monitoring is enabled on the switch side.
sFwdTotalPmCellDiscard Count	L_int		The total number of Performance Monitoring cells discarded in the forward direction. This value is included if Performance Monitoring is enabled on the switch side.
sBwdTotalUserCellTxClp0	L_int		The total number of user cells (with CLP=0) transmitted from the remote side in the backward direction. This value is included if Performance Monitoring is enabled on the switch side.
sBwdTotalUserCellTx Clp01	L_int		The total number of user cells (with CLP=0 or CLP=1) transmitted from the remote side in the backward direction. This value is included if Performance Monitoring is enabled on the switch side.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
sBwdTotalUserCellRxClp0	L_int		The total number of user cells (with CLP=0) received on the local side in the backward direction. This value is included if Performance Monitoring is enabled on the switch side.
sBwdTotalUserCellRx Clp01	L_int		The total number of user cells (with CLP=0 or CLP=1) received on the local side in the backward direction. This value is included if Performance Monitoring is enabled on the switch side.
sBwdTotalPmCellDiscard Count	L_int		The total number of Performance Monitoring cells discarded in the backward direction. This value is included if Performance Monitoring is enabled on the switch side.
sArTotalTime	L_int		The total time, in seconds, used to calculate the Availability Ratio. This value is included if Performance Monitoring is enabled on the switch side.
sArAvailableTime	L_int		The total time, in seconds, that a connection was available.This value is included if Performance Monitoring is enabled on the switch side.
atmServiceCategory	int	cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The ATM service category for both directions of the connection.

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Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
circuitId	string	64 characters	This attribute indicates a unique string, set by the operator allowing the customer to assign a meaningful name to identify and manage the VCC/VPC level components that make up a circuit. It is provisioned in the correlationTag attribute of the AtmIf Vcc Vcd or AtmIf Vpc Vpd component. Downstream processing may use this attribute to correlate accounting records issued at different nodes in the network.
(Sheet 20 of 23)			

Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
rxUpcViolationOnEnforcer1	L_int		This attribute counts the number of UPC violations observed by the Generic Cell Rate Algorithm (GCRA) Enforcer 1. This attribute is only applicable if UPC is enforced or monitored. This attribute is not applicable for standard VPT VCCs. This attribute is not applicable and is not displayed on CQC-based, APC-based, and QRD-based ATM cards. When the value of rxTrafficDescType for this connection is 3, 4, 5, 6, 7 or 8, Enforcer 1 enforces conformance of traffic received fromthe interface to PCR CLP0+1. When the value of rxTrafficDescType for this connection is 9, Enforcer 1 performs the Dynamic Generic Cell Rate Algorithm (DGCRA) used for the Available Bit Rate (ABR) service category. If UPC is enforced all non-conforming cells are discarded by thisenforcer. These discarded cells are included in rxCellDiscard. continued...

Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
			For basic Vpts, this attribute provides an aggregated total of all rxUpcViolationOnEnforcer1 values for the Vccs associated with theVpt. The counter wraps to zero if it exceeds its maximum value of (2**64)-1.
rxUpcViolationOnEnforcer2	L_int		This attribute counts the number of UPC violations observed by the Generic Cell Rate Algorithm (GCRA) Enforcer 2. This attribute is only applicable if UPC is enforced or monitored. This attribute is not applicable for standard VPT VCCs. This attribute is not applicable and is not displayed on CQC-based, APC-based, and QRD-based ATM cards. Enforcer2 is applicable only if the rxTrafficDescType for this connection is 4, 5, 6, 7 or 8. When the value of rxTrafficDescType 4 or 5, Enforcer 2 enforces conformance of traffic received from the interface to PCR CLP0. continued...

Table 15 (Continued)
ATM fields

Field name	Field type	Field value	Field description
			When the value of rxTrafficDescType 6, Enforcer 2 enforces conformance of traffic received from the interface to SCR CLP0+1. When the value of rxTrafficDescType 7 or 8, Enforcer 2 enforces conformance of traffic received from the interface to SCR CLP0. If UPC is enforced, enforcer 2 discards non-conforming cells for rxTrafficDescType values of 4, 6 and 7. It tags non-conforming cells for rxTrafficDescType values of 5 and 8. Discarded cells are counted in the rxCellDiscard attribute. For basic Vpts, this attribute provides an aggregated total of all rxUpcViolationOnEnforcer2 values for the Vccs associated with the Vpt. The counter wraps to zero if it exceeds its maximum value of (2**64)-1.
(Sheet 23 of 23)			

FR-ATM

"FR-ATM fields" (page 125) describes the Passport accounting fields applicable to frame relay and ATM from mixed protocol calls.

Table 16
FR-ATM fields

Field name	Field type	Field value	Field description
switchType	str	pp	The type of switch that generated this record.
dataType	str	acc or acc_DMId_RDFv	Identifies this record as being an accounting record. If configured, can include: Data Model Identifier (DMId) and RDF version (RDFv).
recordType_first	bit	0 = not first record 1 = first record	Indicates whether or not this is the first call accounting record for a call.
recordType_last	bit	0 = not last record 1 = last record	Indicates whether or not this is the last call accounting record for a call.
recordIdentifier	int	always = 30	Identifies this record as being an FR-ATM accounting record.
(Sheet 1 of 13)			

Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
callConnId	char	32 characters	First 20 bytes indicate the NSAP address of the originating interface. The next 4 bytes indicate the VPI and VCI at the originating connection point. The last 4 bytes represent the counter that is incremented by the interface to ensure that this ID is unique, even when the same VPI and VCI are reused by the interface during the same billing interval. The remaining bytes are zeros. They are used only for padding and are not apart of the call ID. This attribute may be used by downstream processing systems to correlate the accounting records issued for the same call at different interfaces (nodes) in the network. For SPVCs (soft permanent virtual connections), the callConnId is generated by the switch and is unique for every call in the network. For NPVCs (nailed-up permanent virtual connections), the callConnId is provisioned in the correlationTag attribute of the FrAtm Dlci Siwf Npvc component.
callType	int	0 = NPVC 1 = SPVC	Indicates the type of call: NPVC (nailed-up permanent virtual connection), or SPVC (soft permanent virtual connection).
interworkingType	int	0 = FRF.8 1 = FRF.5	The type of Frame Relay - ATM interworking.
(Sheet 2 of 13)			

Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
callingNodeIdentifier	int	256 - 49151	This attribute identifies the calling (originating) node by a unique number assigned to each node in the ModuleData component.
callingCustomerIdentifier	int	0 - 8191	An optional identifier for the calling end of the call in the Customer Network Management (CNM) and Virtual Private Network environment. The value in this field is taken from the Customer Network Management Identifier (CID) field in the DNA-CUG envelope for the access line. The value 0 is the default value reserved for all ports that are not associated with a Virtual Private Network and for which CNM is not provided.
callingNsapAddr	hex		The NSAP address of the calling party. This field is not included for PVC calls.
callingEndPointNsapAddr	hex		The NSAP address of the calling end point.
callingDlci	int	0 - 4095 Frame Relay: 16 - 1007	The Logical Channel Number of the calling end.
callingVpi	int		The VPI of VCC associated with the calling DLCI.
callingVci	int		The VCI of VCC associated with the calling DLCI.
calledNodeIdentifier	int	256 - 49151	This attribute identifies the called (terminating) node by a unique number assigned to each node in the ModuleData component.

(Sheet 3 of 13)

Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
calledCustomerIdentifier	int	0 - 8191	An optional identifier for the called end of the call in the Customer Network Management (CNM) and Virtual Private Network environment. The value in this field is taken from the Customer Network Management Identifier (CID) field in the DNA-CUG envelope for the access line. The value 0 is the default value reserved for all ports that are not associated with a Virtual Private Network and for which CNM is not provided.
calledNsapAddr	hex		The NSAP address of the called party. This field is not included for PVC calls.
calledEndPointNsapAddr	hex		The NSAP address of the called end point.
calledDlci	int	0 - 4095 Frame Relay: 16 - 1007	The Logical Channel Number of the called end.
calledVpi	int		The VPI of VCC associated with the called DLCI.
calledVci	int		The VCI of VCC associated with the called DLCI.
atmCallTermCauseValue	int		The call termination cause value as defined by the ATM Forum UNI 3.1 specification. For non-final and Siwf NPVC records, this value is 0.

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Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
callingCir	int		The calling end provisioned CIR (Committed Information Rate). If this record is generated by the called end, this is the provisioned egress CIR. If egress CIR is not provisioned, this is just the CIR. This rate is rounded up to the next 800 bits per second.
callingEir	int		The calling end provisioned EIR (Excess Information Rate). If this record is generated by the called end, this is the provisioned egress EIR. If egress EIR is not provisioned, this is just the EIR. This rate is provisioned as excessive burst size and is rounded up to the next 800 bytes per second.
callingServiceType	int	0 - 255	Indicates the service type of the interface that generated the accounting record. The value is provisioned in field *accountClass* for each ATM interface (under the UNI or IISP component). This field is present only for incoming calls.
callingCollectReason_bill	bit	0 = not for billing 1 = for billing	Indicates whether or not this record is for billing purposes.
callingCollectReason_test	bit	0 = not for testing 1 = for testing	Indicates whether or not this record is for testing purposes.
callingCollectReason_ study	bit	0 = not for study 1 = for study	Indicates whether or not this record is for study purposes.
callingCollectReason_audit	bit	0 = not for audit 1 = for audit	Indicates whether or not this record is for audit purposes.
callingCollectReason_force	bit	0 = not forced 1 = forced	Indicates whether or not data collection was forced by the calling end.

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Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
callingDse	int	0 - 255	Defines the Data Service Exchange associated with the ATM interface. This attribute reflects the value provisioned in field *serviceExchange* of component UNI or IISP. This field is present only for incoming calls.
calledCir	int		If this record is generated by the calling end, this is the provisioned egress CIR (Committed Information Rate). If this record is generated by the called end, this is the provisioned CIR. If egress CIR is not provisioned, this is just the CIR. This rate is rounded up to the next 800 bits per second.
calledEir	int		If this record is generated by the calling end, this is the provisioned egress EIR (Excess Information Rate). If this record is generated by the called end, this is the provisioned EIR. If egress EIR is not provisioned, this is just the EIR. This rate is provisioned as excessive burst size and is rounded up to the next 800 bytes per second.
calledServiceType	int	0 - 255	Indicates the service type of the interface that generated the accounting record. The value is provisioned in field *accountClass* for each ATM interface (under the UNI or IISP component). This field is present only for outgoing calls.

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Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
calledCollectReason_bill	bit	0 = not for billing 1 = for billing	Indicates whether or not this record is for billing purposes.
calledCollectReason_test	bit	0 = not for testing 1 = for testing	Indicates whether or not this record is for testing purposes.
calledCollectReason_ study	bit	0 = not for study 1 = for study	Indicates whether or not this record is for study purposes.
calledCollectReason_audit	bit	0 = not for audit 1 = for audit	Indicates whether or not this record is for audit purposes.
calledCollectReason_force	bit	0 = not forced 1 = forced	Indicates whether or not data collection was forced by the called end.
calledDse	int	0 - 255	Defines the Data Service Exchange associated with the ATM interface. This attribute reflects the value provisioned in field *serviceExchange* of component UNI or IISP. This field is present only for outgoing calls.
flags_calledGenerated	bit	0 = calling end 1 = called end	Indicates which end generated this call accounting record.
flags_calledCleared	bit	0 = calling end 1 = called end	The callCleared bit is initialized to 0 on the calling end and initialized to 1 on the called end. If the call is cleared on the local switch, that switch retains its value for the callCleared bit and sends a disconnect message to the other end. When a switch receives a disconnect message, the switch takes the value for the callCleared flag from the remote end.

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Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
startTime	time		This is the start time of the period accounted for in the record. It is in the format YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is day, T is start of the time data, hh is hour, mm is minute, and ss is seconds. May also contain `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds. In the first accounting record for a call, this field represents the time the call was set up. In subsequent records, this field represents the time the current accounting collection interval started. When TODA is enabled, the collection intervals are delimited by the entries in the TODA schedule (the Col/accounting collectionTimes field). When TODA is disabled, they are delimited by a timer that expires every 12-hours (per call). A zero value in any of the time fields causes the field to be truncated. The T indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the T indicator).

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Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
endTime	time		This is the end time of the period accounted for in the record. It is in the format YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is day, T is start of the time data, hh is hour, mm is minute, and ss is seconds. May also contain `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds. In non-final accounting records, this field represents the time the current accounting collection interval ended. In the final record for a call, this field represents the time the call was cleared. When TODA is enabled, the collection intervals are delimited by the entries in the TODA schedule (the Col/ accounting collectionTimes field). When TODA is disabled, they are delimited by a timer that expires every 12-hours (per call). A zero value in any of the time fields causes the field to be truncated. The T indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the T indicator).

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Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
elapsedTime	int		The duration of the accounting interval in 0.1 second increments. This is the true duration of the accounting interval, measured independently of the start and end time (since start time and end time can be affected by the adjustment of the clock, elapsed time can be shorter or longer than the difference between them). For calls terminated in setup the elapsed time is set to 0.
callingEgressBytes	L_int		The total number of bytes sent to the link at the calling end.
callingIngressBytes	L_int		The total number of bytes received from the link at the calling end.
callingEgressFrames	L_int		The total number of frames sent to the link at the calling end.
callingIngressFrames	L_int		The total number of frames received from the link at the calling end.
callingEirEgressBytes	L_int		The total number of EIR bytes sent to the link at the calling end.
callingEirIngressBytes	L_int		The total number of EIR bytes received from the link at the calling end.
callingEirEgressFrames	L_int		The total number of EIR frames sent to the link at the calling end.
callingEirIngressFrames	L_int		The total number of EIR frames received from the link at the calling end.

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Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
callingDiscardedBytes	L_int		The total number of bytes discarded at the calling end due to rate enforcement.
callingDiscardedFrames	L_int		The total number of frames discarded at the calling end due to rate enforcement.
calledEgressBytes	L_int		The total number of bytes sent to the link at the called end.
calledIngressBytes	L_int		The total number of bytes received from the link at the called end.
calledEgressFrames	L_int		The total number of frames sent to the link at the called end.
calledIngressFrames	L_int		The total number of frames received from the link at the called end.
calledEirEgressBytes	L_int		The total number of EIR bytes sent to the link at the called end.
calledEirIngressBytes	L_int		The total number of EIR bytes received from the link at the called end.
calledEirEgressFrames	L_int		The total number of EIR frames sent to the link at the called end.
calledEirIngressFrames	L_int		The total number of EIR frames received from the link at the called end.
calledDiscardedBytes	L_int		The total number of bytes discarded at the called end due to rate enforcement.
calledDiscardedFrames	L_int		The total number of frames discarded at the called end due to rate enforcement.

(Sheet 11 of 13)

Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
callingTransferPriority	int	0 - 15 Supported by Passport frame relay: 0, 6, 9, 11.	The transfer priority is a preference specified by an application according to its time-sensitivity requirement. Frames with high transfer priority are served by the network before the frames with normal priority. The frame relay transfer priority in Passport determines characteristics: trunk queue (among interrupting, delay, throughput), routing metric (between delay and throughput) and frame relay egress queues (between high and normal priority).
calledTransferPriority	int	0 - 15 Supported by Passport frame relay: 0, 6, 9, 11.	The transfer priority is a preference specified by an application according to its time-sensitivity requirement. Frames with high transfer priority are served by the network before the frames with normal priority. The frame relay transfer priority in Passport determines characteristics: trunk queue (among interrupting, delay, throughput), routing metric (between delay and throughput) and frame relay egress queues (between high and normal priority).

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Table 16 (Continued)
FR-ATM fields

Field name	Field type	Field value	Field description
circuitId	string		This attribute indicates a unique string, set by the operator as the "correlationTag" provisioned attribute, which identifies the call for accounting purposes. Downstream processing uses this attribute to correlate accounting records issued at different nodes in the network. Typically, the attribute is provisioned, as the correlationTag, with the same value at both ends of the connection, but this is not mandatory. As a default, there is no correlationTag provisioned against the DLCI.
(Sheet 13 of 13)			

Voice networking

The BDF record for Passport Voice Networking includes those fields used by usage-based accounting for voice traffic on Passport switches.

Usage-based accounting includes the requirement to collect per-call data and timing information.

Accounting can be enabled at one end of the switched connection (single-ended accounting) or at both ends of the switched connection (double-ended accounting).

Double-ended accounting is when accounting records are generated at both ends of a call. Both the destination and source Passport nodes generate accounting records for the same call. The voice networking accounting software at each end Passport node do not communicate with each other or exchange accounting information other than the source Passport sends the callCorrelationIdentifier value to the destination Passport. The common

callCorrelationIdentifier value is included in all accounting records generated by both Passport switches to enable down-stream software to correlate collected accounting records.

Single-ended accounting must not be confused with egress accounting. Single-ended accounting is when one end Passport, in the process of double-ended accounting, is able to perform single-ended accounting by disabling accounting on one end Passport involved in the call.

"Voice networking" (page 138) describes fields for Voice Networking accounting on Passport switches (in the order in which they appear in a Passport BDF record):

Table 17
Voice networking

Field name	Field type	Field value	Field description
switchType	str	pp	The type of switch that generated this record.
dataType	str	acc or acc_DMId_RDFv	Identifies this record as being an accounting record. If configured, can include: Data Model Identifier (DMId) and RDF version (RDFv).
recordType_first	bit	0 = not first record 1 = first record	Indicates whether or not this is the first call accounting record for a call.
recordType_last	bit	0 = not last record 1 = last record	Indicates whether or not this is the last call accounting record for a call.
recordIdentifier	int	always = 40	Identifies this record as being a voice network accounting record.

(Sheet 1 of 15)

Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
callCorrelationIdentifier	hex		A unique value assigned to all accounting records generated by calling- and called-Passport nodes for this call. The *callCorrelationId* is used during post processing of accounting records to correlate records generated by different Passports. The *callCorrelationId* is always unique in the network with respect to *callCorrelationIds* generated by other function processors. The value of *callCorrelationId* repeats after 16,777,216 calls on the same, continually active function processor.
(Sheet 2 of 15)			

Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
startTime	time		This is the start time of the period accounted for in the record. It is in the format YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is for the day, T is start of the time data, hh is hour, mm isminute, and ss is seconds. May contain `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds. In the first accounting record for a call, this field represents the time the call was set up. In subsequent records, this field represents the time the current accounting collection interval started. When TODA is enabled, the collection intervals are delimited by the entries in the TODA schedule (the Col/accounting *collectionTimes* field). When TODA is disabled, they are delimited by a timer that expires every 12-hours (per call). A zero value in any of the time fields causes the field to be truncated. The T indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the T indicator).
(Sheet 3 of 15)			

Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
endTime	time		This is the end time of the period accounted for in the record. It is in the format YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is day, T is start of the time data, hh is hour, mm is minute, and ss is seconds. May contain `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds. In non-final accounting records, this field represents the time the current accounting collection interval ended. In the final record for a call, this field represents the time the call was cleared. When TODA is enabled, the collection intervals are delimited by the entries in the TODA schedule (the Col/ accounting *collectionTimes* field). When TODA is disabled, they are delimited by a timer that expires every 12-hours (per call). A zero value in any of the time fields causes the field to be truncated. The T indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the T indicator).

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Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
elapsedTime	int		The duration of the accounting interval in 0.1 second increments. This is the true duration of the accounting interval, measured independently of the start and end time (since start time and end time can be affected by the adjustment of the clock, elapsed time can be shorter or longer than the difference between them). For calls terminated in setup the elapsed time is set to 0.
localNodeIdentifier	int		The *nodeID* of the Passport that generated the accounting record. *nodeID* is assigned to each node in the *ModuleData* component.
localLogicalProcessor	int		The logical processor used by the service issuing the accounting record.
localPort	int		The port used by the service issuing the accounting record.
localTimeslots_1	bit	0 = unused 1 = used	A timeslot that can be used by the Passport issuing the accounting record. In ISDN, multiple timeslots (maximum 31) can be assigned to a single call. Accounting records are not generated for call attempts that fail to get a timeslot.
localTimeslots_10	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_11	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_12	bit	0 = unused 1 = used	See field description for localTimeslots_1
(Sheet 5 of 15)			

Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
localTimeslots_13	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_14	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_15	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_16	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_17	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_18	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_19	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_2	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_20	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_21	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_22	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_23	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_24	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_25	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_26	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_27	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_28	bit	0 = unused 1 = used	See field description for localTimeslots_1

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Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
localTimeslots_29	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_3	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_30	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_31	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_4	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_5	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_6	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_7	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_8	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_9	bit	0 = unused 1 = used	See field description for localTimeslots_1
callingNumber	str		The calling number signalled to the Passport. This field can have a length of 0 if the calling number was not provided. The maximum length is 16 digits.
localDlci	int		The local dlci number of the interface. dlci is sometimes called LCN - logical channel number. This number is assigned to the call request by the node generating this accounting record.

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Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
calledNumber	str		The called number signalled to the Passport. If *Vroute/n Acct digitsSuppressed* was provisioned with a non-zero value, that number of trailing digits in *calledNumber* are replaced with “X”s. The maximum length is 32 digits.
connectedNumber	str		The connected number signalled to the Passport. This field can have a length of zero if the connected number was not provided. The maximum length is 16 digits.
sourceNpi	int		The Numbering Plan Indicator (NPI) of the *sourceDna*. This is the value sent by the source accounting node to the destination accounting node during call setup. The *sourceDna* can belong to X.121 or E.164 plans. X.121 is used in packet switched data networks.
sourceDna	bcd		The data network address (the unique identifier) of the calling addressable switched voice application. This is the value sent by the source accounting node to the destination accounting node during call setup. This value is valid in accounting records generated by both ends of the call.
destinationNpi	int		The Numbering Plan Indicator (NPI) of the destinationDNA. This is the value sent by the destination accounting node to the source accounting node during call setup. The *destinationDna* may belong to X.121 or E.164 plans. X.121 is used in packet switched data networks.

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Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
destinationDna	bcd		The data network address (the unique identifier) of the called addressable switched voice application *VoiceRoute*. This is the value sent by the destination accounting node to the source accounting node during call setup. This field value is valid in accounting records generated by both ends of the call.
callVncs	int		The *VoiceNetworkingCallServer* used locally for this call by it's instance value. This field has a value of 0 in an accounting record generated by a terminating end Passport
callProfile	int		The *VoiceProfile* instance used locally for this call. *VoiceProfile* instance values are only unique with respect to a particular *Vncs* instance. This field has a value of 0 in an accounting record generated by a terminating end Passport.
vnetCallType	int	0 = voice (all other calls 1 = data (ISDN data call) 2 = modem (a 2100Hz tone was detected) 3 = faxRelay 4 = modemRelay	The type of call for which this accounting record is issued.

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Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
clearCause	int		Indicates the reason for a call termination. This field is set to zero (0) for intermediate records. For more information, see 241-5701-900 *Passport 7400, 15000, 20000 Frame Relay UNI Guide*.
diagnosticCode	int		This is the clear diagnostic indicator. It is set to zero (0) on non-final records, and to the network diagnostic code of the call clear on the final record. For more information, see 241-5701-900 *Passport 7400, 15000, 20000 Frame Relay UNI Guide*.
localServiceType	int		The service supported by the port used by the local interface. This number is provisioned on each interface as *accountClass*.
localCollectReason_bill	bit	0 = not for billing 1 = for billing	Indicates whether or not this record is for billing purposes.
localCollectReason_test	bit	0 = not for testing 1 = for testing	Indicates whether or not this record is for testing purposes.
localCollectReason_study	bit	0 = not for study 1 = for study	Indicates whether or not this record is for study purposes.
localCollectReason_audit	bit	0 = not for audit 1 = for audit	Indicates whether or not this record is for audit purposes.
localCollectReason_force	bit	0 = not forced 1 = forced	Indicates whether or not data collection was forced by the calling end.
localDse	int		The local end Data Service Exchange (DSE), provisioned as an arbitrary number in the *serviceExchange* attribute.

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Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
localCustomerIdentifier	int		A number assigned in each service to a customer. This field identifies the customer in the Customer Network Management on the end that generated the accounting record.
vnetFlags_answered	bit	0 = false 1 = true	The call was answered.
vnetFlags_bumped	bit	0 = false 1 = true	The call was bumped to another path by a higher priority call in the accounting interval reported by this record.
vnetFlags_clearedInSubnet	bit	0 = outside 1 = inside	Indicates if the call was cleared from inside or from outside of the Passport subnet. This flag is only valid in the final accounting record.
vnetFlags_faxRelayDown speed	bit	0 = false 1 = true	The fax relay call, accounted by this record, lowered the relay rate in the accounting interval reported by this record.
vnetFlags_frameCounts Valid	bit	0 = false 1 = true	The frame counts in this accounting record are valid.
vnetFlags_optimized	bit	0 = false 1 = true	The path of the call was altered in the accounting interval reported by this record.
vnetFlags_originating	bit	0 = far-end 1 = local-end	Indicates which end originated the call.
vnetFlags_tandemPass Through	bit	0 = false 1 = true	The Passport that generated this record used tandem pass-through for this call.
vnetFlags_unique	bit	0 = false 1 = true	If this is set to 1, it guarantees that only the local end generated one, or more, accounting records for this call.

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Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
callRingTime	int	0 - 255	The time in seconds between the setup indication and the call answered indication for answered calls. For unanswered calls, this field indicates the time between the setup indication and the call release indication. For values greater than 255 seconds this field indicates 255 seconds.
framesAtRate1ToNetwork	L_int		The total number of rate 1 frames sent to the network.
framesAtRate2ToNetwork	L_int		The total number of rate 2 frames sent to the network.
framesAtRate3ToNetwork	L_int		The total number of rate 3 frames sent to the network.
framesAtRate1From Network	L_int		The total number of rate 1 frames received from the network.
framesAtRate2From Network	L_int		The total number of rate 2 frames received from the network.
framesAtRate3From Network	L_int		The total number of rate 3 frames received from the network.
rate1	int		The bit rate of the rate 1 statistics, in units of bits per second.
rate2	int		The bit rate of the rate 2 statistics, in units of bits per second.
rate3	int		The bit rate of the rate 3 statistics, in units of bits per second.
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Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
rate1Compression Algorithm	int	0 = none 1 = g711 2 = g726 3 = 9728 4 = g729 5 = faxRelay 6 = modemRelay	The compression algorithm used for the rate 1 statistics. If no compression algorithm is used, the value is *none*.
rate2Compression Algorithm	int	0 = none 1 = g711 2 = g726 3 = 9728 4 = g729 5 = faxRelay 6 = modemRelay	The compression algorithm used for the rate 2 statistics. If no compression algorithm is used, the value is *none*.
rate3Compression Algorithm	int	0 = none 1 = g711 2 = g726 3 = 9728 4 = g729 5 = faxRelay 6 = modemRelay	The compression algorithm used for the rate 3 statistics. If no compression algorithm is used, the value is *none*.
rate1FrameSize	int	0 - 999	The size of the rate 1 frames, in bytes.
rate2FrameSize	int	0 - 999	The size of the rate 2 frames, in bytes.
rate3FrameSize	int	0 -999	The size of the rate 3 frames, in bytes.
frmLostInNetwork	int	0 - 65535	The number of frames lost in the network. If this value is greater than 65535, the value reported is 65535.

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Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
frmDumped	int	0 - 255	The number of frames dumped to limit the size of the egress queue. *frmDumped* can be an indication of persistent network clock synchronization problems between the interfaces involved in the calls. If this value is greater than 255, the value reported is 255.
frmUnderRuns	int	0 - 255	The number of frames that arrived late to prevent the egress queue from becoming empty. *frmUnderRuns* are an indication of network clock synchronization problems between the interfaces involved in the calls. If it is greater than 255, the value reported is 255.
localMpanlInstanceNo	int	0 - 255	The MPANL instance number that is issuing this accounting record.
mpaVoiceFlags_answered	bit	0 = false 1 = true	The call was answered.
mpaVoiceFlags_originating	bit	0 = far-end 1 = local-end	Indicates which end originated the call.
mpaVoiceFlags_unique	bit	0 = false 1 = true	If this is set to 1, it guarantees that only the local end generated one, or more, accounting records for this call.
mpaVoiceFlags_ clearedInSubnet	bit	0 = outside 1 = inside	Indicates if the call was cleared from inside or from outside of the Passport subnet of this MPANL instance. This flag is only valid in the final accounting record.

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Table 17 (Continued)
Voice networking

Field name	Field type	Field value	Field description
callAnswerTime	int	0 - 255	The time in seconds between the setup indication and call answered indication for answered calls. For unanswered calls, this field indicates the time between the setup indication and the call release indication. For values greater than 255, 255 seconds is reported.

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MPANL voice

"MPANL voice" (page 153) describes fields for voice calls on the MPANL of Passport switches (in the order in which they appear in a Passport BDF record):

Table 18
MPANL voice

Field name	Field type	Field value	Field description
switchType	str	pp	The type of switch that generated this record.
dataType	str	acc or acc_DMId_RDFv	Identifies this record as being an accounting record. If configured, can include: Data Model Identifier (DMId) and RDF version (RDFv).
recordType_first	bit	0 = not first record 1 = first record	Indicates whether or not this is the first call accounting record for a call.
recordType_last	bit	0 = not last record 1 = last record	Indicates whether or not this is the last call accounting record for a call.
recordIdentifier	int	always = 40	Identifies this record as being a voice network accounting record.
callCorrelationIdentifier	hex		A unique value assigned to all accounting records generated by calling- and called-Passport nodes for this call. The *callCorrelationId* is used during post processing of accounting records to correlate records generated by different Passports. The *callCorrelationId* is always unique in the network with respect to *callCorrelationIds* generated by other function processors. The value of *callCorrelationId* repeats after 16,777,216 calls on the same, continually active function processor.

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Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
startTime	time		This is the start time of the period accounted for in the record. It is in the format YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is for the day, T is start of the time data, hh is hour, mm isminute, and ss is seconds. May contain `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds. In the first accounting record for a call, this field represents the time the call was set up. In subsequent records, this field represents the time the current accounting collection interval started. When TODA is enabled, the collection intervals are delimited by the entries in the TODA schedule (the Col/accounting *collectionTimes* field). When TODA is disabled, they are delimited by a timer that expires every 12-hours (per call). A zero value in any of the time fields causes the field to be truncated. The T indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the T indicator).

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Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
endTime	time		This is the end time of the period accounted for in the record. It is in the format YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is day, T is start of the time data, hh is hour, mm is minute, and ss is seconds. May contain `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds. In non-final accounting records, this field represents the time the current accounting collection interval ended. In the final record for a call, this field represents the time the call was cleared. When TODA is enabled, the collection intervals are delimited by the entries in the TODA schedule (the Col/ accounting *collectionTimes* field). When TODA is disabled, they are delimited by a timer that expires every 12-hours (per call). A zero value in any of the time fields causes the field to be truncated. The T indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the T indicator).

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Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
elapsedTime	int		The duration of the accounting interval in 0.1 second increments. This is the true duration of the accounting interval, measured independently of the start and end time (since start time and end time can be affected by the adjustment of the clock, elapsed time can be shorter or longer than the difference between them). For calls terminated in setup the elapsed time is set to 0.
localNodeIdentifier	int		The *nodeID* of the Passport that generated the accounting record. *nodeID* is assigned to each node in the *ModuleData* component.
localLogicalProcessor	int		The logical processor used by the service issuing the accounting record.
localPort	int		The port used by the service issuing the accounting record.
localTimeslots_1	bit	0 = unused 1 = used	A timeslot that can be used by the Passport issuing the accounting record. In ISDN, multiple timeslots (maximum 31) can be assigned to a single call. Accounting records are not generated for call attempts that fail to get a timeslot.
localTimeslots_10	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_11	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_12	bit	0 = unused 1 = used	See field description for localTimeslots_1
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Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
localTimeslots_13	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_14	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_15	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_16	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_17	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_18	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_19	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_2	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_20	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_21	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_22	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_23	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_24	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_25	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_26	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_27	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_28	bit	0 = unused 1 = used	See field description for localTimeslots_1

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Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
localTimeslots_29	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_3	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_30	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_31	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_4	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_5	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_6	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_7	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_8	bit	0 = unused 1 = used	See field description for localTimeslots_1
localTimeslots_9	bit	0 = unused 1 = used	See field description for localTimeslots_1
callingNumber	str		The calling number signalled to the Passport. This field can have a length of 0 if the calling number was not provided. The maximum length is 16 digits.
localDlci	int		The local dlci number of the interface. dlci is sometimes called LCN - logical channel number. This number is assigned to the call request by the node generating this accounting record.

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Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
calledNumber	str		The called number signalled to the Passport. If *Vroute/n Acct digitsSuppressed* was provisioned with a non-zero value, that number of trailing digits in *calledNumber* are replaced with “X”s. The maximum length is 32 digits.
connectedNumber	str		The connected number signalled to the Passport. This field can have a length of zero if the connected number was not provided. The maximum length is 16 digits.
sourceNpi	int		The Numbering Plan Indicator (NPI) of the *sourceDna*. This is the value sent by the source accounting node to the destination accounting node during call setup. The *sourceDna* can belong to X.121 or E.164 plans. X.121 is used in packet switched data networks.
sourceDna	bcd		The data network address (the unique identifier) of the calling addressable switched voice application. This is the value sent by the source accounting node to the destination accounting node during call setup. This value is valid in accounting records generated by both ends of the call.
destinationNpi	int		The Numbering Plan Indicator (NPI) of the destinationDNA. This is the value sent by the destination accounting node to the source accounting node during call setup. The *destinationDna* may belong to X.121 or E.164 plans. X.121 is used in packet switched data networks.

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Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
destinationDna	bcd		The data network address (the unique identifier) of the called addressable switched voice application *VoiceRoute*. This is the value sent by the destination accounting node to the source accounting node during call setup. This field value is valid in accounting records generated by both ends of the call.
callVncs	int		The *VoiceNetworkingCallServer* used locally for this call by it's instance value. This field has a value of 0 in an accounting record generated by a terminating end Passport
callProfile	int		The *VoiceProfile* instance used locally for this call. *VoiceProfile* instance values are only unique with respect to a particular *Vncs* instance. This field has a value of 0 in an accounting record generated by a terminating end Passport.
vnetCallType	int	0 = voice (all other calls 1 = data (ISDN data call) 2 = modem (a 2100Hz tone was detected) 3 = faxRelay 4 = modemRelay	The type of call for which this accounting record is issued.

Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
clearCause	int		Indicates the reason for a call termination. This field is set to zero (0) for intermediate records. For more information, see 241-5701-900 *Passport 7400, 15000, 20000 Frame Relay UNI Guide*.
diagnosticCode	int		This is the clear diagnostic indicator. It is set to zero (0) on non-final records, and to the network diagnostic code of the call clear on the final record. For more information, see 241-5701-900 *Passport 7400, 15000, 20000 Frame Relay UNI Guide*.
localServiceType	int		The service supported by the port used by the local interface. This number is provisioned on each interface as *accountClass*.
localCollectReason_bill	bit	0 = not for billing 1 = for billing	Indicates whether or not this record is for billing purposes.
localCollectReason_test	bit	0 = not for testing 1 = for testing	Indicates whether or not this record is for testing purposes.
localCollectReason_study	bit	0 = not for study 1 = for study	Indicates whether or not this record is for study purposes.
localCollectReason_audit	bit	0 = not for audit 1 = for audit	Indicates whether or not this record is for audit purposes.
localCollectReason_force	bit	0 = not forced 1 = forced	Indicates whether or not data collection was forced by the calling end.
localDse	int		The local end Data Service Exchange (DSE), provisioned as an arbitrary number in the *serviceExchange* attribute.

(Sheet 9 of 14)

Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
localCustomerIdentifier	int		A number assigned in each service to a customer. This field identifies the customer in the Customer Network Management on the end that generated the accounting record.
vnetFlags_answered	bit	0 = false 1 = true	The call was answered.
vnetFlags_bumped	bit	0 = false 1 = true	The call was bumped to another path by a higher priority call in the accounting interval reported by this record.
vnetFlags_clearedInSubnet	bit	0 = outside 1 = inside	Indicates if the call was cleared from inside or from outside of the Passport subnet. This flag is only valid in the final accounting record.
vnetFlags_faxRelayDown speed	bit	0 = false 1 = true	The fax relay call, accounted by this record, lowered the relay rate in the accounting interval reported by this record.
vnetFlags_frameCounts Valid	bit	0 = false 1 = true	The frame counts in this accounting record are valid.
vnetFlags_optimized	bit	0 = false 1 = true	The path of the call was altered in the accounting interval reported by this record.
vnetFlags_originating	bit	0 = far-end 1 = local-end	Indicates which end originated the call.
vnetFlags_tandemPass Through	bit	0 = false 1 = true	The Passport which generated this record used tandem pass-through for this call.
vnetFlags_unique	bit	0 = false 1 = true	If this is set to 1, it guarantees that only the local end generated one, or more, accounting records for this call.

(Sheet 10 of 14)

Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
callRingTime	int	0 - 255	The time in seconds between the setup indication and the call answered indication for answered calls. For unanswered calls, this field indicates the time between the setup indication and the call release indication. For values greater than 255 seconds this field indicates 255 seconds.
framesAtRate1ToNetwork	L_int		The total number of rate 1 frames sent to the network.
framesAtRate2ToNetwork	L_int		The total number of rate 2 frames sent to the network.
framesAtRate3ToNetwork	L_int		The total number of rate 3 frames sent to the network.
framesAtRate1From Network	L_int		The total number of rate 1 frames received from the network.
framesAtRate2From Network	L_int		The total number of rate 2 frames received from the network.
framesAtRate3From Network	L_int		The total number of rate 3 frames received from the network.
rate1	int		The bit rate of the rate 1 statistics, in units of bits per second.
rate2	int		The bit rate of the rate 2 statistics, in units of bits per second.
rate3	int		The bit rate of the rate 3 statistics, in units of bits per second.
(Sheet 11 of 14)			

Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
rate1Compression Algorithm	int	0 = none 1 = g711 2 = g726 3 = 9728 4 = g729 5 = faxRelay 6 = modemRelay	The compression algorithm used for the rate 1 statistics. If no compression algorithm is used, the value is *none*.
rate2Compression Algorithm	int	0 = none 1 = g711 2 = g726 3 = 9728 4 = g729 5 = faxRelay 6 = modemRelay	The compression algorithm used for the rate 2 statistics. If no compression algorithm is used, the value is *none*.
rate3Compression Algorithm	int	0 = none 1 = g711 2 = g726 3 = 9728 4 = g729 5 = faxRelay 6 = modemRelay	The compression algorithm used for the rate 3 statistics. If no compression algorithm is used, the value is *none*.
rate1FrameSize	int	0 - 999	The size of the rate 1 frames, in bytes.
rate2FrameSize	int	0 - 999	The size of the rate 2 frames, in bytes.
rate3FrameSize	int	0 -999	The size of the rate 3 frames, in bytes.
frmLostInNetwork	int	0 - 65535	The number of frames lost in the network. If this value is greater than 65535, the value reported is 65535.

(Sheet 12 of 14)

Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
frmDumped	int	0 - 255	The number of frames dumped to limit the size of the egress queue. *frmDumped* can be an indication of persistent network clock synchronization problems between the interfaces involved in the calls. If this value is greater than 255, the value reported is 255.
frmUnderRuns	int	0 - 255	The number of frames that arrived late to prevent the egress queue from becoming empty. *frmUnderRuns* are an indication of network clock synchronization problems between the interfaces involved in the calls. If it is greater than 255, the value reported is 255.
localMpanlInstanceNo	int	0 - 255	The MPANL instance number that is issuing this accounting record.
mpaVoiceFlags_answered	bit	0 = false 1 = true	The call was answered.
mpaVoiceFlags_originating	bit	0 = far-end 1 = local-end	Indicates which end originated the call.
mpaVoiceFlags_unique	bit	0 = false 1 = true	If this is set to 1, it guarantees that only the local end generated one, or more, accounting records for this call.
mpaVoiceFlags_ clearedInSubnet	bit	0 = outside 1 = inside	Indicates if the call was cleared from inside or from outside of the Passport subnet of this MPANL instance. This flag is only valid in the final accounting record.
(Sheet 13 of 14)			

Table 18 (Continued)
MPANL voice

Field name	Field type	Field value	Field description
callAnswerTime	int	0 - 255	The time in seconds between the setup indication and call answered indication for answered calls. For unanswered calls, this field indicates the time between the setup indication and the call release indication. For values greater than 255, 255 seconds is reported.

(Sheet 14 of 14)

IP VPN

The BDF record for Passport IP VPN includes usage-based accounting fields for IP traffic between Virtual Private Network (VPN) sites.

"IP VPN fields" (page 167) describes IP VPN accounting fields from Passport switches:

Table 19
IP VPN fields

Field name	Field type	Field value	Field description
switchType	str	pp	The type of switch that generated this record.
dataType	str	acc or acc_DMId_RDFv	Identifies this record as being an accounting record. If configured, can include: Data Model Identifier (DMId) and RDF version (RDFv).
recordType_first	bit	0 = not first record 1 = first record	Indicates whether or not this is the first call accounting record for a call.
recordType_last	bit	0 = not last record 1 = last record	Indicates whether or not this is the last call accounting record for a call.
recordIdentifier	int	always = 60	Identifies this record as being a IP VPN accounting record.
vpiId	int	0 - 2047	Indicates the Virtual Private Intranet (VPI) associated with this Virtual Router (see vrInstance). If this attribute is not set to the default value, it must be unique on the Passport. Interconnected Virtual Routers on different Passports should have the same VPI value. Note that this attribute will be obsoleted in the near future. It's functionality is replaced by the vpnId. Any affected tools using this attribute should be converted to use the vpnId attribute instead.

(Sheet 1 of 8)

Table 19 (Continued)
IP VPN fields

Field name	Field type	Field value	Field description
virtualPrivateNetwork Identifier (vpnId)	str	7 character, dashed-hex default = 00-00-00-00-00-00-00	Indicates the VPN associated with this Virtual Router (see vrInstance). This is a globally unique identifier composed of a three-octet long Organizationally Unique Identifier (OUI) followed by a four-octet long VPN index. The value "00-00-00-00-00-00-00" identifies an unspecified vpnId and should be set to other non-zero values when the autoDiscovery attribute under same virtual router vr/x ip tunnel msep/y is enabled.
localCollectReason_bill	bit	0 = not for billing 1 = for billing	Indicates whether or not this record is for billing purposes.
localCollectReason_test	bit	0 = not for testing 1 = for testing	Indicates whether or not this record is for testing purposes.
localCollectReason_study	bit	0 = not for study 1 = for study	Indicates whether or not this record is for study purposes.
localCollectReason_audit	bit	0 = not for audit 1 = for audit	Indicates whether or not this record is for audit purposes.
localCollectReason_force	bit	0 = not forced 1 = forced	Indicates whether or not data collection was forced by the calling end.
protocolPortIfIndex	int		The integer index of the protocol port that generated this record.
protocolPortInstance	str		The instance name of the protocol port that generated this record.
mediaType	int	0 = pt-to-pt 1 = pt-to-mpt 2 = frDte 3 = atmMpe	The type of IP connection: point-to-point tunnel (pt-to-pt), point-to-multipoint tunnel (pt-to-mpt), frDte, or atmMpe..
localNodeIdentifier	int		The *nodeID* of the Passport that generated the accounting record. *nodeID* is assigned to each node in the *ModuleData* component.

(Sheet 2 of 8)

Table 19 (Continued)
IP VPN fields

Field name	Field type	Field value	Field description
vrInstance	str		The virtual router (VR) that generated this record.
startTime	time		This is the start time of the period accounted for in the record. It is in the format YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is day, T is start of the time data, hh is hour, mm is minute, and ss is seconds. May contain a `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds. In the first accounting record for a call, this field represents the time the call was set up. In subsequent records, this field represents the time the current accounting collection interval started. When TODA is enabled, the collection intervals are delimited by the entries in the TODA schedule (the Col/accounting *collectionTimes* field). When TODA is disabled, they are delimited by a timer that expires every 12-hours (per call). A zero value in any of the time fields causes the field to be truncated. The `T` indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the `T` indicator).

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Table 19 (Continued)
IP VPN fields

Field name	Field type	Field value	Field description
endTime	time		This is the start time of the period accounted for in the record. It is in the format YYYYMMDDThhmmss, where: YYYY is year, MM is month, DD is day, T is start of the time data, hh is hour, mm is minute, and ss is seconds. May contain a `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is microseconds.. In non-final accounting records, this field represents the time the current accounting collection interval ended. In the final record for a call, this field represents the time the call was cleared. When TODA is enabled, the collection intervals are delimited by the entries in the TODA schedule (the Col/ accounting *collectionTimes* field). When TODA is disabled, they are delimited by a timer that expires every 12-hours (per call). A zero value in any of the time fields causes the field to be truncated. The T indicator is dropped if the record begins at exactly midnight. For example, `19970627T120300` is displayed as `19970627T1203` (the `00` seconds have been truncated) and `19970627T000000` is displayed as `19970627` (all of the time fields have been truncated, including the T indicator).

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Table 19 (Continued)
IP VPN fields

Field name	Field type	Field value	Field description
elapsedTime	int		The duration of the accounting interval in 0.1 second increments. This is the true duration of the accounting interval, measured independently of the start and end time (since start time and end time can be affected by the adjustment of the clock, elapsed time can be shorter or longer than the difference between them). For calls terminated in setup the elapsed time is set to 0.
ipTunnelSrcAddr	IP		The source IP Tunnel address in the shared domain.This field appears in the accounting record only if the mediaType is point-to-point tunnel or point-to-multipoint tunnel. The field format is ###.###.###.###.
ipTunnelDestAddr	IP		The destination IP Tunnel address in the shared domain.This field appears in the accounting record only if the mediaType is point-to-point tunnel or point-to-multipoint tunnel. The field format is ###.###.###.###.
InOctets	L_int		The aggregate number of octets received by the protocol port during the accounting interval.
OutOctets	L_int		The aggregate number of octets transmitted by the protocol port during the accounting interval.
InPkts	L_int		The aggregate number of packets received by the protocol port during the accounting interval.
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Table 19 (Continued)
IP VPN fields

Field name	Field type	Field value	Field description
OutPkts	L_int		The aggregate number of packets transmitted by the protocol port during the accounting interval.
InDiscards	L_int		The aggregate number of packets received by the protocol port and discarded during the accounting interval.
OutDiscards	L_int		The aggregate number of packets transmitted by the protocol port and discarded during the accounting interval.
Cos0InOctets	L_int		The total number of Cos0 octets received by the protocol port during the accounting interval.
Cos0OutOctet	L_int		The total number of Cos0 octets transmitted by the protocol port during the accounting interval.
Cos0InPkts	L_int		The total number of Cos0 packets received by the protocol port during the accounting interval.
Cos0OutPkts	L_int		The total number of Cos0 packets transmitted by the protocol port during the accounting interval.
Cos0InDiscards	L_int		The total number of Cos0 packets received and discarded by the protocol port during the accounting interval.
Cos0OutDiscards	L_int		The total number of Cos0 packets transmitted and discarded by the protocol port during the accounting interval.
Cos1InOctets	L_int		The total number of Cos1 octets received by the protocol port during the accounting interval.
Cos1OutOctet	L_int		The total number of Cos1 octets transmitted by the protocol port during the accounting interval.
(Sheet 6 of 8)			

Table 19 (Continued)
IP VPN fields

Field name	Field type	Field value	Field description
Cos1InPkts	L_int		The total number of Cos1 packets received by the protocol port during the accounting interval.
Cos1OutPkts	L_int		The total number of Cos1 packets transmitted by the protocol port during the accounting interval.
Cos1InDiscards	L_int		The total number of Cos1 packets received and discarded by the protocol port during the accounting interval.
Cos1OutDiscards	L_int		The total number of Cos1 packets transmitted and discarded by the protocol port during the accounting interval.
Cos2InOctets	L_int		The total number of Cos2 octets received by the protocol port during the accounting interval.
Cos2OutOctet	L_int		The total number of Cos2 octets transmitted by the protocol port during the accounting interval.
Cos2InPkts	L_int		The total number of Cos2 packets received by the protocol port during the accounting interval.
Cos2OutPkts	L_int		The total number of Cos2 packets transmitted by the protocol port during the accounting interval.
Cos2InDiscards	L_int		The total number of Cos2 packets received and discarded by the protocol port during the accounting interval.
Cos2OutDiscards	L_int		The total number of Cos2 packets transmitted and discarded by the protocol port during the accounting interval.
Cos3InOctets	L_int		The total number of Cos3 octets received by the protocol port during the accounting interval.

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Table 19 (Continued)
IP VPN fields

Field name	Field type	Field value	Field description
Cos3OutOctet	L_int		The total number of Cos3 octets transmitted by the protocol port during the accounting interval.
Cos3InPkts	L_int		The total number of Cos3 packets received by the protocol port during the accounting interval.
Cos3OutPkts	L_int		The total number of Cos3 packets transmitted by the protocol port during the accounting interval.
Cos3InDiscards	L_int		The total number of Cos3 packets received and discarded by the protocol port during the accounting interval.
Cos3OutDiscards	L_int		The total number of Cos3 packets transmitted and discarded by the protocol port during the accounting interval.
ipTunnelVcgVr	str		The IP tunnel Carrier VR (VCG) is used by the RTD feature, only. This attribute appears in the accounting record only if the mediaType is one of: pointToPointTunnel or pointToMultipointTunnel.
ipTunnelVcgIpAddr	IP		The BGP loopback IP address of the VCR VR used by the RTD feature. This attribute appears in the accounting record only if the mediaType is one of: pointToPointTunnel or pointToMultipointTunnel.
(Sheet 8 of 8)			

Chapter 3
Passport statistics, alarm, log, and scn data

The Management Data Provider (MDP) converts Passport statistics, alarm, log, and state change notification (scn) data to bulk data format (BDF) and stores the converted data in the directory /opt/MagellanMDP/data/mdp/dump/<data_type>. The converted data files are then transferred to a customer host.

For a general description of how Passport spool data is collected, see 241-6001-309 *Preside MDM Management Data Provider User Guide*.

Passport 6000

For a list of documents, see 241-6401-001 *Passport 6400 Documentation Guide*.

Passport 7000/15000

For a list of documents, see 241-5701-001 *Passport 7400, 15000, 20000 Documentation Guide*.

The following topics are discussed in this section:

- "Passport components" (page 176) provides an overview of Passport component definitions.
- "Statistics data" (page 177) describes Passport statistical records.
- "Alarm data" (page 397) describes the purpose of Passport alarms.
- "Log data" (page 397) describes the purpose of Passport logs.
- "SCN data" (page 399) describes the purpose of Passport state change notifications (SCNs) and describes the fields reported by MDP.

Passport components

Since all Passport data refers to Passport components, this section gives a brief overview of Passport component definitions.

Passport components are manageable entities which control Passport software, hardware capabilities, and access services. Passport components are defined in terms of:

Components and subcomponents

Components and subcomponents have the same properties, "sub" indicates the component's relative position within a component hierarchy. In some cases, components may have an operational influence over their respective parent and subcomponents.

Type

A component type refers to a specific type of component.

Instance

When more than one of a component type exists, they are differentiated by an instance value. The instance value is information (such as a decimal or a string) appended to the component type. The component instance is separated from the type by a slash (/). When only one instance of a component exists on the node, the component is identified by its type; that is, without a slash and instance value.

Name

The component name combines the component type with the instance. Every component has a name. A component name is constructed by the concatenation of several component/instance pairs.

Verbs

Verbs are commands applied to Passport components. Commands carry out tasks necessary to provision, maintain and operate a Passport node. Verbs are the action portion of the command.

Within Passport, there are a number of verbs which can be issued against all components. These are called common verbs and are described in the Passport documents. In addition to common commands, there commands that are specific to particular subsystems and their components, see the Passport documents.

Attributes

Components have attributes that define the behavior or informational aspects associated with a specific component. Components can have both operational and provisionable attributes. Component:

- **operational attributes**—provide information or data used for monitoring the operation of Passport and its services. The values of operational attributes are not retained across system restarts.
- **provisionable attribute**—values can be configured by the network operator or administrator so that Passport subsystems or services perform or behave in a certain manner. All components which are provisioned are saved across system restarts. Some components with provisionable attributes are mandatory and are created automatically by their parent.

Groups

The attributes of a component are divided into one or more groups whose members share similar characteristics. The characteristics that may be shared could include operating characteristics, or will define whether the attribute is operational or provisionable.

Statistics data

Passport statistics data is used for mid- to long-term planning and network engineering. On a Passport node, statistics data is available from the spooled data files, only. When statistics data is required, its agent queue size must be set to a non-zero value and its spooling option set to on.

For more information on collecting Passport statistics, including the collection intervals, see the Passport documents.

You can obtain extensive descriptions of each statistic by using the *componentName* and the associated attribute to lookup this statistic in the appropriate Passport document.

The fields and their sequence within the bulk data format (BDF) Passport statistics file are controlled by record description files (RDFs).

The following tables describe those Passport statistics that can be collected for each statistics collection interval.

The following tables are partitioned by the common statistics generated (for example, each service for the *trunk* component):

Table 20
All Passport statistics records

Field name	Field type	Default field position	Field value	Field description
switchType	str	001	pp	The type of switch that generated this record.
dataType	str	002	sta or sta_DMId_RDFv	Identifies this record as being a statistics record. If configured, can include: Data Model Identifier (DMId) and RDF version (RDFv).
componentName	str	003		This field identifies the Passport component type and location for which this statistical record was generated.

Table 20 (Continued)
All Passport statistics records

Field name	Field type	Default field position	Field value	Field description
timeOfRecord	time	004		This field identifies the date and time that this record was produced on switch. It is in the format YYYYMMDDThhmmss, where: YYYY indicates the year, MM is for the month, DD is for the day, T indicates the beginning of the time data, hh is for the hour, mm is for the minute, and ss is for the seconds. May also contain a format of `YYYYMMDDThhmmss.iiiiii`, where: `iiiiii` is for the microseconds.
customerIdentifier	int	005		This field identifies the switch customer.

Table 21
Trunk/PORS statistics

Field name	Field type	Default field position	Field value	Field description
porsNormPktFromIf	L_int			The number of normal priority packets received on the PORS Trunk normal priority queue.
porsNormDiscUnforward FromIf	L_int			The number of normal priority packets discarded from the PORS Trunk normal priority queue.
(Sheet 1 of 3)				

Table 21 (Continued)
Trunk/PORS statistics

Field name	Field type	Default field position	Field value	Field description
porsNormOctetFromIf	L_int			The number of normal priority bytes received on the PORS Trunk normal priority queue.
porsIntPktFromIf	L_int			The number of interrupting priority packets received on the PORS Trunk interrupting priority queue.
porsIntDiscUnforwardFromIf	L_int			The number of interrupting priority packets discarded from the PORS Trunk interrupting priority queue.
porsIntOctetFromIf	L_int			The number of interrupting priority bytes received on the PORS Trunk interrupting priority queue.
porsPktFromIfByPrio	array			The total number of PORS packets received by the Trunk in the last statistics collection interval. It is an array indexed by the emission priorities (ep0, ep1 and ep2) and discard priorities (dp0, dp1, dp2 and dp3) of the packets. The highest emission priority is ep0 and the least discardable priority is dp0.
porsDiscPktFromIfByPrio	array			The total number of PORS packets received and discarded by the Trunk in the last statistics collection interval. It is an array indexed by the emission priorities (ep0, ep1 and ep2) and discard priorities (dp0, dp1, dp2 and dp3) of the packets. The highest emission priority is ep0 and the least discardable priority is dp0.

(Sheet 2 of 3)

Table 21 (Continued)
Trunk/PORS statistics

Field name	Field type	Default field position	Field value	Field description
porsOctetFromIfByPrio	array			The total number of PORS octets received by the Trunk in the last statistics collection interval. It is an array indexed by the emission priorities (ep0, ep1 and ep2) and discard priorities (dp0, dp1, dp2 and dp3) of the packets. The highest emission priority is ep0 and the least discardable priority is dp0.
(Sheet 3 of 3)				

Table 22
Trunk/VNS statistics

Field name	Field type	Default field position	Field value	Field description
vnsPktFromIf	L_int			The number of virtual networking system packets received.
vnsDiscUnforwardFromIf	L_int			The number of virtual networking system packets discarded.
vnsOctetFromIf	L_int			The number of virtual networking system bytes received.
(Sheet 1 of 2)				

Table 22 (Continued)
Trunk/VNS statistics

Field name	Field type	Default field position	Field value	Field description
vnsPktFromIfByPrio	array			The total number of VNS packets of each discard priority received on each of the Trunk's three priority queues. It is a 3x4 array based on three emission priorities (EP0, EP1, EP2) and four discard priorities (DP0, DP1, DP2, DP3).
vnsDiscPktFromIfByPrio	array			The total number of VNS packets of each discard priority received on each of the Trunk's three priority queues and discarded. It is a 3x4 array based on three emission priorities (EP0, EP1, EP2) and four discard priorities (DP0, DP1, DP2, DP3).
vnsOctetFromIfByPrio	array			The total number of VNS octets of each discard priority received on each of the Trunk's three priority queues. It is a 3x4 array based on three emission priorities (EP0, EP1, EP2) and four discard priorities (DP0, DP1, DP2, DP3).
(Sheet 2 of 2)				

Table 23
Trunk/DPNGateway statistics

Field name	Field type	Default field position	Field value	Field description
remoteComponentName	str			The remote end's component name.
measuredSpeedToIfMax	L_int			The maximum measured transmit speed (bit/s) of the link.
measuredSpeedToIfMin	L_int			The minimum measured transmit speed (bit/s) of the link.
measuredSpeedToIf Current	L_int			The current measured transmit speed (bit/s) of the link.
measuredRoundTripDelay Max	int			The maximum measured Round Trip Delay (ms).
measuredRoundTripDelay Min	int			The minimum measured Round Trip Delay (ms).
measuredRoundTripDelay Current	int			The current measured Round Trip Delay (ms).
fwdPktFromIf	L_int			The number of forwarding packets received.
fwdDiscUnforwardFromIf	L_int			The number of forwarding packets discarded.
fwdOctetFromIf	L_int			The number of forwarding bytes received.

Table 24
Trunk/DPRS statistics

Field name	Field type	Default field position	Field value	Field description
dprsPktFromIfByPrio	array			The total number of DPRS packets of each discard priority received on each of the Trunk's three priority queues. It is a 3x4 array based on three emission priorities (EP0, EP1, EP2) and four discard priorities (DP0, DP1, DP2, DP3).
dprsDiscPktFromIfByPrio	array			The total number of DPRS packets of each discard priority received on each of the Trunk's three priority queues and discarded. It is a 3x4 array based on three emission priorities (EP0, EP1, EP2) and four discard priorities (DP0, DP1, DP2, DP3)
dprsOctetFromIfByPrio	array			The total number of DPRS octets of each discard priority received on each of the Trunk's three priority queues. It is a 3x4 array based on three emission priorities (EP0, EP1, EP2) and four discard priorities (DP0, DP1, DP2, DP3)

Table 25
Trunk/ATM statistics

Field name	Field type	Default field position	Field value	Field description
interfaceName	str			The component name of the ATM Layer 2 AAl5 interface that the *AtmAccesscomponent* uses.
txCell	L_int			The total number of cells that have been transmitted to the interface on the Vcc in the last collection interval.
txCellClp	L_int			The total number of cells that have been transmitted to the interface on the Vcc with the CLP=1 in the last collection interval.
txDiscard	L_int			The total number of cells or frames, received from the bus on the Vcc, that have been discarded due to congestion or when the Vcc's interface is disabled in the last collection interval.
txDiscardClp	L_int			The total number of cells or frames, received from the bus on the Vcc, with the CLP=1, that have been discarded due to congestion or when the Vcc's interface is disabled in the last collection interval.
rxCell	L_int			The total number of cells that have been received from the interface on the Vcc in the last collection interval.
rxCellClp	L_int			The total number of cells that have been received from interface on the Vcc, with the CLP=1, in the last collection interval.

(Sheet 1 of 5)

Table 25 (Continued)
Trunk/ATM statistics

Field name	Field type	Default field position	Field value	Field description
rxDiscard	L_int			The total number of received cells or frames from the interface on the Vcc that have been discarded due to congestion, non-conformance with UPC, or AAL reassembly problems in the last collection interval.
rxDiscardClp	L_int			The total number of received cells or frames from the interface on the Vcc, with the CLP=1, that have been discarded due to congestion, non-conformance with UPC, or AAL reassembly problems in the last collection interval.
txCellRateMax	L_int			The maximum transmit cell throughput rate (cells/s) in the last collection interval. It is calculated based on the transmit cell throughput rate sampled every minute in the last collection interval.
txCellRateMin	L_int			The minimum transmit cell throughput rate (cells/s) in the last collection interval. It is calculated based on the transmit cell throughput rate sampled every minute in the last collection interval.
txCellRateAvg	L_int			The average transmit cell throughput rate (cells/s) in the last collection interval. It is calculated based on the transmit cell throughput rate sampled every minute in the last collection interval.

(Sheet 2 of 5)

Table 25 (Continued)
Trunk/ATM statistics

Field name	Field type	Default field position	Field value	Field description
txClpCellRateMax	L_int			The maximum transmit cell throughput rate (cells/s), with the CLP=1 (cells/s), in the last collection interval. It is calculated based on the transmit cell throughput rate, with the CLP=1, sampled every minute in the last collection interval.
txClpCellRateMin	L_int			The minimum transmit cell throughput rate, with the CLP=1 (cells/s), in the last collection interval. It is calculated based on the transmit cell throughput rate, with the CLP=1, sampled every minute in the last collection interval.
txClpCellRateAvg	L_int			The average transmit cell throughput rate, with the CLP=1 (cells/s), in the last collection interval. It is calculated based on the transmit cell throughput rate, with the CLP=1, sampled every minute in the last collection interval.
txTotalVccUtil	int			The average total Vcc utilization, expressed as a percentage, computed based on the total number of cells transmitted on the Vcc in the last collection interval.
rxCellRateMax	L_int			The maximum receive cell throughput rate (cells/s) in the last collection interval. It is calculated based on the receive cell throughput rate sampled every minute in the last collection interval.

(Sheet 3 of 5)

Table 25 (Continued)
Trunk/ATM statistics

Field name	Field type	Default field position	Field value	Field description
rxCellRateMin	L_int			The minimum receive cell throughput rate (cells/s) in the last collection interval. It is calculated based on the receive cell throughput rate sampled every minute in the last collection interval.
rxCellRateAvg	L_int			The average receive cell throughput rate (cells/s) in the last collection interval. It is calculated based on the receive cell throughput rate sampled every minute in the last collection interval.
rxClpCellRateMax	L_int			The maximum receive cell throughput rate, with the CLP=1 (cells/s), in the last collection interval. It is calculated based on the receive cell throughput rate, with the CLP=1, sampled every minute in the last collection interval.
rxClpCellRateMin	L_int			The minimum receive cell throughput rate, with the CLP=1 (cells/s), in the last collection interval. It is calculated based on the receive cell throughput rate, with the CLP=1, sampled every minute in the last collection interval.
rxClpCellRateAvg	L_int			The average receive cell throughput rate, with the CLP=1 (cells/s), in the last collection interval. It is calculated based on the receive cell throughput rate, with the CLP=1, sampled every minute in the last collection interval.

(Sheet 4 of 5)

Table 25 (Continued)
Trunk/ATM statistics

Field name	Field type	Default field position	Field value	Field description
rxTotalVccUtil	int			The average total Vcc utilization, expressed as a percentage, computed based on the total number of cells received on the Vcc in the last collection interval.
(Sheet 5 of 5)				

Table 26
AtmEp AAL2 SVC statistics

Field name	Field type	Default field position	Field value	Field description
txCells	L_int			This attribute counts the cells transmitted to the AAL2 SAR function on this SVC (egress direction). The counter wraps to zero when it reaches the maximum value
txCellDiscards	L_int		0...4294967295	This attribute counts the cells discarded when transmitting (egress direction) to the AAL2 SAR function on this SVC. The counter wraps to zero when it reaches the maximum value.
rxCells	L_int			This attribute counts the cells received by the AAL2 SAR function on this SVC (ingress direction). The counter wraps to zero when it reaches the maximum value.
(Sheet 1 of 3)				

Table 26 (Continued)
AtmEp AAL2 SVC statistics

Field name	Field type	Default field position	Field value	Field description
rxDiscard	L_int			The total number of received cells or frames from the interface on the Vcc that have been discarded due to congestion, non-conformance with UPC, or AAL reassembly problems in the last collection interval.
txCellDiscards	L_int		0...4294967295	This attribute counts the cells discarded when transmitting (egress direction) to the AAL2 SAR function on this SVC. The counter wraps to zero when it reaches the maximum value
txAal2Packets	L_int			This attribute counts the packets transmitted by the AAL2 SAR function toward the receiving applications. The counter wraps to zero when it exceeds the maximum value
rxAal2Packets	L_int			This attribute counts the packets received by the AAL2 SAR function from the sending applications. The counter wraps to zero when it reaches the maximum value.

(Sheet 2 of 3)

Table 26 (Continued)
AtmEp AAL2 SVC statistics

Field name	Field type	Default field position	Field value	Field description
aal2StartFieldErrors	L_int		0...4294967295	This attribute counts the cells received with an AAL2 Common Part Sublayer Protocol Data Unit (CPS-PDU) Start Field error. A Start Field error includes a cell with a parity error or a cell in which the packet pointed to by the offset field (OSF) has a packet HEC error. The counter wraps to zero when it reaches the maximum value.
aal2SequenceErrors	L_int		0...4294967295	This attribute counts the cells received with an unexpected AAL2 Common Part Sublayer Protocol Data Unit (CPS-PDU) sequence number.The counter wraps to zero when it reaches the maximum value.
numAllocatedCids	int		0...256	This attribute specifies the number of CIDs currently allocated for the SVC.
aal2PktLenErrors	L_int			This attribute counts the number of Service Data Units (SDUs) that exceeded the supported Max_SDU_Length.
aal2CidNotInUseErrors	L_int			This attribute counts the Aal2 CPS Packets received for a CID with no Application registered against it.
aal2NoBuffAvailErrors	L_int			This attribute counts the Aal2 CPS Packets discarded due to the unavailability of the reassembly buffer.

(Sheet 3 of 3)

Table 27
LP statistics

Field name	Field type	Default field position	Field value	Field description
cardNumber	int			The logical processor's card number.
cardStatus	int		1 = standby 2 = active	The logical processor's card is *active* or *standby*.
cpuUtilAvg	int			An average processor utilization level.
cpuUtilAvgMin	int			The minimum processor utilization level.
cpuUtilAvgMax	int			The maximum processor utilization level.
memoryCapacity	vector decimal		0..2147483647	The processor's memory capacity (in kilobytes) for each memory type (fastRam, normalRam, and sharedRam) in the specified collection interval. This statistic is calculated using 15 second samples.
memoryUsageAvg	vector decimal		0..2147483647	The processor's average memory utilization (in kilobytes) for each memory type (fastRam, normalRun, and sharedRam) in the specified collection interval. This statistic is calculated using 15 second samples.

(Sheet 1 of 3)

Table 27 (Continued)
LP statistics

Field name	Field type	Default field position	Field value	Field description
memoryUsageAvgMin	vector decimal		0..2147483647	The processor's minimum memory utilization (in kilobytes) for each memory type (fastRam, normalRun, and sharedRam) in the specified collection interval. This statistic is calculated using 15 second samples.
memoryUsageAvgMax	vector decimal		0..2147483647	The processor's maximum memory utilization (in kilobytes) for each memory type (fastRam, normalRun, and sharedRam) in the specified collection interval. This statistic is calculated using 15 second samples.
sharedMsgBlockCapacity	int			The processor's shared message block memory capacity (in kilobytes).
sharedMsgBlockUsageAvg	int			The processor's average memory utilization (in kilobytes) of shared message blocks.
sharedMsgBlockUsageAvgMin	int			The processor's minimum memory utilization (in kilobytes) of shared message blocks.
sharedMsgBlockUsageAvgMax	int			The processor's maximum memory utilization (in kilobytes) of shared message blocks.
localMsgBlockCapacity	int			The processor's message block memory capacity (in kilobytes), for local messaging.
localMsgBlockUsageAvg	int			The processor's average memory utilization (in kilobytes) of message blocks, for local messaging.

(Sheet 2 of 3)

Table 27 (Continued)
LP statistics

Field name	Field type	Default field position	Field value	Field description
localMsgBlockUsageMin	int			The processor's minimum memory utilization (in kilobytes) of message blocks, for local messaging.
localMsgBlockUsageMax	int			The processor's maximum memory utilization (in kilobytes) of message blocks, for local messaging.
(Sheet 3 of 3)				

Table 28
Port/Framer statistics

Field name	Field type	Default field position	Field value	Field description
rxBytes	L_int			The number of bytes received on the link.
rxFrames	L_int			The number of frames received on the link.
txBytes	L_int			The number of bytes transmitted on the link.
txFrames	L_int			The number of frames transmitted on the link.
rxTotalLinkUtil	int			The average total link utilization, based on the total number of bytes received on the link.

Table 29
VoiceRoute statistics

Field name	Field type	Default field position	Field value	Field description
totalCallsFromSubnet	int			The number of calls received from the Passport subnet.
callsClearedNoChannel	int			The number of calls, from the subnet, which were rejected because all in-service channels were busy.
callsClearedOutOfService	int			The number of calls, from the subnet, which were rejected because all of the channels were out-of-service.
callsRejected	int			The number of calls, from the subnet, which were rejected.

Table 30
VoiceSubRoute, SignallingChannel, and CAS statistics

Field name	Field type	Default field position	Field value	Field description
peakActiveChannels	int			The maximum number of channels that have been simultaneously active.

Table 31
VoiceSubRoute and SignallingChannel statistics

Field name	Field type	Default field position	Field value	Field description
totalCallsFromIf	int			The number of calls that have been received by this VoiceSubRoute from the PBX.
peakActiveVoiceChannels	int			The maximum number of voice channels that have been simultaneously active.
peakActiveDataChannels	int			The maximum number of B-channels, carrying data, that have been simultaneously active.

Table 32
VoiceSubRoute statistics

Field name	Field type	Default field positions	Field value	Field description
totalFailedCallsFromIf	int			The number of calls that have been received by this VoiceSubRoute, from the PBX, which failed to be routed through the subnet.
invalidNumberingPlanCalls	int			The number of calls, from the interface, for which the type of number and the numbering plan identification was not associated with a known *DialingPlan*.
(Sheet 1 of 3)				

Table 32 (Continued)
VoiceSubRoute statistics

Field name	Field type	Default field positions	Field value	Field description
addressResolutionFailed Calls	int			The number of calls from the interface which had dialled numbers for which no entry existed in the *VoiceNetworkingCallServer* database.
addressIncompleteCalls	int			The number of calls from the interface which had dialled numbers with insufficient digits to identify a unique entry in the *VoiceNetworkingCallServer* database.
pathAttributesNotMetCalls	int			The number of calls from the interface for which a path to the far end could not be established based on the attributes specified in the *VoiceProfile*.
pathSetupTimeOutCalls	int			The number of calls from the interface for which a path to the far end could not be established *due to a subnet path setup time-out*.
callsRejectedLocally	int			The number of calls, from the subnet, which were rejected by the originating end.
callsRejectedByFarEnd	int			The number of calls, from the subnet, which were rejected by the far end.
peakActiveModem Channels	int			The maximum number of B-channels, on which a 2100Hz tone was detected, that have been simultaneously active.
peakActiveFaxRelay Channels	int			The maximum number of B-channels, carrying fax relay calls, that have been simultaneously active.

(Sheet 2 of 3)

Table 32 (Continued)
VoiceSubRoute statistics

Field name	Field type	Default field positions	Field value	Field description
totalCalls	vector decimal		0..65535	The number of call attempts processed on this channel (both directions).
totalCallSeconds	vector decimal		0..65535	The number of seconds spent handling a call.
voiceRouteInstance	int			The value of the *VoiceRoute* linked to this *VoiceSubRoute*.

(Sheet 3 of 3)

Table 33
SignallingChannel statistics

Field name	Field type	Default field position	Field value	Field description
totalCallsToIf	int			The number of calls made to the link interface.
nonCallAssocSessionsToIf	int			The number of non-call associated sessions to the link interface.
nonCallAssocSessions FromIf	int			The number of non-call associated sessions from the link interface.
frmToIf	L_int			The number of frames transmitted to the link interface.
frmFromIf	L_int			The number of frames received from the link interface.

(Sheet 1 of 2)

Table 33 (Continued)
SignallingChannel statistics

Field name	Field type	Default field position	Field value	Field description
octetFromIf	L_int			The number of bytes received from the link interface.
octetToIf	L_int			The number of bytes transmitted to the link interface.

(Sheet 2 of 2)

Table 34
CAS statistics

Field name	Field type	Default field position	Field value	Field description
totalCallsOutgoing	int			The number of outgoing node call attempts made to this link.
totalCallsIncoming	int			The number of incoming link call attempts made to this node.
seizeFailures	int			The number of outgoing node call attempts to this link for which the link failed to respond correctly upon receiving a seize signal.
releaseFailures	int			The number of times that the link failed to respond correctly during the disconnect sequence of a call.
outgoingAnsweredCalls	int			The number of outgoing node calls to this link that were answered by the link.

(Sheet 1 of 2)

Table 34 (Continued)
CAS statistics

Field name	Field type	Default field position	Field value	Field description
incomingAnsweredCalls	int			The number of incoming link calls that were answered by this node.
(Sheet 2 of 2)				

Table 35
VoiceNet statistics

Field name	Field type	Default field position	Field value	Field description
totalTranslations	int			The total number of translations requests received.
completeTranslations	vector decimal		0..65535	The number of completed translations handled under each *DiallingPlan* component.
incompleteTranslations	vector decimal		0..65535	The number of incomplete translations handled under each *DiallingPlan* component.
failedTranslations	vector decimal		0..65535	The number of failed translations handled under each *DiallingPlan* component.
usageCount	vector decimal		0..65535	The number of times each *VoiceProfile* is accessed to set up a connection.

Table 36
DataShunt statistics

Field name	Field type	Default field position	Field value	Field description
serviceCategory	int			The ATM service category of the transport connection.
pktFromMcs	vector decimal			The number of packets received on the Data Shunt for each discard priority (dp0 dp1dp2 dp3).
octetsFromMcs	vector decimal			The number of octets received on the Data Shunt for each discard priority (dp0 dp1dp2 dp3).
pktDiscCongestedFromMcs	vector decimal			The number of packets received on the Data Shunt for each discard priority (dp0 dp1dp2) that have been discarded at the transport card due to free list congestion at the access card.
pktDiscErroredFromMcs	L_int			The number of packets received on the Data Shunt that have been discarded.

Table 37
TimeChange statistics

Field name	Field type	Default field position	Field value	Field description
oldDateTime	time		yyyymmddT hhmmss	The old date/time immediately prior to the time change.
newDateTime	time		yyyymmddT hhmmss	The new date/time immediately after the time change.

Table 38
McsMgr statistics

Field name	Field type	Default field position	Field value	Field description
bandwidthHWM	int			The high-water mark bandwidth (in bits/sec) at which the transport connection agrees to transfer data during the last statistics collection interval. The value for this attribute is equal to the provisioned bandwidth when the connection is up, and is 0 when the transport connection is down. This attribute, when combined with *bandwidthLWM*, can also be used to indicate a transport connection outage occurrence.
bandwidthLWM	int			The low-water mark bandwidth (in bits/sec) at which the transport connection agrees to transfer data during the last statistics collection interval. The value for this attribute is equal to the provisioned bandwidth when the connection is up, and is 0 when the transport connection is down. This attribute, when combined with *bandwidthHWM*, can also be used to indicate a transport connection outage occurrence.

(Sheet 1 of 2)

Table 38 (Continued)
McsMgr statistics

Field name	Field type	Default field position	Field value	Field description
effectiveBandwidth	L_int			The level of effective bandwidth available during the last statistics collection interval, as indicated by the effectiveBandwidth attribute of the McsMgr DprsMcsEpG/m EndPoint/n Cac component. This value is expressed in thousands of bits per second.
effectiveBandwidth AvailableLWM	L_int			The lowest level of effective bandwidth available during the last statistics collection interval, as indicated by the effective BandwidthAvailable attribute of the McsMgr DprsMcsEp/m EndPoint/n Cac component. This value is expressed in thousands of bits per second.
numberOfCallsActiveHWM	int			The highest level of the numberOfCallsActive attribute of the McsMgr DprsMcsEp/m EndPoint/n Cac component during the last statistics collection interval.
numberOfCacFailures	L_int			The number of call admission failures during the last statistics collection interval. This value equals the increase in the numberOfCacFailures attribute of the McsMgr DprsMcsEp/m EndPoint/n Cac component during the last statistics collection interval.

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Table 39
ATM Port statistics

Field name	Field type	Default field position	Field value	Field description
remoteInstance	string			The name of the remote ATM interface instance.
provRate	L_int			The provisioned link rate for this ATM interface component in cells per second.
actualRate	L_int			The actual bandwidth for this ATM interface component in cells per second. When no errors occur the value of this field is equal to the provRate. When the link is down for the entire collection interval, the value of this field is the average bandwidth.
txUtilization	int			The average transmit link utilization during the collection interval, expressed as a percentage of the provisioned maximum.
rxUtilization	int			The average receive link utilization during the collection interval, expressed as a percentage of the provisioned maximum.
txMaxCellRate	L_int			The transmit cell rate (CLP=0+1) during the busiest minute of the collection interval, in cells per second.
txMinCellRate	L_int			The transmit cell rate (CLP=0+1) during the least busy minute of the collection interval, in cells per second.
txAvgCellRate	L_int			The average transmit cell rate (CLP=0+1) during the collection interval, in cells per second.

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Table 39 (Continued)
ATM Port statistics

Field name	Field type	Default field position	Field value	Field description
rxMaxCellRate	L_int			The receive cell rate (CLP=0+1) during the busiest minute of the collection interval, in cells per second.
rxMinCellRate	L_int			The receive cell rate (CLP=0+1) during the least busy minute of the collection interval, in cells per second.
rxAvgCellRate	L_int			The average receive cell rate (CLP=0+1) during the collection interval, in cells per second.
txMaxCellRateClp	L_int			The transmit cell rate (CLP=1) during the busiest minute of the collection interval, in cells per second.
txMinCellRateClp	L_int			The transmit cell rate (CLP=1) during the least busy minute of the collection interval, in cells per second.
txAvgCellRateClp	L_int			The average transmit cell rate (CLP=1) during the collection interval, in cells per second.
rxMaxCellRateClp	L_int			The receive cell rate (CLP=1) during the busiest minute of the collection interval, in cells per second.
rxMinCellRateClp	L_int			The receive cell rate (CLP=1) during the least busy minute of the collection interval, in cells per second.
rxAvgCellRateClp	L_int			The average receive cell rate (CLP=1) during the collection interval, in cells per second.
(Sheet 2 of 6)				

Table 39 (Continued)
ATM Port statistics

Field name	Field type	Default field position	Field value	Field description
txCellDiscards	L_int			The number of transmit discarded cells (CLP=0+1).
rxCellDiscards	L_int			The number of receive discarded cells (CLP=0+1).
txFrameDiscards	L_int			The number of transmit discarded frames (CLP=0+1).
rxFrameDiscards	L_int			The number of receive discarded frames (CLP=0+1).
txCellDiscardsClp	L_int			The number of transmit discarded cells (CLP=1).
rxCellDiscardsClp	L_int			The number of receive discarded cells (CLP=1).
txFrameDiscardsClp	L_int			The number of transmit discarded frames (CLP=1).
rxFrameDiscardsClp	L_int			The number of receive discarded frames (CLP=1).
txMaxCellRateByServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The transmit cell rate (CLP=0+1) during the busiest minute of the collection interval, in cells per second, by service category.
txMinCellRateByServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The transmit cell rate (CLP=0+1) during the least busy minute of the collection interval, in cells per second, by service category.

(Sheet 3 of 6)

Table 39 (Continued)
ATM Port statistics

Field name	Field type	Default field position	Field value	Field description
txAvgCellRateByService Cat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The average transmit cell rate (CLP=0+1) during the collection interval, in cells per second, by service category.
rxMaxCellRateByService Cat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The receive cell rate (CLP=0+1) during the busiest minute of the collection interval, in cells per second, by service category.
rxMinCellRateByService Cat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The receive cell rate (CLP=0+1) during the least busy minute of the collection interval, in cells per second, by service category.
rxAvgCellRateByService Cat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The average receive cell rate (CLP=0+1) during the collection interval, in cells per second, by service category.
txMaxCellRateClpBy ServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The transmit cell rate (CLP=1) during the busiest minute of the collection interval, in cells per second, by service category.
txMinCellRateClpBy ServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The transmit cell rate (CLP=1) during the least busy minute of the collection interval, in cells per second, by service category.

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Table 39 (Continued)
ATM Port statistics

Field name	Field type	Default field position	Field value	Field description
txAvgCellRateClpBy ServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The average transmit cell rate (CLP=1) during the collection interval, in cells per second, by service category.
rxMaxCellRateClpBy ServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The receive cell rate (CLP=1) during the busiest minute of the collection interval, in cells per second, by service category.
rxMinCellRateClpBy ServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The receive cell rate (CLP=1) during the least busy minute of the collection interval, in cells per second, by service category.
rxAvgCellRateClpBy ServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The average receive cell rate (CLP=1) during the collection interval, in cells per second, by service category.
txCellDiscardsByService Cat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The number of transmit discarded cells (CLP=0+1) during the collection interval, by service category.
rxCellDiscardsByService Cat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The number of receive discarded cells (CLP=0+1) during the collection interval, by service category.
(Sheet 5 of 6)				

Table 39 (Continued)
ATM Port statistics

Field name	Field type	Default field position	Field value	Field description
txFrameDiscardsByServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The number of transmit discarded frames (CLP=0+1) during the collection interval, by service category.
rxFrameDiscardsByServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The number of receive discarded frames (CLP=0+1) during the collection interval, by service category.
txCellDiscardsClpByServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The number of transmit discarded cells (CLP=1) during the collection interval, by service category.
rxCellDiscardsClpByServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The number of receive discarded cells (CLP=1) during the collection interval, by service category.
txFrameDiscardsClpByServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The number of transmit discarded frames (CLP=1) during the collection interval, by service category.
rxFrameDiscardsClpByServiceCat	vector decimal		cbr=0 rtvbr=1 nrtvbr=2 abr=3 ubr=4	The number of receive discarded frames (CLP=1) during the collection interval, by service category.
(Sheet 6 of 6)				

Table 40
PCU PCM link and PCU BVC statistics

Field name	Field type	Default field position	Field value	Field description
pduDn	L_int		0.. 4294967295	If this field is included with a PCU PCM link statistics record: the number of BSSGP PDUs received from the SGSN by all the BVCs associated to this PCM link. If this field is included with a PCU BVC statistics record: the number of PDUs received by this BVC from the Gb interface.
pduUp	L_int		0.. 4294967295	If this field is included with a PCU PCM link statistics record: the number of BSSGP PDUs transmitted to the SGSN by all the BVCs associated to this PCM link. If this field is included with a PCU BVC statistics record: the number of PDUs sent by this BVC to the Gb interface.
octetsDn	L_int		0.. 4294967295	If this field is included with a PCU PCM link statistics record: the number of octets received by all the BVCs associated to this PCM link. If this field is included with a PCU BVC statistics record: the number of octets received by the BVC from the Gb interface.

(Sheet 1 of 2)

Table 40 (Continued)
PCU PCM link and PCU BVC statistics

Field name	Field type	Default field position	Field value	Field description
octetsUp	L_int		0.. 4294967295	If this field is included with a PCU PCM link statistics record: the number of octets sent by all the BVCs associated to this PCM link. If this field is included with a PCU BVC statistics record: the number of octets sent by the BVC to the Gb interface.
psPaging	L_int		0.. 4294967295	If this field is included with a PCU PCM link statistics record: the number of BSSGP PAGING PS PDUs received from the SGSN by this PCM link.
csPaging	L_int		0.. 4294967295	If this field is included with a PCU PCM link statistics record: the number of BSSGP PAGING CS PDUs received from the SGSN by this PCM link.
dyAgprsLackOfTimeslots	L_int		0.. 4294967295	If this field is included with a PCU PCM link statistics record: the number of times that the PCU has not been able to satisfy the request sent by the most loaded cell on which there appears a lack of resources.

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Table 41
PCU LAPD Signaling statistics

Field name	Field type	Default field position	Field value	Field description
framesLostOverflowUp	L_int		0.. 4294967295	The number of uplink frames lost due to data overrun or receive buffer overflow.
framesLostOverflowDn	L_int		0.. 4294967295	The number of downlink frames which were not sent because of buffer overflow.
errorsCRC	L_int		0.. 4294967295	The number of frames with CRC errors received.
framesLostAlignment	L_int		0.. 4294967295	The number of frames lost due to aborts or lack of alignment.
supervisoryFramesUp	L_int		0.. 4294967295	The number of supervisory frames received.
iFramesUp	L_int		0.. 4294967295	The number of I frames received.
uiFramesUp	L_int		0.. 4294967295	The number of unnumbered I frames received.
iOctetsUp	L_int		0.. 4294967295	The number of I octets received.
uiOctetsUp	L_int		0.. 4294967295	The number of unnumbered I octets received.
supervisoryFramesDn	L_int		0.. 4294967295	The number of supervisory frames transmitted.
iFramesDn	L_int		0.. 4294967295	The number of I frames transmitted.
uiFramesDn	L_int		0.. 4294967295	The number of unnumbered I frames transmitted.

(Sheet 1 of 2)

Table 41 (Continued)
PCU LAPD Signaling statistics

Field name	Field type	Default field position	Field value	Field description
iOctetsDn	L_int		0.. 4294967295	The number of I octets transmitted.
uiOctetsDn	L_int		0.. 4294967295	The number of unnumbered I octets transmitted.
iFramesRetriesDn	L_int		0.. 4294967295	The number of I frames retransmitted.
(Sheet 2 of 2)				

Table 42
PCU cell statistics

Field name	Field type	Default field position	Field value	Field description
cellBVCI	int		0..65535	This field indicates the corresponding BSSGP Virtual Channel Identifier.
(Sheet 1 of 7)				

Table 42 (Continued)
PCU cell statistics

Field name	Field type	Default field position	Field value	Field description
upMultiSlotRequests	vector decimal		0.. 4294967295 for each index (1..4)	The number of multi-slot allocation requests received by the PCU from the mobile station. • Index 1 counts the number of 1 timeslot allocation requests. • Index 2 counts the number of 2 timeslots allocation requests. • Index 3 counts the number of 3 timeslots allocation requests. • Index 4 counts the number of 4 or more timeslots allocation requests.
upMultiSlotAllocations	vector decimal		0.. 4294967295 for each index (1..4)	The number of multi-slot granted allocations received by the PCU from the mobile station. • Index 1 counts the number of 1 timeslot granted allocations. • Index 2 counts the number of 2 timeslots granted allocations. • Index 3 counts the number of 3 timeslots granted allocations. • Index 4 counts the number of 4 or more timeslots granted allocations.

(Sheet 2 of 7)

Table 42 (Continued)
PCU cell statistics

Field name	Field type	Default field position	Field value	Field description
dnMultiSlotRequests	vector decimal		0.. 4294967295 for each index (1..4)	The number of multi-slot allocation requests received by the mobile station from the PCU. • Index 1 counts the number of 1 timeslot allocation requests. • Index 2 counts the number of 2 timeslots allocation requests. • Index 3 counts the number of 3 timeslots allocation requests. • Index 4 counts the number of 4 or more timeslots allocation requests.
dnMultiSlotAllocations	vector decimal		0.. 4294967295 for each index (1..4)	The number of multi-slot granted allocations received by the mobile station from the PCU. • Index 1 counts the number of 1 timeslot granted allocations. • Index 2 counts the number of 2 timeslots granted allocations. • Index 3 counts the number of 3 timeslots granted allocations. • Index 4 counts the number of 4 or more timeslots granted allocations.
fullDuplexTbfEstablishment	L_int		0.. 4294967295	The number of full duplex TBFs established.
upTbfReleases	L_int		0.. 4294967295	The number of uplink TBFs released.

(Sheet 3 of 7)

Table 42 (Continued)
PCU cell statistics

Field name	Field type	Default field position	Field value	Field description
cumulativeTimeUpTbf	L_int		0.. 4294967295 units of seconds	The cumulative duration of all uplink TBFs released.
maxTimeUpTbf	L_int		0.. 4294967295 units of seconds	The duration of the longest TBF of all the uplink TBFs released.
allocatedBlocksUpTbf	L_int		0.. 4294967295	The number of blocks allocated for the uplink TBFs.
nonAckUpTbfEstablishment	L_int		0.. 4294967295	The number of non-acknowledged uplink TBFs established.
ackUpTbfEstablishment	L_int		0.. 4294967295	The number of acknowledged uplink TBFs established.
closeEndedUpTbfEstablishment	L_int		0.. 4294967295	The number of closed-ended uplink TBFs established.
upTbfTotalSignaling	L_int		0.. 4294967295	The number of uplink TBFs bearing Mobility Management signaling or paging response.
dnTbfReleases	L_int		0.. 4294967295	The number of downlink TBFs released.
cumulativeTimeDnTbf	L_int		0.. 4294967295 units of seconds	The cumulative duration of all downlink TBFs released.
maxTimeDnTbf	L_int		0.. 4294967295 units of seconds	The duration of the longest TBF of all the downlink TBFs released.

(Sheet 4 of 7)

Table 42 (Continued)
PCU cell statistics

Field name	Field type	Default field position	Field value	Field description
allocatedBlocksDnTbf	L_int		0.. 4294967295	The number of blocks allocated for the downlink TBFs.
nonAckDnTbfEstablishment	L_int		0.. 4294967295	The number of non-acknowledged downlink TBFs established.
ackDnTbfEstablishment	L_int		0.. 4294967295	The number of acknowledged downlink TBFs established.
dnTbfTotalSignaling	L_int		0.. 4294967295	The number of downlink TBFs bearing Mobility Management signaling or paging response.
dyAgprsNbModif	L_int		0.. 4294967295	The number of modifications to Agprs timeslots allocated in the cell.
dyAgprsAvgNbTimeslots	L_int		0.. 4294967295	The average number of Agprs timeslots allocated in the cell.
dyAgprsMinNbTimeslots	L_int		0.. 4294967295	The minimum number of Agprs timeslots allocated in the cell.
dyAgprsMaxNbTimeslots	L_int		0.. 4294967295	The maximum number of Agprs timeslots allocated in the cell.
dyAgprsAvgLoadCriterion	int		0..100	The average Agprs load criterion value.
dyAgprsMaxLoadCriterion	int		0..100	The maximum Agprs load criterion value.
dnTbfGoldSatisfactMore90pCent	L_int		0.. 4294967295	The number of downlink TBFs with gold QOS that have a satisfaction rate greater or equal to 90 per cent.
dnTbfGoldSatisfactBet5090pCent	L_int		0.. 4294967295	The number of downlink TBFs with gold QOS that have a satisfaction rate between 50 to 90 per cent.

(Sheet 5 of 7)

Table 42 (Continued)
PCU cell statistics

Field name	Field type	Default field position	Field value	Field description
dnTbfGoldSatisfactLess 50pCent	L_int		0.. 4294967295	The number of downlink TBFs with gold QOS that have a satisfaction rate lower than 50 per cent.
dnTbfGoldRejectedForMin Tput	L_int		0.. 4294967295	The number of downlink TBFs with gold QOS rejected at the establishment due to non-allocation of corresponding minimum throughput.
dnTbfSilverSatisfactMore 90pCent	L_int		0.. 4294967295	The number of downlink TBFs with silver QOS that have a satisfaction rate greater or equal to 90 per cent.
dnTbfSilverSatisfactBet50 90pCent	L_int		0.. 4294967295	The number of downlink TBFs with silver QOS that have a satisfaction rate between 50 to 90 per cent.
dnTbfSilverSatisfactLess 50pCent	L_int		0.. 4294967295	The number of downlink TBFs with silver QOS that have a satisfaction rate lower than 50 per cent.
dnTbfSilverRejectedForMin Tput	L_int		0.. 4294967295	The number of downlink TBFs with silver QOS rejected at the establishment due to non allocation of corresponding minimum throughput.
dnTbfBronzeSatisfactMore 90pCent	L_int		0.. 4294967295	The number of downlink TBFs with bronze QOS that have a satisfaction rate greater or equal to 90 per cent.
dnTbfBronzeSatisfactBet50 90pCent	L_int		0.. 4294967295	The downlink TBFs with bronze QOS that have a satisfaction rate between 50 to 90 per cent.
dnTbfBronzeSatisfactLess5 0pCent	L_int		0.. 4294967295	The number of downlink TBFs with bronze QOS that have a satisfaction rate lower than 50 per cent.
(Sheet 6 of 7)				

Table 42 (Continued)
PCU cell statistics

Field name	Field type	Default field position	Field value	Field description
dnTbfBronzeRejectedForMinTput	L_int		0.. 4294967295	The number of downlink TBFs with bronze QOS rejected at the establishment due to non-allocation of corresponding minimum throughput.
(Sheet 7 of 7)				

Table 43
PCU BVC statistics

Field name	Field type	Default field position	Field value	Field description
cell	int		0..65535	This field indicates the cell identity number associated with this BVC.
pduDataDn	L_int		0.. 4294967295	The number of UNIT-DATA PDUs received by the BVC from the Gb interface.
pduDataUp	L_int		0.. 4294967295	The number of UNIT-DATA PDUs sent by the BVC to the Gb interface.
octetsDataDn	L_int		0.. 4294967295	The number of octets received by the BVC from the Gb interface in DL-UNIT-DATA PDUs.
octetsDataUp	L_int		0.. 4294967295	The number of octets sent by the BVC to the Gb interface in UL-UNIT-DATA PDUs.
maxSizeDataDn	L_int		0.. 4294967295	The maximum size of LLC frames received.
(Sheet 1 of 3)				

Table 43 (Continued)
PCU BVC statistics

Field name	Field type	Default field position	Field value	Field description
maxSizeDataUp	L_int		0.. 4294967295	The maximum size of LLC frames sent.
bvcBlockRequests	int		0..65535	The number of BVC-BLOCK PDUs messages sent by the BVC.
bvcUnBlockRequests	int		0..65535	The number of BVC-UNBLOCK PDUs messages sent by the BVC.
bvct1TimeOuts	int		0..65535	The number of BVC-BLOCK-ACK and BVC-UNBLOCK-ACK timers expirations.
bvcResetRequestsUp	int		0..65535	The number of BVC-RESET PDUs messages sent by a BVC.
bvcResetRequestsDn	int		0..65535	The number of BVC-RESET PDUs messages received by a BVC.
bvct2TimeOuts	int		0..65535	The number of BVC-RESET-ACK timer expirations.
bvcFlowControlRequests	int		0..65535	The number of FLOW-CONTROL-BVC PDUs sent by the BVC.
msFlowControlRequests	int		0..65535	The number of FLOW-CONTROL-MS PDUs sent by the BVC.
bvcPagingRequests	int		0..65535	The number of PAGING-REQUEST messages sent by the BVC.
llcDiscardedPdu	int		0..65535	The number of LLC-DISCARDED PDUs sent by the BVC.
llcDiscardedOctets	int		0..65535	The number of octets discarded with an LLC-DISCARDED-INDICATION message sent by the BVC.

(Sheet 2 of 3)

Table 43 (Continued)
PCU BVC statistics

Field name	Field type	Default field position	Field value	Field description
nmStatusUp	int		0..65535	The number of NM-STATUS PDUs sent by a BVC.
nmStatusDn	int		0..65535	The number of NM-STATUS PDUs received by a BVC.
msFlushLLRequest	int		0..65535	The number of FLUSH-LL PDUs relative to the BVC sent from the SGSN to the PCU.
msRadioStatusInd	int		0..65535	The number of INDICATION messages for radio exception conditions that occurred on the radio interface in the BVC.
msSuspendReq	int		0..65535	The number of SUSPEND PDUs sent by the BVC.
msRaCapabilityInd	int		0..65535	The number of RA-CAPABILITY-INDICATION PDUs received by the BVC.
msRaCapabilityUpdateReq	int		0..65535	The number of RA-CAPABILITY-UPDATE PDUs sent by the BVC.
bvct3TimeOuts	int		0..65535	The number of SUSPEND-ACK timer expirations.
bvct5TimeOuts	int		0..65535	The number of RA-CAPABILITY-UPDATE-ACK timer expirations.
msCellTransitionDn	int		0..65535	The number of FLUSH-LL PDUs that are sent by the SGSN to the PCU when the mobile station, located on a cell indicated by the BVCI, has moved to another cell indicated to the new BVCI.

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Table 44
PCU TDMA statistics

Field name	Field type	Default field position	Field value	Field description
localBusy	L_int		0.. 4294967295	The number of blocks sent with the window stalled indicator set.
remoteBusy	L_int		0.. 4294967295	The number of blocks received with the window stalled indicator set.
configuredTimeslots	L_int		0.. 4294967295	The number of configured timeslots at the end of the statistics collection interval.
cumulativeUnavailableTimeslots	L_int		0.. 4294967295	The cumulative number of unavailable timeslots at the sample time. The average can be calculated by dividing this value by the nbSamples value.
maxUnavailableTimeslots	L_int		0.. 4294967295	The maximum number of unavailable timeslots at a given sample time. The number of samples during the statistics collection interval is indicated by nbSamples.
cumulativeUpActiveTimeslots	L_int		0.. 4294967295	The cumulative number of active uplink timeslots bearing at least one TBF at the sample time. The average can be calculated by dividing this value by the nbSamples value.

(Sheet 1 of 6)

Table 44 (Continued)
PCU TDMA statistics

Field name	Field type	Default field position	Field value	Field description
maxUpActiveTimeslots	L_int		0.. 4294967295	The maximum number of active uplink timeslots bearing at least one TBF at a given sample time. The number of samples during the statistics collection interval is indicated by nbSamples.
cumulativeUpTbfPerTdma	L_int		0.. 4294967295	The cumulative number of uplink TBFs in the TDMA at the sample time. The average can be calculated by dividing this value by the nbSamples value.
maxUpTbfPerTdma	L_int		0.. 4294967295	The maximum number of uplink TBFs in the TDMA at a given sample time. The number of samples during the statistics collection interval is indicated by nbSamples.
cumulativeUpTbfPerTimeslots	L_int		0.. 4294967295	The cumulative number of uplink TBFs per timeslot for all the timeslots in the TDMA at the sample time. The average can be calculated by dividing this value by the nbSamples value.
maxUpTbfPerTimeslots	L_int		0.. 4294967295	The maximum number of uplink TBFs on one timeslot at a given sample time. The number of samples during the statistics collection interval is indicated by nbSamples.

(Sheet 2 of 6)

Table 44 (Continued)
PCU TDMA statistics

Field name	Field type	Default field position	Field value	Field description
cumulativeDnActiveTimeslots	L_int		0.. 4294967295	The cumulative number of active downlink timeslots bearing at least one TBF at the sample time. The average can be calculated by dividing this value by the nbSamples value.
maxDnActiveTimeslots	L_int		0.. 4294967295	The maximum number of active downlink timeslots bearing at least one TBF at a given sample time. The number of samples during the statistics collection interval is indicated by nbSamples.
cumulativeDnTbfPerTdma	L_int		0.. 4294967295	The cumulative number of downlink TBFs in the TDMA at the sample time. The average can be calculated by dividing this value by the nbSamples value.
maxDnTbfPerTdma	L_int		0.. 4294967295	The maximum number of downlink TBFs in the TDMA at a given sample time. The number of samples during the statistics collection interval is indicated by nbSamples.
cumulativeDnTbfPerTimeslots	L_int		0.. 4294967295	The cumulative number of downlink TBFs per timeslot for all the timeslots in the TDMA at the sample time. The average can be calculated by dividing this value by the nbSamples value.

(Sheet 3 of 6)

Table 44 (Continued)
PCU TDMA statistics

Field name	Field type	Default field position	Field value	Field description
maxDnTbfPerTimeslots	L_int		0.. 4294967295	The maximum number of downlink TBFs on one timeslot at a given sample time. The number of samples during the statistics collection interval is indicated by nbSamples.
nbSamples	L_int		0.. 4294967295	The number of samples taken. This value can be used with cumulative attributes to calculate averages.
llcPacketsUp	L_int		0.. 4294967295	The number of LLC packets reassembled and transmitted to the LLC relay.
dataBlocksUp	L_int		0.. 4294967295	The number of uplink RLC data blocks received.
controlBlocksUp	L_int		0.. 4294967295	The number of uplink RLC control blocks received.
invalidBlocksUp	L_int		0.. 4294967295	The number of invalid uplink radio blocks received.
invalidProtocolErrorBlocksUp	L_int		0.. 4294967295	The number of invalid uplink radio blocks received with invalid RLC protocol.
outOfSequenceBlocksUp	L_int		0.. 4294967295	The number of data blocks received uplink with a Block Sequence Number outside the received window.
packetAckNackUp	L_int		0.. 4294967295	The number of PACKET-UPLINK-ACK-NACK messages received.
totalRetransmissionRequested	L_int		0.. 4294967295	The number of RLC/MAC block retransmission requests.

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Table 44 (Continued)
PCU TDMA statistics

Field name	Field type	Default field position	Field value	Field description
cumulativeUpRxQual	L_int		0.. 4294967295	The cumulative uplink RxQual value applied. The average can be calculated by dividing this value by the nbSamples value.
cumulativeUpRxLev	L_int		0.. 4294967295	The cumulative uplink RxLev value applied. The average can be calculated by dividing this value by the nbSamples value.
nbSamplesUpQuality	L_int		0.. 4294967295	The number of samples for RxQual and RxLev cumulative values.
llcPacketsDn	L_int		0.. 4294967295	The number of LLC packets, segmented into RLC data blocks, received.
dataBlocksDn	L_int		0.. 4294967295	The number of downlink RLC data blocks transmitted.
controlBlocksDn	L_int		0.. 4294967295	The number of downlink RLC control blocks transmitted.
retransmittedDataBlocksDn	L_int		0.. 4294967295	The number of data blocks retransmitted downlink.
packetAckNackDn	L_int		0.. 4294967295	The number of PACKET-DOWNLINK-ACK-NACK messages transmitted.
cumulativeDnRxQual	L_int		0.. 4294967295	The cumulative downlink RxQual value applied. The average can be calculated by dividing this value by the nbSamples value.
nbSamplesDnQuality	L_int		0.. 4294967295	The number of samples for RxQual cumulative values.

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Table 44 (Continued)
PCU TDMA statistics

Field name	Field type	Default field position	Field value	Field description
tbfNormalReleaseUp	L_int		0.. 4294967295	The number of uplink TBFs that terminated normally.
tbfNormalReleaseDn	L_int		0.. 4294967295	The number of downlink TBFs that terminated normally.
noPacketResourceReq	L_int		0.. 4294967295	The number of TBFs abnormally released due to non-receipt of Packet Resource Request.
lossOfComNN002Max	L_int		0.. 4294967295	The number of TBFs abnormally released due to V(Q) non-progression.
lossOfComT3169	L_int		0.. 4294967295	The number of TBFs abnormally released due to timer T3169 expiry.
lossOfComNT0001	L_int		0.. 4294967295	The number of TBFs abnormally released due to timer NT0001 expiry.
lossOfComT3195	L_int		0.. 4294967295	The number of TBFs abnormally released due to timer T3195 expiry.
lossOfComT3191	L_int		0.. 4294967295	The number of TBFs abnormally released due to timer T3191 expiry.
lossOfComNT1001	L_int		0.. 4294967295	The number of TBFs abnormally released due to timer NT1001 expiry.

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Table 45
PCU CCCH statistics

Field name	Field type	Default field position	Field value	Field description
upTbfImmediateAssignment	L_int		0.. 4294967295	The number of IMMEDIATE-ASSIGNMENT messages generated by the PCU to the mobile station in the first phase of the two_phase access uplink TBF establishment.
upTbfImmAssigRejectNoPdch	L_int		0.. 4294967295	The number of IMMEDIATE-ASSIGNMENT-REJECT messages generated by the PCU to the mobile station with a cause of "No PDCH available for GPRS" in the first phase of the two_phase access uplink TBF establishment.
upTbfImmAssigRejectNoTs	L_int		0.. 4294967295	The number of IMMEDIATE-ASSIGNMENT-REJECT messages generated by the PCU to the mobile station with a cause of "Maximum MS per TS is reached" in the first phase of the two_phase access uplink TBF establishment.
upTbfImmAssigRejectNoTbf	L_int		0.. 4294967295	The number of IMMEDIATE-ASSIGNMENT-REJECT messages generated by the PCU to the mobile station with a cause of "Maximum TBF per TDMA is reached" in the first phase of the two_phase access uplink TBF establishment.
channelRequest	L_int		0.. 4294967295	The number of CHANNEL-REQUEST messages received by the PCU from the mobile station in the first phase of the two_phase access uplink TBF establishment.

(Sheet 1 of 4)

Table 45 (Continued)
PCU CCCH statistics

Field name	Field type	Default field position	Field value	Field description
packetResourceRequest	L_int		0.. 4294967295	The number of PACKET-RESOURCE-REQUEST messages received by the PCU from the mobile station in the second phase of the two_phase access uplink TBF establishment.
deleteIndicationUp	L_int		0.. 4294967295	The number of DELETE-INDICATION messages sent by the BTSs when an IMMEDIATE-ASSIGNMENT message for uplink transfer is dropped.
packetUpAssignment	L_int		0.. 4294967295	The number of PACKET-UPLINK-ASSIGNMENT messages generated by the PCU after a PACKET-RESOURCE-REQUEST in the second phase of the two_phase access uplink TBF establishment.
upTbfPacketAccessRejectNoPdch	L_int		0.. 4294967295	The number of PACKET-ACCESS-REJECT messages generated by the PCU to the mobile station with a cause of "No PDCH available for GPRS" in the second phase of the two_phase access uplink TBF establishment.
upTbfPacketAccessRejectNoTs	L_int		0.. 4294967295	The number of PACKET-ACCESS-REJECT messages generated by the PCU to the mobile station with a cause of "Maximum MS per TS is reached" in the second phase of the two_phase access uplink TBF establishment.

(Sheet 2 of 4)

Table 45 (Continued)
PCU CCCH statistics

Field name	Field type	Default field position	Field value	Field description
upTbfPacketAccessRejectNoTbf	L_int		0.. 4294967295	The number of PACKET-ACCESS-REJECT messages generated by the PCU to the mobile station with a cause of "Maximum TBF per TDMA is reached" in the second phase of the two_phase access uplink TBF establishment.
dnTbfImmediateAssignment	L_int		0.. 4294967295	The number of IMMEDIATE-ASSIGNMENT messages sent for a downlink TBF establishment from the PCU to the mobile station.
pagingRequest	L_int		0.. 4294967295	The number of PAGING-REQUEST messages generated by the PCU to the mobile station.
deleteIndicationDn	L_int		0.. 4294967295	The number of DELETE-INDICATION messages sent by the BTSs when an IMMEDIATE-ASSIGNMENT message for downlink transfer is dropped.
packetDnAssignment	L_int		0.. 4294967295	The number of PACKET-DOWNLINK-ASSIGNMENT messages generated by the PCU to the mobile station in the downlink TBF establishment phase.
dnTbfPacketAccessRejectNoPdch	L_int		0.. 4294967295	The number of PACKET-ACCESS-REJECT messages generated by the PCU to the mobile station with a cause of "No PDCH available for GPRS" in the second phase of the two_phase access downlink TBF establishment.

(Sheet 3 of 4)

Table 45 (Continued)
PCU CCCH statistics

Field name	Field type	Default field position	Field value	Field description
dnTbfPacketAccessRejectNoTs	L_int		0.. 4294967295	The number of PACKET-ACCESS-REJECT messages generated by the PCU to the mobile station with a cause of "Maximum MS per TS is reached" in the second phase of the two_phase access downlink TBF establishment.
dnTbfPacketAccessRejectNoTbf	L_int		0.. 4294967295	The number of PACKET-ACCESS-REJECT messages generated by the PCU to the mobile station with a cause of "Maximum TBF per TDMA is reached" in the second phase of the two_phase access downlink TBF establishment.

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Table 46
PCU PBlock statistics

Field name	Field type	Default field position	Field value	Field description
cpuPBlockUtilAvg	int		0..100	The average PBlock CPU load during the statistics collection interval, expressed as a percentage.
cpuPBlockUtilMin	int		0..100	The minimum PBlock CPU load during the statistics collection interval, expressed as a percentage.

(Sheet 1 of 2)

Table 46 (Continued)
PCU PBlock statistics

Field name	Field type	Default field position	Field value	Field description
cpuPBlockUtilMax	int	309 n/a to pp	0..100	The maximum PBlock CPU load during the statistics collection interval, expressed as a percentage.
(Sheet 2 of 2)				

Table 47
GPRS BSS Virtual Connection (BVC) statistics

Field name	Field type	Default field position	Field value	Field description
currentBvcs	L_int		0.. 4294967295	The current number of BSS GPRS Virtual Connections (BVCs) on this Network Service Entity (NSE).

Table 48
GPRS GTL NSE, PTP BVC, NS-VC, and SIG BVC statistics

Field name	Field type	Default field position	Field value	Field description
octetsToPcu	L_int		0.. 4294967295	If this field is included with a GPRS GTL NSE record, this field indicates the number of octets transmitted to the Packet Control Unit (PCU) by all the Network Service Virtual Connections (NS-VCs) served by this Network Service Entity (NSE). If this field is included with a PTP BVC record, this field indicates the number of octets transmitted to the Packet Control Unit (PCU) from the BSS GPRS Virtual Connection (BVC). If this field is included with an SG NS-VC record, this field indicates the number of octets the Network Service Virtual Connection (NS-VC) has processed and transmitted to the Packet Control Unit (PCU). If this field is included with a SIG BVC record, this field indicates the number of octets transmitted to the Packet Control Unit (PCU) from the BSS GPRS Virtual Connection (BVC).

(Sheet 1 of 2)

Table 48 (Continued)
GPRS GTL NSE, PTP BVC, NS-VC, and SIG BVC statistics

Field name	Field type	Default field position	Field value	Field description
octetsFromPcu	L_int		0.. 4294967295	If this field is included with a GPRS GTL NSE record, this field indicates the number of octets received from all the Network Service Virtual Connections (NS-VCs) of the Packet Control Unit served by the peer Network Service Entity (NSE). If this field is included with a PTP BVC record, this field indicates the number of octets received from the Packet Control Unit (PCU) by the BSS GPRS Virtual Connection (BVC). If this field is included with an SG NS-VC record, this field indicates the number of octets the Network Service Virtual Connection (NS-VC) has processed and received from the Packet Control Unit (PCU). If this field is included with a SIG BVC record, this field indicates the number of octets received from the Packet Control Unit (PCU) by the BSS GPRS Virtual Connection (BVC).

(Sheet 2 of 2)

Table 49
GPRS PTP BVC and SIG BVC statistics

Field name	Field type	Default field position	Field value	Field description
pdusFromPcu	L_int		0.. 4294967295	If this field is included with a PTP BVC record, this field indicates the number of protocal data units (PDUs) received from the Packet Control Unit (PCU) by the BSS GPRS Virtual Connection (BVC). If this field is included with a SIG BVC record, this field indicates the number of protocol data units (PDUs) received from the Packet Control Unit (PCU) by the BSS GPRS Virtual Connection (BVC).
pdusToPcu	L_int		0.. 4294967295	If this field is included with a PTP BVC record, this field indicates the number of protocol data units (PDUs) transmitted to the Packet Control Unit (PCU) from the BSS GPRS Virtual Connection (BVC). If this field is included with a SIG BVC record, this field indicates the number of protocol data units (PDUs) received from the Packet Control Unit (PCU) by the BSS GPRS Virtual Connection (BVC).

Table 50
GPRS PTP BSS Virtual Connection (BVC) statistics

Field name	Field type	Default field position	Field value	Field description
bvcFlowCntlFromPcu	L_int		0.. 4294967295	The number of FLOW-CONTROL-BVC Protocol Data Units (PDUs) received by the BSS GPRS Virtual Connection (BVC).
msFlowCntlFromPcu	L_int		0.. 4294967295	The number of BSSGP-FLOW-CONTROL-MS Protocol Data Units (PDUs) received by the BSS GPRS Virtual Connection (BVC).

Table 51
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
currentTransactions	L_int		0.. 4294967295	The current number of concurrent transactions being handled by the MapClient. This is the value at the end of the statistics collection interval.
uglMsgs	L_int		0.. 4294967295	The number of MAP-UPDATE GPRS LOCATION messages sent to the Home Location Register (HLR).
uglResponseMsgs	L_int		0.. 4294967295	The number of MAP-UPDATE GPRS LOCATION RESPONSE messages received from the Home Location Register (HLR).
(Sheet 1 of 16)				

Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
isdMsgs	L_int		0.. 4294967295	The number of MAP-INSERT SUBSCRIBER DATA messages sent to the Home Location Register (HLR).
isdResponseMsgs	L_int		0.. 4294967295	The number of MAP-INSERT SUBSCRIBER DATA RESPONSE messages received from the Home Location Register (HLR).
dsdMsgs	L_int		0.. 4294967295	The number of MAP-DELETE SUBSCRIBER DATA messages sent to the Home Location Register (HLR).
dsdResponseMsgs	L_int		0.. 4294967295	The number of MAP-DELETE SUBSCRIBER DATA RESPONSE messages received from the Home Location Register (HLR).
clMsgs	L_int		0.. 4294967295	The number of MAP-CANCEL LOCATION messages sent to the Home Location Register (HLR).
clResponseMsgs	L_int		0.. 4294967295	The number of MAP-CANCEL LOCATION RESPONSE messages received from the Home Location Register (HLR).
rstMsgs	L_int		0.. 4294967295	The number of MAP-RESET messages received from the Home Location Register (HLR).
saiMsgs	L_int		0.. 4294967295	The number of MAP-SEND AUTHENTICATION INFO messages sent to the Home Location Register (HLR).

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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
saiResponseMsgs	L_int		0.. 4294967295	The number of MAP-SEND AUTHENTICATION INFO RESPONSE messages received from the Home Location Register (HLR).
transLimitDiscards	L_int		0.. 4294967295	The number of transactions rejected by the MapClient when the maximum number of Mobile Application Part (MAP) transactions (attribute maxTransactions) has been exceeded.
tmrExpiries	L_int		0.. 4294967295	The number of times the mcTimer (defined in component Sgsn GprsSubscriberControl) expires before receiving a response from the Home Location Register (HLR). This field can be used to determine if the provisionable attribute mcTimer needs to be changed, or if a problem exists between the Serving GPRS Support Node (SGSN) and the Home Location Register (HLR).
sigErrs	L_int		0.. 4294967295	The number of errors encountered by the MapClient when decoding a message from the Signaling System 7-Internet Protocol (SS7-IP) Gateway. This field can be used to determine if a problem exists (such as formatting or corrupt data) with the messages received from the SS7-IP Gateway.

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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
sigErrsRcvd	L_int		0.. 4294967295	The number of messages containing an ERROR or REJECT component from the Signaling System 7-Internet Protocol (SS7-IP) Gateway. This field can be used to identify potential problems between the SS7-IP Gateway and the Serving GPRS Support Node (SGSN).
ofsmMsgs	L_int		0.. 4294967295	The number of MAP-MO-FORWARD-SHORT-MESSAGE messages received by the Inter-working Mobile Switching Center (IWMSC) from the MAP Client.
ofsmResMsgs	L_int		0.. 4294967295	The number of MAP-MO-FORWARD-SHORT-MESSAGE response messages received by the MAP Client from the Inter-working Mobile Switching Center (IWMSC).
tfsmMsgs	L_int		0.. 4294967295	The number of MAP-MT-FORWARD-SHORT-MESSAGE messages received by the MAP Client from the Inter-working Mobile Switching Center (IWMSC).
tfsmResMsgs	L_int		0.. 4294967295	The number of MAP-MT-FORWARD-SHORT-MESSAGE response messages received by the Inter-working Mobile Switching Center (IWMSC) from the MAP Client.
rsmMsgs	L_int		0.. 4294967295	The number of MAP-READY-FOR-SM messages received by the Home Location Register (HLR) from the MAP Client.

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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
rsmResMsgs	L_int		0.. 4294967295	The counts the MAP-READY-FOR-SM response messages received by the MAP Client from the Home Location Register (HLR).
afrMsgs	L_int		0.. 4294967295	The number of AUTHENTICATION FAILURE REPORT messages sent to the Home Location Register (HLR). UMTS, only.
afrResponseMsgs	L_int		0.. 4294967295	The number of AUTHENTICATION FAILURE REPORT RESPONSE messages received from the Home Location Register (HLR). UMTS, only.
sccpServiceRequest Timeouts	L_int		0.. 4294967295	This attribute indicates the MAP Stack Service request timeouts in the collection interval. This could occur if the MAP Stack was not responding to Service requests from the MAP Clients, or if there was an SS7-IP Gateway (SIG) or IP network problem. Retries of the Service request are infinite since the MAP Client can not send or receive MAP messages until it is successfully registered with the MAP Stack.
decodeErrors	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of MAP messages received from the peer nodes that are not decodable. The inability to decode the MAP message is caused by the MAP Client receiving a message with invalid data.

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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
dataMissingRespSent	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of "data missing" error responses sent to the peer nodes. This error may occur when optional data is missing from a MAP message received, when required data is missing from a MAP message received, or when an internal data structure is missing data.
unexpectedDataValues RespSent	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of "unexpected data value" error responses sent to the peer nodes. This error may occur when the parameter type is correct in a MAP message received but contains data which is not relevant for the type of MAP service being invoked.
unidentifiedSubscribers RespSent	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of "unidentified subscriber" error responses sent to the peer nodes. This error may occur when the subscriber is not contained in the subscriber database resulting in the failure to establish a call.
uAbortMsgSent	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of MAP USER ABORT messages sent by the MAP Client to the peer nodes. This message may be sent as a result of a resource limitation caused by congestion or as a result of the unavailability of resources.

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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
pAbortMsgRecv	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of MAP PROVIDER ABORT messages received by the MAP Client from the peer nodes. This message indicates to the MAP service-user to abort a MAP dialogue. This message may be received due to a MAP service-provider malfunction, supporting dialogue/transaction release, resource limitation, maintenance activity, version incompatibility, or an abnormal MAP dialogue.
uAbortMsgRecv	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of MAP USER ABORT messages received by the MAP Client from the peer nodes. This message indicates to the MAP service-provider to abort a MAP dialogue. This message may be received due to a resource limitation caused by congestion or by unavailability of resources.
dataMissingRespRecv	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of "data missing" error responses received from the peer nodes. This error may occur when optional data is missing from a MAP message sent, when required data is missing from a MAP message sent, or when an internal data structure is missing data.

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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
unexpectedDataValues RespRecv	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of "unexpected data value" error responses received from the peer nodes. This error may occur when the parameter type is correct in a MAP message sent but contains data which is not relevant for the type of MAP service being invoked.
systemFailuresRespRecv	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of "system failure" error responses received from the peer nodes. This error may occur when a task specified by a MAP message sent cannot be performed because of a problem with another entity.
systemFailuresRespSent	L_int		0.. 4294967295	This attribute indicates the number of "system failure" error responses sent to the peer nodes. This error may occur when a task specified in MAP message received cannot be performed because of a problem with another entity. The counter wraps to zero when it exceeds the maximum value. GPRS, only.
unknownSubscribersResp Recv	L_int		0.. 4294967295	This attribute indicates the number of "unknown subscriber" error responses received from the peer nodes. This error may occur when a message sent is processed for a subscription that does not exist. The counter wraps to zero when it exceeds the maximum value.

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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
roamingNotAllowedResp Recv	L_int		0.. 4294967295	This attribute indicates the number of "roaming not allowed" error responses received from the peer nodes. This error may occur when a location update attempt is made in an area not covered by the subscription. The counter wraps to zero when it exceeds the maximum value.
invalidMessages	L_int		0.. 4294967295	This attribute indicates the number of invalid messages received by the MAP Client. This may occur if the MAP Client receives an unsolicited message, a message with an invalid header, or an invalid dialogue ID. The counter wraps to zero when it exceeds the maximum value.
isdMsgsUpdateLocation	L_int		0.. 4294967295	This attribute indicates the number of MAP-INSERT SUBSCRIBER DATA messages received from the Home Location Register (HLR) during a GPRS Update Location procedure. The counter wraps to zero when it exceeds the maximum value.
isdMsgsHlrSubUpdate	L_int		0.. 4294967295	This attribute indicates the number of MAP-INSERT SUBSCRIBER DATA messages received from the Home Location Register (HLR) due to an HLR operator intervention. The counter wraps to zero when it exceeds the maximum value.
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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
isdFailures	L_int		0.. 4294967295	This attribute indicates the number of MAP-INSERT SUBSCRIBER DATA messages sent to the Home Location Register (HLR) that could not be processed due to one of the following errors: Data Missing Unexpected Data Value Unidentified Subscriber Decode errors The counter wraps to zero when it exceeds the maximum value.
clMsgsHlrDetach	L_int		0.. 4294967295	This attribute indicates the number of MAP-CANCEL LOCATION messages received from the Home Location Register (HLR) due to an HLR initiated Detach. The counter wraps to zero when it exceeds the maximum value.
clMsgsSgsnChange	L_int		0.. 4294967295	This attribute indicates the number of MAP-CANCEL LOCATION messages received from the Home Location Register (HLR) due to a Service GPRS Support Node (SGSN) change. The counter wraps to zero when it exceeds the maximum value.

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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
clMsgsHlrOther	L_int		0.. 4294967295	This attribute indicates the number of MAP-CANCEL LOCATION messages received from the Home Location Register (HLR) with a cancellation type other than a Service GPRS Support Node (SGSN) change or an HLR initiated Detach. The counter wraps to zero when it exceeds the maximum value.
clFailures	L_int		0.. 4294967295	This attribute counts the MAP-CANCEL LOCATION messages received from the Home Location Register (HLR) that could not be processed due to one of the following errors: Data Missing Unexpected Data Value Decode errors The counter wraps to zero when it exceeds the maximum value.
dsdFailures	L_int		0.. 4294967295	This attribute indicates the number of MAP-DELETE SUBSCRIBER DATA messages sent to the Home Location Register (HLR) that could not be processed due to one of the following errors: Data Missing Unexpected Data Value Unidentified Subscriber Decode errors The counter wraps to zero when it exceeds the maximum value.

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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
pmsMsgs	L_int		0.. 4294967295	This attribute counts the number of Mobile Subscriber Purge messages sent to the Home Location Register (HLR). The counter wraps to zero when it exceeds the maximum value.
pmsResponseMsgs	L_int		0.. 4294967295	This attribute counts the number of Mobile Subscriber Purge MS Response messages received from the Home Location Register(HLR). The counter wraps to zero when it exceeds the maximum value.
pslMsgs	L_int		0.. 4294967295	This attribute counts the MAP-PROVIDE SUBSCRIBER LOCATION messages received by the MAP Client from the Gateway Mobile Location Center (GMLC). The counter wraps to zero when it exceeds the maximum value.
pslRespMsgs	L_int		0.. 4294967295	This attribute counts the MAP-PROVIDE SUBSCRIBER LOCATION response messages sent by the MAP Client to the Gateway Mobile Location Center (GMLC). The counter wraps to zero when it exceeds the maximum value.

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Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
unauthorizedReqNetwork RespSent	L_int		0.. 4294967295	This attribute counts the number of "Unauthorized Requested Network" error responses sent to the Gateway Mobile Location Center (GMLC). This error may occur when a Location Request is denied due to the GMLC not being in the home country. The counter wraps to zero when it exceeds the maximum value.
unauthorizedLcsClientResp Sent	L_int		0.. 4294967295	This attribute counts the number of "Unauthorized LCS Client" error responses sent to the Gateway Mobile Location Center (GMLC). This error may occur when a Location Request is denied due to privacy restrictions. The counter wraps to zero when it exceeds the maximum value.
positionMethodFailureResp Sent	L_int		0.. 4294967295	This attribute counts the number of "Positioning Method Failure" error responses sent to the Gateway Mobile Location Center (GMLC). This error may occur when the position of the mobile cannot be retrieved. The counter wraps to zero when it exceeds the maximum value.
(Sheet 13 of 16)				

Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
absentSubscriberRespSent	L_int		0.. 4294967295	This attribute counts the number of "Absent Subscriber" error responses sent to the Gateway Mobile Location Center (GMLC). This error may occur when the subscriber is International Mobile Subscriber Identity (IMSI) detached, in a restricted area, or does not respond to paging. The counter wraps to zero when it exceeds the maximum value.
facilityNotSupportedResp Sent	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of "facility not supported" error responses sent to the peer nodes. This error may occur when the requested facility, such as SMS, is not supported. GPRS, only.
facilityNotSupportedResp Recv	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of "facility not supported" error responses received from the HLR or SMSC. This error may occur when the requested facility, such as SMS, is not supported. GPRS, only.
smDeliveryFailuresResp Sent	L_int		0.. 4294967295	This attribute indicates the number of "short message delivery failure" error responses sent to the SMSC. This error may occur when the mobile runs out of memory to store short messages. The counter wraps to zero when it exceeds the maximum value. GPRS, only.
(Sheet 14 of 16)				

Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
smDeliveryFailuresResp Recv	L_int		0.. 4294967295	This attribute indicates, over the collection interval, the number of "short message delivery failure" error responses received from the SMSC. This error may occur when the Short Message Service Center returns a delivery error indication in response to a message sent by the MAP Client. GPRS, only.
illegalSubscribersRespSent	L_int		0.. 4294967295	This attribute indicates the number of "illegal subscriber" error responses sent to the peer nodes. This error may occur when an illegal access attempt is determined during the authentication process. The counter wraps to zero when it exceeds the maximum value.GPRS, only.
illegalEquipmentRespSent	L_int		0.. 4294967295	This attribute indicates the number of "illegal equipment" error responses sent to the peer nodes. This error may occur when the International Mobile station Equipment Identity (IMEI) is either blacklisted or not whitelisted. The counter wraps to zero when it exceeds the maximum value. GPRS, only.
(Sheet 15 of 16)				

Table 51 (Continued)
GPRS/UMTS Map Client statistics

Field name	Field type	Default field position	Field value	Field description
subscriberBusyForMtSms RespSent	L_int		0.. 4294967295	This attribute indicates the number of "subscriber busy for mobile-terminated short message service" error responses sent to the SMSC. This error may occur when mobile terminated short messages cannot be completed. The counter wraps to zero when it exceeds the maximum value. GPRS, only.
absentSubscriberSmResp Sent	L_int		0.. 4294967295	This attribute indicates the number of "absent subscriber short message service" error responses sent to the SMSC. This error may occur when the mobile terminated short message transfer cannot be completed because the network cannot contact the subscriber. This may be caused by the mobile being turned off. The counter wraps to zero when it exceeds the maximum value. GPRS, only.
(Sheet 16 of 16)				

Table 52
GPRS Mobility Management (GMM) statistics

Field name	Field type	Default field position	Field value	Field description
authenticationRequests	L_int		0.. 4294967295	The number of AUTHENTICATION AND CIPHERING REQUEST messages sent to the MS requiring only authentication and messages requiring both authentication and ciphering.
cipheringRequests	L_int		0.. 4294967295	The number of AUTHENTICATION AND CIPHERING REQUEST messages sent to the Mobile Stations (MS) requiring only ciphering.
identityRequests	L_int		0.. 4294967295	The number of IDENTITY REQUEST messages sent to the Mobile Stations (MS).
ptmsiReallocationRequests	L_int		0.. 4294967295	The number of implicit and explicit P-TMSI REALLOCATION messages sent to the Mobile Stations (MS).
bssgpSuspendMsgs	L_int		0.. 4294967295	The number of SUSPEND messages received by the Serving GPRS Support Node (SGSN) from the Base Station System (BSS). The BSS sends these messages when a mobile subscriber switches from packet-switched mode to circuit-switched mode.

(Sheet 1 of 7)

Table 52 (Continued)
GPRS Mobility Management (GMM) statistics

Field name	Field type	Default field position	Field value	Field description
bssgpResumeMsgs	L_int		0.. 4294967295	The number of RESUME messages received by the Serving GPRS Support Node (SGSN) from the Base Station System (BSS). The BSS sends these messages when a mobile subscriber switches from circuit-switched mode to packet-switched mode.
readyStateSubscribers	L_int		0.. 4294967295	The number of mobile subscribers that are GPRS-attached and in Ready state. This value is reported at the end of the statistics collection interval.
currentlyAttached	L_int		0.. 4294967295	The number of Mobile Stations (MS) that are currently GPRS-attached and in Ready or Standby state. This value is reported at the end of the statistics collection interval.
attachesSuccessful	L_int		0.. 4294967295	The number of GPRS-attaches to this Serving GPRS Support Node (SGSN) that were successful.
attachesRejected	L_int		0.. 4294967295	The number of GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected.
attachesWithKnownTlli	L_int		0.. 4294967295	The number of ATTACH REQUEST messages received with a Temporary Logical Link Identifier (TLLI) previously assigned by this Serving GPRS Support Node (SGSN). This includes all successful and unsuccessful attempts.

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Table 52 (Continued)
GPRS Mobility Management (GMM) statistics

Field name	Field type	Default field position	Field value	Field description
attachesWithUnknownTlli	L_int		0.. 4294967295	The number of ATTACH REQUEST messages received with a Temporary Logical Link Identifier (TLLI) not assigned by this Serving GPRS Support Node (SGSN). This includes all successful and unsuccessful attempts.
attachesWithImsi	L_int		0.. 4294967295	This attribute counts the ATTACH REQUEST messages received with an International Mobile Subscriber Identity (IMSI) as an identifier. This includes all successful and unsuccessful attempts.
attachesWithInfoAttempts	L_int		0.. 4294967295	The number of ATTACH attempts by mobile subscribers using the GPRS Mobility Management (GMM) context in the Serving GPRS Support Node (SGSN). This includes all successful and unsuccessful attempts.
detachesSuccessful	L_int		0.. 4294967295	The number of successful mobile or network initiated DETACHes.
msDetachRequests	L_int		0.. 4294967295	The number of Mobile Station (MS) initiated DETACH REQUEST messages received by this Serving GPRS Support Node (SGSN).
msDetachRejected	L_int		0.. 4294967295	The number of Mobile Station (MS) initiated GPRS-DETACH REQUEST messages that have been rejected by this Serving GPRS Support Node (SGSN).
nwkDetachRequests	L_int		0.. 4294967295	The number of network initiated DETACH REQUEST messages transmitted to a mobile subscriber.

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Table 52 (Continued)
GPRS Mobility Management (GMM) statistics

Field name	Field type	Default field position	Field value	Field description
authenticationsRejected	L_int		0.. 4294967295	The number of AUTHENTICATION AND CIPHERING REJECT messages transmitted to the Mobile Station (MS) due to authentication failures.
oldCredentialsPresented	L_int		0.. 4294967295	The number of old authentication credentials used in an AUTHENTICATION AND CIPHERING RESPONSE received from a Mobile Station (MS).
normalIntraSgsnRaUpdate	L_int		0.. 4294967295	The number of normal intra-Serving GPRS Support Node (SGSN) ROUTING AREA UPDATE REQUEST messages received from the Mobile Station (MS).
periodicIntraSgsnRa Update	L_int		0.. 4294967295	The number of periodic intra-Serving GPRS Support Node (SGSN) ROUTING AREA UPDATE REQUEST messages received from the Mobile Station (MS).
normalInterSgsnRaUpdate	L_int		0.. 4294967295	The number of normal inter-Serving GPRS Support Node (SGSN) ROUTING AREA UPDATE REQUEST messages received from the Mobile Station (MS).
intraRaCellChange	L_int		0.. 4294967295	The number of intra-Serving GPRS Support Node (SGSN) intra-Routing Area Update cell changes performed by the Mobile Station (MS).
initialPsPageRequests	L_int		0.. 4294967295	The number of initial PS (Packet-Switched) PAGE REQUEST messages transmitted to the Mobile Station (MS).
(Sheet 4 of 7)				

Table 52 (Continued)
GPRS Mobility Management (GMM) statistics

Field name	Field type	Default field position	Field value	Field description
reattemptPsPageRequests	L_int		0.. 4294967295	The number of re-attempted PS (Packet-Switched) PAGE REQUEST messages transmitted to the Mobile Station (MS) after the initial page request.
interSgsnRaUpdate Accepts	L_int		0.. 4294967295	The number of ROUTING AREA UPDATE ACCEPT messages sent from this SGSN, while acting as the new SGSN, to the Mobile Station (MS).
t3Timeouts	L_int		0.. 4294967295	The number of times the t3TunnelTimer (defined in Sgsn GprsSubscriberControl) expires in this SGSN, while acting as the old SGSN, and the CANCEL LOCATION message has been received.
msPresentAttempts	L_int		0.. 4294967295	This attribute indicates, for the collection interval, the number of times the SGSN detects that the Mobile Station (MS) has recovered operation such as responded to a paging request via the SGSN. If the MS has alerted the SGSN and the HLR that its memory has exceeded, then the HLR will not notify the Service Center that the MS is ready for Short Message Services (SMS).
(Sheet 5 of 7)				

Table 52 (Continued)
GPRS Mobility Management (GMM) statistics

Field name	Field type	Default field position	Field value	Field description
nwkDetachReachable Timer	L_int		0.. 4294967295	This attribute counts the number of network initiated detaches due to the expiration of reachable timer. The mobileReachableTimer attribute is provisioned in the Sgsn Gsc component. The counter counts the events in the collection interval.
nwkDetachCancelLocation	L_int		0.. 4294967295	This attribute counts the number of network initiated detaches due to the receipt of CANCEL LOCATION Messages from the Home Location Register (HLR). The counter counts the events in the collection interval.
nwkDetachDuplicateAttach	L_int		0.. 4294967295	This attribute counts the number of network initiated detaches due to mobile reattaches with a new random Packet Temporary Mobile Subscriber Identity (PTMSI) without first performing a detach. The counter counts the events in the collection interval.
nwkDetachTempNetwork Failure	L_int		0.. 4294967295	This attribute counts the number of network initiated detaches due to temporary network problems. The counter counts the events in the collection interval.
(Sheet 6 of 7)				

Table 52 (Continued)
GPRS Mobility Management (GMM) statistics

Field name	Field type	Default field position	Field value	Field description
nwkDetachForReattach	L_int		0.. 4294967295	This attribute counts the number of network initiated detaches with a detach type of "reattach required". The counter counts the events in the collection interval.
(Sheet 7 of 7)				

Table 53
GPRS Mobility Management (GMM) attach rejects statistics

Field name	Field type	Default field position	Field value	Field description
attachRejIllegalMs	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected because of the reject cause Illegal Ms. The counter wraps to zero when it exceeds the maximum value.
attachRejGprsServNot Allowed	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected because of the reject cause Gprs Service not allowed. The counter wraps to zero when it exceeds the maximum value.
(Sheet 1 of 4)				

Table 53 (Continued)
GPRS Mobility Management (GMM) attach rejects statistics

Field name	Field type	Default field position	Field value	Field description
attachRejGprsServNotAllowedInPlmn	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected because of the reject cause "Gprs Service not allowed in this PLMN". The counter wraps to zero when it exceeds the maximum value.
attachRejPlmnNotAllowed	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected because of the reject cause PLMN not allowed. The counter wraps to zero when it exceeds the maximum value.
attachRejPacketNetworkFailure	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected because of the reject cause Network Failure. The counter wraps to zero when it exceeds the maximum value.
attachRejSgsnCongestion	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected because of the reject cause Congestion. The counter wraps to zero when it exceeds the maximum value.

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Table 53 (Continued)
GPRS Mobility Management (GMM) attach rejects statistics

Field name	Field type	Default field position	Field value	Field description
attachRejMsgError	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected because of one of the following reject causes: Semantically incorrect message, Invalid mandatory information, Message type non-existence or not implemented, Message type not compatible with the protocol state, Information element non-existent or not implemented, Conditional IE error, Message not compatible with the protocol state, Protocol error, unspecified. The counter wraps to zero when it exceeds the maximum value.
(Sheet 3 of 4)				

Table 53 (Continued)
GPRS Mobility Management (GMM) attach rejects statistics

Field name	Field type	Default field position	Field value	Field description
attachRejRoamNotAllowedInLocArea	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected because of the reject cause "roaming not allowed in location area". This counter is incremented when a Unit Data Transfer Service message (UDTS) is received from the SS7/IP Gateway (SIG) for a Update GPRS Location (UGL) or a Send Authentication Info (SAI), or when the global title translation failure occurs in the MapClient component. The counter wraps to zero when it exceeds the maximum value.

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Table 54
GPRS Mobility Management (GMM) attach rejects per cell statistics

Field name	Field type	Default field position	Field value	Field description
msAttachAttemptsPerCell	L_int		0.. 4294967295	This attribute counts the number of attach requests received from the mobile subscribers in this cell. The counter counts the events in the collection interval.

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Table 54 (Continued)
GPRS Mobility Management (GMM) attach rejects per cell statistics

Field name	Field type	Default field position	Field value	Field description
attachRejIllegalMsPerCell	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this cell that were rejected because of the reject cause Illegal Ms. The counter wraps to zero when it exceeds the maximum value.
attachRejGprsSvcNot AllowedPerCell	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this cell that were rejected because of the reject cause Gprs Service not allowed. The counter wraps to zero when it exceeds the maximum value.
attachRejGprsSvcNot AllowInPlmnPerCell	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this cell that were rejected because of the reject cause "Gprs Service not allowed in this PLMN". The counter wraps to zero when it exceeds the maximum value.
attachRejPlmnNotAllowed PerCell	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this cell that were rejected because of the reject cause PLMN not allowed. The counter wraps to zero when it exceeds the maximum value.
attachRejPacketNetFailure PerCell	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this cell that were rejected because of the reject cause Network Failure. The counter wraps to zero when it exceeds the maximum value.

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Table 54 (Continued)
GPRS Mobility Management (GMM) attach rejects per cell statistics

Field name	Field type	Default field position	Field value	Field description
attachRejSgsnCongestion PerCell	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this cell that were rejected because of the reject cause Congestion. The counter wraps to zero when it exceeds the maximum value.
attachRejMsgErrorPerCell	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this cell that were rejected because of one of the following reject causes: Semantically incorrect message, Invalid mandatory information, Message type non-existence or not implemented, Message type not compatible with the protocol state, Information element non-existent or not implemented, Conditional IE error, Message not compatible with the protocol state, Protocol error, unspecified. The counter wraps to zero when it exceeds the maximum value.
attachRejRoamNotAllowed InLocAreaPerCell	L_int		0.. 4294967295	This attribute counts the GPRS-attaches to this cell that were rejected because of the reject cause "roaming not allowed in location area". The counter wraps to zero when it exceeds the maximum value.
(Sheet 3 of 5)				

Table 54 (Continued)
GPRS Mobility Management (GMM) attach rejects per cell statistics

Field name	Field type	Default field position	Field value	Field description
nwkDetachReachable TimerPerCell	L_int		0.. 4294967295	This attribute counts the number of network initiated detaches in this cell due to the expiration of reachable timer. The mobileReachableTimer attribute is provisioned in the Sgsn Gsc component. The counter counts the events in the collection interval.
nwkDetachCancelLocation PerCell	L_int		0.. 4294967295	This attribute counts the number of network initiated detaches in the specified cell due to the receipt of CANCEL LOCATION Messages from the HLR. The counter counts the events in the collection interval.
nwkDetachDuplicateAttach PerCell	L_int		0.. 4294967295	This attribute counts the number of network initiated detaches in this cell due to mobile reattaches with a new random Packet Temporary (PTMSI) without first performing a detach. This is an implicit detach and no detach message is sent to the mobile. The counter counts the events in the collection interval.
nwkDetachTempNwk FailurePerCell	L_int		0.. 4294967295	This attribute counts the number of network initiated detaches or termination of mobility contexts in this cell due to temporary network problems. The counter counts the events in the collection interval.

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Table 54 (Continued)
GPRS Mobility Management (GMM) attach rejects per cell statistics

Field name	Field type	Default field position	Field value	Field description
nwkDetachForReattachPerCell	L_int		0.. 4294967295	This attribute counts the number of network initiated detaches in this cell with a detach cause of "reattach required". The counter counts the events in the collection interval.
(Sheet 5 of 5)				

Table 55
GPRS Session Management (SM) Packet Data Protocol (PDP) statistics

Field name	Field type	Default field position	Field value	Field description
currentPdpContexts	L_int		0.. 4294967295	The number of active Packet Data Protocol (PDP) contexts.
mobileInitActivations	L_int		0.. 4294967295	The number of successful Mobile-initiated Packet Data Protocol (PDP) context activations for this SessionManagement (SM) component.
mobileInitDeacts	L_int		0.. 4294967295	The number of Packet Data Protocol (PDP) context deactivations initiated by the Mobile Station (MS).
ggsnInitDeacts	L_int		0.. 4294967295	The number of Packet Data Protocol (PDP) context deactivations initiated by the Gateway GPRS Support Node (GGSN).
(Sheet 1 of 4)				

Table 55 (Continued)
GPRS Session Management (SM) Packet Data Protocol (PDP) statistics

Field name	Field type	Default field position	Field value	Field description
sgsnInitDeacts	L_int		0.. 4294967295	The number of Packet Data Protocol (PDP) context deactivations initiated locally from the Serving GPRS Support Node (SGSN) (for example, as a result of a DETACH from the Mobile Station (MS)).
hlrInitDeacts	L_int		0.. 4294967295	The number of Packet Data Protocol (PDP) context deactivations initiated by the Home Location Register (HLR) (for example, Delete Subscriber Data (DSD) withdrawing subscription for an active session).
(Sheet 2 of 4)				

Table 55 (Continued)
GPRS Session Management (SM) Packet Data Protocol (PDP) statistics

Field name	Field type	Default field position	Field value	Field description
currentQosReliability	vector decimal		0.. 4294967295 for each index (0..5)	This attribute indicates the currently active Packet Data Protocol (PDP) contexts for each Quality of Service (QoS) Reliability Class. This is the value at the end of the statistics collection interval. The Reliability values have the following meaning: RelClass = GTP LLC RLC Data where GTP is GPRS Tunnelling Protocol, LLC is Logical Link Control, and RLC is Radio Link Control. • 1 = Acked Acked Acked Protected • 2 = UnAcked Acked Acked Protected • 3 = UnAcked UnAcked Acked Protected • 4 = UnAcked UnAcked UnAcked Protected • 5 = UnAcked UnAcked UnAcked UnProtected

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Table 55 (Continued)
GPRS Session Management (SM) Packet Data Protocol (PDP) statistics

Field name	Field type	Default field position	Field value	Field description
totalQosReliability	vector decimal		0.. 4294967295 for each index (0..5)	The number of Packet Data Protocol (PDP) contexts that were activated for each Quality of Service (QoS) Reliability Class. The Reliability values have the following meaning: RelClass = GTP LLC RLC Data where GTP is GPRS Tunnelling Protocol, LLC is Logical Link Control, and RLC is Radio Link Control. • 1 = Acked Acked Acked Protected • 2 = UnAcked Acked Acked Protected • 3 = UnAcked UnAcked Acked Protected • 4 = UnAcked UnAcked UnAcked Protected • 5 = UnAcked UnAcked UnAcked UnProtected
nwkPdpModifyInitiated	L_int		0.. 4294967295	The number of NWK PDP MODIFY CONTEXT REQUEST messages sent to the Mobile Station (MS). This counter is incremented in the SGSN acting as the new SGSN.
nwkPdpModifyRetries Exhausted	L_int		0.. 4294967295	Tthe number of times the nwkPdpModifyRetires attribute is exhausted. This counter is incremented in the SGSN acting as the new SGSN.

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Table 56
GPRS Home Location Register (HLR) Cache statistics

Field name	Field type	Default field position	Field value	Field description
cacheHits	L_int		0.. 4294967295	The number of instances where the HlrCache contained subscriber information locally and did not need to retrieve information from the Home Location Register (HLR).
cacheMisses	L_int		0.. 4294967295	The number of instances where the HlrCache did not contain subscriber information locally and needed to retrieve information from the Home Location Register (HLR).

Table 57
GPRS Mobile Station (MS) initialization of Packet Data Protocol (PDP) context failures statistics

Field name	Field type	Default field position	Field value	Field description
insufficientResources	L_int		0.. 4294967295	The number of Mobile Station (MS) initiated activations rejected by the Serving GPRS Support Node (SGSN) due to insufficient resources. This counter is incremented either due to the SGSN having insufficient resources for the session, or the Gateway GPRS Support Node (GGSN) returning a cause code of "No resources available" in the CREATE PDP CONTEXT RESPONSE message.
missingOrUnknowApn	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation due to the requested service being rejected by the external packet data network because the Access Point Name (APN) was not included, although required, or if the APN was not resolved.
(Sheet 1 of 5)				

Table 57 (Continued)
GPRS Mobile Station (MS) initialization of Packet Data Protocol (PDP) context failures statistics

Field name	Field type	Default field position	Field value	Field description
unknownPdpAddrOrPdpType	L_int		0.. 4294967295	The number of times a CREATE PDP CONTEXT RESPONSE message was received from the Gateway GPRS Support Node (GGSN) with the cause "Service not supported". This could be because the requested service was rejected by the external packet data network because the Packet Data Protocol (PDP) address or the PDP type was not recognized.
userAuthenticationsFailed	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation because the requested service was rejected by the external packet data network due to a failed user authentication. The SGSN increments this counter when a cause code of "User Authentication Failed" is received from the Gateway GPRS Support Node (GGSN) in the CREATE PDP CONTEXT REQUEST message.

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Table 57 (Continued)
GPRS Mobile Station (MS) initialization of Packet Data Protocol (PDP) context failures statistics

Field name	Field type	Default field position	Field value	Field description
activationRejectedByGgsn	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation because the requested service was rejected by the Gateway GPRS Support Node (GGSN) with a cause code that is not mappable to a cause code in the ACTIVATE PDP CONTEXT REJECT message. These events were counted.
activationRejected Unspecified	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation due to unspecified reasons.
reqServiceOptionNot Subscribed	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation because the MS requested a service for which it has no subscription. These events were counted.
serviceOptionTempOutOf Order	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation because of temporary outage of one or more functions required for supporting the service. These events were counted.

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Table 57 (Continued)
GPRS Mobile Station (MS) initialization of Packet Data Protocol (PDP) context failures statistics

Field name	Field type	Default field position	Field value	Field description
nsapiAlreadyUsed	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation because of the MS requesting a Network-Service Access Point Identifier (N-SAPI) in the Packet Data Protocol (PDP) context activation, that is already used by another active PDP context of this MS. These events were counted.
semanticallyIncorrect Mesage	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation because of the receipt of a message with semantically incorrect contents. These events were counted.
invalidMandatoryInfo Element	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation because of the receipt of a message with errors in a mandatory Information Element (IE). These events were counted.
msgTypeNotCompWithProt State	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation because of the receipt of a message type not compatible with the current protocol state. These events were counted.
(Sheet 4 of 5)				

Table 57 (Continued)
GPRS Mobile Station (MS) initialization of Packet Data Protocol (PDP) context failures statistics

Field name	Field type	Default field position	Field value	Field description
protocolErrorUnspecified	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) rejected a Mobile Station (MS) initiated activation because of a protocol error event that does not fit into any specific protocol error class values. These events were counted.
(Sheet 5 of 5)				

Table 58
GPRS Mobile Station (MS) initialization of Packet Data Protocol (PDP) context failures per cell statistics

Field name	Field type	Default field position	Field value	Field description
msActivationAttemptsPerCell	L_int		0.. 4294967295	This attribute counts the number of Activate PDP context request message received by this SGSN from Mobile Station (MS) in this cell. The counter counts the events in the collection interval.
(Sheet 1 of 4)				

Table 58 (Continued)
GPRS Mobile Station (MS) initialization of Packet Data Protocol (PDP) context failures per cell statistics

Field name	Field type	Default field position	Field value	Field description
insufficientResourcesPer Cell	L_int		0.. 4294967295	This attribute counts the number of PDP activations rejected by this SGSN in this cell due to reject cause "insufficient resources". The counter counts the events in the collection interval.
missingOrUnknowApnPer Cell	L_int		0.. 4294967295	This attribute counts the number of PDP activations rejected by this SGSN in this cell due to reject cause "missing or unknown APN". The counter counts the events in the collection interval.
unkPdpAddrOrPdp TypePerCell	L_int		0.. 4294967295	This attribute counts the number of PDP activations rejected by this SGSN in this cell due to reject cause "unknown PDP address or PDP type". The counter counts the events in the collection interval.
activationsRejByGgsnPer Cell	L_int		0.. 4294967295	This attribute counts the number of Packet Data Protocol (PDP) activations rejected by this SGSN in this cell due to reject cause "activation rejected by GGSN". The counter counts the events in the collection interval.

(Sheet 2 of 4)

Table 58 (Continued)
GPRS Mobile Station (MS) initialization of Packet Data Protocol (PDP) context failures per cell statistics

Field name	Field type	Default field position	Field value	Field description
activationRejUnspecified PerCell	L_int		0.. 4294967295	This attribute counts the number of Packet Data Protocol (PDP) activations rejected by this SGSN in this cell due to reject cause "unspecified reason". The counter counts the events in the collection interval.
serviceOptionNot SupportedPerCell	L_int		0.. 4294967295	This attribute counts the number of Packet Data Protocol (PDP) activations rejected by this SGSN in this cell due to reject cause "service option not supported". The counter counts the events in the collection interval.
reqSvcOptionNot SubscribedPerCell	L_int		0.. 4294967295	This attribute counts the number of Packet Data Protocol (PDP) activation rejected by this SGSN in this cell due to reject cause "requested service option not subscribed". The counter counts the events in the collection interval.
svcOptionTempOutOf OrderPerCell	L_int		0.. 4294967295	This attribute counts the number of Packet Data Protocol (PDP) activation reject by this SGSN in this cell due to reject cause "service option temporarily out of order". The counter counts the events in the collection interval.

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Table 58 (Continued)
GPRS Mobile Station (MS) initialization of Packet Data Protocol (PDP) context failures per cell statistics

Field name	Field type	Default field position	Field value	Field description
protocolErrorPerCell	L_int		0.. 4294967295	This attributes counts the number of Packet Data Protocol (PDP) activation reject by this SGSN in this cell currently because of one of the following reject causes: Semantically incorrect message, Invalid mandatory information, Message not compatible with the protocol state, Protocol error, unspecified. The counter counts the events in the collection interval.
currentPdpContextPerCell	L_int		0.. 4294967295	This attribute counts the number of currently active Packet Data Protocol (PDP) contexts in this cell. The counter counts the events in the collection interval.

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Table 59
GPRS Logical Link Context (LLC) statistics

Field name	Field type	Default field position	Field value	Field description
currentLlesForUserData	L_int		0.. 4294967295	The number of Logical Link Entities (LLEs) used to handle the user data SAPs (Service Access Points) for the GprsSubscriberDataPath (Gsd). This is the peak value in the statistics collection interval.
unknownTllis	L_int		0.. 4294967295	The number of frames received from the Mobile Station (MS) for an unmapped Temporary Logical Link Identity (TLLI). An unmapped TLLI is one for which no Logical Link Context (LLC) mobile context exists. These frames were counted.
currentLlesForUserSms	L_int		0.. 4294967295	The current number of Logical Link Entities (LLEs) used to handle the Short Message Service (SMS) Service Access Points (SAPs) for the GprsSubscriberDatapath (Gsd). This value reported is the peak value in the collection interval.
framesRetransmitted	L_int		0.. 4294967295	This attribute counts the number of total frames retransmitted by the LLC layer. The counter counts the events in the collection interval.
crcErrorsFromMs	L_int		0.. 4294967295	This attribute counts the frames received from the Mobile Station (MS) that contained Cyclic Redundancy Check (CRC) errors. The counter counts the events in the collection interval.

Table 60
GPRS SNDCP statistics

Field name	Field type	Default field position	Field value	Field description
currentNsapis	L_int		0.. 4294967295	The number of Network-Service Access Point Identifiers (N-SAPIs) for this instance of GprsSubscriberDataPath (Gsd). This is the peak value in the statistics collection interval.
currentV42bisEntities	L_int		0.. 4294967295	The number of RFC 1144 header compression entities in the last statistics collection interval for this instance of GprsSubscriberDataPath (Gsd). This is the peak value in the statistics collection interval.
currentRfc1144Entities	L_int		0.. 4294967295	The number of V.42bis compression entities in the last statistics collection interval for this instance of GprsSubscriberDataPath (Gsd). This is the peak value in the statistics collection interval.
snPdusToMs	L_int		0.. 4294967295	The number of SNDCP-Protocol Data Units (SN-PDUs) sent to the Mobile Station (MS).
snPdusFromMs	L_int		0.. 4294967295	The number of SNDCP-Protocol Data Units (SN-PDUs) received from the Mobile Station (MS) (that is, the total number of LL-UNITDATA-PDU and LL-DATA-PDU received from the Logical Link Context (LLC)).

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Table 60 (Continued)
GPRS SNDCP statistics

Field name	Field type	Default field position	Field value	Field description
discardedNpdusFromMs	L_int		0.. 4294967295	The number of Network-Protocol Data Units (N-PDUs) that originated from the Mobile Station (MS) that could not be re-assembled. This could result from N-PDUs lost or re-ordered. These N-PDUs were counted.

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Table 61
GPRS (Serving GPRS) SG Network Service Virtual Connections (NS-VC) statistics

Field name	Field type	Default field position	Field value	Field description
unitDatasFromPcu	L_int		0.. 4294967295	The number of NS-UNITDATA Protocol Data Units (PDUs) received from the Packet Control Unit (PCU).
unitDatasToPcu	L_int		0.. 4294967295	The number of NS-UNITDATA Protocol Data Units (PDUs) sent to the Packet Control Unit (PCU).

Table 62
GPRS Network initialized deactivations of PDP contexts statistics

Field name	Field type	Default field position	Field value	Field description
networkFailure	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) sent a Packet Data Protocol (PDP) CONTEXT DEACTIVATION REQUEST message to the Mobile Station (MS) with a cause code of NETWORK FAILURE. This cause code is sent because of an error situation in the network. These events were counted.
reactivationRequested	L_int		0.. 4294967295	The number of times the Serving GPRS Support Node (SGSN) sent a Packet Data Protocol (PDP) CONTEXT DEACTIVATION REQUEST message to the Mobile Station (MS) with a cause code of REACTIVATE REQUEST. This cause code is sent to MS to request session reactivation. These events were counted.

Table 63
GPRS Packet Control Units (PCU) Network Service Virtual Connections (NS-VC) and PCU Network Service Entity (NSE) statistics

Field name	Field type	Default field position	Field value	Field description
octetsFromSgsn	L_int		0.. 4294967295	If this field was included with a PCU NS-VC record, the number of octets the Network Service Virtual Connection (NS-VC) has processed that were received from the Serving GPRS Support Node (SGSN). If this field was included with a PCU NSE record, the number of octets received from the Serving GPRS Support Node's (SGSN) Network Service Virtual Connections (NS-VCs) served by the peer Network Service Entity (NSE).
octetsToSgsn	L_int		0.. 4294967295	If this field is included with a PCU NS-VC record, the number of octets the Network Service Virtual Connection (NS-VC) has processed that were sent to the Serving GPRS Support Node (SGSN). If this field is included with a PCU NSE record, the number of octets sent to the Serving GPRS Support Node (SGSN) by all the Network Service Virtual Connections (NS-VCs) served by this Network Service Entity (NSE).

Table 64
GPRS Packet Control Units (PCU) Network Service Virtual Connections (NS-VC) statistics

Field name	Field type	Default field position	Field value	Field description
unitDatasFromSgsn	L_int		0.. 4294967295	The number of NS-UNITDATA Protocol Data Units (PDUs) received from the Serving GPRS Support Node (SGSN).
unitDatasToSgsn	L_int		0.. 4294967295	The number of NS-UNITDATA Protocol Data Units (PDUs) sent to the Serving GPRS Support Node (SGSN).

Table 65
GPRS Subscriber Control (Gsc) Prepaid Short Message Service (PSms) statistics

Field name	Field type	Default field position	Field value	Field description
peakConcurrentTransactions	L_int		0.. 4294967295	The peak number of concurrent Prepaid Short Message Service (PSMS) transactions that have occurred on this GprsSubscriberControl (Gsc).
activeConnections	L_int		0.. 4294967295	The number of connections that are currently active between the GprsSubscriberControl (Gsc) and the external Service Control Points (Scps). This reflects only those connections that are currently in the Network Connection Control Protocol (NCCP) data exchange state.

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Table 65 (Continued)
GPRS Subscriber Control (Gsc) Prepaid Short Message Service (PSms) statistics

Field name	Field type	Default field position	Field value	Field description
totalSuccessful Connections	L_int		0.. 4294967295	The number of connections between the GprsSubscriberControl (Gsc) and the external Service Control Points (Scps) that have successfully reached the Network Connection Control Protocol (NCCP) data exchange state.
totalFailedConnections	L_int		0.. 4294967295	The number of connections attempts between the GprsSubscriberControl (Gsc) and the external Service Control Points (Scps) that have failed to reach the Network Connection Control Protocol (NCCP) data exchange state.
totalTransactionSuccesses	L_int		0.. 4294967295	The number of Prepaid Short Message Service (PSMS) transactions that have successfully completed between the GprsSubscriberControl (Gsc) and the external Service Control Points (Scps). Specifically, this indicates the Prepaid CTP INCREMENT DECREMENT RESPONSE messages that have been successfully received before the transactionTime has expired.

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Table 65 (Continued)
GPRS Subscriber Control (Gsc) Prepaid Short Message Service (PSms) statistics

Field name	Field type	Default field position	Field value	Field description
totalTransactionFailures	L_int		0.. 4294967295	The number of Prepaid Short Message Service (PSMS) transactions that have failed between the GprsSubscriberControl (Gsc) and the external Service Control Points (Scps). This includes failures due to failed connections, late responses, resource limitations and protocol errors.
totNwkRelatedTransaction Failures	L_int		0.. 4294967295	The total number of Prepaid Short Message Service (PSMS) transactions that have failed between the GprsSubscriberControl (Gsc) and this external Service Control Point (SCP) due to network related events. This includes transactions rejected due to connection failures, network congestion, and local network resource limitations. This counter counts the events in the collection interval.
(Sheet 3 of 3)				

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Table 66
GPRS Subscriber Control (Gsc) Prepaid Short Message Service (PSms) Service Control Point (SCP) statistics

Field name	Field type	Default field position	Field value	Field description
transactionSuccesses	L_int		0.. 4294967295	The number of Prepaid Short Message Service (PSMS) transactions that have successfully completed between the GprsSubscriberControl (Gsc) and the external Service Control Points (Scps). Specifically, this indicates the Prepaid CTP INCREMENT DECREMENT RESPONSE messages that have been successfully received before the transactionTime has expired.
transactionFailures	L_int		0.. 4294967295	The number of Prepaid Short Message Service (PSMS) transactions that have failed between the GprsSubscriberControl (Gsc) and the external Service Control Points (Scps). This includes failures due to failed connections, late responses, resource limitations and protocol errors.
prepaidCtpLocalProtocol Errors	L_int		0.. 4294967295	The number of Prepaid-CTP protocol errors that have been committed locally and the external Service Control Point (Scp) has detected and has reported back to the GprsSubscriberControl (Gsc). The count consists of the transaction portion, component portion, and parameter error categories.

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Table 66 (Continued)
GPRS Subscriber Control (Gsc) Prepaid Short Message Service (PSms) Service Control Point (SCP) statistics

Field name	Field type	Default field position	Field value	Field description
prepaidCtpRemoteGeneralErrors	L_int		0.. 4294967295	The number of Prepaid-CTP general errors that have occurred on the external Service Control Point (Scp) and that have been reported back to the GprsSubscriberControl (Gsc). The count consists of the general error category as described in the Prepaid-CTP specification.
prepaidCtpRemoteProtocolErrors	L_int		0.. 4294967295	The number of Prepaid-CTP protocol errors that have been committed remotely by the external Service Control Point (Scp) that have been detected and has reported back to the GprsSubscriberControl (Gsc). The count consists of the transaction portion, component portion, and parameter error categories as described in the Prepaid-CTP specification.
nccpLoginSuccesses	L_int		0.. 4294967295	The number of Network Connection Control Protocol (NCCP) logins that have successfully completed between the GprsSubscriberControl (Gsc) and this external Service Control Point (Scp). Specifically, this indicates the NCCP LOGIN RESPONSE messages received from this Scp before the nccpLoginResponseTimer has expired.

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Table 66 (Continued)
GPRS Subscriber Control (Gsc) Prepaid Short Message Service (PSms) Service Control Point (SCP) statistics

Field name	Field type	Default field position	Field value	Field description
nccpLoginFailures	L_int		0.. 4294967295	The number of Network Connection Control Protocol (NCCP) logins that have failed between the GprsSubscriberControl (Gsc) and this external Service Control Point (Scp). This count includes failues due to rejected logins as well as late or lost responses.
nccpLoginResponse Timeouts	L_int		0.. 4294967295	The number of times that the nccpLoginResponseTimer expires before receiving a response from the external Service Control Point (Scp) for the Network Connection Control Protocol (NCCP) LOGIN REQUEST message sent.
nccpLogoutSuccesses	L_int		0.. 4294967295	The number of Network Connection control Protocol (NCCP) logouts that have successfully completed between the GprsSubscriberControl (Gsc) and this external Service Control Point (Scp). Specifically, this indicates the NCCP LOGOUT RESPONSE messages received from this Scp before the nccpLogoutResponseTimer has expired.
(Sheet 3 of 6)				

Table 66 (Continued)
GPRS Subscriber Control (Gsc) Prepaid Short Message Service (PSms) Service Control Point (SCP) statistics

Field name	Field type	Default field position	Field value	Field description
nccpLogoutFailures	L_int		0.. 4294967295	The number of Network Connection control Protocol (NCCP) logouts that have failed between the GprsSubscriberControl (Gsc) and this external Service Control Point (Scp). Specifically, this indicates the nccpLogoutResponseTimer expirations that have occurred.
nccpRemoteAborts	L_int		0.. 4294967295	The number of Network Connection control Protocol (NCCP) ABORT messages that have been received from this external Service Control Point (Scp).
nccpLocalAborts	L_int		0.. 4294967295	The number of Network Connection control Protocol (NCCP) ABORT messages that have been sent to this external Service Control Point (Scp). This counter also includes the NCCP ABORT messages sent due to aborts caused by the expiration of the NCCP KeepAlive timer.
nccpKeepAliveTimeouts	L_int		0.. 4294967295	The number of Network Connection control Protocol (NCCP) KeepAlive timer expirations that have occurred while communicating with this external Service Control Point (Scp).

(Sheet 4 of 6)

Table 66 (Continued)
GPRS Subscriber Control (Gsc) Prepaid Short Message Service (PSms) Service Control Point (SCP) statistics

Field name	Field type	Default field position	Field value	Field description
nccpKeepAliveAborts	L_int		0.. 4294967295	The number of aborts caused by the Network Connection control Protocol (NCCP) KeepAlive timer expiry. Specifically, this counts the number of NCCP Abort messages that have been sent to this external Service Control Point (Scp) due to aborts caused by KeepAlive timer expirations.
nccpRoundRobinTimeouts	L_int		0.. 4294967295	The number of nccpRoundRobinTimer expirations before the SGSN could establish a connection with any of the Service Processors (SPs) of this external Service Control Point (Scp).
nccpReconnectTimeouts	L_int		0.. 4294967295	The number of nccpReconnectTimer expirations that have occurred while communicating with this external Service Control Point (Scp).
nccpLocalProtocolErrors	L_int		0.. 4294967295	The number of Network Connection Control Protocol (NCCP) protocol errors that have been committed locally and the external Service Control Point (Scp) has detected and has reported back to the GprsSubscriberControl (Gsc).
nccpRemoteProtocolErrors	L_int		0.. 4294967295	The number of Network Connection Control Protocol (NCCP) protocol errors that have been committed remotely by this external Service Control Point (Scp) that have been detected and reported back to the GprsSubscriberControl (Gsc).

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Table 66 (Continued)
GPRS Subscriber Control (Gsc) Prepaid Short Message Service (PSms) Service Control Point (SCP) statistics

Field name	Field type	Default field position	Field value	Field description
tcpConnectSuccesses	L_int		0.. 4294967295	The number of TCP connections that have been successfully established between the GprsSubscriberControl (Gsc) and this Service Control Point (Scp).
tcpConnectFailures	L_int		0.. 4294967295	The number of failed TCP connection attempts between the GprsSubscriberControl (Gsc) and the external Service Control Point (Scp).
networkRelatedTransaction Failures	L_int		0.. 4294967295	The number of Prepaid Short Message Service (PSMS) transactions that have failed between the GprsSubscriberControl (Gsc) and this external Service Control Point (SCP) due to network related events. This includes transactions rejected due to connection failures, network congestion, and local network resource limitations.
(Sheet 6 of 6)				

Table 67
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
cpResponseExhaust	L_int		0.. 4294967295	The number of cpResponseTimer expirations and the cpResponseRetries threshold has been reached before receiving a CP-ACK or CP-ERROR message from the Mobile Station (MS).
rpResponseTimeouts	L_int		0.. 4294967295	The number of rpResponseTimer expirations before receiving a RP-ACK or RP-ERROR message from the Mobile Station (MS).
iwmscResponseTimeouts	L_int		0.. 4294967295	The number of iwmscResponseTimer expirations before receiving a MOBILE ORIGINATED FORWARD SHORT MESSAGE from the Service Center.
moAttempts	L_int		0.. 4294967295	The number of MOBILE ORIGINATED FORWARD SHORT MESSAGE messages sent to the ShortMessageService (Sms) from the Mobile Station (MS).
(Sheet 1 of 19)				

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
moFailures	L_int		0.. 4294967295	The number of MOBILE ORIGINATED FORWARD SHORT MESSAGE messages sent to the ShortMessageService (Sms) from the Mobile Station (MS) that failed because of one of the following conditions: Network Out Of Order Protocol Error Congestion Operator Determined Barring Unidentified Subscriber Unknown Subscriber Invalid Transaction Identifier Value Message Type non-existence Invalid mandatory information Invalid short message transfer reference value Message not compatible with short message protocol state Requested Facility not subscribed Requested Facility not implemented Unassigned number Short Message transfer reject.

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Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
moFailUnidentified Subscriber	L_int		0.. 4294967295	This attribute counts the number of MOBILE ORIGINATED FORWARD SHORT MESSAGE messages received by the ShortMessageService (Sms) from the Mobile Station (MS) that failed because the MS is not registered in the Public Land Mobile Network (PLMN), the MS is not subscribed in a Service Center (SC) or the MS Prepaid Mobile Originated SMS account is depleted. This counter is incremented when the SGSN sends a CP-Data(RP-Error) message to the MS with error cause "unidentifiedSubscriber" selected. The value of this attribute is included in the count of moFailures. The counter wraps to zero when it exceeds the maximum value.
(Sheet 3 of 19)				

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
moFailNetworkFailures	L_int		0.. 4294967295	This attribute counts the number of MOBILE ORIGINATED FORWARD SHORT MESSAGE messages received by the ShortMessageService (Sms) from the Mobile Station (MS) that failed because the MS is not registered in the Public Land Mobile Network (PLMN), the MS is not subscribed in a Service Center (SC) or the MS Prepaid Mobile Originated SMS account is depleted. This counter is incremented when the SGSN sends a CP-Data(RP-Error) message to the MS with error cause "unidentifiedSubscriber" selected. The value of this attribute is included in the count of moFailures. The counter wraps to zero when it exceeds the maximum value.
(Sheet 4 of 19)				

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
moFailFacilityNotSupp	L_int		0.. 4294967295	This attribute counts the number of MOBILE ORIGINATED FORWARD SHORT MESSAGE messages received by the ShortMessageService (Sms) from the Service Center (SC) that failed because the network is unable to provide the requested short message services. This counter is incremented when the SGSN receives a MOForwardMessageAckRsp message with "facilityNotSupported" error cause selected. The value of this attribute is included in the count of moFailures. The counter wraps to zero when it exceeds the maximum value.
(Sheet 5 of 19)				

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
moFailCongestion	L_int		0.. 4294967295	This attribute counts the number of MOBILE ORIGINATED FORWARD SHORT MESSAGE messages received by the ShortMessageService (Sms) from the Mobile Station (MS) that failed because the short message service cannot be serviced because of high traffic. This counter is incremented when the SGSN receives a Mobile Originated message with "SC-congestion" error cause selected from the SMS-IWMSC (Short Message Service-InterWorking MSC). The value of this attribute is included in the count of the moFailures. The counter wraps to zero when it exceeds the maximum value.

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Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
moFailUnknownService Center	L_int		0.. 4294967295	This attribute counts the number of MOBILE ORIGINATED FORWARD SHORT MESSAGE messages sent from the ShortMessageService (Sms) to the Mobile Station (MS) that failed because the destination requested by the MS is not currently assigned or allocated. This counters is incremented when the SGSN receives a MOForwardShortMessageAckRsp message with "unknownServiceCenter" error cause selected. The value of this attribute is included in the count of the moFailures. The counter wraps to zero when it exceeds the maximum value.
(Sheet 7 of 19)				

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
moFailInvalidSmeAddress	L_int		0.. 4294967295	This attribute counts the number of MOBILE ORIGINATED FORWARD SHORT MESSAGE messages received by the ShortMessageService (Sms) from the Mobile Station (MS) that failed because the Service Center (SC) received an invalid Short Message Entity address. This counter is incremented when the SGSN receives a MOForwardShortMessageAckRsp message with "invalidSMEAddress" error cause selected. The value of this attribute is included in the count of the moFailures. The counter wraps to zero when it exceeds the maximum value.

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Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
moFailMissingSms Subscription	L_int		0.. 4294967295	This attribute counts the number of MOBILE ORIGINATED FORWARD SHORT MESSAGE messages sent from the ShortMessageService (Sms) to the Mobile Station (MS) that failed because the Mobile Subscriber subscription information does not include Mobile Originated Short Message Services. This counter is incremented when the SGSN sends a CP-Data (RP-Error) message to the MS with error cause "RequestedFacilityNotSubscribed" selected. The value of this attribute is included in the count of the moFailures. The counter wraps to zero when it exceeds the maximum value.

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Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
moFailOdbSubscriber	L_int		0.. 4294967295	This attribute counts the number of MOBILE ORIGINATED FORWARD SHORT MESSAGE messages sent from the ShortMessageService (Sms) to the Mobile Station (MS) that failed because the MS is forbidden from originating Short Message Services (SMS) messages. This counter is incremented when the SGSN sends a CP-Data (RP-Error) message to the MS with error cause "Operator Determined Barring" selected. The value of this attribute is included in the count of the moFailures. The counter wraps to zero when it exceeds the maximum value.

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Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
moFailOthers	L_int		0.. 4294967295	This attribute counts the MOBILE ORIGINATED FORWARD SHORT MESSAGE messages received by the ShortMessageService (Sms) component from the Mobile Station (MS) that failed due to one of the following conditions: Unknown Subscriber Invalid Transaction Identifier Value Message Type non-existence Invalid mandatory information Invalid short message transfer reference value Message not compatible with short message protocol state Unassigned number Short Message transfer reject The counter wraps to zero when it exceeds the maximum value.
mtAttempts	L_int		0.. 4294967295	The number of MOBILE TERMINATED FORWARD SHORT MESSAGE messages sent to the ShortMessageService (Sms) from the Service Center. This includes the failures counted by mtFailures.

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
mtFailures	L_int		0.. 4294967295	The number of MOBILE TERMINATED FORWARD SHORT MESSAGE messages sent to the ShortMessageService (Sms) from the Service Center that failed because of one of the following conditions: Network Out Of Order Unidentified Subscriber Absent Subscriber Subscriber Busy for SMS Unexpected Data Value Data Missing Equipment Protocol Error Equipment Not SM-Equipped Message Type non-existence Invalid mandatory information Invalid short message transfer reference value Message not compatible with short message protocol state Requested Facility not subscribed Memory Capacity Exceeded Semantically incorrect message.
(Sheet 12 of 19)				

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
mtFailUnidentified Subscriber	L_int		0.. 4294967295	This attribute counts the number of MOBILE TERMINATED FORWARD SHORT MESSAGE messages sent from the ShortMessageService (Sms) to the Service Center that failed because the Mobile Station (MS) is not known within the SGSN or the MS location is not confirmed in the HLR. This counter is incremented when the SGSN sends a negative MTForwardShortMessageAckRsp message to the SIG (SS7 Ip Gateway) with "unidentified Subscriber" error cause selected. The value of this attribute is included in the count of mtFailures. The counter wraps to zero when it exceeds the maximum value.
(Sheet 13 of 19)				

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
mtFailSubscriberAbsent	L_int		0.. 4294967295	This attribute counts the number of MOBILE TERMINATED FORWARD SHORT MESSAGE messages sent from the ShortMessageService (Sms) to the Service Center that failed because a Mobile Station (MS) did not respond to a Packet Paging Request or a MS is detached from the network. This counter is incremented when the SGSN sends a negative MTForwardShortMessageAckRsp message to the SIG (SS7 IP Gateway) with "Absent Subscriber_SM" error cause and "Gprs Detached" or "No Paging Response from GPRS" diagnostic information selected. The value of this attribute is included in the count of the mtFailures. The counter wraps to zero when it exceeds the maximum value.
(Sheet 14 of 19)				

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
mtFailSubscriberBusy	L_int		0.. 4294967295	This attribute counts the number of MOBILE TERMINATED FORWARD SHORT MESSAGE messages sent from the ShortMessageService (Sms) to the Service Center that failed because an another mobile terminated short message transfer is going on and the Mobile Terminated SMS Message Buffer Queue has reached its capacity limit, the message was buffered but it is not possible to deliver the message before the expiry of the buffering time or the Mobile Station (MS) is performing an inter SGSN routing area update. The value of this attribute is included in the mtFailures. The counter wraps to zero when it exceeds the maximum value.
(Sheet 15 of 19)				

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
mtFailSubscriberNotSm Equipped	L_int		0.. 4294967295	This attribute counts the number of MOBILE TERMINATED FORWARD SHORT MESSAGE messages sent from the ShortMessageService (Sms) to the Service Center that failed because the Mobile Station did not support Short Message Services (SMS) messages. This counter is incremented when the SGSN sends a negative MTForwardShortMessageAckRsp message to the SIG (SS7 Ip Gateway) with "equipmentNotSM-Equipped" user error selected. The value of this attribute is included in the count of mtfailures. The counter wraps to zero when it exceeds the maximum value.
mtFailNetworkFailures	L_int		0.. 4294967295	This attribute counts the number of MOBILE TERMINATED FORWARD SHORT MESSAGE messages sent from the ShortMessageService (Sms) to the Service Center that failed because the network is not functioning correctly, a task cannot be performed because of a problem with the network or an equipment protocol error occurs. The value of this attribute is included in the count of mtFailures. The counter wraps to zero when it exceeds the maximum value.

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Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
mtFailMemCapExceed	L_int		0.. 4294967295	This attribute counts the number of MOBILE TERMINATED FORWARD SHORT MESSAGE messages sent from the ShortMessageService (Sms) to the Mobile Subscriber (MS) that failed because the MS cannot store the incoming short message due to lack of storage capacity. This counter is incremented when the SGSN sends a negative MTForwardShortMessageAckRsp message to the SIG (SS7 Ip Gateway) with "SM-DeliveryFailure cause: MemoryCapacityExceeded" user error selected. The value of this attribute is included in the count of mtFailures. The counter wraps to zero when it exceeds the maximum value.
(Sheet 17 of 19)				

Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
mtFailOthers	L_int		0.. 4294967295	This attribute counts the MOBILE TERMINATED FORWARD SHORT MESSAGE messages sent from the ShortMessageService (Sms) component to the Service Center that failed due to one of the following conditions: Unexpected Data Value Data Missing Message Type non-existence Invalid mandatory information Invalid short message transfer reference value Message not compatible with short message protocol state Semantically incorrect message System Failures The counter wraps to zero when it exceeds the maximum value.
mmaAttempts	L_int		0.. 4294967295	The number of MORE MEMORY AVAILABLE messages sent to the ShortMessageService (Sms) from the Mobile Station (MS). This includes the failures counted by mmaFailures.

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Table 67 (Continued)
GPRS Subscriber Control (Gsc) Short Message Service (Sms) statistics

Field name	Field type	Default field position	Field value	Field description
mmaFailures	L_int		0.. 4294967295	The number of MORE MEMORY AVAILABLE messages sent to the ShortMessageService (Sms) from the Mobile Station (MS) that failed because of one of the following conditions: Network Out Of Order Protocol Error Congestion Operator Determined Barring Unidentified Subscriber Unknown Subscriber Invalid Transaction Identifier Value Message Type non-existence Invalid mandatory information Invalid short message transfer reference value Message not compatible with short message protocol state Requested Facility not implemented.
(Sheet 19 of 19)				

Table 68
GPRS SGSN Accounting Server (SAS) statistics

Field name	Field type	Default field position	Field value	Field description
openScdrs	L_int		0.. 4294967295	The number of SGSN Packet Data Protocol Call Detail Records (S-CDRs) opened by the SGSN Accounting Server (SAS).
openMcdrs	L_int		0.. 4294967295	The number of Mobility Call Detail Records (M-CDRs) opened by the SGSN Accounting Server (SAS).
closedScdrs	L_int		0.. 4294967295	The number of SGSN Packet Data Protocol Call Detail Records (S-CDRs) closed by the SGSN Accounting Server (SAS). Closed S-CDRs are those CDRs that have been written to disk.
closedMcdsr	L_int		0.. 4294967295	The number of Mobility Call Detail Records (M-CDRs) opened by the SGSN Accounting Server (SAS). Closed CDRs are those M-CDRs that have been written to disk.
scdrsUpdated	L_int		0.. 4294967295	The number of SGSN Packet Data Protocol Call Detail Records (S-CDRs) updated in the SGSN Accounting Server (SAS). Updated means that an open CDR was modified due to some external event. An S-CDR can be updated more than once, and this attribute is incremented for each update.
(Sheet 1 of 8)				

Table 68 (Continued)
GPRS SGSN Accounting Server (SAS) statistics

Field name	Field type	Default field position	Field value	Field description
mcdrsUpdated	L_int		0.. 4294967295	The number of Mobility Call Detail Records (M-CDRs) updated in the SGSN Accounting Server (SAS). Updated means that an open CDR was modified due to some external event. An M-CDR can be updated more than once, and this attribute is incremented for each update.
smoCdrs	L_int		0.. 4294967295	The number of Mobile Originated Short Message Service (SMS) Call Detail Records (CDRs) generated in the SGSN Accounting Server (SAS). The SMS CDRs do not have states (such as opened, closed) like other CDR types. When SAS receives a message that a SMS CDR message is sent through the network, SAS writes the SMS CDR directly to disk, which means an SMS CDR is generated.
smtCdrs	L_int		0.. 4294967295	The number of Mobile Terminated Short Message Service (SMS) Call Detail Records (CDRs) generated in the SGSN Accounting Server (SAS). The SMS CDRs do not have states (such as opened, closed) like other CDR types. When SAS receives a message that a SMS CDR message is sent through the network, SAS writes the SMS CDR directly to disk, which means an SMS CDR is generated.

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Table 68 (Continued)
GPRS SGSN Accounting Server (SAS) statistics

Field name	Field type	Default field position	Field value	Field description
partialScdrs	L_int		0.. 4294967295	The number of SGSN Packet Data Protocol Call Detail Record (S-CDR) partial records generated in the SGSN Accounting Server (SAS) due to the expiry of the scdrPartialRecordInterval.
dataVolumeLimitPartial Scdrs	L_int		0.. 4294967295	This attribute counts the partial SGSN Packet Data Protocol (PDP) Call Detail Records (S-CDRs) generated in the SGSN Accounting Server (SAS) when the threshold of the dataVolumeLimit attribute (defined in the Usgsn and Sgsn components for UMTS and GPRS, respectively) is reached. This counter counts the events in the collection interval.
timeDurationLimitPartial Scdrs	L_int		0.. 4294967295	This attribute counts the partial SGSN Packet Data Protocol (PDP) Call Detail Records (S-CDRs) generated in the SGSN Accounting Server (SAS) due to the expiry of the scdrPartialRecordInterval attribute. This counter counts the events in the collection interval.
(Sheet 3 of 8)				

Table 68 (Continued)
GPRS SGSN Accounting Server (SAS) statistics

Field name	Field type	Default field position	Field value	Field description
maxChargingCondition PartialScdrs	L_int		0.. 4294967295	This attribute counts the partial SGSN Packet Data Protocol (PDP) Call Detail Records (S-CDRs) generated in the SGSN Accounting Server (SAS) when the maximum number of charging condition changes, as specified by the scdrMaxContainers attribute, is reached. This counter counts the events in the collection interval.
mgmtInterventionPartial Scdrs	L_int		0.. 4294967295	This attribute counts the partial SGSN Packet Data Protocol (PDP) Call Detail Records (S-CDRs) generated in the SGSN Accounting Server (SAS) with a partial record reason of "management intervention". This counter counts the events in the collection interval.
qosChangeScdrContainers	L_int		0.. 4294967295	This attribute counts the SGSN Packet Data Protocol (PDP) Call Detail Record (S-CDR) "List of Traffic Data Volumes" containers closed in the SGSN Accounting Server (SAS) due to a QoS change. This counter counts the events in the collection interval.

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Table 68 (Continued)
GPRS SGSN Accounting Server (SAS) statistics

Field name	Field type	Default field position	Field value	Field description
tariffTimeChangeScdr Containers	L_int		0.. 4294967295	This attribute counts the SGSN Packet Data Protocol (PDP) Call Detail Record (S-CDR) "List of Traffic Data Volumes" containers closed in the SGSN Accounting Server (SAS) due to a tariff time change. This counter counts the events in the collection interval.
partialMcdrs	L_int		0.. 4294967295	The number of Mobility Call Detail Record (M-CDR) partial records generated in the SGSN Accounting Server (SAS) due to the expiry of the mcdrPartialRecordInterval.
timeDurationLimitPartial Mcdrs	L_int		0.. 4294967295	This attribute counts the partial Mobility Call Detail Records (M-CDRs) generated in the SGSN Accounting Server (SAS) due to the expiry of the mcdrPartialRecordInterval attribute. This counter counts the events in the collection interval.
maxChangeCondition PartialMcdrs	L_int		0.. 4294967295	This attribute counts the partial Mobility Call Detail Records (M-CDRs) generated in the SGSN Accounting Server (SAS) when the maximum number of mobility changes, as specified by the mcdrMaxContainers attribute, is reached. This counter counts the events in the collection interval.

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Table 68 (Continued)
GPRS SGSN Accounting Server (SAS) statistics

Field name	Field type	Default field position	Field value	Field description
mobilityChangeMcdr Containers	L_int		0.. 4294967295	This attribute counts the Mobility Call Detail Record (M-CDR) "Change of Location" containers closed in the SGSN Accounting Server (SAS) due to a mobility change. This counter counts the events in the collection interval.
cdrsXferCgf1	L_int		0.. 4294967295	The number of Call Detail Records (CDRs) successfully transferred from the SGSN Accounting Server (SAS) to the primary Charging Gateway Functionality (CGF). This attribute is incremented each time a CDR is transferred to the CGF.
cdrsXferCgf1Fail	L_int		0.. 4294967295	The number of unsuccessful Call Detail Record (CDR) transfers from the SGSN Accounting Server (SAS) to the primary Charging Gateway Functionality (CGF). This value is incremented whenever a CDR fails to get transferred to the primary CGF. Multiple attempts to send a CDR increment the statistic only once.
cdrsXferCgf2	L_int		0.. 4294967295	The number of Call Detail Records (CDRs) successfully transferred from the SGSN Accounting Server (SAS) to the secondary Charging Gateway Functionality (CGF). This attribute is incremented each time a CDR is transferred to the CGF.
(Sheet 6 of 8)				

Table 68 (Continued)
GPRS SGSN Accounting Server (SAS) statistics

Field name	Field type	Default field position	Field value	Field description
cdrsXferCgf2Fail	L_int		0.. 4294967295	The number of unsuccessful Call Detail Record (CDR) transfers from the SGSN Accounting Server (SAS) to the secondary Charging Gateway Functionality (CGF). This value is incremented whenever a CDR fails to get transferred to the secondary CGF. Multiple attempts to send a CDR increment the statistic only once.
gtpMsgXferCgf1	L_int		0.. 4294967295	The number of GPRS Tunnelling Protocol (GTP) messages successfully transferred to the primary Charging Gateway Functionality (CGF).
gtpMsgXferCgf1Fail	L_int		0.. 4294967295	The number of unsuccessful GPRS Tunnelling Protocol (GTP) message transfers to the primary Charging Gateway Functionality (CGF). The value is incremented whenever a GTP message is rejected or unacknowledged by the primary CGF. Multiple message attempts increment the statistic only once.
gtpMsgXferCgf2	L_int		0.. 4294967295	The number of GPRS Tunnelling Protocol (GTP) messages successfully transferred to the secondary Charging Gateway Functionality (CGF).

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Table 68 (Continued)
GPRS SGSN Accounting Server (SAS) statistics

Field name	Field type	Default field position	Field value	Field description
gtpMsgXferCgf2Fail	L_int		0.. 4294967295	The number of unsuccessful GPRS Tunnelling Protocol (GTP) message transfers to the secondary Charging Gateway Functionality (CGF). The value is incremented whenever a GTP message is rejected or unacknowledged by the secondary CGF. Multiple message attempts increment the statistic only once.
(Sheet 8 of 8)				

Table 69
SGSN Tiered Subscription Service statistics

Field name	Field type	Default field position	Field value	Field description
pktsPerTierToMobile	L_int		0.. 4294967295	The number of packets successfully serviced by SGSN for each tier in the down link direction.
octetsPerTierToMobile	L_int		0.. 4294967295	The number of octets successfully serviced by SGSN for each tier in the down link direction.
(Sheet 1 of 2)				

Table 69 (Continued)
SGSN Tiered Subscription Service statistics

Field name	Field type	Default field position	Field value	Field description
pktsDropped	L_int		0.. 4294967295	The number of packets dropped by the Tiered Subscription of the SGSN/USGSN for each tier in the collection interval. For example, if the peak throughput for a context is 56kbit/s and there is a burst of downlink data packets exceeding 56kbit/s, then the excess packets are dropped, and the pktsDropped attribute is incremented each time a packet is dropped.
activePdpCServiced	L_int		0.. 4294967295	The current number of PDP contexts that are active for each tier. This value is incremented on a PDP context activation for a tier and decremented when a PDP context is deactivated for the tier. This value is reported at the end of the collection interval.
peakPdpCServiced	L_int		0.. 4294967295	The maximum number of PDP contexts serviced for the tier. The value is incremented every time currentPdpCServiced for that tier exceeds the current value of peakPdpCServiced for that tier. It is reset to currentPdpCServiced after every data collection.

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Table 70
GPRS Session Management statistics

Field name	Field type	Default field position	Field value	Field description
currentRoamers	L_int		0.. 4294967295	The inumber of current roamers that are currently being serviced by the SGSN. A roamer is a mobile that is not in its H-PLMN. This attribute is incremented whenever a PDP context is activated and is decremented whenever a PDP context is de-activated. This counter counts the events at the end of the collection interval.

Table 71
Wireless Gateway Circuit Switched (CS) domain statistics

Field name	Field type	Default field position	Field value	Field description
rabAssignRequests	L_int		0.. 4294967295	The number of RAB ASSIGNMENT REQUEST messages that were sent to the RNC.
relocRequests	L_int		0.. 4294967295	The number of RELOCATION REQUEST messages that were sent to the RNC.
paging	L_int		0.. 4294967295	The number of PAGING messages that were sent to the RNC.
iuReleaseCmds	L_int		0.. 4294967295	The number of IU RELEASE COMMAND messages that were sent to the RNC.
(Sheet 1 of 5)				

Table 71 (Continued)
Wireless Gateway Circuit Switched (CS) domain statistics

Field name	Field type	Default field position	Field value	Field description
relocCmds	L_int		0.. 4294967295	The number of RELOCATION COMMAND messages that were sent to the RNC.
relocPrepFailures	L_int		0.. 4294967295	The number of RELOCATION PREPARATION FAILURE messages that were sent to the RNC.
relocCancelAcks	L_int		0.. 4294967295	The number of RELOCATION CANCEL ACKNOWLEDGE messages that were sent to the RNC.
commonIds	L_int		0.. 4294967295	The number of COMMON ID messages that were sent to the RNC.
cnInvokeTraces	L_int		0.. 4294967295	The number of CN INVOKE TRACE messages that were sent to the RNC.
securityModeCmds	L_int		0.. 4294967295	The number of SECURITY MODE COMMAND messages that were sent to the RNC.
directTransfers	L_int		0.. 4294967295	The total number of DIRECT TRANSFER messages between the RNC and the Core Network in either direction.
resets	L_int		0.. 4294967295	The total number of RESET messages between the RNC and the Core Network in either direction.
resetAcks	L_int		0.. 4294967295	The total number of RESET ACKNOWLDEGE messages between the RNC and the Core Network in either direction.

(Sheet 2 of 5)

Table 71 (Continued)
Wireless Gateway Circuit Switched (CS) domain statistics

Field name	Field type	Default field position	Field value	Field description
errorIndications	L_int		0.. 4294967295	The total number of ERROR INDICATION messages between the RNC and the Core Network in either direction.
initialUeMessages	L_int		0.. 4294967295	The number of INITIAL UE messages that were received from the RNC.
rabAssignResponses	L_int		0.. 4294967295	The number of RAB ASSIGNMENT RESPONSE messages that were received from the RNC.
rabReleaseRequests	L_int		0.. 4294967295	The number of RAB RELEASE REQUEST messages that were received from the RNC.
iuReleaseRequests	L_int		0.. 4294967295	The number of Iu RELEASE REQUEST messages that were received from the RNC.
iuReleaseComps	L_int		0.. 4294967295	The number of Iu RELEASE COMPLETE messages that were received from the RNC.
relocRqds	L_int		0.. 4294967295	The number of RELOCATION REQUIRED messages that were received from the RNC.
relocRequestAcks	L_int		0.. 4294967295	The number of RELOCATION REQUEST ACKNOWLEDGE messages that were received from the RNC.
relocDetects	L_int		0.. 4294967295	The number of RELOCATION DETECT messages that were received from the RNC.
relocComps	L_int		0.. 4294967295	The number of RELOCATION COMPLETE messages that were received from the RNC.

(Sheet 3 of 5)

Table 71 (Continued)
Wireless Gateway Circuit Switched (CS) domain statistics

Field name	Field type	Default field position	Field value	Field description
relocFailures	L_int		0.. 4294967295	The number of RELOCATION FAILURE messages that were received from the RNC.
relocCancels	L_int		0.. 4294967295	The number of RELOCATION CANCEL messages that were received from the RNC.
securityModeComps	L_int		0.. 4294967295	The number of SECURITY MODE COMPLETE messages that were received from the RNC.
resetCircuits	L_int		0.. 4294967295	The number of RESET CIRCUIT messages between the Core Network and the DMS Call Server.
unequipCircuits	L_int		0.. 4294967295	The number of UNEQUIPPED CIRCUIT messages received from the DMS Call Server.
blocks	L_int		0.. 4294967295	The number of BLOCK messages that were sent to the DMS Call Server.
unblocks	L_int		0.. 4294967295	The number of UNBLOCK messages that were sent to the DMS Call Server.
circuitGrpBlocks	L_int		0.. 4294967295	The number of CIRCUIT GROUP BLOCK messages that were sent to the DMS Call Server.
circuitGrpUnblocks	L_int		0.. 4294967295	The number of CIRCUIT GROUP UNBLOCK messages that were sent to the DMS Call Server.
securityModeRjcts	L_int		0.. 4294967295	The number of SECURITY MODE REJECT messages that were received from the RNC.
rabSetups	L_int		0.. 4294967295	The number of RAB SETUP messages that were received from the Virtual Media Gateway.

(Sheet 4 of 5)

Table 71 (Continued)
Wireless Gateway Circuit Switched (CS) domain statistics

Field name	Field type	Default field position	Field value	Field description
rabSetupResps	L_int		0.. 4294967295	The number of RAB SETUP RESPONSE messages that were received from the RNC.
releases	L_int		0.. 4294967295	The number of RELEASE messages between RANAP-CS and the Virtual Media Gateway.
(Sheet 5 of 5)				

Table 72
SS7 MTP 3 linkset statistics

Field name	Field type	Default field position	Field value	Field description
linkSetsUnavailable	L_int		0.. 4294967295	The number of linkset unavailable conditions.

Table 73
SS7 SAAL-NNI statistics

Field name	Field type	Default field position	Field value	Field description
insvFailures	L_int		0.. 4294967295	The number of in-service link outages. It does not include failures which occur during the alignment process.

Table 73 (Continued)
SS7 SAAL-NNI statistics

Field name	Field type	Default field position	Field value	Field description
pdusTx	L_int		0.. 4294967295	The number of protocol data units transmitted.
pdusRx	L_int		0.. 4294967295	The number of protocol data units recieved.
pduOctetsTx	L_int		0.. 4294967295	The number of payload PDU octets transmitted.
pduRetransmits	L_int		0.. 4294967295	The number of protocol data units retransmitted because of negative acknowledgements.

Table 74
SS7 Signalling Connection Control Part (SCCP) statistics

Field name	Field type	Default field position	Field value	Field description
activeConnections	L_int		0.. 4294967295	The number of open signalling connections for the SCCP component. The maximum number of open signalling connections is set by attribute maxConnections.
(Sheet 1 of 3)				

Table 74 (Continued)
SS7 Signalling Connection Control Part (SCCP) statistics

Field name	Field type	Default field position	Field value	Field description
rejectedConnections	L_int		0.. 4294967295	The number of times a signalling connection establishment request by the application was refused. The reasons include: the subsystem being down, the number of open connections exceeding the limit specified by the attribute maxConnections. This includes the number of rejected connections indicated by attribute maxConnExhausted.
maxConnectionsExhausted	L_int		0.. 4294967295	The number of times a signalling connection establishment request by the application was refused because the number of open connections reached the limit specified by the attribute maxConnection.
lostConnections	L_int		0.. 4294967295	The number of open signalling connections lost due to unavailability of the SCCP Subsystem.
invalidMessages	L_int		0.. 4294967295	The number of invalid (syntax error or undecodable) messages received.
messagesTx	L_int		0.. 4294967295	The number of messages sent to layer 3. This includes maintenance messages.
payloadMessagesTx	L_int		0.. 4294967295	The number of payload messages transmitted.
messagesRx	L_int		0.. 4294967295	The number of messages received from layer 3. This includes maintenance messages.

(Sheet 2 of 3)

Table 74 (Continued)
SS7 Signalling Connection Control Part (SCCP) statistics

Field name	Field type	Default field position	Field value	Field description
payloadMessagesRx	L_int		0.. 4294967295	The number of payload messages received.
localRoutingFailures	L_int		0.. 4294967295	The number of routing failures to the local subsystem.
remoteRoutingFailures	L_int		0.. 4294967295	The number of routing failures to the remote subsystem.
(Sheet 3 of 3)				

Table 75
GPRS Mobiity Management Attachment Rejects statistics

Field name	Field type	Default field position	Field value	Field description
attachRejCombNotAllowed	L_int			This attribute counts the GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected because of the reject cause "Combined Gprs and Circuit Services not allowed". The counter wraps to zero when it exceeds the maximum
attachRejNotPermittedInLocArea	L_int			This attribute counts the GPRS-attaches to this Serving GPRS Support Node (SGSN) that were rejected because of the reject cause "Mobile not Permitted in this Location Area". The counter wraps to zero when it exceeds the maximum value.

Table 76
UMTS MAP Client statistics

Field name	Field type	Default field position	Field value	Field description
unexpectedErrorCodeResp Recv	L_int			This attribute counts the unexpected error responses received from the Home Location Register (HLR). An unexpected error response may be received when a Transaction Capabilities Application Part (TCAP) error code is received at the Service GPRS Support Node (SGSN) and that error code is inconsistent with the invoked Mobile Application Part (MAP) operation. This counter counts the events in the collection interval.

Table 77
GPRS Mobility Management (GMM) for UMTS statistics

Field name	Field type	Default field position	Field value	Field description
pmmIdleStateSubscribers	L_int		0.. 4294967295	The number of mobile subscribers that are GPRS-attached and in the PMM-IDLE state
pmmConnectedState Subscribers	L_int		0.. 4294967295	The number of mobile subscribers that are GPRS-attached and in the PMM-CONNECTED state.
(Sheet 1 of 6)				

Table 77 (Continued)
GPRS Mobility Management (GMM) for UMTS statistics

Field name	Field type	Default field position	Field value	Field description
currentlyAttached	L_int		0.. 4294967295	The number of Mobile Stations (MS) that are currently GPRS-attached and in the PMM-IDLE or PMM-CONNECTED state. The maximum subscribers that can be GPRS-attached is provisioned in the maxAttachedSubscribers attribute of the parent UmtsSubscriberControl (Usc) component.
attachesSuccessful	L_int		0.. 4294967295	The number of GPRS-attaches to this UMTS Serving GPRS Support Node (USGSN) that were successful.
attachesWithKnownPtmsi	L_int		0.. 4294967295	The number of ATTACH REQUEST messages received with a Packet-Temporary Mobile Subscriber Identity (P-TMSI) previously assigned by this UMTS Serving GPRS Support Node (USGSN). This includes all successful and unsuccessful attempts.
attachesWithUnknown Ptmsi	L_int		0.. 4294967295	The number of ATTACH REQUEST messages received with a Packet-Temporary Mobile Subscriber Identity (P-TMSI) not assigned by this UMTS Serving GPRS Support Node (USGSN). This includes all successful and unsuccessful attempts.

(Sheet 2 of 6)

Table 77 (Continued)
GPRS Mobility Management (GMM) for UMTS statistics

Field name	Field type	Default field position	Field value	Field description
attachesWithImsi	L_int		0.. 4294967295	The number of ATTACH REQUEST messages received with an International Mobile Subscriber Identity (IMSI) as an identifier. This includes all successful and unsuccessful attempts.
authenticationRequests	L_int		0.. 4294967295	The number of AUTHENTICATION AND CIPHERING REQUEST messages sent to the MS requiring only authentication and messages requiring both authentication and ciphering.
cipheringRequests	L_int		0.. 4294967295	The number of AUTHENTICATION AND CIPHERING REQUEST messages sent to the Mobile Stations (MS) requiring only ciphering.
securityModeRequests	L_int		0.. 4294967295	This attribute counts the number of times the Security Mode procedure was initiated by the UMTS Serving GPRS Support Node (USGSN). The counter counts the events in the collection interval.
serviceRequestsFor Signalling	L_int		0.. 4294967295	The number of SERVICE REQUEST messages sent by mobile stations (MS) requesting a signalling connection in order to send uplink signalling messages (such as ATTACH REQUEST, PDP CONTEXT REQUEST).

(Sheet 3 of 6)

Table 77 (Continued)
GPRS Mobility Management (GMM) for UMTS statistics

Field name	Field type	Default field position	Field value	Field description
serviceRequestsForData	L_int		0.. 4294967295	The number of SERVICE REQUEST messages sent by mobile stations (MS) requesting a resource reservation for active PDP contexts.
serviceRequestsForPaging Response	L_int		0.. 4294967295	The number of SERVICE REQUEST messages sent by mobile stations (MS) indicating a paging response.
detachesSuccessful	L_int		0.. 4294967295	The number of successful DETACHes that are either mobile or network initiated.
msDetachRejected	L_int		0.. 4294967295	The number of Mobile Station (MS) initiated GPRS-DETACH REQUEST messages that have been rejected by this UMTS Serving GPRS Support Node (USGSN).
normalIntraUSGSNRa Update	L_int		0.. 4294967295	The number of normal intra-Serving GPRS Support Node ROUTING AREA UPDATE REQUEST messages received from the Mobile Station (MS).
periodicIntraUSGSNRA Update	L_int		0.. 4294967295	The number of periodic intra-Serving GPRS Support Node ROUTING AREA UPDATE REQUEST messages from the Mobile Station (MS).
normalInterUSGSNRa Update	L_int		0.. 4294967295	The number of inter-UMTS Serving GPRS Support Node ROUTING AREA UPDATE REQUEST messages from the Mobile Station (MS).

(Sheet 4 of 6)

Table 77 (Continued)
GPRS Mobility Management (GMM) for UMTS statistics

Field name	Field type	Default field position	Field value	Field description
intraRaCellChange	L_int		0.. 4294967295	The number of intra-Serving GPRS Support Node Routing Area Update cell changes performed by the Mobile Station (MS).
initialPsPageRequests	L_int		0.. 4294967295	The number of initial PS (Packet-Switched) PAGE REQUEST messages sent to the Mobile Station (MS).
reattemptPsPageRequests	L_int		0.. 4294967295	The re-attempt PS (Packet-Switched) PAGE REQUEST messages sent to the Mobile Station (MS) after the initial page request.
psPagingProcFailures	L_int		0.. 4294967295	This attribute indicates the PS (Packet-Switched) paging procedures initiated by the UMTS Serving GPRS Support Node (USGSN) over the Iu interface that are rejected by the Mobile Station (MS). This counter counts the events in the collection interval.
interSgsnRaUpdate Accepts	L_int		0.. 4294967295	The number of ROUTING AREA UPDATE ACCEPT messages sent from this SGSN, while acting as the new SGSN, to the Mobile Station (MS).
interSgsnRaUpdateRejects	L_int		0.. 4294967295	The number of ROUTING AREA UPDATE REJECT messages sent from this SGSN, while acting in the role of new SGSN, to the Mobile Station (MS).

(Sheet 5 of 6)

Table 77 (Continued)
GPRS Mobility Management (GMM) for UMTS statistics

Field name	Field type	Default field position	Field value	Field description
intraSgsnRaUpdateRejects	L_int		0.. 4294967295	The number of ROUTING AREA UPDATE REJECT messages sent during an Intra-SGSN Routing Area Update to the Mobile Station (MS).
periodicRaUpdateRejects	L_int		0.. 4294967295	The number of ROUTING AREA UPDATE REJECT messages sent during Periodic Routing Area Updates to the Mobile Station (MS).
(Sheet 6 of 6)				

Table 78
UMTS GPRS Tunneling Protocol statistics

Field name	Field type	Default field position	Field value	Field description
echoRqstsTx	L_int		0.. 4294967295	The number of Echo Request Messages sent over the collection interval. The count is taken at the end of the collection interval.
gnEchoRespTx	L_int		0.. 4294967295	The number of Echo Response Messages sent on the Gn Interface over the collection interval. The count is taken at the end of the collection interval.
(Sheet 1 of 2)				

Table 78 (Continued)
UMTS GPRS Tunneling Protocol statistics

Field name	Field type	Default field position	Field value	Field description
pathFailures	L_int		0.. 4294967295	This attribute indicates the number of path failures detected by GTPC, based on the attribute strictPathSupervision in Usgsn Usc, over the collection interval. If strictPathSupervision has the value enabled, failure of the remote end to respond to any GTP request will result in path failure being declared. If strictPathSupervision has the value disabled, then failure of the remote end to respond to an echo request will be marked as a path failure, but all other failures will not be detected.
idenRqstMsgsTx	L_int		0.. 4294967295	The number of times the USGSN sent a IDENTIFICATION REQUEST message to the Mobile Station (MS) over the collection interval. The count is taken at the end of the collection interval.
sgsnCntxtRqstMsgsTx	L_int		0.. 4294967295	The number of times the USGSN sent a SGSN CONTEXT REQUEST Message to the Mobile Station (MS) over the collection interval. The count is taken at the end of the collection interval.
sgsnCntxtAckRqstMsgsTx	L_int		0.. 4294967295	The number of times the USGSN sent a SGSN CONTEXT ACKNOWLEDGE REQUEST Message to the Mobile Station (MS). The count is taken at the end of the collection interval.

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Table 79
UMTS GPRS Tunneling Protocol Management statistics

Field name	Field type	Default field position	Field value	Field description
echoRequestsTransmitted	L_int		0.. 4294967295	The number of Echo Request Messages sent over the Gn interface. The counter wraps to zero when it exceeds the maximum value.
echoResponsesTransmit-ted	L_int		0.. 4294967295	The number of Echo Response Messages sent on the Gn Interface. The counter wraps to zero when it exceeds the maximum value.
pathFailures	L_int		0.. 4294967295	This attribute counts the path failures detected by the GPRS Tunnelling Protocol (GTP), based on the attribute strictPathSupervision, provisioned in the Sgsn Gsc component. If the attribute strictPathSupervision has a value enabled, failure of the remote end to respond to any GTP request will result in a path failure being declared. If the attribute strictPathSupervision has a value disabled, then failure of the remote end to respond to an echo request will be marked as a path failure, but all other failures will not be detected. The counter wraps to zero when it exceeds the maximum value.

(Sheet 1 of 2)

Table 79 (Continued)
UMTS GPRS Tunneling Protocol Management statistics

Field name	Field type	Default field position	Field value	Field description
incomingRequestsRejected	L_int		0.. 4294967295	This attribute counts the number of the incoming GPRS Tunnelling Protocol (GTP) requests that were rejected because the maximum number of outstanding incoming requests was exceeded. This maximum is based on the attribute maxIncomingRequests. The counter wraps to zero when it exceeds its maximum value.

(Sheet 2 of 2)

Table 80
GPRS Tunneling Protocol statistics

Field name	Field type	Default field position	Field value	Field description
octetsToNetwork	L_int		0.. 4294967295	This attribute counts the total octets of the GPRS Tunneling Protocol (GTP) transmitted in Packet Data Unit (PDU) to Gateway GPRS Support Node (GGSN). The counter counts the events in the collection interval.

(Sheet 1 of 2)

Table 80 (Continued)
GPRS Tunneling Protocol statistics

Field name	Field type	Default field position	Field value	Field description
octetsFromNetwork	L_int		0.. 4294967295	This attribute counts the total octets of the GPRS Tunneling Protocol (GTP) received in Packet Data Unit (PDU) from the Gateway GPRS Support Node (GGSN). The counter counts the events in the collection interval.
pdusToNetwork	L_int		0.. 4294967295	This attribute counts the GPRS Tunneling Protocol (GTP) Data Units (PDU) transmitted to the Gateway GPRS Support Node (GGSN). The counter counts the events in the collection interval.
pdusFromNetwork	L_int		0.. 4294967295	This attribute counts the GPRS Tunneling Protocol (GTP) Data Units (PDU) received from the Gateway GPRS Support Node (GGSN). The counter counts the events in the collection interval.
discPdusFromNetwork	L_int		0.. 4294967295	This attribute counts the incoming GPRS Tunneling Protocol (GTP) Protocol Data Units (PDUs) discarded because of traffic congestion or because no Packet Data Protocol (PDP) Context has been established. The counter counts the events in the collection interval.

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Table 81
UMTS Home Location Register (HLR) Cache statistics

Field name	Field type	Default field position	Field value	Field description
currHlrCachePdpContexts	L_int		0.. 4294967295	The current number of Packet Data Protocol (PDP) context subscription data records that are stored in the HLR Cache. The maximum number of PDP contexts that can be stored in the HLR Cache is provisioned in attribute maxPdpContexts.
cacheHits	L_int		0.. 4294967295	The number of times the HLR Cache had the subscriber information locally and did not need to retrieve information from the Home Location Register (HLR).
cacheMisses	L_int		0.. 4294967295	The number of times the HLR Cache does not have the subscriber information locally and must retrieve information from the HLR.
recordsInactive	L_int		0.. 4294967295	The number of HLR Cache Records that are currently inactive, that is, the number of records for which subscribers are detached from the UMTS Serving GPRS Support Node (USGSN).
recordsActive	L_int		0.. 4294967295	The number of HLR Cache Records that are currently active, that is, the number of records that are active and the UPDATE GPRS LOCATION RESPONSE has been received from the Home Location Register (HLR).

(Sheet 1 of 2)

Table 81 (Continued)
UMTS Home Location Register (HLR) Cache statistics

Field name	Field type	Default field position	Field value	Field description
recordsToBeReset	L_int		0.. 4294967295	The number of HLR Cache Records waiting to be reset. When a RESET message is received from a Home Location Register (HLR), all Location Confirmation flags of the HLR Cache Records, corresponding to the HLR is set to false. The GPRS Mobility Management (GMM) is notified to request UPDATE GPRS LOCATION for the HLR Cache Records corresponding to the reset HLR. The value of recordstoBeReset indicates the number of HLR Cache Records for which the GMM needs to be notified.
recordsWaitingForHlrConf	L_int		0.. 4294967295	The number of HLR Cache Records that are active and waiting for Home Location Register (HLR) Confirmation, that is, number of records which are yet to receive UPDATE GPRS LOCATION RESPONSE from the HLR.

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Table 82
UMTS RAB assignment request failure statistics

Field name	Field type	Default field position	Field value	Field description
rabAssgnRqstSetupFailureMsgs	L_int		0.. 4294967295	The number of times a RAB assignment request of type setup was rejected by the RNC.
rabAssgnRqstRelFailureMsgs	L_int		0.. 4294967295	The number of times a RAB assignment message of type release was rejected by the RNC

Table 83
UMTS RANAP protocol layer message statistics

Field name	Field type	Default field position	Field value	Field description
rabAssignmentMsgs	L_int		0.. 4294967295	The number of RAB Assignment messages that were sent to the RNC.
rabSetupRequestMsgs	L_int		0.. 4294967295	The number of RAB SETUP REQUEST messages that were sent to the RNC.
rabReleaseRequestMsgs	L_int		0.. 4294967295	The number of RAB RELEASE REQUEST messages that were sent to the RNC.
iuReleaseRequestRxMsgs	L_int		0.. 4294967295	The number of IU RELEASE REQUEST messages that were received from the RNC.
iuReleaseCommandTxMsgs	L_int		0.. 4294967295	The number of LU RELEASE COMMAND messages that were sent to the RNC.

(Sheet 1 of 2)

Table 83 (Continued)
UMTS RANAP protocol layer message statistics

Field name	Field type	Default field position	Field value	Field description
relocRequestMsgs	L_int		0.. 4294967295	The number of Relocation Request messages that were sent to the RNC.
pagingMsgs	L_int		0.. 4294967295	The number of Paging messages that were sent to the RNC.
resetMsgs	L_int		0.. 4294967295	The number of Reset messages that were received from the RNC.
initialUeMsgs	L_int		0.. 4294967295	The number of Initial UE messages that were received from the RNC.
errorIndicationMsgsRx	L_int		0.. 4294967295	The number of Error Indication messages that were received from the RNC.
errorIndicationMsgsTx	L_int		0.. 4294967295	The number of Error Indication messages that were sent to the RNC.
locationReportingControl Msgs	L_int		0.. 4294967295	This attribute indicates the number of Location Reporting Control messages that are sent to the Radio Network Controller over the collection interval.
locationReportMsgs	L_int		0.. 4294967295	This attribute indicates the number of Location Report messages that are received from the Radio Network Controller over the collection interval.

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Table 84
UMTS Session Management (SM) statistics

Field name	Field type	Default field position	Field value	Field description
currentPdpContexts	L_int		0.. 4294967295	The number of currently active Packet Data Protocol (PDP) contexts.
mobileInitActivations	L_int		0.. 4294967295	The number of successful Packet Data Protocol (PDP) context activations initiated by the Mobile Station (MS).
mobileInitDeacts	L_int		0.. 4294967295	The number of Packet Data Protocol (PDP) context deactivations initiated by the Mobile Station (MS).
ggsnInitDeacts	L_int		0.. 4294967295	The number of Packet Data Protocol (PDP) context deactivations initiated by the Gateway GPRS Support Node (GGSN).
usgsnInitDeacts	L_int		0.. 4294967295	The number of Packet Data Protocol (PDP) context deactivations initiated locally from the UMTS Serving GPRS Support Node (USGSN), for example, as a result of DETACH from the Mobile Station (MS).
hlrInitDeacts	L_int		0.. 4294967295	The number of Packet Data Protocol (PDP) context deactivations initiated by the Home Location Register (HLR), for example, Delete Subscriber Data (DSD) withdrawing subscription for an active session.

(Sheet 1 of 2)

Table 84 (Continued)
UMTS Session Management (SM) statistics

Field name	Field type	Default field position	Field value	Field description
usgsnInitModifies	L_int		0.. 4294967295	The number of Packet Data Protocol (PDP) context Modifications initiated from the UMTS Serving GPRS Support Node (USGSN), for example, as a result of QoS renegotiations with the Mobile Station (MS).
currentRoamers	L_int		0.. 4294967295	The number of mobiles that have entered the PLMN that is not their home PLMN, and are served by the UMTS Serving GPRS Support Node (USGSN).
tRabAssgtTimeouts	L_int		0.. 4294967295	The number of times the tRabAssgtTimer expires. If the value of this attribute increases consistently, the value of the tRabAssgtTimer can be increased.
usgsnInitModifyExhaust	L_int		0.. 4294967295	The number of times the usgsnInitModifies attribute is exhausted during Inter-SGSN Routing Area Update. This counter is incremented in the new SGSN.

(Sheet 2 of 2)

Table 85
UMTS Session Management message (SM) failure statistics

Field name	Field type	Default field position	Field value	Field description
idenRespMsgsRx	L_int		0.. 4294967295	The number of IDENTIFICATION RESPONSE message failures received with the cause indicated by the instance of the component.
sgsnCntxtRespMsgsRx	L_int		0.. 4294967295	The number of SGSN CONTEXT RESPONSE message failures received with the cause indicated by the instance of the component.
sgsnCntxtAckRespMsgsRx	L_int		0.. 4294967295	The number of SGSN CONTEXT ACKNOWLEDGE RESPONSE message failures received with the cause indicated by the instance of the component.
createPdpCntxtRespMsgsRx	L_int		0.. 4294967295	The number of CREATE PDP CONTEXT RESPONSE message failures received with the cause indicated by the instance of the component.
updatePdpCntxtRespMsgsTx	L_int		0.. 4294967295	The number of UPDATE PDP CONTEXT RESPONSE message failures received with the cause indicated by the instance of the component.
deletePdpCntxtRespMsgsRx	L_int		0.. 4294967295	The number of DELETE PDP CONTEXT RESPONSE message failures received with the cause indicated by the instance of the component.

Table 86
UMTS Subscriber Data Path statistics

Field name	Field type	Default field position	Field value	Field description
currentActiveSessions	int			The current number of active session contexts for this instance of UmtsSubscriberDataPath (Usd). The maximum number of active sessions allowed is provisioned in the attribute maxActiveSessions.
pdusToUtran	L_int		0.. 4294967295	The number of Protocol Data Units (PDUs) sent to the UTRAN.
pdusFromUtran	L_int		0.. 4294967295	The number of Protocol Data Units (PDUs) received from the UTRAN.
pdusToNetwork	L_int		0.. 4294967295	The number of GPRS Tunneling Protocol (GTP-U) Protocol Data Units (PDUs) transmitted to the Gateway GPRS Support Node (GGSN).
pdusFromNetwork	L_int		0.. 4294967295	The number of GPRS Tunneling Protocol (GTP-U) Protocol Data Units (PDUs) received from the Gateway GPRS Support Node (GGSN). This includes PDUs counted in the attribute discardedPdusFromNetwork.

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Table 86 (Continued)
UMTS Subscriber Data Path statistics

Field name	Field type	Default field position	Field value	Field description
discardedPdusFrom Network	L_int		0.. 4294967295	The number of Protocol Data Units (PDUs) received from the Network (GSNs) that were discarded, including erroneously received packets dropped due to GTP-U protocol errors, packets received with no currently linked session context, packets received without a path to send them or packets dropped due to the Tiered Subscription feature policing downlink data.
discardedPdus	L_int		0.. 4294967295	This attribute indicates the number of discarded Protocol Data Units (PDUs) received from the GPRS Support Nodes (GSNs) or UMTS Terrestrial Radio Access Network (UTRAN). This includes packets dropped due to GPRS Tunneling Protocol (GTP-U) protocol errors, packets received with no currently linked session context, packets received without a path to send them or packets dropped due to the Tiered Subscription feature policing downlink data. The counter counts events in the collection interval.

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Table 87
Virtual Media Gateway interface statistics

Field name	Field type	Default field position	Field value	Field description
crcxMsgs	L_int		0.. 4294967295	The number of CONNECTION REQUEST messages sent to the Media Gateway.
dlcxMsgs	L_int		0.. 4294967295	The number of DELETE REQUEST messages sent to the Media Gateway.
rinfMsgs	L_int		0.. 4294967295	The number of REQUEST FOR INFORMATION messages sent to the Media Gateway.
resetMsgs	L_int		0.. 4294967295	The total number of RESET messages sent in either direction
crcxAckMsgs	L_int		0.. 4294967295	The number of CONNECTION REQUEST ACKNOWLEDGE messages received from the Media Gateway.
dlcxAckMsgs	L_int		0.. 4294967295	The number of DELETE REQUEST ACKNOWLEDGE messages received from the Media Gateway.
updateCicInfo	L_int		0.. 4294967295	The number of UPDATE CIC INFO messages received from the Media Gateway.
sigFailMsgs	L_int		0.. 4294967295	The number of SIGNALLING FAILURE messages received from the Media Gateway.
sigOkMsgs	L_int		0.. 4294967295	The number of SIGNALLING OK messages received from the Media Gateway.

Table 88
UMTS Mobile Application Part (MAP) Stack statistics

Field name	Field type	Default field position	Field value	Field description
uglTimeouts	L_int		0.. 4294967295	The number of expiries of the timer specified by the attribute uglSanityTimer.
saiTimeouts	L_int		0.. 4294967295	The number of expiries of the saiSanityTimer.
clTimeouts	L_int		0.. 4294967295	The number of expiries of the clSanityTimer.
isdTimeouts	L_int		0.. 4294967295	The number of expiries of the isdSanityTimer.
dsdTimeouts	L_int		0.. 4294967295	The number of expiries of the dsdSanityTimer.
mtfsmTimeouts	L_int		0.. 4294967295	The number of expiries of the mtfsmSanityTimer.
mofsmTimeouts	L_int		0.. 4294967295	The number of expiries of the mofsmSanityTimer.
fsmTimeouts	L_int		0.. 4294967295	The number of expiries of the fsmSanityTimer.
rfsmTimeouts	L_int		0.. 4294967295	The number of expiries of the rfsmSanityTimer.
afrTimeouts	L_int		0.. 4294967295	The number of expiries of the afrSanityTimer.
pslTimeouts	L_int		0.. 4294967295	This attribute counts the expiries of the timer specified by the pslSanityTimer attribute in the collection interval.

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Table 88 (Continued)
UMTS Mobile Application Part (MAP) Stack statistics

Field name	Field type	Default field position	Field value	Field description
rejectsSent	L_int		0.. 4294967295	The number of TCAP REJECT messages sent to the SCCP layer.
rejectsReceived	L_int		0.. 4294967295	The number of TCAP REJECT messages received from the SCCP layer.
mapConcurrTransactions Low	L_int		0.. 4294967295	The lowest number of simultaneously active MAP dialogues.
mapConcurrentTransaction sAvg	L_int		0.. 4294967295	The average number of simultaneous MAP dialogues active. The algorithm to compute the average is approximately the sum of the simultaneous MAP Transactions polled every second divided by 900 seconds.
mapConcurrentTransaction sHigh	L_int		0.. 4294967295	The highest number of active simultaneous MAP dialogues.
mapConcurrentInvokesLow	L_int		0.. 4294967295	The lowest number of simultaneously active MAP Invokes.
mapConcurrentInvokesAvg	L_int		0.. 4294967295	The average number of simultaneous MAP Invokes active during the collection interval. The algorithm to compute the average is approximately the sum of the simultaneous MAP Invokes polled every second divided by 900 seconds.
mapConcurrentInvokes High	L_int		0.. 4294967295	The highest number of simultaneously active MAP Invokes.

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Table 88 (Continued)
UMTS Mobile Application Part (MAP) Stack statistics

Field name	Field type	Default field position	Field value	Field description
pmsTimeouts	L_int		0.. 4294967295	This attribute indicates the number of expiries of the pmsSanityTimer attribute in the collection interval.

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Table 89
UMTS Traffic Class Service statistics

Field name	Field type	Default field position	Field value	Field description
createPdpReq	L_int		0.. 4294967295	The number of CREATE PDP CONTEXT REQUEST messages sent by the (UMTS) Serving GPRS Support Node (USGSN or SGSN) for the allocation retention priority and traffic class represented by this component.
createPdpRes	L_int		0.. 4294967295	The number of CREATE PDP CONTEXT RESPONSE messages received with the cause REQUEST ACCEPTED for the allocation retention priority and traffic class represented by this component.
sgsnInitPdpUpdateReq	L_int		0.. 4294967295	The number of UPDATE PDP CONTEXT REQUEST messages sent by the (UMTS) Serving GPRS Support Node (USGSN or SGSN) for the allocation retention priority and traffic class represented by this component.

(Sheet 1 of 2)

Table 89 (Continued)
UMTS Traffic Class Service statistics

Field name	Field type	Default field position	Field value	Field description
sgsnInitPdpUpdateRes	L_int		0.. 4294967295	The number of UPDATE PDP CONTEXT RESPONSE messages sent by the (UMTS) Serving GPRS Support Node (USGSN or SGSN) for the allocation retention priority and traffic class represented by this component.
ggsnInitPdpUpdateReq	L_int		0.. 4294967295	The number of UPDATE PDP CONTEXT REQUEST messages received from the Gateway Serving GPRS Support Node (GGSN) for the allocation retention priority and traffic class represented by this component.
wlcGgsnInitPdpUpdateRes	L_int		0.. 4294967295	The number of UPDATE PDP CONTEXT RESPONSE messages sent with a cause REQUEST ACCEPTED by the (UMTS) Serving GPRS Support Node (USGSN or SGSN) for the allocation retention priority and traffic class represented by this component.

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Table 90
UMTS Traffic Class Differentiated Service statistics

Field name	Field type	Default field position	Field value	Field description
dsUplink	L_int		0.. 4294967295	The number of octets transferred uplink for the allocation retention priority and traffic class represented by this component
dsDownlink	L_int		0.. 4294967295	The number of octets transferred downlink for the allocation retention priority and traffic class represented by this component.

Table 91
SS7 NSTA VGS BRAG MTP2 statistics

Field name	Field type	Default field position	Field value	Field description
insvFailures	L_int		0.. 4294967295	The number of in-service link outages. It does not include failures which occur during the alignment process.
msusTx	L_int		0.. 4294967295	The number of message signal units transmitted. This includes the number of message signal units retransmitted, indicated by the attribute msuRetransmits.
msuRetransmits	L_int		0.. 4294967295	The number of message signal units retransmitted because of negative acknowledgments.

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Table 91 (Continued)
SS7 NSTA VGS BRAG MTP2 statistics

Field name	Field type	Default field position	Field value	Field description
msusRx	L_int		0.. 4294967295	The number of message signal units received. This includes the MSUs with errors, indicated by the attribute msuErrors.
msuErrors	L_int		0.. 4294967295	The number of ingress signal units discarded because of sequence number, length or CRC errors.
msuOctetsTx	L_int		0.. 4294967295	The number of layer 3 payload octets transmitted.
msuOctetsRx	L_int		0.. 4294967295	The number of layer 3 payload octets received.

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Table 92
SS7 MTP3 linkset PDU statistics

Field name	Field type	Default field position	Field value	Field description
pdusRx	L_int		0.. 4294967295	The Protocol Data Units (PDUs) received from layer 2. This includes the PDUs with and without user payload.
payloadPdusRx	L_int		0.. 4294967295	The Protocol Data Units (PDUs) with payload received from layer 2.
pdusTx	L_int		0.. 4294967295	The Protocol Data Units sent to layer 2. This includes the PDUs with and without user payload.

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Table 92 (Continued)
SS7 MTP3 linkset PDU statistics

Field name	Field type	Default field position	Field value	Field description
payloadPdusTx	L_int		0.. 4294967295	The Protocol Data Units (PDUs) with payload sent to layer 2.
invalidPdusRx	L_int		0.. 4294967295	The number of invalid Protocol Data Units received from Layer 2.
sltFailures	L_int		0.. 4294967295	The number of signalling link test message failure conditions.
changeovers	L_int		0.. 4294967295	The number of link changeover conditions.

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Table 93
UMTS GPRS Support Node statistics

Field name	Field type	Default field position	Field value	Field description
incomingRequestsRejected	L_int		0.. 4294967295	The number of incoming request messages on the Gn interface that were rejected during the collection interval because the maximum number of outstanding incoming requests was exceeded.

Table 94
BCN statistics

Field name	Field type	Default field position	Field value	Field description
trafficSubRange	int		0...3	Uniquely identifies a traffic sub-range within a DiscoBcnIf traffic address. This attribute is applicable to the DiscoBcnIf, only.
txPackets	L_int		0.. 4294967295	The number of packets transmitted from the BCN interface. This attribute does not include the packets discarded indicated by the attribute txPacketDiscards.
txOctets	L_int		0.. 4294967295	The number of octets of the packets transmitted from the BCN interface. This attribute includes the packet overhead, which consists of the CRC and the HDLC interframe flag. This attribute is not applicable to and is not displayed for ATM-based BCN interfaces.
rxPackets	L_int		0.. 4294967295	The number of packets received by the BCN interface. This attribute includes the packets discarded which are indicated by the attributes rxBroadcastPacketDiscard and rxPacketDiscards. This attribute also includes the packets discarded, which are not indicated by the attributes rxBroadcastPacketDiscard and rxPacketDiscards.

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Table 94 (Continued)
BCN statistics

Field name	Field type	Default field position	Field value	Field description
rxOctets	L_int		0.. 4294967295	The number of octets of the packets received by the BCN interface. This attribute includes the packet overhead, which consists of the CRC and the HDLC interframe flag. This attribute is not applicable to ATM-based BCN interfaces.
txPeakLinkUtilization	int		0...100	The peak transmit link capacity utilization during the collection interval, expressed as a percentage of the available bandwidth. The utilization is measured over a one minute interval.
rxPeakLinkUtilization	int		0...100	The peak receive link capacity utilization during the collection interval, expressed as a percentage of the available bandwidth. The utilization is measured over a one minute interval.
txAvgLinkUtilization	int		0...100	The average transmit link capacity utilization during the collection interval, expressed as a percentage of the available bandwidth. The utilization is measured over a one minute interval.
rxAvgLinkUtilization	int		0...100	The average receive link capacity utilization during the collection interval, expressed as a percentage of the available bandwidth. The utilization is measured over a one minute interval.

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Table 94 (Continued)
BCN statistics

Field name	Field type	Default field position	Field value	Field description
txMinLinkUtilization	int		0...100	The lowest transmit link capacity utilization during the collection interval, expressed as a percentage of the available bandwidth. The utilization is measured over a one minute interval.
rxMinLinkUtilization	int		0...100	The lowest receive link capacity utilization during the collection interval, expressed as a percentage of the available bandwidth. The utilization is measured over a one minute interval.
txPeakPacketRate	L_int		0.. 4294967295	The transmitted packet rate during the busiest minute of the collection interval. The measurement unit for this rate is packets per second (pkt/s)
txPeakThroughput	L_int		0.. 4294967295	The throughput of the bits transmitted during the busiest minute of the collection interval, based on the number of octets in the txOctets attribute. This attribute is not applicable to ATM-based BCN interfaces.
txAvgPacketRate	L_int		0.. 4294967295	The average transmitted packet rate during the collection interval. The measurement unit for this rate is packets per second (pkt/s)
txAvgThroughtput	L_int		0.. 4294967295	The average throughput of the bits transmitted during the collection interval, based on the number of octets in the txOctets attribute. This attribute is not applicable to ATM-based BCN interfaces.

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Table 94 (Continued)
BCN statistics

Field name	Field type	Default field position	Field value	Field description
rxPeakPacketRate	L_int		0.. 4294967295	The received packet rate during the busiest minute of the collection interval. The measurement unit for this rate is packets per second (pkt/s)
rxPeakThroughput	L_int		0.. 4294967295	The throughput of the bits received during the busiest minute of the collection interval, based on the number of octets in the rxOctets attribute. This attribute is not applicable to ATM-based BCN interfaces.
rxAvgPacketRate	L_int		0.. 4294967295	The average received packet rate during the collection interval. The measurement unit for this rate is packets per second (pkt/s)
rxAvgThroughtput	L_int		0.. 4294967295	The average throughput of the bits received during the collection interval, based on the number of octets in the txOctets attribute. This attribute is not applicable to ATM-based BCN interfaces.
txPacketDiscards	L_int		0.. 4294967295	The number of packets that could not be transmitted due to protocol errors or lack of resources during the collection interval. The count includes packets counted by txPktDiscardPriority1 and txPktDiscardPriority2 attributes. The protocol errors include HEC errors and LRC errors.

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Table 94 (Continued)
BCN statistics

Field name	Field type	Default field position	Field value	Field description
txPacketDiscardPriority1	L_int		0.. 4294967295	The number of priority 1 packets that could not be transmitted due to queue congestion and HEC errors during the collection interval. The congestion threshold is determined by the provisionable BCN Traffic Management attribute, txQueueSize.
txPacketDiscardPriority2	L_int		0.. 4294967295	The number of priority 2 packets that could not be transmitted due to queue congestion and HEC errors during the collection interval. The congestion threshold is determined by the provisionable BCN Traffic Management attribute, txQueueSize.
rxPacketDiscards	L_int		0.. 4294967295	The number of packets that could not be received due to protocol errors or lack of resources during the collection interval. The packets are discarded when there is a lack of resources. The protocol errors include HDLC errors, HEC errors, and CRC errors. Packets discarded due to a loopback condition, when the loopback detection mechanism is active, are also included.
rxBroadcastPacketDiscard	L_int		0.. 4294967295	The number of received broadcast packets that were discarded due to an invalid BCN address. This attribute is not applicable to ATM-based BCN interfaces.

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Table 95
PCS test statistics specific to a Logical Processor (LP)

Field name	Field type	Default field position	Field value	Field description
cardNumber	int			The logical processor's card number.
cardStatus	int		1 = standby 2 = active	The logical processor's card is *active* or *standby*.
memoryCapacity	vector decimal		0..2147483647	The processor's memory capacity (in kilobytes) for each memory type (fastRam, normalRam, and sharedRam) in the specified collection interval. This statistic is calculated using 15 second samples.
msgBlockCapacity	int			The processor's shared message block memory capacity (in kilobytes).
cpuUtilAvg	int			This attribute indicates an average processor utilization level over the specified time period, timeInterval. This average is calculated based on one minute CPU utilization averages.
cpuUtilMin	int			This attribute indicates the minimum processor utilization level over the specified time period, timeInterval. This is calculated based on one minute CPU utilization averages.

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Table 95 (Continued)
PCS test statistics specific to a Logical Processor (LP)

Field name	Field type	Default field position	Field value	Field description
cpuUtilMax	int			This attribute indicates the maximum processor utilization level over the specified time period, timeInterval. This is calculated based on one minute CPU utilization averages.
memoryUsageAvg	vector decimal		0..2147483647	The processor's average memory utilization (in kilobytes) for each memory type (fastRam, normalRun, and sharedRam) in the specified collection interval. This statistic is calculated using 15 second samples.
memoryUsageMin	vector decimal		0..2147483647	The processor's minimum memory utilization (in kilobytes) for each memory type (fastRam, normalRun, and sharedRam) in the specified collection interval. This statistic is calculated using 15 second samples.
memoryUsageMax	vector decimal		0..2147483647	The processor's maximum memory utilization (in kilobytes) for each memory type (fastRam, normalRun, and sharedRam) in the specified collection interval. This statistic is calculated using 15 second samples.
msgBlockUsageAvg	int			This attribute indicates the processor's average message block memory utilization (in kilobytes) over a specified time period, timeDuration. This is calculated using 15 second samples.

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Table 95 (Continued)
PCS test statistics specific to a Logical Processor (LP)

Field name	Field type	Default field position	Field value	Field description
msgBlockUsageMin	int			This attribute indicates the processor's maximum (low water mark) message block memory utilization (in kilobytes) over a specified time period, timeDuration. This is calculated using 15 second samples.
msgBlockUsageMax	int			This attribute indicates the processor card's maximum (high water mark) message block memory utilization (in kilobytes) over a specified time period, timeDuration. This is calculated using 15 second samples.
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Table 96
Mobile Subscriber Purge functionality on the (UMTS) Serving GPRS Support Node (USGSN or SGSN) statistics

Field name	Field type	Default field position	Field value	Field description
explicitDetachPurge	L_int		0.. 4294967295	This attribute counts the Mobile Subscriber (MS) Purge requests initiated due to an explicit mobile detach. Mobile Subscriber Purge requests are initiated upon explicit detach when the purgeOnExplicitDetach attribute in (U) SGSN MobileSubscriberPurge is enabled. The counter wraps to zero when it exceeds the maximum value.
operatorInitiatedPurge	L_int		0.. 4294967295	This attribute counts the Mobile Subscriber (MS) Purge requests initiated by the operator. An operator initiated the Mobile Subscriber Purge request by issuing the clear command on an (U) SGSN Imsi component. The counter wraps to zero when it exceeds the maximum value.
contextReusePurge	L_int		0.. 4294967295	This attribute counts the Mobile Subscriber (MS) Purge requests initiated due to context reuse. The counter wraps to zero when it exceeds the maximum value.

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Table 96 (Continued)
Mobile Subscriber Purge functionality on the (UMTS) Serving GPRS Support Node (USGSN or SGSN) statistics

Field name	Field type	Default field position	Field value	Field description
periodicAuditPurge	L_int		0.. 4294967295	This attribute counts the Mobile Subscriber (MS) Purge requests initiated due to periodic audit. During a periodic audit, Mobile Subscribers whose age is greater than the value specified by the auditPurgeMinimumInactiveAge attribute in (U) SGSN MobileSubscriberPurge are considered candidates for purge. The counter wraps to zero when it exceeds the maximum value.
msPurgeAckFailures	L_int		0.. 4294967295	This attribute counts the Mobile Subscriber (MS) Purge Acknowledgement Failures received from the Home Location Register (HLR). The counter wraps to zero when it exceeds the maximum value.
msPurgeSendFailures	L_int		0.. 4294967295	This attribute counts the Mobile Subscriber (MS) Purge requests that were not sent from the (UMTS) Serving GPRS Support Node (USGSN or SGSN) due to network related faults such as SIG failure. The counter wraps to zero when it exceeds the maximum value.

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Table 97
Overload controls on the Gsc and Usc components statistics

Field name	Field type	Default field position	Field value	Field description
cpuOvldAttachesDiscarded	L_int		0.. 4294967295	This attribute counts the number of GPRS Mobility Management (GMM) attach request messages that are discarded due to a CPU overload condition on the GSC and USC applications. The counter counts the events in the collection interval.
cpuOvldActivations Discarded	L_int		0.. 4294967295	This attribute counts the number of Session Management (SM) session activate request messages that are discarded due to CPU overload on the GSC and USC applications. The counter counts the events in the collection interval.
subCountOvldAttaches Discarded	L_int		0.. 4294967295	This attribute counts the number of GPRS Mobility Management (GMM) attach request messages that are discarded due to subscriber count overload, which occurs when the value of the currentlyAttached attribute is equal to the value of the maxAttachedSubscribers attribute. The counter counts the events in the collection interval.

Table 98
Overload controls statistics

Field name	Field type	Default field position	Field value	Field description
cpuOvldMovingAvg	int			This attribute indicates the CPU moving average calculated from within the defined moving window, the size of which is determined by the value of cpuOvldWindowSize attribute.

Table 99
Session Management (SM) for Packet Data Protocol (PDP) context modification statistics

Field name	Field type	Default field position	Field value	Field description
sgsnInitModifyAttempts	L_int		0.. 4294967295	This attribute counts the number of Packet Data Protocol (PDP) context modifications initiated by the Serving GPRS Support Node (SGSN), for example, as a result of QoS renegotiations with the Mobile Station (MS). This counter is pegged only during SGSN Initiated PDP Context Modification. The counter counts the events in the collection interval.
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Table 99 (Continued)
Session Management (SM) for Packet Data Protocol (PDP) context modification statistics

Field name	Field type	Default field position	Field value	Field description
sgsnInitFailAtMs	L_int		0.. 4294967295	This attribute counts the unsuccessful Packet Data Protocol (PDP) context modifications initiated by the Serving GPRS Support Node (SGSN) that failed at the Mobile Station (MS). The counter counts the events in the collection interval.
sgsnInitFailAtGgsn	L_int		0.. 4294967295	This attribute counts the unsuccessful Packet Data Protocol (PDP) context modifications initiated by the Serving GPRS Support Node (SGSN) that failed at the Gateway GPRS Support Node (GGSN). The counter counts the events in the collection interval.
sgsnInitFailAtSgsn	L_int		0.. 4294967295	This attribute counts the unsuccessful Packet Data Protocol (PDP) context modifications initiated by the Serving GPRS Support Node (SGSN) that failed at the SGSN. The counter counts the events in the collection interval.
msInitModifyAttempts	L_int		0.. 4294967295	This attribute counts the number of Packet Data Protocol (PDP) context modifications initiated by the Mobile Station (MS). The counter counts the events in the collection interval.

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Table 99 (Continued)
Session Management (SM) for Packet Data Protocol (PDP) context modification statistics

Field name	Field type	Default field position	Field value	Field description
msInitFailAtGgsn	L_int		0.. 4294967295	This attribute counts the unsuccessful Packet Data Protocol (PDP) context modifications initiated by the Mobile Station (MS) that failed at the Gateway GPRS Support Node (GGSN). The counter counts the events in the collection interval.
msInitFailAtSgsn	L_int		0.. 4294967295	This attribute counts the unsuccessful Packet Data Protocol (PDP) context modifications initiated by the Mobile Station (MS) that failed at the SGSN. The counter counts the events in the collection interval.

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Table 100
Location Services (Lcs) statistics

Field name	Field type	Default field position	Field value	Field description
lcsMaxCurrentEnabled Subscribers	L_int		0.. 4294967295	This attribute indicates the current number of location services enabled subscribers. The value reported is the peak value for the duration of the collection interval.

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Table 100 (Continued)
Location Services (Lcs) statistics

Field name	Field type	Default field position	Field value	Field description
lcsMtRequests	L_int		0.. 4294967295	This attribute counts the total mobile terminated location requests. The counter counts the events in the collection interval.
lcsMtFailures	L_int		0.. 4294967295	This attribute counts the total unsuccessful mobile terminated location requests. The counter counts the events in the collection interval.
lcsPagingRequests	L_int		0.. 4294967295	This attribute counts the total paging requests sent by the LocationServices component. The counter counts the events in the collection interval.
lcsPagingFailures	L_int		0.. 4294967295	This attribute counts the total unsuccessful paging requests sent by the LocationServices component. The counter counts the events in the collection interval.
lcsRequestTypeNot Supported	L_int		0.. 4294967295	This attribute counts the total failed location requests due to a requested location that is not supported. The counter counts the events in the collection interval.

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Table 100 (Continued)
Location Services (Lcs) statistics

Field name	Field type	Default field position	Field value	Field description
lcsDataMissing	L_int		0.. 4294967295	This attribute counts the total failed location requests due to missing information. For example, Imsi or Msisdn is missing in the location request message. The counter counts the events in the collection interval.
lcsSubscriberNotAttached	L_int		0.. 4294967295	This attribute counts the total failed location requests due to the subscriber not currently attached. The counter counts the events in the collection interval.
lcsUnauthorizedGmlc	L_int		0.. 4294967295	This attribute counts the total failed location requests due to location requests messages received from an unauthorized Gateway Mobile Location Center. The counter counts the events in the collection interval.
lcsUnauthorizedClient	L_int		0.. 4294967295	This attribute counts the total failed location requests due to location requests messages received from an unauthorized client. The counter counts the events in the collection interval.
lcsServiceBusy	L_int		0.. 4294967295	This attribute counts the total failed location requests due to another location request already in progress for the same subscriber. The counter counts the events in the collection interval.

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Table 100 (Continued)
Location Services (Lcs) statistics

Field name	Field type	Default field position	Field value	Field description
lcsNotificationNotPossible	L_int		0.. 4294967295	This attribute counts the total failed location requests due to the reason that it is impossible to send a notification message to the mobile. The counter counts the events in the collection interval.
lcsGadShapeNotSupported	L_int		0.. 4294967295	This attribute counts the total failed location requests due to the obtained location estimates using a Geographical Area Description (GAD) shape that are not supported in the Location Request message. The counter counts the events in the collection interval.
lcsInterrupted	L_int		0.. 4294967295	This attribute counts the total failed location requests due to information received from the Radio Network Controller (RNC) showing that the Location Services (LCS) entity has been interrupted. For example, LCS can be interrupted by an Inter-SGSN Routing Area Update (IRAU). The counter counts the events in the collection interval.

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Table 100 (Continued)
Location Services (Lcs) statistics

Field name	Field type	Default field position	Field value	Field description
lcsQosNotAttained	L_int		0.. 4294967295	This attribute counts the total failed location requests due to the quality of service information not matching the requested quality of service in the Provide Subscriber Location (PSL) message from the Gateway Mobile Location Center (GMLC). The counter counts the events in the collection interval.

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Table 101
GPRS Subscriber Control Local Services statistics

Field name	Field type	Default field position	Field value	Field description
lcsCellInfoMissing	L_int		0.. 4294967295	This attribute counts the total unsuccessful location requests due to the cell information missing in the local cell database. The counter counts the events in the collection interval.

Table 102
Virtual Media Gateway (VMG) statistics

Field name	Field type	Default field position	Field value	Field description
estReqMsgs	L_int		0.. 4294967295	This attribute counts Q.2630 ERQ (establish request) messages that were received from the RNC. The counter counts the events in the collection interval.
rejectedCalls	L_int		0.. 4294967295	This attribute counts the number of calls rejected by the Media Gateways controlled by this component. The counter counts the events in the collection interval.
peakUsedPercentage	L_int		0.. 4294967295	This attribute indicates the peak percentage of provisioned DS0s for this component that are in a non-idle state. The value is set to the current percentage at the beginning of the collection interval.

Table 103
UMTS Session Management for Packet Data Protocol (PDP) context modification statistics

Field name	Field type	Default field position	Field value	Field description
sgsnInitFailAtRnc	L_int		0.. 4294967295	This attribute counts the unsuccessful Packet Data Protocol (PDP) context modifications initiated by the UMTS Serving GPRS Support Node (USGSN) that failed at the Radio Network Controller (RNC). The counter counts the events in the collection interval.
msInitFailAtMs	L_int		0.. 4294967295	This attribute counts the unsuccessful Packet Data Protocol (PDP) context modifications initiated by the Mobile Station (MS) that failed at the MS. The counter counts the events in the collection interval.
msInitFailAtRnc	L_int		0.. 4294967295	This attribute counts the unsuccessful Packet Data Protocol (PDP) context modifications initiated by the Mobile Station (MS) that failed at the Radio Network Controller (RNC). The counter counts the events in the collection interval.

Table 104
UMTS Location Services (Lcs) statistics

Field name	Field type	Default field position	Field value	Field description
lcsNotificationRequests	L_int		0.. 4294967295	This attribute counts the total notification requests to the mobile subscribers. The counter counts the events in the collection interval.
lcsNotificationFailures	L_int		0.. 4294967295	This attribute counts the total unsuccessful notification requests to the mobile subscribers. The counter counts the events in the collection interval.
lcsReportExpiries	L_int		0.. 4294967295	This attribute counts the timer expiries associated with the locationReportTimer attribute. The counter counts the events in the collection interval.
lcsNotifyExpiries	L_int		0.. 4294967295	This attribute counts the timer expiries associated with the locationNotifyTimer attribute. The counter counts the events in the collection interval.
lcsClientDeniedByMs	L_int		0.. 4294967295	This attribute counts the location requests that fail due to the subscriber denying the request. The counter counts the events in the collection interval.

(Sheet 1 of 2)

Table 104 (Continued)
UMTS Location Services (Lcs) statistics

Field name	Field type	Default field position	Field value	Field description
lcsRncPositioningFailure	L_int		0.. 4294967295	This attribute counts the total failed location requests due to the Radio Network Controller (RNC) failing to determine the location of the subscriber. The counter counts the events in the collection interval.

(Sheet 2 of 2)

Table 105
IP Round Trip Delay (RTD) statistics

Field name	Field type	Default field position	Field value	Field description
localNodeIdentifier	int			The *nodeID* of the Passport that generated the accounting record. *nodeID* is assigned to each node in the *ModuleData* component.
ipVcgInstance	str			This attribute indicates the VCG VR that generated this record.
localVcgIpAddress	IP			The VCG loopback IP address of the VCG VR that generated this record.
remoteVcgIpAddress	IP			The remote VCG destination address for which delays are measured.
framesSent	vector decimal			The number of frames transmitted by the Virtual Carrier Gateway (VCG) during the collection interval

Table 105 (Continued)
IP Round Trip Delay (RTD) statistics

Field name	Field type	Default field position	Field value	Field description
framesReceived	vector decimal			The number of frames received by the Virtual Carrier Gateway (VCG) during the collection interval
sample1StartTime	time DHMS			The timestamp when the first sample was sent to this remote Virtual Carrier Gateway (VCG).
RoundTripDelays1	vector decimal			An array of round trip delays for the first sample of packets received by the Virtual Carrier Gateway during the last monitoring session, for each class of service (0 to 3).
sample2StartTime	time DHMS			The timestamp when the second sample was sent to this remote Virtual Carrier Gateway (VCG).
RoundTripDelays2	vector decimal			An array of round trip delays for the second sample of packets received by the Virtual Carrier Gateway during the last monitoring session, for each class of service (0 to 3).
sample3StartTime	time DHMS			The timestamp when the third sample was sent to this remote Virtual Carrier Gateway (VCG).
RoundTripDelays3	vector decimal			An array of round trip delays for the third sample of packets received by the Virtual Carrier Gateway during the last monitoring session, for each class of service (0 to 3).
sample4StartTime	time DHMS			The timestamp when the fourth sample was sent to this remote Virtual Carrier Gateway (VCG).
RoundTripDelays4	vector decimal			An array of round trip delays for the fourth sample of packets received by the Virtual Carrier Gateway during the last monitoring session, for each class of service (0 to 3).

Table 105 (Continued)
IP Round Trip Delay (RTD) statistics

Field name	Field type	Default field position	Field value	Field description
sample5StartTime	time DHMS			The timestamp when the fifth sample was sent to this remote Virtual Carrier Gateway (VCG).
RoundTripDelays5	vector decimal			An array of round trip delays for the fifth sample of packets received by the Virtual Carrier Gateway during the last monitoring session, for each class of service (0 to 3).

Table 106
Dummy test statistics

Field name	Field type	Default field position	Field value	Field description
testStat1	L_int		0.. 4294967295	This attribute is the 1st test stat, an enum.
testStat2	L_int		0.. 4294967295	This attribute is the 2nd test stat, an unsigned integer.
testStat3	L_int		0.. 4294967295	This attribute is the 3rd test stat, an ASCII string.

Table 107
SCTP statistics

Field name	Field type	Default field position	Field value	Field description
outOfTheBluePackets	int			This attribute counts the "out of the blue" packets received. These packets do not belong to any particular association. The counter wraps to zero when it reaches its maximum value. Note: When multiple SCTP stacks are associated with the SCTP component, this attribute aggregates the "out of the blue" packets received on all of them.

Table 108
SCTP Association statistics

Field name	Field type	Default field position	Field value	Field description
retransmitCount	int			This attribute counts the retransmissions currently performed over the association. The counter wraps to zero when it reaches its maximum value.
transmitErrorCount	int			This attribute counts the number of packet transmission errors in the path. Packet transmission errors accrue as a result of T3-rtx timer expiry and heartbeat failure. This counter wraps to zero if it reaches its maximum defined value.

Table 108 (Continued)
SCTP Association statistics

Field name	Field type	Default field position	Field value	Field description
txChunks	L_int			This attribute counts the number of chunks transmitted to the peer SCTP endpoint. This count includes txChunkRetransmits, but does not include txChunksDiscarded. This counter wraps to zero if it reaches its maximum defined value.
txChunkRetransmits	int			This attribute counts the number of chunks currently retransmitted in the path. This count is included in txChunks. This counter wraps to zero if it reaches its maximum defined value.
txChunksDiscarded	int			This attribute counts number of chunks that could not be transmitted to the peer endpoint due to error. This counter wraps to zero if it reaches its maximum defined value.
txPacketsDiscarded	int			This attribute counts the number of SCTP packets that could not be transmitted due to error. This counter wraps to zero if it reaches its maximum defined value.

Table 108 (Continued)
SCTP Association statistics

Field name	Field type	Default field position	Field value	Field description
rxChunks	L_int			This attribute counts the number of both data and control chunks received from the peer SCTP endpoint. This count includes rxChunksDuplicate and rxChunksDiscarded chunks. This counter wraps to zero if it reaches its maximum defined value.
rxChunksDuplicate	int			This attribute counts the number of duplicate chunks received from the peer endpoint. This count is included in rxChunks. This counter wraps to zero if it reaches its maximum defined value.
rxChunksDiscarded	int			This attribute counts the number of chunks discarded out of all the ones received from the peer endpoint due to errors, such as invalid chunk type, invalid stream identifier, no user data in chunk, etc.This count is included in rxChunks. This counter wraps to zero if it reaches its maximum defined value.

Table 108 (Continued)
SCTP Association statistics

Field name	Field type	Default field position	Field value	Field description
rxPacketsDiscarded	int			This attribute counts the discarded SCTP packets out of all the ones received from the peer endpoint due to error, such as the CRC-32 checksum failure. This count is included in rxPackets. This counter wraps to zero if it reaches its maximum defined value.

Table 109
IpPolicer statistics

Field name	Field type	Default field position	Field value	Field description
committedInformationRate	int			This attribute indicates the Committed Information Rate (cir) in bits per second (bits/s). It represents the rate at which the network agrees to transfer information under normal conditions.The cir attribute under the Meter component provides an upper bound for this attribute which might be adjusted in some cases.

Table 109 (Continued)
IpPolicer statistics

Field name	Field type	Default field position	Field value	Field description
excessInformationRate	int			This attribute indicates the Excess Information Rate (eir) in bits per second (bits/s). It represents the rate at which the network will attempt to transfer information. It is derived from the excessBurstSize and measurmentInterval attributes (eir=be/t).
committedBurstSize	int			This attribute indicates the Committed Burst Size (bc) in bits. The bc attribute under Meter component provides an upper bound which might be adjusted in some cases.
excessBurstSize	int			This attribute indicates the Excess Burst Size (be) in bits. The be attribute under Meter component provides an upper bound which might be adjusted in some cases
measurmentInterval	L_int			This attribute indicates the time interval (in milliseconds) over which rates and burst sizes are measured. It is derived from cir and be attributes, or it has the same value as provisioned measurmentInterval attribute.
packetsReceived	L_int			This attribute contains the number of packets received on an interface during the last statistics collection interval that are handled by the traffic meter. It includes packets that are discarded due to excess.

Table 109 (Continued)
IpPolicer statistics

Field name	Field type	Default field position	Field value	Field description
octetsReceived	L_int			This attribute contains the number of octets received on an interface during the last statistics collection interval that are handled by the traffic meter. It includes octets that are discarded due to excess.
eirPacketsReceived	L_int			This attribute contains the number of packets received on an interface during the last statistics collection interval that have EIR rate enforced by the traffic meter only.
eirOctetsReceived	L_int			This attribute contains the number of octets received on the interface during the last statistics collection interval that have EIR rate enforced by the traffic meter only.
packetsRemarked	L_int			This attribute counts the number of packets that have exceeded the CIR rate and have been remarked by the traffic meter during the last statistics collection interval.
octetsRemarked	L_int			This attribute counts the number of octets that have exceeded the CIR rate and have been remarked by this traffic meter during the last statistics collection interval.
packetsDiscarded	L_int			This attribute counts the number of packets discarded by the traffic meter during the last statistics collection interval.
octetsDiscarded	L_int			This attribute counts the number of octets discarded by the traffic meter during the last statistics collection interval.

Table 110
InWlpCpp statistics

Field name	Field type	Default field position	Field value	Field description
isolatedDa	IP			This attribute indicates the IP address of the isolated locally destined DA..
isolatedLp	int			This attribute indicates the LP number on which the locally destined address is being isolated.
isolatedCounts	int			This attribute indicates the number of counts that the isolated DA encountered during the last 15 minutes.
averageFlowRate	int			This attribute indicates the average flow rate of the isolated DA during the isolation period.

Table 111
WLC Seamless National Roaming Attachment Collected statistics

Field name	Field type	Default field position	Field value	Field description
snrPeakAttached	L_int			This attribute indicates the peak number of roaming Mobile Stations (MSs) that have become GPRS-attached and have been given homer Quality of Service by Seamless National Roaming. If the SNR service is updated after the MS is attached, then the value of this attribute is not updated until the next periodic Routing Area Update. The value reported is the peak value in the collection interval.
snrAttachesSuccessful	L_int			This attribute counts the roaming Mobile Stations (MSs) that have been GPRS-attached and have been given homer Quality of Service by Seamless National Roaming. If the SNR service is updated after the MS is attached, then the value of this attribute is not updated until the next periodic Routing Area Update. This counter counts the events in the collection interval.

Table 111 (Continued)
WLC Seamless National Roaming Attachment Collected statistics

Field name	Field type	Default field position	Field value	Field description
snrGprsNotAllowedRejects	L_int			This attribute counts the rejects sent by Seamless National Roaming to the Mobile Stations (MSs) due to the Cause code 7: "GPRS Services Not Allowed". The reject is also counted in the attachesRejected attribute (defined in the Gsc/n Gmm component). The counter counts the events in the collection interval.
snrCombNotAllowedRejects	L_int			This attribute counts the rejects sent by Seamless National Roaming to the Mobile Stations (MSs) due to the Cause code 8: "GPRS And Non-GPRS Services Not Allowed". The counter counts the events in the collection interval.
snrNotAllowedInPlmnRejects	L_int			This attribute counts the rejects sent by Seamless National Roaming to the Mobile Stations (MSs) due to the Cause code 11: "PLMN Not Allowed". The counter counts the events in the collection interval.
snrNotAllowedInLaRejects	L_int			This attribute counts the rejects sent by Seamless National Roaming to the Mobile Stations (MSs) due to the Cause code 12: "Location Area Not Allowed". The counter counts the events in the collection interval.

Table 111 (Continued)
WLC Seamless National Roaming Attachment Collected statistics

Field name	Field type	Default field position	Field value	Field description
snrNoRoamingInLaRejects	L_int			This attribute counts the rejects sent by Seamless National Roaming to the Mobile Stations (MSs) due to the Cause code 12: "Location Area Not Allowed". The counter counts the events in the collection interval.
snrGprsNotAllowedInPlmn Rejects	L_int			This attribute counts the rejects sent by Seamless National Roaming to the Mobile Stations (MSs) due to the Cause code 14: "GPRS Not Allowed in this PLMN". The counter counts the events in the collection interval.
snrTryAnotherCellRejects	L_int			This attribute counts the rejects sent by Seamless National Roaming to the Release 99 Mobile Stations (MSs) due to the Cause code 15: "No Suitable Cells In Location Area". The reject for Release 97 MSs are counted in the snrRemappedCauseRejects attribute (defined in the Gsc/n Gmm component). The counter counts the events in the collection interval.

Table 111 (Continued)
WLC Seamless National Roaming Attachment Collected statistics

Field name	Field type	Default field position	Field value	Field description
snrRemappedCauseRejects	L_int			This attribute counts the rejects sent by Seamless National Roaming to the Release 97 Mobile Stations (MSs) due to the Cause code 15: "No Suitable Cells In Location Area". The counter counts the events in the collection interval.
snrOtherCauseRejects	L_int			This attribute counts the rejects sent by Seamless National Roaming to the Mobile Stations (MSs) because of causes other than the following reject causes: • Cause code 7: GPRS Services Not Allowed • Cause code 8: GPRS Services and Non-GPRS Services Not Allowed • Cause code 11: PLMN Not Allowed • Cause code 12: Location Area Not Allowed • Cause code 13: Roaming Not Allowed In This Location Area • Cause code 14: GPRS Not Allowed In This PLMN • Cause code 15: No Suitable Cells In Location Area The counter counts the events in the collection interval.

Table 112
WLC Seamless National Roaming Activations Collected statistics

Field name	Field type	Default field position	Field value	Field description
snrPeakActivated	L_int			This attribute indicates the peak number of roaming Mobile Stations (MSs) that have become GPRS-activated and have been given homer Quality of Service by Seamless National Roaming. The value reported is the peak value in the collection interval.
snrActivatesSuccessful	L_int			This attribute counts the roaming Mobile Stations (MSs) that have been GPRS-activated and have been given homer Quality of Service by Seamless National Roaming. The counter counts the events in the collection interval.

Table 113
GPRS SGSN Buffers Collected statistics

Field name	Field type	Default field position	Field value	Field description
totalPdusBuffered	L_int			This attribute contains the statistical information of the Gsd/n DownlinkBuffer component which is collected and spooled by the Data Collection System.

Table 113 (Continued)
GPRS SGSN Buffers Collected statistics

Field name	Field type	Default field position	Field value	Field description
totalBytesBuffered	L_int			This attribute counts the total number of Protocol Data Units (PDUs) that have been buffered on this GPRS Subscriber Data (GSD). The counter counts the events in the collection interval.
totalMobilesBufferedFc	L_int			This attribute counts the total number of mobiles that have been buffered on this GPRS Subscriber Data (GSD) due to flow control. The counter counts the events in the collection interval.
totalMobilesBufferedLlc	L_int			This attribute counts the total number of mobiles that have been buffered on this GPRS Subscriber Data (GSD) due to suspension of the Logical Link Control (LLC) layer. The counter counts the events in the collection interval.
totalDiscardsDueToLifetimeExpiry	L_int			This attribute counts the total number of packets discarded because the maximum amount of time the packet can be buffered has exceeded the value specified by the pduLifetimeInBuff attribute. The counter counts the events in the collection interval..

Table 113 (Continued)
GPRS SGSN Buffers Collected statistics

Field name	Field type	Default field position	Field value	Field description
totalDiscardsDueToMaxPackets	L_int			This attribute counts the total number of packets discarded because the maximum number of bufferable bytes specified by the maxBytesBuffPerMs attribute was exceeded. The counter counts the events in the collection interval.

Alarm data

Alarm data is essential for the real-time surveillance of Passport nodes. Alarm data is also used for post-processing and analysis of down-time and other service-affecting problems.

Alarm data collection should be active at all times; this ensures that there is sufficient information to analyze the cause of problems, should they occur. Each alarm is described in Passport documents, namely the 241-5701-500 *Passport 6400, 7400, 15000, 20000 Alarms*. Also see responses *DcsAlarmInfo, DcsAlarmOptInfo,* and *OsiStateStatusResponse* in the Passport documents.

For a description of the alarm format, see Appendix B, Common Alarm Format in 241-6001-011 *Preside MDM Fault Management User Guide.*

Log data

Passport logs are used to monitor the operator command activity on a node.

For a description of common operator commands and component-specific commands and responses, refer to the Passport documents.

"Passport log records" (page 397) describes the fields in Passport spooled log records.

Table 114
Passport log records

Field name	Field type	Default field position	Field value	Field description
switchType	str	001	pp	The type of switch that generated this record.
dataType	str	002	log	Identifies this record as being a command log.

(Sheet 1 of 3)

Table 114 (Continued)
Passport log records

Field name	Field type	Default field position	Field value	Field description
componentName	str	003		This field identifies the Passport component type and location for which this statistical record was generated.
timeOfRecord	time	004	yyyymmddT hhmmss.xxxxxx yyyy = year mm = month dd = day T = date/time split hh = hour mm = minutes ss = seconds xxxxxx = 0..999999 microseconds	This field identifies the date and time that this record was produced on switch.
customerIdentifier	int	005		This field identifies the switch customer.
userId	str	006	0..8	The userID of the user that issued the command.
sessionSequenceNumber	L_int	007	0.. 4294967295	A numeric session sequence number. A “login” Log and all commands issued during that particular session has the same sequence number. The next time a user (the same one or a different one) logs in, a new sequence number is used.
command	str	008		The actual command.
response	str	009		The success/failure indicator of the command. This is not the full textual response.

(Sheet 2 of 3)

Table 114 (Continued)
Passport log records

Field name	Field type	Default field position	Field value	Field description
managerIpAddress	str	010		The SNMP Management station (manager) that issued the SNMP command.
snmpCommand	str	011		The command received by the SNMP Agent.
cliCommand	str	012		The command line interface (CLI) equivalent of the command received by the SNMP Agent.
(Sheet 3 of 3)				

SCN data

State change notification (SCN) data is used by Preside Multiservice Data Manager (MDM) to update the Network Model database. The Network Model is a common repository of network configuration information used by any number of applications on MDM. See response *OsiStateStatusResponse* in the Passport documents.

Passport spooled SCN data is also collected by MDPs File Prober, converted to BDF, and transfered to a customer performance host.

"Passport SCN records" (page 399) describes the fields in Passport spooled SCN records.

Table 115
Passport SCN records

Field name	Field type	Default field position	Field value	Field description
switchType	str	001	pp	The type of switch that generated this record.
(Sheet 1 of 5)				

Table 115 (Continued)
Passport SCN records

Field name	Field type	Default field position	Field value	Field description
dataType	str	002	scn or scn_DMId_RDFv	Identifies this record as being a state change notification (scn) record. If configured, can include: Data Model Identifier (DMId) and RDF version (RDFv).
componentName	str	003		This field identifies the Passport component type and location for which this statistical record was generated.
timeOfRecord	time	004	yyyymmddT hhmmss.xxxxxx yyyy = year mm = month dd = day T = date/time split hh = hour mm = minutes ss = seconds xxxxxx = 0..999999 microseconds	This field identifies the date and time that this record was produced on switch.
customerIdentifier	int	005		This field identifies the switch customer.
adminState	int	006	0 = locked 1 = unlocked 2 = shutting down	Indicates the ability of the component to execute the loaded software. locked prevents execution, unlocked enables execution and shutting down indicates that the component is in an intermediate state waiting for executing software to terminate.

(Sheet 2 of 5)

Table 115 (Continued)
Passport SCN records

Field name	Field type	Default field position	Field value	Field description
operationalState	int	007	0 = disabled 1 = enabled	Indicates the ability of the component to operate. disabled indicates that the component is inoperable and enabled indicates that the component is at least partially in operation.
usageState	int	008	0 = idle 1 = active 2 = busy	Indicates the current status of the component. idle indicates that the component is not in use. active indicates that the component is in use and is capable of handling additional load. busy indicates that the component is in use and is not capable of handling additional load.
availabilityStatus_inTest	bit	009		The component is being tested.
availabilityStatus_failed	bit	010		The component is inoperable.
availabilityStatus_powerOff	bit	011		The component requires power to become operable.
availabilityStatus_offLine	bit	012		The component requires activation to become operable.
availabilityStatus_offDuty	bit	013		The component has been deactivated according to a scheduled outage.
availabilityStatus_ dependency	bit	014		The component is inoperable because an associated component is unavailable.
availabilityStatus_ degraded	bit	015		The component is operable but in a degraded state.

(Sheet 3 of 5)

Table 115 (Continued)
Passport SCN records

Field name	Field type	Default field position	Field value	Field description
availabilityStatus_ notInstalled	bit	016		This component does not exist.
availabilityStatus_logFull	bit	017		Indicates a log full condition.
proceduralStatus_ initializationRequired	bit	018		The component requires activation to become operable. Operator intervention is required.
proceduralStatus_ notInitialized	bit	019		The component requires activation to become operable. The component will activate itself.
proceduralStatus_ initializing	bit	020		The component is being activated.
proceduralStatus_reporting	bit	021		The component is responding to an operation and is generating the results (for example, testing).
proceduralStatus_ terminating	bit	022		The component is terminating operation.
controlStatus_ subjectToTest	bit	023		The component is available for normal and testing operations.
controlStatus_ partOfServicesLocked	bit	024		A portion of the services provided by this component are restricted.
controlStatus_ reservedForTest	bit	025		The component is being tested.
controlStatus_suspended	bit	026		Service on this component is suspended by operator.
alarmStatus_underRepair	bit	027		The component is being repaired.

(Sheet 4 of 5)

Table 115 (Continued)
Passport SCN records

Field name	Field type	Default field position	Field value	Field description
alarmStatus_critical	bit	028		One, or more, critical alarms exist.
alarmStatus_major	bit	029		One, or more, major alarms exist.
alarmStatus_minor	bit	030		One, or more, minor alarms exist.
alarmStatus_ alarmOutstanding	bit	031		One, or more, alarms exist.
standbyStatus	bit	032	0 = hot 1 = cold 2 = providing 15 = notSet	Indicates the service status of the component. hot indicates that the component is not currently providing service but is available in sync mode. cold indicates that the component is not currently providing service and is not available in sync mode. providing indicates that the component is providing service. notSet indicates the status is not set.
unknownStatus	bit	033	0 = false 1 = true	Indicates the accuracy of the component or service state attributes. true indicates that the reported values are accurate. false indicates that the reported values may not be accurate.

(Sheet 5 of 5)

Chapter 4
Outage records

This chapter describes MDP Outage Calculator outage records for Passport.

Outage records use a Bulk Data Format (BDF) and are generated from alarm and State Change Notification (SCN) records processed by an MDP outage calculator.

The fields and their sequence within the BDF Passport outage file are controlled by RDFs.

Table 116
Passport BDF outage record fields

Field name	Position	Description or value
switchType	001	pp (for Passport)
dataType	002	otg
componentName	003	The component identifier of the alarm.
customerIdentifier	004	Customer Network Management Identifier assigned to network components dedicated to a Virtual Private Network.
outageType	005	Can have a value of: Component, Partial, Indeterminate, CP SwitchOver, or SoftwareMigration.
componentType	006	Can have a value of: Module, ShelfCard (CARD), LogicalProcessor (LP), Trunk, DpnGateway, CP, or Unknown.

(Sheet 1 of 2)

Table 116 (Continued)
Passport BDF outage record fields

Field name	Position	Description or value
startDateTime	007	The date and time of the first alarm or scn record processed. The format is: yyyymmDDTHHMMSS.t, where yyyy=year; mm=month; DD=day; HH=hour; MM=minute; SS=seconds; and t=tenths of a second.
endDateTime	008	The date and time of the last alarm or scn record processed. The format is: yyyymmddTHHMMSS.t, where yyyy=year; mm=month; DD=day; HH=hour; MM=minute; SS=seconds; and t=tenths of a second. The endDateTime value will be set to zero if the outageType is Partial.
duration	009	Outage duration in seconds. Duration is specified only if startDateTime and endDateTime are both non-zero values; otherwise duration is set to zero.
ntpIndex	010	Use as an index to Passport alarm NTPs
(Sheet 2 of 2)		

Note: Comment and condition fields use the BDF escape sequence.

For Passport BDF outage record details, see “Passport BDF outage record fields” (page 405).

Chapter 5
Availability report records

Availability report records use a Bulk Data Format (BDF) and are generated from outage file records created by an MDP Outage Calculator. The content and sequence of all fields within BDF availability records is controlled by the gen_ava.rdf RDF file. See “BDF availability record fields” (page 407).

Table 117
BDF availability record fields

Field name	Description or value
switchType	pp (for Passport).
dataType	ava
dateTime	Start date and time of the availability sample period. The format is: YYYYMMDDThhmmss.s, where YYYY=year; MM=month; DD=day; hh=hour; mm=minute; ss=seconds; s=tenths of a second.
switchID	A Passport nodeID or nodename.
componentId	The component identifier formatted in pairs of: category/value.
componentType	Module, Card, LP, Trunk, DpnGate, CPSwitch
sampleTime	Duration of the sample period in seconds
outageTime	Sum of individual outage durations in seconds
serviceTime	Total time, in seconds, of sample period less any service windows defined in the exceptions file
nofOutages	Number of individual outages
mtbf	Mean time between failure in seconds

(Sheet 1 of 2)

Table 117 (Continued)
BDF availability record fields

Field name	Description or value
mttr	Mean time to repair in seconds
availPcnt	Percentage availability
accsampleTime	Duration of the accumulated sample period in seconds
accOutageTime	Accumulated outage time in seconds
accServiceTime	Accumulated service time in seconds
accNofOutages	Accumulated number of outages
accMtbf	Accumulated mean time between failures in seconds
accMttr	Accumulated mean time to repair in seconds
accAvailPcnt	Accumulated availability percentage
(Sheet 2 of 2)	

Note: Comment and condition fields use the BDF escape sequence.

Chapter 6
Statistics Retrieval System records

Statistics Retrieval System (SRS) records use a Bulk Data Format (BDF) and are generated by the SRS. The content and sequence of all fields within BDF SRS records is controlled by the pp_srs.rdf RDF. For a description of the original Nortel Networks supplied SRS RDF, see “SRS records” (page 409).

Table 118
SRS records

Field name	Field type	Default field position	Field value	Field description
switchType	str	001	pp	The type of switch that generated this record.
dataType	str	002	srs_<identifier> where <identifier> is the name of the applied RCF	This field identifies this record as being an SRS record and identifies the applied RCF.
componentName	str	003		This field identifies the Passport component type and location for which this statistical record was generated.

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Table 118 (Continued)
SRS records

Field name	Field type	Default field position	Field value	Field description
timeOfRecord	time	004	yyyymmddT hhmmss.xxxxxx yyyy = year mm = month dd = day T = date/time split hh = hour mm = minutes ss = seconds xxxxxx = 0..999999 microseconds	This field identifies the date and time that this record was generated on switch.
deltaTime	L_int	005	units = seconds	The time, in seconds, since this component was last polled. The actual polling interval.
customerIdentifier	int	006		This field identifies the switch customer.
txCellDelta	L_int	007		The total number of cells that have been transmitted to the interface since the last SRS poll.
txCellClpDelta	L_int	008		The total number of cells that have been transmitted to the interface with CLP=1 since the last SRS poll.
txDiscardDelta	L_int	009		The total number of cells or frames, transmitted to the bus that have been discarded due to congestion, or a disabled interface, since the last SRS poll.
txDiscardClpDelta	L_int	010		The total number of cells or frames, transmitted to the bus with CLP=1 that have been discarded due to congestion, or a disabled interface, since the last SRS poll.

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Table 118 (Continued)
SRS records

Field name	Field type	Default field position	Field value	Field description
rxCellDelta	L_int	011		The total number of cells that have been received from the interface since the last SRS poll.
rxCellClpDelta	L_int	012		The total number of cells that have been received from the interface with CLP=1 since the last SRS poll.
rxDiscardDelta	L_int	013		The total number of cells or frames, received from the bus that have been discarded due to congestion, or a disabled interface, since the last SRS poll.
rxDiscardClpDelta	L_int	014		The total number of cells or frames, received from the bus with CLP=1 that have been discarded due to congestion, or a disabled interface, since the last SRS poll.
cellsTransmittedDelta	L_int	015		The total number of cells transmitted to the backplane (ingress direction) since the last SRS poll. This includes cells containing CBR data, trunk conditioning cells (structured services), and unframed AIS cells (unstructured services).
cellsReceivedDelta	L_int	016		The total number of cells received from the backplane (egress direction) since the last SRS poll. This includes CBR user data cells, cells with AAL1 header errors (correctable and non-correctable) and cells with AAL1 sequencing errors.

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Table 118 (Continued)
SRS records

Field name	Field type	Default field position	Field value	Field description
lostCellsDelta	L_int	017		The number of cells declared as never received by the AAL1 protocol layer since the last SRS poll.
bufferUnderflowsDelta	L_int	018		The number of times the AAL1 reassembly buffer underflows that have occurred since the last SRS poll. In the case of a continuous buffer starvation, a single buffer underflow event is counted.
bufferOverflowsDelta	L_int	019		The number of times the AAL1 reassembly buffer overflows that have occurred since the last SRS poll. Buffer overflows occur when AAL1 cells arrive at a rate above that which is expected. Occurrences of this condition may be reduced by increasing the value of the attributes bufferSize or maximumBufferDelay.
reassembledCellsDelta	L_int	020		The number of received cells whose payload has been played out to the service interface since the last SRS poll.
headerErrorsDelta	L_int	021		The number of cells received with AAL1 header errors since the last SRS poll.

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Table 118 (Continued)
SRS records

Field name	Field type	Default field position	Field value	Field description
pointerReframesDelta	L_int	022		The number of times that the AAL1 reassembly unit found an SDT pointer where it was not expected and as a result had to reacquire the SDT pointer since the last SRS poll. Errors of this type can occur because of problems at the far end. This attribute is meaningful for structured services, only, and are set to 0 for unstructured services.
pointerParityErrorsDelta	L_int	023		The number of times that the AAL1 reassembly unit detects a parity check failure at the point where an SDT pointer is expected since the last SRS poll. Errors of this type can occur because of problems at the far end. This attribute is meaningful for structured services, only, and are set to 0 for unstructured services.
aal1SequenceErrorsDelta	L_int	024		The number of times that the sequence number of an incoming AAL1 Type 1 SAR-PDU gets out of synchronization as defined by ITU-T Recommendation I.363.1 since the last SRS poll.
misinsertedCellsDelta	L_int	025		The number of AAL1 sequence violations that the AAL convergence sub-layer interprets as mis-inserted cells as defined by ITU-T I.363.1 since the last SRS poll.
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Chapter 7
File processing audit records

Header records that identify each field in the file processing audit records are optionally provided at the top of each detail or summary report page. Header records are indicated by the letter H in field 1.

For a description of the file processing audit detail records, see “File processing audit detail records” (page 415).

For a description of the file processing audit summary records, see “File processing audit summary records” (page 417).

Table 119
File processing audit detail records

Field name	Field type	Default field position	Field value	Field description
recordType	str	001	always “D”	This field identifies this audit record as a detail record.
fileName	str	002		The filename of the converted raw data file.
dataType	str	003	one of: acc, ala, log, scn, or sta	This field identifies the datatype of the converted raw data file.

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Table 119 (Continued)
File processing audit detail records

Field name	Field type	Default field position	Field value	Field description
nodeID	str	004		The nodename or nodeID of the originating switch.
sizeBytes	str	005	7 digits, 0 filled	The size of the spooled data file in bytes.
recordsCount	str	006	7 digits, 0 filled	The number of successfully converted records.
bytesCorrupt	str	007	7 digits, 0 filled	The number of corrupted bytes in the spooled file.
conversionResult	str	008	one of: CONVERTED PARTIAL ERROR OTHER_ERR ZERO_LEN NONE UNKNOWN	This field indicates the status of the file conversion. CONVERTED indicates successful BDF conversion. PARTIAL indicates some records were converted and a BDF file was generated. ERROR indicates that no records were converted. OTHER_ERR indicates that other processing errors occurred while processing this file. ZERO_LEN indicates that this file was zero length and removed from the spool directory. NONE indicates that no conversion occurred because the file was missing, was waiting in the spool directory, or is not to be converted (for example, an SRS file). UNKNOWN indicates the file status is unknown.

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Table 119 (Continued)
File processing audit detail records

Field name	Field type	Default field position	Field value	Field description
deliverResult	str	009	one of: MISSING <seq> INSPOOL DELIVERED NONE	This optional field indicates the status of the file delivery. MISSING <seq> indicates that a spool file with sequence number <seq> was not received. INSPOOL indicates that a data file is received and waiting in the spool directory. DELIVERED indicates that the file was delivered to a customer host. NONE indicates that the file was not delivered to a customer host.
receivingHost/server	str	010	maximum 3 values, comma delimited	This optional field identifies the customer host(s) that received the converted BDF file. This field can contain hostnames or IP addresses.

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Table 120
File processing audit summary records

Field name	Field type	Default field position	Field value	Field description
recordType	str	001	always “S”	This field identifies this audit record as a summary record.
date	str	002	YYYYMMDD	The date of the record.
dataType	str	003	one of: acc, ala, log, scn, or sta	This field identifies the datatype of the converted raw data file.

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Table 120 (Continued)
File processing audit summary records

Field name	Field type	Default field position	Field value	Field description
nodeID	str	004		The nodename or nodeID of the originating switch.
detailCount	str	005	5 digits, 0 filled	The number of records per node.
totalBytes/node	str	006	10 digits, 0 filled	The number of bytes processed per node.
totalRecs/node	str	007	10 digits, 0 filled	The number of successfully converted records per node.
corruptedBtyes/node	str	008	10 digits, 0 filled	The number of corrupted bytes per node.
zeroCount	str	009	5 digits, 0 filled	The number of zero length files per node.
errorCount	str	010	5 digits, 0 filled	The number error files per node.
missgCount	str	011	5 digits, 0 filled	The number of missing spool files per node.
delivCount	str	012	5 digits, 0 filled	The number of BDF files successfully delivered to customer hosts.

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Chapter 8
MPE records

This chapter provides a reference to Nortel Networks Multiservice Provider Edge (MPE) accounting, statistics, alarm and trace records.

Note: MDM documentation does not provide a list, or descriptions of MPE collected data. Refer directly to the MPE documents listed below for this information.

Table 121
MPE reference by record type

Record type	MPE document to reference
Accounting	NN10700-010 *Nortel Networks Multiservice Provider Edge 9500 Accounting*
Statistics	NN10700-015 *Nortel Networks Multiservice Provider Edge 9500 Performance Management*
Alarms	NN10700-014 *Nortel Networks Multiservice Provider Edge 9500 Alarms Reference* and NN10700-013 *Nortel Networks Multiservice Provider Edge 9500 Fault Management*
Trace	NN10700-013 *Nortel Networks Multiservice Provider Edge 9500 Fault Management*

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Preside Multiservice Data Manager

MDP Data Formats

Reference

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