



Configuring BAMS for ASCII Output and Measurements

Overview

This chapter describes how to configure the Cisco Billing and Measurements Server (BAMS) for ASCII output and measurements.



Note

If the length of the data in the CDR file obtained from the Cisco PGW 2200 is greater than that which is expected by BAMS, the data value will be truncated.



Note

You enable ASCII and/or measurements output with the NODEPARMS tag ID. For more information, see the [“NODEPARMS Tag ID” section on page 5-10](#).

ASCII Output

Many mediation systems depend on input data that is preformatted as ASCII. You can configure BAMS to create ASCII records. In addition to requiring ASCII records for billing purposes, the same mediation systems might require bearer-level measurements that are produced on BAMS. In order to satisfy both requirements, BAMS can produce ASCII output that mirrors what is currently produced on the Cisco MGC.

To enable ASCII record generation on BAMS, set the parameter `asciioutput` in the NODEPARMS tag ID to a value of 1 for ANSI output or 2 for ITU output. See [Chapter 2, “Setup and Installation,”](#) for further details.

BAMS creates ASCII 1110 records when a call has terminated. Filenames are identical to the names that are currently used on the Cisco MGC and BAMS, with the suffix changed to “`csv`” (that is, comma-separated values). For example, if a Tag-Length Value (TLV) billing file on the Cisco MGC is named `cdr_20000714195130_000777.bin` on the Cisco MGC, any file that is produced as a result of processing this file is named `cdr_20000714195130_000777.csv`. Some files are created with zero records, when no calls terminate during the processing of a TLV file from the Cisco MGC.



Note

The Cisco MGC (PGW 2200) uses local time to generate CDR file names. The Cisco BAMS uses UTC to generate both measurement and billing output file names. For example, a file generated by the Cisco MGC in the Eastern Standard Timezone named cdr_200404201300210412_123456.bin, the ASCII output file generated by the Cisco BAMS would be named cdr_200404201800210412_123456.csv.

All fields for records 1110 and 1060 are written in comma-separated format. Tag 6000 (Virtual Switch Controller [VSC] ID) is collected from the 1090 Call Detail Block (CDB). The fields are written in the exact order specified in Table 7-1. When a field was not created by the Cisco MGC, because the field did not apply to the type of call recorded, a blank field or zero field is inserted as a place holder.

A normalized set of fields, or CDEs, is written for every record type, even if that record type does not contain a particular field. In this way, the end user can quickly import the CDR ASCII file into a database with standard data-importing tools. If more fields are added at a later time, they are appended to the end of the record, so you can ignore them, or modify their database import structure by simply adding fields to the end of the layout.

The accuracy selection for time points is configurable in seconds or milliseconds. When you are using ASCII output from BAMS, either choice is possible, because a place holder for each type has been provided in the ASCII formatting layout. For each type of time point, two entries are contained in the output format, one for seconds and one for milliseconds of granularity.

A downstream mediation or billing system can parse these ASCII records easily. Each record is prefixed in the ASCII file with a record identifier field. For example, an 1110 record would begin this way:

1110,1234,5678,2222

Table 7-1 ASCII Output Field Ordering: ANSI and ITU

| Field | Tag | Description | Format |
|-------|---------------------|-------------------------|-------------------|
| 1 | 1060, 1090, or 1110 | CDB (record) identifier | Decimal |
| 2 | 4000 | CDB Version | Decimal |
| 3 | 4001 | CDB Timepoint | Seconds (decimal) |
| 4 | 4002 | Call Reference ID | Hexadecimal |
| 5 | 4003 | IAM Timepoint | Seconds (decimal) |
| 6 | 4004 | ACM Timepoint | Seconds (decimal) |
| 7 | 4005 | ANM Timepoint | Seconds (decimal) |
| 8 | 4008 | Originating Trunk Group | Decimal |
| 9 | 4009 | Originating Member | Decimal |
| 10 | 4010 | Calling Number | Text |
| 11 | 4011 | Charged Number | Text |
| 12 | 4012 | Dialed Number | Text |
| 13 | 4014 | Called Number | Text |
| 14 | 4015 | Terminating Trunk Group | Decimal |
| 15 | 4016 | Terminating Member | Decimal |
| 16 | 4028 | First Release Source | Decimal |
| 17 | 4031 | VSC Info Field | Hexadecimal |

Table 7-1 ASCII Output Field Ordering: ANSI and ITU (continued)

| Field | Tag | Description | Format |
|-------|---------|--|-----------------------|
| 18 | 4100 | IAM Timepoint rcvd ms | Seconds, milliseconds |
| 19 | 4101 | IAM Timepoint sent ms | Seconds, milliseconds |
| 20 | 4102 | ACM Timepoint rcvd ms | Seconds, milliseconds |
| 21 | 4103 | ACM Timepoint sent ms | Seconds, milliseconds |
| 22 | 4104 | ANM Timepoint rcvd ms | Seconds, milliseconds |
| 23 | 4105 | ANM Timepoint sent ms | Seconds, milliseconds |
| 24 | 4106 | First REL Timepoint ms | Seconds, milliseconds |
| 25 | 4107 | Second REL Timepoint ms | Seconds, milliseconds |
| 26 | 4108 | RLC Timepoint rcvd ms | Seconds, milliseconds |
| 27 | 4109 | RLC Timepoint sent ms | Seconds, milliseconds |
| 28 | 2000 | ANSI Calling Party Category | Decimal |
| 29 | 2001 | ANSI User Service Information | Hex |
| 30 | 2003 | ANSI Calling Number Nature of Address | Decimal |
| 31 | 2004 | ANSI Charged Number Nature of Address | Decimal |
| 32 | 2005 | ANSI Dialed Number Nature of Address | Decimal |
| 33 | 2007 | ANSI Called Number Nature of Address | Decimal |
| 34 | 2008 | ANSI Reason Code | Hexadecimal |
| 35 | 2013 | ANSI Transit Network Selection | Hexadecimal |
| 36 | 2015 | ANSI Carrier Selection Parameter | Decimal |
| 37 | 3000 | ITU Calling Party Category | Decimal |
| 38 | 3001 | ITU User Service Information | Hex |
| 39 | 3003 | ITU Calling Number Nature of Address | Decimal |
| 40 | N.A. | Blank | N/A |
| 41 | 3005 | ITU Dialed Number Nature of Address | Decimal |
| 42 | 3007 | ITU Called Number Nature of Address | Decimal |
| 43 | 3008 | ITU Reason Code | Hexadecimal |
| 44 | 6000 | VSC ID | Text |
| 45 | Derived | Subscriber Duration (4106 minus (whichever is greater: 4104 or 4105)) | Seconds, milliseconds |
| 46 | Derived | Network Usage Duration (whichever is greater: 4108 or 4109) minus (whichever is less: 4100 or 4101)) | Seconds, milliseconds |
| 47 | 4060 | Redirecting Number | Decimal |
| 48 | 5000 | Global Call Id | Text |

Correlation of Billing Information

BAMS collects information about calls with the various Primary Interexchange Carrier (PIC) CDBs; therefore, at any point in time, some calls are terminating and some calls are just being set up. BAMS must collect the information from the various records, just as with a BAF output, and then output records only upon receipt of either a long-call duration record or a call termination event.

Files and Records

The ASCII file contains the following records:

090—File Header

110—End of Call Record

060—Long Call Duration Event

These files and records are written as if they had been produced from the Cisco MGC. The most significant information from the 1090 records is the VSC ID, and the time stamp and other information on that record should match corresponding entries in the 1090 record from the file that triggered the current file processing.

Extendable ASCII Output

Extendable ASCII is based on ASCII output, but it includes four supplementary fields. These fields are appended to the end of a standard comma-separated value ASCII record, to create a new extendable ASCII record.

To enable extendable ASCII record generation on BAMS, use the NODEPARMS tag ID to set the extasciiooutput parameter to a value of 1 for ANSI output, or 2 for ITU output. See [“Configuring Node Parameters” section on page 2-12](#) for further details. For file-naming conventions, see the [“Extendable ASCII Filename Elements” section on page A-6](#).

Extendable ASCII Output Format

Table 7-2 provides the complete list of the Extendable ASCII output fields. The additional fields (beginning with Field 49) are appended to a standard ASCII record. Each record is prefixed in the extendable ASCII file with a record identifier field (for example, an 1110 record would begin like this: 1110,1234,5678,2222). For details about the first 48 fields in an extendable ASCII record, see the “ASCII Output” section on page 7-1.

Table 7-2 Extendable ASCII Output Field Ordering: ANSI and ITU

| Field | Tag | Description | Format |
|-------|--------------------------|-------------------------------|-----------------------|
| 1 | 1060, 1090 or 1110 | CDB (record) Identifier | Decimal |
| 2 | 4000 | CDB Version | Decimal |
| 3 | 4001 | CDB Timepoint | Seconds (Decimal) |
| 4 | 4002 | Call Reference ID | Hexadecimal |
| 5 | 4003 | IAM Timepoint | Seconds (Decimal) |
| 6 | 4004 | ACM Timepoint | Seconds (Decimal) |
| 7 | 4005 | ANM Timepoint | Seconds (Decimal) |
| 8 | 4008 | Originating Trunk Group | Decimal |
| 9 | 4009 | Originating Member | Decimal |
| 10 | 4010 | Calling Number | Text |
| 11 | 4011 | Charged Number | Text |
| 12 | 4012 | Dialed Number | Text |
| 13 | 4014 | Called Number | Text |
| 14 | 4015 | Terminating Trunk Group | Decimal |
| 15 | 4016 | Terminating Member | Decimal |
| 16 | 4028 | First Release Source | Decimal |
| 17 | 4031 | VSC Info Field | Hex |
| 18 | 4100 | IAM Timepoint rcvd ms | Seconds, Milliseconds |
| 19 | 4101 | IAM Timepoint sent ms | Seconds, Milliseconds |
| 20 | 4102 | ACM Timepoint rcvd ms | Seconds, Milliseconds |
| 21 | 4103 | ACM Timepoint sent ms | Seconds, Milliseconds |
| 22 | 4104 | ANM Timepoint rcvd ms | Seconds, Milliseconds |
| 23 | 4105 | ANM Timepoint sent ms | Seconds, Milliseconds |
| 24 | 4106 | First REL Timepoint ms | Seconds, Milliseconds |
| 25 | 4107 | Second REL Timepoint ms | Seconds, Milliseconds |
| 26 | 4108 | RLC Timepoint rcvd ms | Seconds, Milliseconds |
| 27 | 4109 | RLC Timepoint sent ms | Seconds, Milliseconds |
| 28 | 2000 | ANSI Calling Party Category | Decimal |
| 29 | 2001 | ANSI User Service Information | Hexadecimal |

Table 7-2 Extendable ASCII Output Field Ordering: ANSI and ITU (continued)

| Field | Tag | Description | Format |
|-------|---------|---|-----------------------|
| 30 | 2003 | ANSI Calling Number Nature of Address | Decimal |
| 31 | 2004 | ANSI Charged Number Nature of Address | Decimal |
| 32 | 2005 | ANSI Dialed Number Nature of Address | Decimal |
| 33 | 2007 | ANSI Called Number Nature of Address | Decimal |
| 34 | 2008 | ANSI Reason Code | Hexadecimal |
| 35 | 2013 | ANSI Transit Network Selection | Hexadecimal |
| 36 | 2015 | ANSI Carrier Selection Parameter | Decimal |
| 37 | 3000 | ITU Calling Party Category | Decimal |
| 38 | 3001 | ITU User Service Information | Hexadecimal |
| 39 | 3003 | ITU Calling Number Nature of Address | Decimal |
| 40 | 3004 | ITU Charged Number Nature of Address | Decimal |
| 41 | 3005 | ITU Dialed Number Nature of Address | Decimal |
| 42 | 3007 | ITU Called Number Nature of Address | Decimal |
| 43 | 3008 | ITU Reason Code | Hexadecimal |
| 44 | 6000 | VSC ID | Text |
| 45 | Derived | Subscriber Duration (4106 minus (whichever is greater: 4104 or 4105)) | Seconds, Milliseconds |
| 46 | Derived | Network Usage Duration ((whichever is greater: 4108 or 4109) minus (whichever is less: 4100 or 4101)) | Seconds, Milliseconds |
| 47 | 4060 | Redirecting Number | Text |
| 48 | 5000 | Global Call Id | Hexadecimal |
| 49 | 2002 | ANSI Originating Line Information | Hexadecimal |
| 50 | 4201 | Ingress SIP URL | 1 to 256 characters |
| 51 | 4202 | Egress SIP URL | 1 to 256 characters |
| 52 | 4203 | SIP Callid | 1 to 256 characters |
| 53 | 4204 | Source IP Address | String |
| 54 | 4205 | Ingress Media Device Address | String |
| 55 | 4206 | Egress Media Device Address | String |
| 56 | 4207 | Initial Codec | String |
| 57 | 4208 | Final Codec | String |
| 58 | 4209 | Ingress Media Device Port Number | String |
| 59 | 4210 | Egress Media Device Port Number | String |
| 60 | 4052 | Originating Gateway Primary Select | Decimal integer |
| 61 | 4053 | Terminating Gateway Primary Select | Decimal integer |
| 62 | 4061 | Tariff Rate | Decimal integer |
| 63 | 4062 | Scale Factor | Decimal integer |

Table 7-2 Extendable ASCII Output Field Ordering: ANSI and ITU (continued)

| Field | Tag | Description | Format |
|-------|------|--|-----------------|
| 64 | 4063 | Test Line Indicator | Decimal integer |
| 65 | 4078 | Charge Band Number | Decimal integer |
| 66 | 4079 | Furnish Charging Number | String |
| 67 | 4080 | Original Called Number | String |
| 68 | 4081 | T.38 Fax Call | String |
| 69 | 4082 | Charge Unit Number | Decimal integer |
| 70 | 4034 | Ingress Originating Point Code | Decimal |
| 71 | 4035 | Ingress Destination Point Code | Decimal |
| 72 | 4036 | Egress Originating Point Code | Decimal |
| 73 | 4037 | Egress Destination Point Code | Decimal |
| 74 | 4046 | Ingress Packet Info | Hexadecimal |
| 75 | 4047 | Egress Packet Info | Hexadecimal |
| 76 | 4068 | Ingress BearChanId | Decimal |
| 77 | 4072 | Egress BearChanId | Decimal |
| 78 | 4083 | Charge Indicator | Decimal |
| 79 | 4084 | Outgoing Calling Party Number | Text |
| 80 | 4085 | MCID Request Indicator | Decimal |
| 81 | 4086 | MCID Response Indicator | Decimal |
| 82 | 4087 | Ingress MGCP DLCX (Delete Connection) return code value | Decimal |
| 83 | 4088 | Egress MGCP DLCX (Delete Connection) return code value | Decimal |
| 84 | 4089 | Network Translated Address Indicator | Decimal |
| 85 | 4090 | Reservation Request Accepted | Decimal |
| 86 | 4091 | Reservation Request Error Count | Decimal |
| 87 | 4092 | ATM Ingress Configured Profile | Text |
| 88 | 4093 | ATM Egress Configured Profile | Text |
| 89 | 4094 | ATM Negotiated Profile | Text |
| 90 | 4095 | Route List Name | Text |
| 91 | 4096 | Route Name | Text |
| 92 | 4097 | MGCP Script Response String | Text |
| 93 | 4211 | Originating VPN ID | Text |
| 94 | 4212 | Terminating VPN ID | Text |
| 95 | 4213 | Meter Pulses Received | Decimal |
| 96 | 4214 | Meter Pulses Sent | Decimal |
| 97 | 4215 | Charge Tariff Info | Hexadecimal |
| 98 | 4216 | Advice of Charge Indicator | Decimal |

Table 7-2 Extendable ASCII Output Field Ordering: ANSI and ITU (continued)

| Field | Tag | Description | Format |
|-------|------|--------------------------------|-------------|
| 99 | 4217 | Short Call Indicator | Decimal |
| 100 | 4218 | Charge Limit Exceeded | Decimal |
| 101 | 4219 | CALL Recovered Indication | Decimal |
| 102 | 4220 | Partial CLI | Hexadecimal |
| 103 | 4221 | Service Activation | Decimal |
| 104 | 4222 | PRI AOC Invoke Type | Decimal |
| 105 | 4223 | PRI AOC – S Charge Information | Hexadecimal |
| 106 | 4224 | PRI AOC – D Charge Information | Hexadecimal |
| 107 | 4225 | PRI AOC – E Charge Information | Hexadecimal |
| 108 | 4226 | PRI AOC Invoke Failure | Hexadecimal |

Operational Measurements

Defining Bucket Size

The bucket size refers to the measurements interval that is set up during installation through use of the NODEPARMS tag ID.

To change the system settings for the measurement intervals, for example, to take measurements every 5 minutes, you can update the Node Parameters table.

Refer to the [“Updating the Node Parameters Table” section on page 5-10](#) for further details.

Setting Up the TCA Table

Use the TCA-TBL tag ID to set up the Threshold Crossing Alarms (TCA) table. The table is used to define the types of measurements that BAMS traps and makes available to downstream processes. Refer to the [“TCA-TBL Tag ID” section on page 5-24](#) for TCA-TBL tag ID field names, and to [Chapter 11, “Obtaining Measurements,”](#) for required values and a detailed description of the measuring process.

When a measurement threshold is crossed, an alarm is generated. This alarm is automatically cleared when the measurement statistics fall below the boundary. You set up the conditions to be monitored using the TCA-TBL tag ID. The following example shows which parameters you would set to achieve a specific result:

Objective Generate a threshold alarm for trunk group 008 that exceeds 10 egress call attempts during a specified interval.

Parameters

- id/trkgrp = 0
- Egress call attempt condition = 3 (greater than)
- Egress call attempt value = 10

Result

A threshold alarm is generated every time the call attempts exceed 10 in the interval. This alarm is set only once until it is cleared. It is cleared when the number of egress call attempts in the measurement interval drops below 10.

**Note**

Set up only those measurement conditions in the TCA table that you are interested in monitoring (that is, not all table values need to be provisioned).
