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 extasciioutput 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).