



CHAPTER 11

Configuring BAMS for QoS Output

Revised: March 10, 2011, OL-11618-18

Introduction

Cisco BAMS Release 3.30 can generate QoS output from a gateway statistics. BAMS produces an output record that corresponds to a completed call. BAMS generates one QoS output file for each CDR input file. If an input file contains no completed calls, BAMS generates an empty QoS file.

A new output task produces the QoS output. The AUG task is modified to create the additional output file (when enabled) that becomes the input file to the new QoS output task.

QoS Output Control

BAMS 3.30 can generate QoS output in either ANSI or ITU format. The mode is determined by the new “QoS” parameter in the NODEPARMS table.

Table 11-1 QOS NODEPARM Parameter

QoS Value	Output
0	QOS output suppressed
1	QOS output enabled with ANSI output
2	QOS output enabled with ITU output

The following MML command adds the QoS parameter to the NODEPARMS table.

Example

```
mml:1:node1>prov-add:NODEPARMS:qosoutput=1
```

File Location for Gateway Statistics Output

The QOS output files are stored in the directory `/opt/CiscoBAMS/data/s0X/QOS_STAT`.

File Naming

A QoS (gateway statistics) output file is generated for each PGW CDR file. The generated file name is in the format QOS_STAT_YYYYMMDDhhmmss_XXXXXX.csv. In this format:

- YYYYMMDDhhmmss is date-time in UTC format contained in CDE tag 6001 of the corresponding CDR file header.
 - YYYY—year
 - MM—month
 - DD—day of the month
 - hh—hour
 - mm—minute
 - ss—second

For example, 04/16/2005 13:45:27 UTC would generate 20050416134527.

- XXXXXX is the file sequence number, which is the same as the PGW file sequence number. For example, 000123.

File Format

The QOS file is composed of QOS records. The records are separated by a line feed character (0xA). Each file can contain 0 (zero) or more records. One record is generated for each 1030 or 1040 CDB in the input file. One record is generated for every call. One output file is generated for each input file.

Record Format

Each line feed terminated record is composed of 238 fields. The fields are separated by the character ',' (comma). To avoid corrupting the record format, any comma detected in the input stream is converted to a ' ' (space 0x20) character.

Fields

Table 11-2 Input Tag to QoS Output Field Mapping

Field Index	Source CDE Tag or DSP tag	Description of field	Field Output Format
1	5000	Global Call Id	128 bit Hex
2	4002	Call Reference ID	64 bit Hex
3	4106	First REL Timepoint ms	Seconds, milliseconds
4	4107	Second REL Timepoint ms	Seconds, milliseconds
5	4108	RLC Timepoint rcvd ms	Seconds, milliseconds
6	4109	RLC Timepoint sent ms	Seconds, milliseconds
7	4046-P:PS	Ingress Packets sent	Integer
8	4046-P:PR	Ingress Packets rcv	Integer
9	4046-P:PL	Ingress Packets Lost	Integer

Table 11-2 *Input Tag to QoS Output Field Mapping (continued)*

Field Index	Source CDE Tag or DSP tag	Description of field	Field Output Format
10	4046-P:OS	Ingress Octet Sent	Integer
11	4046-P:OR	Ingress Octet Recv	Integer
12	4046-P:JI	Ingress Jitter	Integer
13	4046-P:LA	Ingress Latency	Integer
14	4046-P:R1	Ingress Reservd1	N/A
15	4046-P:R2	Ingress Reserved2	N/A
16	4047-P:PS	Egress Packets sent	Integer
17	4047-P:PR	Egress Packets recv	Integer
18	4047-P:PL	Egress Packets Lost	Integer
19	4047-P:OS	Egress Octet Sent	Integer
20	4047-P:OR	Egress Octet Recv	Integer
21	4047-P:JI	Egress Jitter	Integer
22	4047-P:LA	Egress Latency	Integer
23	4047-P:R1	Egress Reservd1	N/A
24	4047-P:R2	Egress Reserved2	N/A
25	4098-DSP/TX:PK	Ingress tx packets	Integer
26	4098-DSP/TX: SG	Ingress signaling paks	Integer
27	4098-DSP/TX: NS	Ingress noise packets	Integer
28	4098-DSP/TX: DU	Ingress tx duration	Integer
29	4098-DSP/TX: VO	Ingress voice tx duration	Integer
30	4098-DSP/RX: PK	Ingress voice paks	Integer
31	4098-DSP/RX: SG	Ingress signaling paks	Integer
32	4098-DSP/RX: CF	Ingress comfort noise paks	Integer
33	4098-DSP/RX: RX	Ingress rx duration	Integer
34	4098-DSP/RX: VO	Ingress voice rx duration	Integer
35	4098-DSP/RX: BS	Ingress bad sequence	Integer
36	4098-DSP/RX: BP	Ingress bad protocol	Integer
37	4098-DSP/RX: LP	Ingress late paks	Integer
38	4098-DSP/RX: EP	Ingress early paks	Integer
39	4098-DSP/PD: CU	Ingress playout delay current	Integer
40	4098-DSP/PD: MI	Ingress playout delay min	Integer
41	4098-DSP/PD: MA	Ingress playout delay max	Integer
42	4098-DSP/PD: CO	Ingress playout delay clock_offset	Integer
43	4098-DSP/PD: IJ	Ingress playout delay interarrival jitter	Integer

Table 11-2 *Input Tag to QoS Output Field Mapping (continued)*

Field Index	Source CDE Tag or DSP tag	Description of field	Field Output Format
44	4098-DSP/PE: PC	Ingress playout error predictive concealment	Integer
45	4098-DSP/PE: IC	Ingress playout error interpolative concealment	Integer
46	4098-DSP/PE: SC	Ingress playout error silence concealment	Integer
47	4098-DSP/PE: RM	Ingress playout error retroactive mem update	Integer
48	4098-DSP/PE: BO	Ingress playout error buffer overflow	Integer
49	4098-DSP/PE: EE	Ingress playout error talkspurt end point error	Integer
50	4098-DSP/LE: TP	Ingress Level tx power in 0.1 dBm	Integer
51	4098-DSP/LE: TX	Ingress Level tx mean in 0.1 dBm	Integer
52	4098-DSP/LE: RP	Ingress Level rx power in 0.1 dBm	Integer
53	4098-DSP/LE: RM	Ingress Level rx mean in 0.1 dBm	Integer
54	4098-DSP/LE: BN	Ingress Level background noise	Integer
55	4098-DSP/LE: ER	Ingress Level erl level	Integer
56	4098-DSP/LE: AC	Ingress Level acom level	Integer
57	4098-DSP/LE: TA	Ingress Level curr tx act	Integer
58	4098-DSP/LE: RA	Ingress Level curr rx act	Integer
59	4098-DSP/ER: RD	Ingress error_stats rx dropped	Integer
60	4098-DSP/ER: TD	Ingress error_stats tx dropped	Integer
61	4098-DSP/ER: RC	Ingress error_stats rx control	Integer
62	4098-DSP/ER: TC	Ingress error_stats tx control	Integer
63	4098-DSP/IC: IC	Ingress ICPIF value for measuring voice quality	Integer
64	4098-DSP/EC:CI	Ingress Codec ID	Text
65	4098-DSP/EC:FM	Ingress Frame size in ms	Integer
66	4098-DSP/EC:FP	Ingress Frames per packet	Integer
67	4098-DSP/EC:VS	Ingress VAD enabled flag	Integer
68	4098-DSP/EC:GT	Ingress TX Gain (linear)	Integer
69	4098-DSP/EC:GR	Ingress RX Gain (linear)	Integer
70	4098-DSP/EC:JD	Ingress Jitter Buffer Mode	Integer

Table 11-2 *Input Tag to QoS Output Field Mapping (continued)*

Field Index	Source CDE Tag or DSP tag	Description of field	Field Output Format
71	4098-DSP/EC:JN	Ingress Jitter buffer nominal playout delay	Integer
72	4098-DSP/EC:JM	Ingress Jitter buffer minimum playout delay	Integer
73	4098-DSP/EC:JX	Ingress Jitter buffer max playout delay	Integer
74	4098-DSP/KF:KF	Ingress K-factor MOS-k (inst)	Integer
75	4098-DSP/KF:AV	Ingress Average MOS-k	Integer
76	4098-DSP/KF:MI	Ingress Minimum MOS-k	Integer
77	4098-DSP/KF:BS	Ingress Baseline MOS-k (Max)	Integer
78	4098-DSP/KF:NB	Ingress Number of bursts	Integer
79	4098-DSP/KF:FL	Ingress Average frame loss rate	Integer
80	4098-DSP/KF:NW	Ingress Number of windows in average MOS	Integer
81	4098-DSP/KF:VR	Ingress MOS K-factor Version ID	Integer
82	4098-DSP/CS:CR	Ingress Conceal Ratio (instantaneous)	Integer
83	4098-DSP/CS:AV	Ingress Average CR	Integer
84	4098-DSP/CS:MX	Ingress Maximum CR	Integer
85	4098-DSP/CS:CT	Ingress Concealment Time	Integer
86	4098-DSP/CS:TT	Ingress Total time (duration)	Integer
87	4098-DSP/CS:OK	Ingress OK seconds	Integer
88	4098-DSP/CS:CS	Ingress Concealed seconds	Integer
89	4098-DSP/CS:SC	Ingress Severely concealed seconds	Integer
90	4098-DSP/CS:TS	Ingress Conceal threshold	Integer
91	4098-DSP/CS:DC	Ingress Dead connection indication	Integer
92	4098-DSP/RF:ML	Ingress R-factor MOS-LQE	Integer
93	4098-DSP/RF:MC	Ingress R-factor MOS-CQE	Integer
94	4098-DSP/RF:R1	Ingress R-factor LQ profile 1	Integer
95	4098-DSP/RF:R2	Ingress R-factor LQ profile 2	Integer
96	4098-DSP/RF:IF	Ingress Ie_eff	Integer
97	4098-DSP/RF:ID	Ingress Idd	Integer
98	4098-DSP/RF:IE	Ingress Codec baseline IE score	Integer
99	4098-DSP/RF:BL	Ingress Codec baseline BPL	Integer
100	4098-DSP/RF:R0	Ingress R0 default	Integer

Table 11-2 *Input Tag to QoS Output Field Mapping (continued)*

Field Index	Source CDE Tag or DSP tag	Description of field	Field Output Format
101	4098-DSP/RF:VR	Ingress R-factor Version ID	Integer
102	4098-DSP/UC:U1	Ingress User conceal seconds 1 count (UCS1)	Integer
103	4098-DSP/UC:U2	Ingress User conceal seconds 2 count (UCS2)	Integer
104	4098-DSP/UC:T1	Ingress UCS1 threshold in ms	Integer
105	4098-DSP/UC:T2	Ingress UCS2 threshold in ms	Integer
106	4098-DSP/DL:RT	Ingress Round trip delay	Integer
107	4098-DSP/DL:ED	Ingress End system delay	Integer
108	4099-DSP/TX:PK	Egress tx packets	Integer
109	4099-DSP/TX: SG4098-	Egress signaling paks	Integer
110	4099-DSP/TX: 4098-NS	Egress noise packets	Integer
111	4099-DSP/TX: DU	Egress tx duration	Integer
112	4099-DSP/TX: VO	Egress voice tx duration	Integer
113	4099-DSP/RX: PK	Egress voice paks	Integer
114	4099-DSP/RX: SG	Egress signaling paks	Integer
115	4099-DSP/RX: CF	Egress comfort noise paks	Integer
116	4099-DSP/RX: RX	Egress rx duration	Integer
117	4099-DSP/RX: VO	Egress voice rx duration	Integer
118	4099-DSP/RX: BS	Egress bad sequence	Integer
119	4099-DSP/RX: BP	Egress bad protocol	Integer
120	4099-DSP/RX: LP	Egress late paks	Integer
121	4099-DSP/RX: EP	Egress early paks	Integer
122	4099-DSP/PD: CU	Egress playout delay current	Integer
123	4099-DSP/PD: MI	Egress playout delay min	Integer
124	4099-DSP/PD: MA	Egress playout delay max	Integer
125	4099-DSP/PD: CO	Egress playout delay clock_offset	Integer
126	4099-DSP/PD: IJ	Egress playout delay interarrival jitter	Integer
127	4099-DSP/PE: PC	Egress playout error predictive concealment	Integer
128	4099-DSP/PE: IC	Egress playout error interpolative concealment	Integer
129	4099-DSP/PE: SC	Egress playout error silence concealment	Integer
130	4099-DSP/PE: RM	Egress playout error retroactive mem update	Integer

Table 11-2 *Input Tag to QoS Output Field Mapping (continued)*

Field Index	Source CDE Tag or DSP tag	Description of field	Field Output Format
131	4099-DSP/PE: BO	Egress playout error buffer overflow	Integer
132	4099-DSP/PE: EE	Egress playout error talkspurt end point error	Integer
133	4099-DSP/LE: TP	Egress Level tx power in units of 0.1 dBm	Integer
134	4099-DSP/LE: TX	Egress Level tx mean in units of 0.1 dBm	Integer
135	4099-DSP/LE: RP	Egress Level rx power in units of 0.1 dBm	Integer
136	4099-DSP/LE: RM	Egress Level rx mean in units of 0.1 dBm	Integer
137	4099-DSP/LE: BN	Egress Level background noise	Integer
138	4099-DSP/LE: ER	Egress Level erl level	Integer
139	4099-DSP/LE: AC	Egress Level acom level	Integer
140	4099-DSP/LE: TA	Egress Level curr tx act	Integer
141	4099-DSP/LE: RA	Egress Level curr rx act	Integer
142	4099-DSP/ER: RD	Egress error_stats rx dropped	Integer
143	4099-DSP/ER: TD	Egress error_stats tx dropped	Integer
144	4099-DSP/ER: RC	Egress error_stats rx control	Integer
145	4099-DSP/ER: TC	Egress error_stats tx control	Integer
146	4099-DSP/IC: IC	Egress ICPIF value for measuring voice quality	Integer
147	4099-DSP/EC:CI	Egress Codec ID	Text
148	4099-DSP/EC:FM	Egress Frame size in ms	Integer
149	4099-DSP/EC:FP	Egress Frames per packet	Integer
150	4099-DSP/EC:VS	Egress VAD enabled flag	Integer
151	4099-DSP/EC:GT	Egress TX Gain (linear)	Integer
152	4099-DSP/EC:GR	Egress RX Gain (linear)	Integer
153	4099-DSP/EC:JD	Egress Jitter Buffer Mode	Integer
154	4099-DSP/EC:JN	Egress Jitter buffer nominal playout delay	Integer
155	4099-DSP/EC:JM	Egress Jitter buffer minimum playout delay	Integer
156	4099-DSP/EC:JX	Egress Jitter buffer max playout delay	Integer
157	4099-DSP/KF:KF	Egress K-factor MOS-k (inst)	Integer
158	4099-DSP/KF:AV	Egress Average MOS-k	Integer
159	4099-DSP/KF:MI	Egress Minimum MOS-k	Integer

Table 11-2 *Input Tag to QoS Output Field Mapping (continued)*

Field Index	Source CDE Tag or DSP tag	Description of field	Field Output Format
160	4099-DSP/KF:BS	Egress Baseline MOS-k (Max)	Integer
161	4099-DSP/KF:NB	Egress Number of bursts	Integer
162	4099-DSP/KF:FL	Egress Average frame loss rate	Integer
163	4099-DSP/KF:NW	Egress Number of windows in average MOS	Integer
164	4099-DSP/KF:VR	Egress MOS K-factor Version ID	Integer
165	4099-DSP/CS:CR	Egress Conceal Ratio (instantaneous)	Integer
166	4099-DSP/CS:AV	Egress Average CR	Integer
167	4099-DSP/CS:MX	Egress Maximum CR	Integer
168	4099-DSP/CS:CT	Egress Concealment Time	Integer
169	4099-DSP/CS:TT	Egress Total time (duration)	Integer
170	4099-DSP/CS:OK	Egress OK seconds	Integer
171	4099-DSP/CS:CS	Egress Concealed seconds	Integer
172	4099-DSP/CS:SC	Egress Severely concealed seconds	Integer
173	4099-DSP/CS:TS	Egress Conceal threshold	Integer
174	4099-DSP/CS:DC	Egress Dead connection indication	Integer
175	4099-DSP/RF:ML	Egress R-factor MOS-LQE	Integer
176	4099-DSP/RF:MC	Egress R-factor MOS-CQE	Integer
177	4099-DSP/RF:R1	Egress R-factor LQ profile 1	Integer
178	4099-DSP/RF:R2	Egress R-factor LQ profile 2	Integer
179	4099-DSP/RF:IF	Egress Ie_eff	Integer
180	4099-DSP/RF:ID	Egress Idd	Integer
181	4099-DSP/RF:IE	Egress Codec baseline IE score	Integer
182	4099-DSP/RF:BL	Egress Codec baseline BPL	Integer
183	4099-DSP/RF:R0	Egress R0 default	Integer
184	4099-DSP/RF:VR	Egress R-factor Version ID	Integer
185	4099-DSP/UC:U1	Egress User conceal seconds 1 count (UCS1)	Integer
186	4099-DSP/UC:U2	Egress User conceal seconds 2 count (UCS2)	Integer
187	4099-DSP/UC:T1	Egress UCS1 threshold in ms	Integer
188	4099-DSP/UC:T2	Egress UCS2 threshold in ms	Integer
189	4099-DSP/DL:RT	Egress Round trip delay	Integer
190	4099-DSP/DL:ED	Egress End system delay	Integer

Table 11-2 *Input Tag to QoS Output Field Mapping (continued)*

Field Index	Source CDE Tag or DSP tag	Description of field	Field Output Format
191	4087	Egress MGCP DLCX Return Code	8 bit Hex
192	4088	Egress MGCP DLCX Return Code	8 bit Hex
193	4205	Egress Media Device Address	String, 0-256 bytes
194	4206	Egress Media Device Address	String, 0-256 bytes
195	4207	Initial Codec	String, 0-12 bytes
196	4208	Final Codec	String, 0-12 bytes
197	4209	Egress Media Device Port	String, 0-6 bytes
198	4210	Egress Media Device Port	String, 0-6 bytes
199	4227	Route Optimization/Path Replacement Action	8 bit Hex
200	4228	Route Optimization/Path Replacement Call Reference	64 bit Hex
201	4229	Route Optimization/Path Replacement Trunk Group Info	16 bit Hex
202	4230	Route Optimization/Path Replacement Channel Info	16 bit Hex
203	4231	Route Optimization Switchover Timestamp	32 bit Hex
204	4008	Originating Trunk Group	Integer
205	4010	Calling Party Number	String
206	4014	Called Party Number	String
207	4015	Terminating Trunk Group	Integer
208	4034	Ingress Orig. Point Code	32 bit Hex
209	4035	Ingress Term. Point Code	32 bit Hex
210	4036	Egress Orig. Point Code	32 bit Hex
211	4037	Egress Term. Point Code	32 bit Hex
212	4038	Ingress Media Gateway ID	16 bit Hex
213	4039	Egress Media Gateway ID	16 bit Hex
214	4048	Directional Flag	8 bit Hex
215	4066	Ingress SigPath ID	32 bit Hex
216	4067	Ingress Span ID	32 bit Hex
217	4068	Ingress BearChan ID	32 bit Hex
218	4069	Ingress Protocol ID	8 bit Hex
219	4070	Egress SigPath ID	32 bit Hex
220	4071	Egress Span ID	32 bit Hex
221	4072	Egress BearChan ID	32 bit Hex

Table 11-2 *Input Tag to QoS Output Field Mapping (continued)*

Field Index	Source CDE Tag or DSP tag	Description of field	Field Output Format
222	4073	Egress Protocol ID	8 bit Hex
223	4081	T.38 Fax Call	8 bit Hex
224	4084	Outgoing Called Party Number	String
225	4095	Route List Name	String
226	4096	Route Name	String
227	4100	IAM Timepoint Received	Seconds, milliseconds
228	4101	IAM Timepoint Sent	Seconds, milliseconds
229	4102	ACM Timepoint Received	Seconds, milliseconds
230	4103	ACM Timepoint Sent	Seconds, milliseconds
231	4104	ANM Timepoint Received	Seconds, milliseconds
232	4105	ANM Timepoint Sent	Seconds, milliseconds
233	4201	Ingress SIP URL	String
234	4202	Egress SIP URL	String
235	4203	SIP Call ID	String
236	4204	Source IP Address	String
237	4211	Originating VPN ID	String
238	4212	Terminating VPN ID	String

Source CDE Tag or DSP Tag Definition

Table 11-3 *Source CDE Tag or DSP Tag Definition*

Source CDE Tag/DSP Tag Type	Description
CDE TAG	The entire value of the CDE is be taken and formatted to the output field.
CDE TAG-P.Subfield	The value is the specified subfield of the PGW CDE Tag is taken and formatted to the output field.
CDE TAG DSP/Subfield	The value is obtained by parsing the content of the corresponding PGW CDE for the subfield string. The value is then found following the =.

Field Output Format Definition

Table 11-4 Field Output Format Definition

Field Output Format	Description
Text:	A free form text string. Any commas in the original data are replaced by a space character.
Seconds, milliseconds:	float, format sssssssss.mmm, number of seconds since 0:00 1/1/1970. For example, 1133444451.456.
8 bit hexadecimal	An 8 bit hexadecimal integer, 3F
16 bit hexadecimal	A 16 bit hexadecimal integer, A12B
32 bit hexadecimal	A 32 bit hexadecimal integer, 234a346b
64 Bit hexadecimal	A 64 bit hexadecimal integer, 4360834000000015
128 bit hexadecimal	A 128 bit hexadecimal integer, 00139339c064b11d30000000ab4c009.
Integer	Integer: 32 bit decimal integer. For example, 1012333410. For DSP tags, the format stated is for reference only. BAMS will collect data from the CDEs as if the field contains strings. No formatting/translation is performed by BAMS.

Missing Input Fields

For any missing input field that maps to an output field, the output field is left blank. No data is written but the comma separator is written. The comma separator for the missing field follows the comma separator of the previous field.

