



SNMP Background Synchronization

The SNMP Background Synchronization features provides periodic background synchronization of DOCSIS MIB data from line card to Supervisor in order to improve the performance of the SNMP polling of these MIB tables.

Finding Feature Information

Your software release may not support all the features that are documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. The Feature Information Table at the end of this document provides information about the documented features and lists the releases in which each feature is supported.

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Information About SNMP Background Synchronization

To improve SNMP performance, SNMP background synchronization feature is introduced to synchronize the SNMP MIB information between the line card and the Supervisor. It is based on raw socket and uses TCP protocol. The benefits of the SNMP Background Synchronization include:

- Bundles small packets together before sending out, increases IPC channel utilization.
- Use pre-allocated static buffer to send/receive message, avoid buffer allocation at run time.
- In order not to burden CPU when the system is in high load, SNMP background synchronization receive process can sleep based on CPU utilization, so it will not compete with other priority processes.
- Significantly improve SNMP polling performance for supported MIB tables, and reduce the CPU utilization in both Supervisor and line card.

The following MIB tables are supported in SNMP background synchronization:

- docsQosParamSetEntry
- docsIetfQosParamSetEntry

- docsQos3ParamSetEntry
- docsIf3CmtsCmUsStatusEntry
- docsIfCmtsCmStatusEntry
- docsSubMgtCpeControlEntry
- docsSubMgtCmFilterEntry
- cdxCmtsCmStatusExtEntry
- docsLoadBalCmtsCmStatusEntry
- docsIf3CmtsCmRegStatusTable
- docsIfSignalQualityTable
- docsifCmtsServiceTable
- cdxCmtsServiceExtEntry

How to Configure SNMP Background Synchronization

Enabling SNMP Background Synchronization

Before you begin

To use the **cable bgsync** command, you must configure the **service internal** command in global configuration mode.

SNMP background synchronization is enabled by default, use **no cable bgsync active** to disable this feature, and use **cable bgsync active** to enable it again. The following procedure lists detailed steps to enable SNMP background synchronization:

```
enable
configure terminal
cable bgsync active
exit
```

Setting Data Interval

Before you begin

To use the **cable bgsync** command, you must configure the **service internal** command in global configuration mode. Use the **cable bgsync** command carefully as it can impact the CPU utilization.

To set the data intervals for the background synchronization of SNMP MIB data on the Cisco cBR routers, use the **cable bgsync {itime *i-interval*|ptime *p-interval*}** command in global configuration mode. To disable background synchronization, use the **no** form of this command. The following procedure lists detailed steps to set data interval:

```
enable
configure terminal
```

```

service internal
cable bgsync itime i-interval
cable bgsync ptime p-interval
exit

```

itime is the interval of synchronizing all related MIB tables from line card to Supervisor. The valid range is from 5 to 31536000. The default value is 86400. **ptime** is the interval of synchronizing the changed MIB content from line card to Supervisor.

Verifying SNMP Background Synchronization

- To display the current status of the SNMP background synchronization, use the **show cable bgsync** command as shown in the example below:

```

Router#show cable bgsync
Background Sync is active, uptime is 5 minutes, 14 seconds.
Background Sync last active time is 5 minutes, 14 seconds. ago.
I-packet interval time is 1 day, P-packet interval time is 5 seconds.
Line Card with bg-sync: 3/0
Line Card working on I syncing:
Last clear cable bg sync counters Time:
Total bytes: 85864
Total background sync packets: 2109
  Ack packets: 0
  Run Ctrl Msg packets: 2
  Data packets: 0
Interval packets: 2002
  I Type packets: 230
  P Type packets: 1772
Bg sync data IPC lost packets: 0

Background Sync statistics for the last 00:07:34
=====
ipc packets 0-30k:      105
ipc packets 30-60k:    0
ipc packets 60-100k:   0
msg per packet average: 20
msg per packet max:    113
msg per packet min:    1
msg per packet under 3: 60
=====
type      packets      cpu-total (ms)  avg (us)  max (us)
serv flow 904           3              3         1000
sflog     0             0              0         0
cm        17            0              0         0
cmtx      296           0              0         0
paramset  112           0              0         0
DXIF      298           0              0         0
sid       208           0              0         0
uschan    167           1              5         1000
-----
IPC PKTs  105           4              0         ms 1     ms
=====
slot type  packets      bytes      pps      Bps      wrong_len_pkts
0  serv flow  0            0          0.0      0.0      0
0  sflog     0            0          0.0      0.0      0
0  cm        0            0          0.0      0.0      0

```

| | | | | | | |
|---|-----------|-----|-------|-----|-------|---|
| 0 | cmtx | 0 | 0 | 0.0 | 0.0 | 0 |
| 0 | paramset | 0 | 0 | 0.0 | 0.0 | 0 |
| 0 | DXIF | 0 | 0 | 0.0 | 0.0 | 0 |
| 0 | sid | 0 | 0 | 0.0 | 0.0 | 0 |
| 0 | uschan | 0 | 0 | 0.0 | 0.0 | 0 |
| 1 | serv flow | 0 | 0 | 0.0 | 0.0 | 0 |
| 1 | sflog | 0 | 0 | 0.0 | 0.0 | 0 |
| 1 | cm | 0 | 0 | 0.0 | 0.0 | 0 |
| 1 | cmtx | 0 | 0 | 0.0 | 0.0 | 0 |
| 1 | paramset | 0 | 0 | 0.0 | 0.0 | 0 |
| 1 | DXIF | 0 | 0 | 0.0 | 0.0 | 0 |
| 1 | sid | 0 | 0 | 0.0 | 0.0 | 0 |
| 1 | uschan | 0 | 0 | 0.0 | 0.0 | 0 |
| 2 | serv flow | 0 | 0 | 0.0 | 0.0 | 0 |
| 2 | sflog | 0 | 0 | 0.0 | 0.0 | 0 |
| 2 | cm | 0 | 0 | 0.0 | 0.0 | 0 |
| 2 | cmtx | 0 | 0 | 0.0 | 0.0 | 0 |
| 2 | paramset | 48 | 7680 | 0.0 | 0.0 | 0 |
| 2 | DXIF | 0 | 0 | 0.0 | 0.0 | 0 |
| 2 | sid | 16 | 512 | 0.0 | 0.0 | 0 |
| 2 | uschan | 0 | 0 | 0.0 | 0.0 | 0 |
| 3 | serv flow | 904 | 25104 | 4.4 | 115.4 | 0 |
| 3 | sflog | 0 | 0 | 0.0 | 0.0 | 0 |
| 3 | cm | 17 | 981 | 0.0 | 2.0 | 0 |
| 3 | cmtx | 296 | 8607 | 0.7 | 20.6 | 0 |
| 3 | paramset | 64 | 8368 | 0.0 | 0.0 | 0 |
| 3 | DXIF | 298 | 21876 | 0.9 | 74.3 | 0 |
| 3 | sid | 192 | 4756 | 0.1 | 6.8 | 0 |
| 3 | uschan | 167 | 5832 | 0.3 | 10.7 | 0 |
| 6 | serv flow | 0 | 0 | 0.0 | 0.0 | 0 |
| 6 | sflog | 0 | 0 | 0.0 | 0.0 | 0 |
| 6 | cm | 0 | 0 | 0.0 | 0.0 | 0 |

| | | | | | | |
|---|-----------|---|---|-----|-----|---|
| 6 | cmtx | 0 | 0 | 0.0 | 0.0 | 0 |
| 6 | paramset | 0 | 0 | 0.0 | 0.0 | 0 |
| 6 | DXIF | 0 | 0 | 0.0 | 0.0 | 0 |
| 6 | sid | 0 | 0 | 0.0 | 0.0 | 0 |
| 6 | uschan | 0 | 0 | 0.0 | 0.0 | 0 |
| 7 | serv flow | 0 | 0 | 0.0 | 0.0 | 0 |
| 7 | sflog | 0 | 0 | 0.0 | 0.0 | 0 |
| 7 | cm | 0 | 0 | 0.0 | 0.0 | 0 |
| 7 | cmtx | 0 | 0 | 0.0 | 0.0 | 0 |
| 7 | paramset | 0 | 0 | 0.0 | 0.0 | 0 |
| 7 | DXIF | 0 | 0 | 0.0 | 0.0 | 0 |
| 7 | sid | 0 | 0 | 0.0 | 0.0 | 0 |
| 7 | uschan | 0 | 0 | 0.0 | 0.0 | 0 |
| 8 | serv flow | 0 | 0 | 0.0 | 0.0 | 0 |
| 8 | sflog | 0 | 0 | 0.0 | 0.0 | 0 |
| 8 | cm | 0 | 0 | 0.0 | 0.0 | 0 |
| 8 | cmtx | 0 | 0 | 0.0 | 0.0 | 0 |
| 8 | paramset | 0 | 0 | 0.0 | 0.0 | 0 |
| 8 | DXIF | 0 | 0 | 0.0 | 0.0 | 0 |
| 8 | sid | 0 | 0 | 0.0 | 0.0 | 0 |
| 8 | uschan | 0 | 0 | 0.0 | 0.0 | 0 |
| 9 | serv flow | 0 | 0 | 0.0 | 0.0 | 0 |
| 9 | sflog | 0 | 0 | 0.0 | 0.0 | 0 |
| 9 | cm | 0 | 0 | 0.0 | 0.0 | 0 |
| 9 | cmtx | 0 | 0 | 0.0 | 0.0 | 0 |
| 9 | paramset | 0 | 0 | 0.0 | 0.0 | 0 |
| 9 | DXIF | 0 | 0 | 0.0 | 0.0 | 0 |
| 9 | sid | 0 | 0 | 0.0 | 0.0 | 0 |
| 9 | uschan | 0 | 0 | 0.0 | 0.0 | 0 |

- To display all the SNMP background sync data on Supervisor side or line card side, use the **show cable bgsync sync-info cable** command as shown in the example below:

```
Router#show cable bgsync sync-info cable 9/0/1
```

```

part1 for srv template:
srv_tmp_id  min_rate  max_rate  max_burst
0           0         0         0
1           0         64000    0
2           0         1000000  0
3           0         1000000  3044
4           0         0         3044
5           0         11000000 30000
6           0         0         3044
7           0         2000000000 5000000
8           0         0         3044

part2 for srv flow:
sfid      prov_qos  adm_qos  act_qos  wb_mode  octets  pkts  delay_pkts
drop_pkts gate_id   create_time total_active_time
1         0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
2         0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
3         0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
4         0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
5         0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
6         0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
7         0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
8         0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
9         0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
10        0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
11        0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
12        0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
13        0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
14        0         0         0         0         0         0         0
0         0         0         0         0         0         0         0
15        3         3         3         0         0         0         0
0         0         3600    179
16        3         3         3         0         0         0         0
0         0         3600    179
17        3         3         3         0         0         0         0
0         0         3600    179
18        3         3         3         0         0         0         0
0         0         3600    179
19        3         3         3         0         0         0         0
0         0         3600    179
20        3         3         3         0         0         0         0
0         0         3600    179
21        3         3         3         0         0         0         0
0         0         3600    179
22        3         3         3         0         0         0         0
0         0         3600    179
23        3         3         3         0         0         0         0
0         0         3600    179
24        3         3         3         0         0         0         0
0         0         3600    179
25        3         3         3         0         0         0         0
0         0         3600    179

```

| | | | | | | | |
|----|---|---|-------|-----|------|----|---|
| 26 | 3 | 3 | 3 | 0 | 0 | 0 | 0 |
| 0 | 0 | | 3600 | 179 | | | |
| 27 | 4 | 5 | 5 | 0 | 8925 | 42 | 0 |
| 0 | 0 | | 12700 | 88 | | | |
| 28 | 6 | 7 | 7 | 3 | 0 | 0 | 0 |
| 0 | 0 | | 12700 | 88 | | | |
| 29 | 4 | 5 | 5 | 3 | 3855 | 21 | 0 |
| 0 | 0 | | 11500 | 100 | | | |
| 30 | 6 | 7 | 7 | 3 | 0 | 0 | 0 |
| 0 | 0 | | 11500 | 100 | | | |
| 31 | 8 | 8 | 8 | 3 | 222 | 3 | 0 |
| 0 | 0 | | 11500 | 100 | | | |
| 32 | 4 | 5 | 5 | 3 | 1277 | 11 | 0 |
| 0 | 0 | | 12100 | 94 | | | |
| 33 | 6 | 7 | 7 | 0 | 0 | 0 | 0 |
| 0 | 0 | | 12100 | 94 | | | |
| 34 | 4 | 5 | 5 | 0 | 3851 | 21 | 0 |
| 0 | 0 | | 12300 | 92 | | | |
| 35 | 6 | 7 | 7 | 3 | 0 | 0 | 0 |
| 0 | 0 | | 12300 | 92 | | | |
| 36 | 8 | 8 | 8 | 0 | 148 | 2 | 0 |
| 0 | 0 | | 12100 | 94 | | | |
| 37 | 4 | 5 | 5 | 0 | 3855 | 21 | 0 |
| 0 | 0 | | 12700 | 88 | | | |
| 38 | 6 | 7 | 7 | 3 | 0 | 0 | 0 |
| 0 | 0 | | 12700 | 88 | | | |
| 39 | 8 | 8 | 8 | 3 | 222 | 3 | 0 |
| 0 | 0 | | 12300 | 92 | | | |
| 40 | 4 | 5 | 5 | 3 | 3281 | 20 | 0 |
| 0 | 0 | | 13100 | 84 | | | |
| 41 | 6 | 7 | 7 | 3 | 0 | 0 | 0 |
| 0 | 0 | | 13100 | 84 | | | |
| 42 | 8 | 8 | 8 | 3 | 222 | 3 | 0 |
| 0 | 0 | | 12700 | 88 | | | |
| 43 | 8 | 8 | 8 | 3 | 222 | 3 | 0 |
| 0 | 0 | | 12700 | 88 | | | |
| 44 | 4 | 5 | 5 | 3 | 3308 | 21 | 0 |
| 0 | 0 | | 13100 | 84 | | | |
| 45 | 6 | 7 | 7 | 3 | 0 | 0 | 0 |
| 0 | 0 | | 13100 | 84 | | | |
| 46 | 8 | 8 | 8 | 3 | 296 | 4 | 0 |
| 0 | 0 | | 13100 | 84 | | | |
| 47 | 8 | 8 | 8 | 3 | 296 | 4 | 0 |
| 0 | 0 | | 13100 | 84 | | | |
| 48 | 4 | 5 | 5 | 3 | 73 | 2 | 0 |
| 0 | 0 | | 14500 | 70 | | | |
| 49 | 6 | 7 | 7 | 3 | 0 | 0 | 0 |
| 0 | 0 | | 14500 | 70 | | | |
| 50 | 8 | 8 | 8 | 3 | 74 | 1 | 0 |
| 0 | 0 | | 14500 | 70 | | | |

part3 for sid

```

sid_entry[1] sid 1 service_class 2 create_time 127 total_octets 8925
sid_entry[2] sid 2 service_class 2 create_time 115 total_octets 3855
sid_entry[3] sid 3 service_class 2 create_time 121 total_octets 1277
sid_entry[4] sid 4 service_class 2 create_time 123 total_octets 3851
sid_entry[5] sid 5 service_class 2 create_time 127 total_octets 3855
sid_entry[6] sid 6 service_class 2 create_time 131 total_octets 3281
sid_entry[7] sid 7 service_class 2 create_time 131 total_octets 3308
sid_entry[8] sid 8 service_class 2 create_time 145 total_octets 73

```

part4 for cm and cmtx

```

cm_mac: 68ee.9633.0699, tcsbmp: 0x1, admin_status 1, md_sg_id 0x1510505, rcc_status_id
0x4, rcs_id 0x1520005, tcs_id 0x1 last_reg_time 1444372688, RCP ID:00 10 00 00 10
usch 1, modulation_type 2, rx_power -5, signal_noise 390, time_offset 2085
cm_mac: e448.c70c.96e7, tcsbmp: 0x4, admin_status 1, md_sg_id 0x1510505, rcc_status_id

```

```

0x4, rcs_id 0x1520005, tcs_id 0x3 last_reg_time 1444372678, RCP ID:00 10 00 00 08
usch 3, modulation_type 2, rx_power -15, signal_noise 381, time_offset 1785
cm_mac: 0019.474a.c126, tcsbmp: 0x1, admin_status 1, md_sg_id 0x1510505, rcc_status_id
0x0, rcs_id 0x22, tcs_id 0x1 last_reg_time 1444372682, RCP ID:00 00 00 00 00
usch 1, modulation_type 2, rx_power -15, signal_noise 390, time_offset 1792
cm_mac: e448.c70c.982b, tcsbmp: 0x1, admin_status 1, md_sg_id 0x1510505, rcc_status_id
0x4, rcs_id 0x1520005, tcs_id 0x1 last_reg_time 1444372685, RCP ID:00 10 00 00 08
usch 1, modulation_type 2, rx_power -10, signal_noise 390, time_offset 1786
cm_mac: e448.c70c.96d5, tcsbmp: 0x2, admin_status 1, md_sg_id 0x1510505, rcc_status_id
0x4, rcs_id 0x1520005, tcs_id 0x2 last_reg_time 1444372688, RCP ID:00 10 00 00 08
usch 2, modulation_type 2, rx_power -15, signal_noise 381, time_offset 1786
cm_mac: e448.c70c.9819, tcsbmp: 0x1, admin_status 1, md_sg_id 0x1510505, rcc_status_id
0x4, rcs_id 0x1520005, tcs_id 0x1 last_reg_time 1444372692, RCP ID:00 10 00 00 08
usch 1, modulation_type 2, rx_power -10, signal_noise 390, time_offset 1789
cm_mac: e448.c70c.980d, tcsbmp: 0x4, admin_status 1, md_sg_id 0x1510505, rcc_status_id
0x4, rcs_id 0x1520005, tcs_id 0x3 last_reg_time 1444372695, RCP ID:00 10 00 00 08
usch 3, modulation_type 2, rx_power -10, signal_noise 390, time_offset 1783
cm_mac: e448.c70c.96f3, tcsbmp: 0x1, admin_status 1, md_sg_id 0x1510505, rcc_status_id
0x4, rcs_id 0x1520005, tcs_id 0x1 last_reg_time 1444372723, RCP ID:00 10 00 00 04
usch 1, modulation_type 2, rx_power 0, signal_noise 420, time_offset 1798
part5 for dxif info ifnum 1
basedata[1][1]: cmstatusindex 2375681, cm_mac 68ee.9633.0699, cm_ip 0x5011961F, cm_ds_if
59881, cm_us_if 204952
cmregmode 2, cmmodulype 2, cmdocmode 2
basedata[1][2]: cmstatusindex 2375682, cm_mac e448.c70c.96e7, cm_ip 0x5011961D, cm_ds_if
59882, cm_us_if 204954
cmregmode 2, cmmodulype 2, cmdocmode 2
basedata[1][3]: cmstatusindex 2375683, cm_mac 0019.474a.c126, cm_ip 0x50119602, cm_ds_if
59914, cm_us_if 204952
cmregmode 2, cmmodulype 2, cmdocmode 2
basedata[1][4]: cmstatusindex 2375684, cm_mac e448.c70c.982b, cm_ip 0x50119612, cm_ds_if
59881, cm_us_if 204952
cmregmode 2, cmmodulype 2, cmdocmode 2
basedata[1][5]: cmstatusindex 2375685, cm_mac e448.c70c.96d5, cm_ip 0x5011960D, cm_ds_if
59881, cm_us_if 204953
cmregmode 2, cmmodulype 2, cmdocmode 2
basedata[1][6]: cmstatusindex 2375686, cm_mac e448.c70c.9819, cm_ip 0x5011961E, cm_ds_if
59881, cm_us_if 204952
cmregmode 2, cmmodulype 2, cmdocmode 2
basedata[1][7]: cmstatusindex 2375687, cm_mac e448.c70c.980d, cm_ip 0x5011961A, cm_ds_if
59882, cm_us_if 204954
cmregmode 2, cmmodulype 2, cmdocmode 2
basedata[1][8]: cmstatusindex 2375688, cm_mac e448.c70c.96f3, cm_ip 0x5011960E, cm_ds_if
59882, cm_us_if 204952
cmregmode 2, cmmodulype 2, cmdocmode 2
part6 uschan for ifnum 1
usport 1 micro_reflections 0 us_snr 390 snmp_sigq_unerrored 0 snmp_sigq_corrected 0
snmp_sigq_uncorrectables 0
usport 2 micro_reflections 0 us_snr 381 snmp_sigq_unerrored 0 snmp_sigq_corrected 0
snmp_sigq_uncorrectables 0
usport 3 micro_reflections 0 us_snr 390 snmp_sigq_unerrored 0 snmp_sigq_corrected 0
snmp_sigq_uncorrectables 0
usport 4 micro_reflections 0 us_snr 0 snmp_sigq_unerrored 0 snmp_sigq_corrected 0
snmp_sigq_uncorrectables 0

```

- To display raw socket interprocess communication (IPC) infrastructure statistics for specified field replaceable unit (FRU), use the **show platform software ios slot-id socket statistics** command as shown in the example below:

```

Router#show platform software ios R0 socket statistics 0
-----
Session Slot           : 2

```



```

Socket FD          : 93
Client ID         : 0
Message Receive Count : 0
Message Receive Bytes : 0

-----

Session Slot      : 2
Socket FD        : 93
Client ID       : 1
Message Receive Count : 30155
Message Receive Bytes : 1326820

-----

Session Slot      : 3
Socket FD        : 86
Client ID       : 0
Message Receive Count : 0
Message Receive Bytes : 0

-----

Session Slot      : 3
Socket FD        : 86
Client ID       : 1
Message Receive Count : 29611
Message Receive Bytes : 69782901

```

Configuring Example for SNMP Background Synchronization

The following example shows how to configure SNMP background synchronization:

```

enable
configure terminal
cable bgsync active
service internal
cable bgsync itime 200
cable bgsync ptime 500
exit

```

Feature Information for SNMP Background Synchronization

Use Cisco Feature Navigator to find information about the platform support and software image support. Cisco Feature Navigator enables you to determine which software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to the www.cisco.com/go/cfn link. An account on the Cisco.com page is not required.



Note The following table lists the software release in which a given feature is introduced. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Table 1: Feature Information for SNMP Background Synchronization

| Feature Name | Releases | Feature Information |
|---------------------------------|-----------------------------|---|
| SNMP Background Synchronization | Cisco IOS XE Everest 16.6.1 | This feature was integrated into Cisco IOS XE Everest 16.6.1 on the Cisco cBR Series Converged Broadband Routers. |