

SNMP计数器：常见问题

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简介

本文提供常见问题解答，并且指导用户查找与Cisco设备有关的SNMP和SNMP问题的有用资源。

SNMP计数器问题

问：我将哪个MIB用于接口计数器？

答：基于SNMP的接口管理基于两个表：[ifTable\(仅注册客户\)及其扩展](#)，[ifXTable\(仅注册客户\)](#) (RFC1213/RFC2233中描述)。接口可以有多个层，具体取决于介质，每个子层在表中用单独的行表示。ifStackTable (仅限注册客户)中描述了较[高层](#)和较[低层](#)之间的关系。ifTable为入站和出站八位组(ifInOctets(仅注册客户)/ifOutOctets)、数据包([ifInUcastPkts \(仅注册客户\)](#))/[ifOutUcastPkts \(仅注册客户\)](#)定义32位计数器、ifInNUcastPkts (仅注册客户)/ifOutNUcastPkts (仅注册客户)、错误和丢弃。ifXTable提供类似的64位计数器，也称为高容量(HC)计数器：[ifHCInOctets\(仅注册客户\)](#)/ifHCOutOctets (仅注册客户)，和[ifHCInUcastPkts \(仅注册客户\)](#) /ifHCOutUcastPkts (仅注册客户)。

问：何时应使用64位计数器？

答：[RFC 2233](#) 对高容量接口采用扩展的64位计数器，其中32位计数器不能提供足够的容量，而且包装速度太快。

随着网络媒体速度的增加，32位计数器暂时离线的最短时间减少。例如，一个背对背的大型的信息包的10 Mbps流造成ifInOctets包裹在刚超过57分钟的数据包中。在速率为100 Mbps的时候，最短的暂停离线时间是5.7分钟；而在1Gbps的时候，最短则为34秒。

注意：SNMP计数器换行，命令行界面(CLI)计数器不换行。

"对于以20,000,000(2000)位/秒 (或更少) 速率运行的接口，必须使用32位字节和数据包计数器。
"对于运行速度高于每秒200万比特的接口、每秒低于650,000,000比特的接口，您必须使用32位信息包计数器和64位八位计数器。对于以650,000,000位/秒 (或更快) 速率运行的接口，必须使用64位信息包和八位组计数器。

相应地，Cisco IOS®软件不支持接口速度低于20 Mbps的64位计数器。这意味着10 Mb以太网端口不支持64位计数器，只有100 Mb快速以太网和其他高速端口支持64位计数器。

问：查询64位计数器需要哪个版本的SNMP？

答：查询64位计数器需要SNMPv2C或SNMPv3。SNMPv1不支持64位计数器。请注意，ifInOctets = .1.3.6.1.2.1.2.2.1.10是32位计数器，而64位版本是ifHCInOctets = .1.3.6.1.2.1.31.1.1.6。

例如：

Catalyst 5000使用HP OpenView snmpget，默认为SNMPv1

```
# snmpget -c public 14.32.5.18 ifName.1
```

```
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifName.1 DISPLAY STRING- (ascii) sc0
```

使用SNMPv1查询，HP OpenView snmpget的默认值

```
# snmpget -c public 14.32.5.18 ifHCInOctets.1
```

```
snmpget Agent reported error with variable #1.  
.iso.org.dod.internet.mgmt.mib-2.ifMIB.ifMIBObjects.ifXTable.ifXEntry.  
ifHCInOctets.1
```

```
SNMP Variable does not exist or access is denied.
```

与SNMPv2C的查询相同

```
# snmpget -v 2c -c public 14.32.5.18 ifHCInOctets.1
```

```
ifMIB.ifMIBObjects.ifXTable.ifXEntry.ifHCInOctets.1 Counter64 622366215
```

问：哪些思科设备实施64位SNMP计数器，尤其是IF-MIB？

答：这些思科设备实施64位SNMP计数器：

注意：您必须是注册用户，并且必须登录才能访问思科Bug ID链接并查看详细的Bug信息。

- Cisco 2500、2600路由器 — 这些路由器不支持64位计数器。
- Catalyst 2950和3550 — 支持从Cisco IOS软件版本12.1(11)EA1开始，因为Cisco Bug ID CSCdx67611(仅限[注册](#)客户)和Cisco Bug ID [CSCdw52807](#) (仅注册[客户](#))。
- Catalyst 2900XL和3500XL — 支持从Cisco IOS软件版本12.0(5)WC3开始，因为Cisco Bug ID [CSCds45300](#)(仅限[注册](#)客户)。
- Catalyst 5000系列 — 自Cisco IOS软件版本3.x起。在RSM/RSFC上，支持从Cisco Bug ID CSCds50549 (仅限注册客户) 开始，从Cisco IOS软件版本12.1(6)E1[开始](#)，因为[Cisco bug ID CSCds50549](#)(仅注册客户)。
- Catalyst 5000/6000 ATM模块 — 自Cisco IOS软件版本12.0(14)W05(20)起，请参阅Cisco Bug ID [CSCds07238](#)(仅注册客户)。
- Catalyst 6000千兆以太网WAN OSM — 自Cisco IOS软件版本12.1.12E起，请参阅Cisco Bug ID [CSCdw64849](#)(仅限[注册](#)客户)。
- Catalyst 6000系列 — 所有Cisco IOS软件版本。WS-F6K-MSFC和MSM支持从Cisco IOS软件版本12.1(8a)E4开始。

- Catalyst 8500系列 — 从Cisco IOS软件版本12.0(5)W5(13)开始支持。
- Cisco路由器3600、4000和更高平台 — 自Cisco IOS软件12.0(1)和Cisco IOS软件版本12.0(1)T起，请参阅Cisco Bug ID CSCdj93712(仅[注册](#)客户)和Cisco Bug ID [CSCdt58029](#) (仅限注册客户)。
- 帧中继接口 — 从Cisco IOS软件版本12.0(17)S和Cisco IOS软件版本12.2(4)T3开始，请参阅帧中[继64位计数器](#)。
- OC3 ATM接口 — 从Cisco IOS软件版本12.0(6)T开始，请参阅Cisco Bug ID [CSCdm45357](#)(仅限注册客户)。
- 隧道接口 — 自Cisco IOS软件版本12.0(16)S起，请参阅Cisco Bug ID [CSCdt58029](#)(仅限注册客户)。

注意： Cisco IOS软件不支持接口速度低于20 Mbps的64位计数器。这意味着10 Mb以太网端口不支持64位计数器。只有100 Mb快速以太网和其他高速端口支持64位计数器。

问： ifInOctets和ifOutOctets SNMP计数器是否与show interfaces In/Out计数器相同？

答： 是，但仅当从启动时启用SNMP时。如果打开思科设备电源，然后启用SNMP，则SNMP计数器从0开始。它们不会自动从CLI输出中提取其值。

问： ifInOctets和ifOutOctets计数器是否包括成帧开销（点对点协议、高级数据链路控制）？

是的。

问： 在异步传输模式接口上，计数器是否包括信元报头？

答： 异步传输模式(ATM)计数器不包括ATM开销（信元报头和AAL5填充）。

问： 为什么SNMP计数器不返回与CLI show命令相同的编号？

答： 定义为计数器的SNMP对象必须遵守[RFC1155](#)：

"3.2.3.3.计数器

这个应用全局类型代表一个非负整数，当该非负整数开始围包并再次从零增加时，它一直会增加到最大值。此通知单为计数器指定最大值 $2^{32}-1$ (4294967295 十进制)"。

没有方法可将SNMP计数器重置为零而无需重新加载设备。

因为SNMP的限制不存在，所以从CLI show命令的计数器输出可以在接口上重置。

MIB-2中定义的原始接口计数器是32位计数器。对于10 Mbps接口，32位计数器理论上可以在57分钟内换行。这样长的时间，很容易避免不连续。但是，对于100 Mbps，最短理论话后时间为5.7分钟。对于1 Gbps接口，它会降至34秒。这些时间用于背对背传输全尺寸数据包，理论上是理想的。即使如此，接口速度越快，它避免计数器错过换行就越困难。作为此问题的解决方案，SNMPv2 SMI为64位计数器定义了新的对象类型counter64。因此，在RFC 1573（后来被RFC 2233取代）中定义的扩展接口表(ifxTable)中定义了多个新的64位计数器。这些来自[IF-MIB-V1SMI.my](#)(仅注册客户)。

ifHCInOctets (.1.3.6.1.2.1.31.1.1.6)	ifHCOctets (1.3.6.1.2.1.31.1.1.10)
ifHCInUcastPkts (.1.3.6.1.2.1.31.1.1.7)	ifHCOUcastPkts (.1.3.6.1.2.1.31.1.1.11)
ifHCInMulticastPkts (.1.3.6.1.2.1.31.1.1.8)	ifHCOMulticastPkts (.1.3.6.1.2.1.31.1.1.12)
ifHCInBroadcastPkts (.1.3.6.1.2.1.31.1.1.9)	ifHCOBroadcastPkts (.1.3.6.1.2.1.31.1.1.13)

虽然对64位计数器的基本支持已写入Cisco IOS软件版本11.3 (从Cisco IOS软件版本12.0开始), 但仅当HCInOctets(.1.3.6.1.2.1.31.1.1.6)和ifHCOctets(1.3.6.1.2.1.31.1.1.10)仅对ATM LANE LEC子接口实施。对于Catalyst工作组交换机, 3.1版中已实施了64位计数器支持。

注意: 必须使用SNMPv2c或SNMPv3协议才能检索任何计数器64对象。

SNMP计数器和show命令等效问题

问: 思科路由器对以下SNMP MIB变量有何作用: ifInOctets、ifInUcastPkts、ifInNUcastPkts、ifInDiscards、ifInErrors、ifInUnknownProtos、ifOutOctets、ifOutUcastPkts、ifOutNUcastPkts、ifOutDiscards、ifOutErrors和ifOutQLen?

A. 详细信息请参阅下表。这些来自RFC1213-MIB(仅限注册客户)。

ifInNUcastPkts(.1.3.6.1.2.1.2.2.1.12)	这些是入站广播和组播数据包的计数。
ifInDiscards(.1.3.6.1.2.1.2.2.1.13)	这些缓冲区被视为没有缓冲区, 如show interfaces命令所反映。
ifInErrors(.1.3.6.1.2.1.2.2.1.14)	这些是show interfaces命令中反映的所有输入错误计数。
ifInUnknownProtos(.1.3.6.1.2.1.2.2.1.15)	这些错误被计为未分类错误。
ifOutOctets(.1.3.6.1.2.1.2.2.1.16)	这些是接口输出的字节数计数, 如show interfaces命令所示。
ifOutUcastPkts(.1.3.6.1.2.1.2.2.1.17)	这些是出站广播和组播数据包的计数。
ifOutDiscards(.1.3.6.1.2.1.2.2.1.19)	如show interfaces命令所示, 这些数据包被计为输出丢包。
ifOutErrors(.1.3.6.1.2.1.2.2.1.20)	如show interfaces命令所示, 这些错误被计为输出错误。
ifOutQLen(.1.3.6.1.2.1.2.2.1.21)	如show interfaces命令所示, 这是允许在输出队列中的数据包包数。

之前列出的不表示它们出现在show interfaces中的变量除SNMP外, 在任何位置都不可用。

Examples

本示例使用与Cisco IOS软件版本12.2(2)T1一起运行的3640。使用的只读(RO)社区字符串是公有的，使用的读写(RW)社区字符串是私有的。有关如何在[设备上配置SNMP社区字符串](#)的详细信息，请参阅[如何配置SNMP社区字符串](#)。

以下输出是在启用模式下执行的show ip interface brief命令的典型输出：

```
3600#show ip interface brief
Interface      IP-Address      OK? Method Status  Prol
BRI0/0         unassigned      YES NVRAM  administratively down dow
FastEthernet0/0 172.16.99.20    YES NVRAM  up      up
Serial0/0      unassigned      YES NVRAM  down    dow
Serial0/0.1    unassigned      YES unset  down    dow
BRI0/0:1       unassigned      YES unset  administratively down dow
BRI0/0:2       unassigned      YES unset  administratively down dow
Serial0/1      unassigned      YES NVRAM  administratively down dow
ATM1/0         unassigned      YES NVRAM  down    dow
ATM1/0.109     10.164.0.46     YES NVRAM  down    dow
Virtual-Template1 99.99.99.99     YES NVRAM  down    dow
Loopback0      10.1.10.1       YES NVRAM  up      up
Loopback1      unassigned      YES NVRAM  up      up
Loopback101    3.3.3.3         YES NVRAM  administratively down dow
Loopback200    4.4.4.14        YES NVRAM  administratively down dow
Loopback201    4.4.4.18        YES NVRAM  administratively down dow
```

此输出是MIB对象(如果前一路由器的Descr(.1.3.6.1.2.2.1.2))，它是包含接口信息的文本字符串。这将提供接口名称和说明，如获取的，使用先前的CLI命令输出。也可以使用ifName(.1.3.6.1.2.1.31.1.1.1.2)，但ifDescr同时提供接口的标识和名称，而ifName只提供接口名称。

```
snmpwalk 172.16.99.20 public .1.3.6.1.2.1.2.2.1.2
interfaces.ifTable.ifEntry.ifDescr.1 = ATM1/0
interfaces.ifTable.ifEntry.ifDescr.2 = BRI0/0
interfaces.ifTable.ifEntry.ifDescr.3 = FastEthernet0/0
interfaces.ifTable.ifEntry.ifDescr.4 = Serial0/0
interfaces.ifTable.ifEntry.ifDescr.5 = BRI0/0:1
interfaces.ifTable.ifEntry.ifDescr.6 = BRI0/0:2
interfaces.ifTable.ifEntry.ifDescr.7 = Serial0/1
interfaces.ifTable.ifEntry.ifDescr.8 = Null0
interfaces.ifTable.ifEntry.ifDescr.10 = Foreign Exchange Office 2/0/0
interfaces.ifTable.ifEntry.ifDescr.11 = Foreign Exchange Office 2/0/1
interfaces.ifTable.ifEntry.ifDescr.12 = recEive And transMit 3/0/0
interfaces.ifTable.ifEntry.ifDescr.13 = recEive And transMit 3/0/1
interfaces.ifTable.ifEntry.ifDescr.14 = Loopback0
interfaces.ifTable.ifEntry.ifDescr.15 = Loopback1
interfaces.ifTable.ifEntry.ifDescr.16 = Loopback101
interfaces.ifTable.ifEntry.ifDescr.17 = Loopback200
interfaces.ifTable.ifEntry.ifDescr.18 = Loopback201
interfaces.ifTable.ifEntry.ifDescr.19 = Serial0/0.1
interfaces.ifTable.ifEntry.ifDescr.20 = ATM1/0.109-atm subif
interfaces.ifTable.ifEntry.ifDescr.21 = ATM1/0.109-aal5 layer
interfaces.ifTable.ifEntry.ifDescr.22 = Virtual-Template1
interfaces.ifTable.ifEntry.ifDescr.23 = Voice Encapsulation (POTS) Peer: 1
interfaces.ifTable.ifEntry.ifDescr.24 = Voice Over IP Peer: 2
interfaces.ifTable.ifEntry.ifDescr.25 = Voice Encapsulation (POTS) Peer: 111
interfaces.ifTable.ifEntry.ifDescr.26 = Voice Over IP Peer: 222
interfaces.ifTable.ifEntry.ifDescr.27 = Voice Over IP Peer: 1234
interfaces.ifTable.ifEntry.ifDescr.28 = Voice Over IP Peer: 30000
interfaces.ifTable.ifEntry.ifDescr.29 = Voice Over FR Peer: 3
```

```
interfaces.ifTable.ifEntry.ifDescr.30 = Voice Over IP Peer: 99
interfaces.ifTable.ifEntry.ifDescr.31 = Voice Encapsulation (POTS) Peer: 9
interfaces.ifTable.ifEntry.ifDescr.32 = BRI0/0-Physical
interfaces.ifTable.ifEntry.ifDescr.33 = BRI0/0-Signaling
interfaces.ifTable.ifEntry.ifDescr.34 = BRI0/0:1-Bearer Channel
interfaces.ifTable.ifEntry.ifDescr.35 = BRI0/0:2-Bearer Channel
```

1. ifInDiscards(.1.3.6.1.2.1.2.2.1.13):

```
snmpwalk 172.16.99.20 public .1.3.6.1.2.1.2.2.1.13
```

```
interfaces.ifTable.ifEntry.ifInDiscards.1 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.2 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.3 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.4 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.5 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.6 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.7 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.8 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.10 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.11 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.12 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.13 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.14 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.15 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.16 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.17 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.18 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.19 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.20 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.21 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.22 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.23 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.24 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.25 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.26 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.27 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.28 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.29 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.30 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.31 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.32 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.33 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.34 = Counter32: 0
interfaces.ifTable.ifEntry.ifInDiscards.35 = Counter32: 0
```

此路由器的所有接口的ifInDiscards为零。如果将此结果与show interfaces fastEthernet 0/0命令的CLI结果进行比较，则这将确认结果：

```
3600#show interfaces fastEthernet 0/0
```

```
FastEthernet0/0 is up, line protocol is up
  Hardware is AmdFE, address is 0001.42b4.fe81 (bia 0001.42b4.fe81)
  Description: testme
  Internet address is 172.16.99.20/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:00, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 323 drops
  5 minute input rate 1000 bits/sec, 2 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    1767411 packets input, 178272010 bytes
```

```
Received 1161500 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
0 watchdog
0 input packets with dribble condition detected
7146925 packets output, 765049281 bytes, 0 underruns(0/0/0)
0 output errors, 0 collisions, 1 interface resets
0 babbles, 0 late collision, 461 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
```

2. ifInErrors(.1.3.6.1.2.1.2.2.1.14):

```
snmpwalk 172.16.99.20 public .1.3.6.1.2.1.2.2.1.14
```

```
interfaces.ifTable.ifEntry.ifInErrors.1 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.2 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.3 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.4 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.5 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.6 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.7 = Counter32: 1
interfaces.ifTable.ifEntry.ifInErrors.8 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.10 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.11 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.12 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.13 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.14 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.15 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.16 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.17 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.18 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.19 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.20 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.21 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.22 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.23 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.24 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.25 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.26 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.27 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.28 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.29 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.30 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.31 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.32 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.33 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.34 = Counter32: 0
interfaces.ifTable.ifEntry.ifInErrors.35 = Counter32: 0
```

此输出显示，该接口只有一个输入错误**interfaces.ifTable.ifEntry.ifInErrors.7 = Counter32:1**。要确定这是哪个接口，请将其与上面的**ifDescr**输出进行比较，该输出显示这是来自**interfaces.ifTable.ifEntry.ifDescr.7 = Serial0/1**。现在在启用模式下执行**show interfaces serial 0/1**命令以验证以前的结果：

```
3600#show interfaces serial 0/1
```

```
Serial0/1 is administratively down, line protocol is down
Hardware is DSCC4 Serial
Description: atm-dxi test
MTU 1500 bytes, BW 2048 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ATM-DXI, loopback not set
Keepalive not set
Last input never, output never, output hang never
Last clearing of "show interface" counters 1w1d
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
```

```

5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  1 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 1 abort
  0 packets output, 0 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 output buffer failures, 0 output buffers swapped out
  0 carrier transitions
DCD=down DSR=down DTR=down RTS=down CTS=down

```

3. ifOutOctets(.1.3.6.1.2.1.2.2.1.16):

```
snmpwalk 172.16.99.20 public .1.3.6.1.2.1.2.2.1.16
```

```

interfaces.ifTable.ifEntry.ifOutOctets.1 = Counter32: 98
interfaces.ifTable.ifEntry.ifOutOctets.2 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.3 = Counter32: 765470674
interfaces.ifTable.ifEntry.ifOutOctets.4 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.5 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.6 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.7 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.8 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.10 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.11 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.12 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.13 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.14 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.15 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.16 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.17 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.18 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.19 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.20 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.21 = Counter32: 98
interfaces.ifTable.ifEntry.ifOutOctets.22 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.23 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.24 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.25 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.26 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.27 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.28 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.29 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.30 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.31 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.32 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.33 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.34 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutOctets.35 = Counter32: 0

```

如果将上一个结果与ifDescr的输出进行比较，则表明：**interfaces.ifTable.ifEntry.ifOutOctets.1 = Counter32:98**与**interfaces.ifTable.ifEntry.ifDescr.1 = ATM1/0**对应
interfaces.ifTable.ifEntry.ifOutOctets.3 = Counter32:765470674与
interfaces.ifTable.ifEntry.ifDescr.3 = FastEthernet0/0对应
interfaces.ifTable.ifEntry.ifOutOctets.21 = Counter32:98与**interfaces.ifTable.ifEntry.ifDescr.21 = ATM1/0.109-aal5**层对应以下是在启用模式下执行的每个以前接口的CLI show interfaces命令的输出：

```

3600#show interfaces atM 1/0
  ATM1/0 is down, line protocol is down
  Hardware is RS8234 ATMOC3
  MTU 4470 bytes, sub MTU 4470, BW 155000 Kbit, DLY 80 usec,
    reliability 5/255, txload 1/255, rxload 1/255
  Encapsulation ATM, loopback not set

```



```

Encapsulation(s): AAL5
1024 maximum active VCs, 1 current VCCs
VC idle disconnect time: 300 seconds
Last input never, output lwld, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: None
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  2 packets output, 98 bytes, 0 underruns
  0 output errors, 0 collisions, 2 interface resets
  0 output buffer failures, 0 output buffers swapped out

```

```

3600#show interfaces fastEthernet 0/0
FastEthernet0/0 is up, line protocol is up
Hardware is AmdFE, address is 0001.42b4.fe81 (bia 0001.42b4.fe81)
Description: testme
Internet address is 172.16.99.20/24
MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
  reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Full-duplex, 100Mb/s, 100BaseTX/FX
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:00, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 323 drops
5 minute input rate 2000 bits/sec, 3 packets/sec
5 minute output rate 1000 bits/sec, 1 packets/sec
  1772214 packets input, 178767841 bytes
  Received 1164210 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
0 watchdog
  0 input packets with dribble condition detected
  7149179 packets output, 765450524 bytes, 0 underruns(0/0/0)
  0 output errors, 0 collisions, 1 interface resets
  0 babbles, 0 late collision, 461 deferred
  0 lost carrier, 0 no carrier
  0 output buffer failures, 0 output buffers swapped out

```

ifOutOctets的输出与show interfaces FastEthernet 0/0命令的命令行输出不匹配，但是很类似。这是因为在轮询接口和执行CLI命令时，可能有延迟。

```

3600#show interfaces atm 1/0.109
ATM1/0.109 is down, line protocol is down
Hardware is RS8234 ATMOC3
Description: pvc
Internet address is 10.164.0.46/30
MTU 4470 bytes, BW 2250 Kbit, DLY 80 usec,
  reliability 5/255, txload 1/255, rxload 1/255
Encapsulation ATM
0 packets input, 0 bytes
2 packets output, 98 bytes
0 OAM cells input, 77093 OAM cells output
AAL5 CRC errors : 0
AAL5 SAR Timeouts : 0
AAL5 Oversized SDUs : 0
AAL5 length violation : 0
AAL5 CPI Error : 0

```

4. ifOutDiscards(.1.3.6.1.2.1.2.2.1.19):

```

snmpwalk 172.16.99.20 public .1.3.6.1.2.1.2.2.1.19

```

```
interfaces.ifTable.ifEntry.ifOutDiscards.1 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.2 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.3 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.4 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.5 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.6 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.7 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.8 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.10 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.11 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.12 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.13 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.14 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.15 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.16 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.17 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.18 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.19 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.20 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.21 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.22 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.23 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.24 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.25 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.26 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.27 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.28 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.29 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.30 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.31 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.32 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.33 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.34 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutDiscards.35 = Counter32: 0
```

所有接口的ifOutDiscards为零。以show interfaces fastEthernet 0/0命令为例，此命令会产生以下结果：

```
3600#show interfaces fastEthernet 0/0
FastEthernet0/0 is up, line protocol is up
  Hardware is AmdFE, address is 0001.42b4.fe81 (bia 0001.42b4.fe81)
  Description: testme
  Internet address is 172.16.99.20/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:00, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 323 drops
  5 minute input rate 1000 bits/sec, 2 packets/sec
  5 minute output rate 1000 bits/sec, 1 packets/sec
    1774581 packets input, 179005552 bytes
      Received 1165620 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog
    0 input packets with dribble condition detected
  7150259 packets output, 765645035 bytes, 0 underruns(0/0/0)
  0 output errors, 0 collisions, 1 interface resets
  0 babbles, 0 late collision, 461 deferred
  0 lost carrier, 0 no carrier
```

0 output buffer failures, 0 output buffers swapped out

5. ifOutErrors(.1.3.6.1.2.1.2.2.1.20):

```
snmpwalk 172.16.99.20 public .1.3.6.1.2.1.2.2.1.20
```

```
interfaces.ifTable.ifEntry.ifOutErrors.1 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.2 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.3 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.4 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.5 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.6 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.7 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.8 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.10 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.11 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.12 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.13 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.14 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.15 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.16 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.17 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.18 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.19 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.20 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.21 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.22 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.23 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.24 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.25 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.26 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.27 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.28 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.29 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.30 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.31 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.32 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.33 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.34 = Counter32: 0
interfaces.ifTable.ifEntry.ifOutErrors.35 = Counter32: 0
```

所有接口的ifOutErrors为零。以show interfaces fastEthernet 0/0命令为例，此命令会产生以下结果：

```
3600#show interfaces fastEthernet 0/0
FastEthernet0/0 is up, line protocol is up
  Hardware is AmdFE, address is 0001.42b4.fe81 (bia 0001.42b4.fe81)
  Description: testme
  Internet address is 172.16.99.20/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:00, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 323 drops
  5 minute input rate 0 bits/sec, 1 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    1776187 packets input, 179154616 bytes
    Received 1166778 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog
    0 input packets with dribble condition detected
    7150781 packets output, 765744231 bytes, 0 underruns(0/0/0)
```

```
0 output errors, 0 collisions, 1 interface resets
0 babbles, 0 late collision, 461 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
```

6. ifOutQLen(.1.3.6.1.2.1.2.2.1.21):

```
snmpwalk 172.16.99.20 public .1.3.6.1.2.1.2.2.1.21
```

```
interfaces.ifTable.ifEntry.ifOutQLen.1 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.2 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.3 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.4 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.5 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.6 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.7 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.8 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.10 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.11 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.12 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.13 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.14 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.15 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.16 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.17 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.18 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.19 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.20 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.21 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.22 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.23 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.24 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.25 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.26 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.27 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.28 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.29 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.30 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.31 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.32 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.33 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.34 = Gauge32: 0
interfaces.ifTable.ifEntry.ifOutQLen.35 = Gauge32: 0
```

所有接口ifOutQLen都为零。以show interfaces fastEthernet 0/0命令为例：

```
3600#show interfaces fastEthernet 0/0
```

```
FastEthernet0/0 is up, line protocol is up
  Hardware is AmdFE, address is 0001.42b4.fe81 (bia 0001.42b4.fe81)
  Description: testme
  Internet address is 172.16.99.20/24
  MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:00, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 323 drops
  5 minute input rate 0 bits/sec, 1 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    1776912 packets input, 179225431 bytes
    Received 1167240 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 watchdog
```

```

0 input packets with dribble condition detected
7151102 packets output, 765796341 bytes, 0 underruns(0/0/0)
0 output errors, 0 collisions, 1 interface resets
0 babbles, 0 late collision, 461 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out

```

问：show interfaces语句no buffers和input queue drops之有?为什么SNMP的inDiscards不提供缓数而不提供弃，而SNMP的outDiscards确实提供输?

A. loclflInputQueueDrops/iflInDiscards的工作方式与loclflOutputQueueDrops/ifOutDiscards不同。iflInDiscards计算因缺少系统资源（如缓冲区）而丢弃的数据包数。这通常是loclflInputQueueDrops的子集。您通常会看到loclflInputQueueDrops = iflInDiscards。但是，loclflInputQueueDrops也会计算由于达到输入队列限制而丢弃的数据包数。通常，您会看到loclflInputQueueDrops > iflInDiscards。

摘要

loclflInputQueueDrops =队列限制丢弃+如果InDiscards =无缓冲区丢弃（并且是loclflInputQueueDrops的子集）

loclflOutputQueueDrops和ifOutDiscards在计数相同事件时始终相等。当数据包从一个接口快速交换到另一个接口时，这些事件达到了输出队列限制，并且没有硬件传输缓冲区。以前MIB对象的OID如下：

从 OLD-CISCO-INTERFACES-MIB (仅限注册客户)	从 RFC1213-MIB (仅限注册客户)
loclflInputQueueDrops = .1.3.6.1.4.1.9.2.2.1.26	iflInDiscards = .1.3.6.1.2.1.2.2.1.13
loclflOutputQueueDrops = .1.3.6.1.4.1.9.2.2.1.27	ifOutDiscards = .1.3.6.1.2.1.2.2.1.19

问：我能否在路由器上轮询无缓冲区？

是的。您可以轮询iflInDiscards以轮询无缓冲区。

问：如何轮询路由器上的队列限制丢包？

答：使用SNMP时，show interfaces命令无法分开进入输出丢弃的各个元素。

请考虑以下有关输出丢弃计数器中内容的新信息：

输入丢弃=队列限制丢弃+限制丢弃+ SMT队列完全丢弃+ RSRB丢弃+无缓冲区丢弃

此外，SNMP计数器从不清除，即使接口被清除也是如此。

相关信息

- [IP应用服务技术提示](#)
- [技术支持和文档 - Cisco Systems](#)