How to check traffic rate within the device - for DNX devices

KB0024077

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Affected Products: BCM88370 (Qumran-MX), BCM88670 (Jericho)
Legacy ID: HT2456
Related Articles:
Attachments: diag_rates.c diag_rates_2.jpg diag_rates_qax.c

How to check traffic rate (MPPS and Gbps) at Ingress / Egress for Jericho and QMX

Introduction

Two types of traffic rates can be measured:

1. MPPS - Million packets per second
2. Gbps - Gigabits per second

The results can be used to understand the overall BWusage in the device.

The attached CINT uses the G-Timer mechanism to collect the statistics.

To dive into specific ports/flows BW, you can ues the scripts from here: KB0025684

How to Use

Download the attached CINT and run it on your system.

It can also be used as a reference if the user wants to implement statistics based on the G-Timer mechanism.

Results Explained

The CINT check the performance of 3 blocks:

NBI - Total RX / TX rates on the NIF.

IRE - Traffic rate per interface.

MMU - Traffic rate in DRAM and OCB

IQM - Enqeue/Dequeue and discarded traffic rates.

IPT - Local (EGQ) and Fabric (FDT) routed traffic rate.

EGQ - UC/MC and discarded traffic rates, in FQP, PQPand EHP blocks.

In all the blocks the results are shown per core, and the sum of both.

Example

In the below example, the device is running full wire speed of 64B packets.

You can see each core is processing 360MPPS (720 total).

```
+-------------------------------------------------------------------------------------------------------------------+
|                                                    NBI Rates                                                      |
+------------------+-------------------------------------+-------------------------------------+-------------------------------------+
| Counter          |              Core 0                 |              Core 1                 |              Total                  |
+------------------+-------------------------------------+-------------------------------------+-------------------------------------+
| Rx Rate          |   172.76 Gbps        359.91 Mpps    |   172.76 Gbps        359.91 Mpps    |   345.52 Gbps        719.82 Mpps    |
| Tx Rate          |   172.74 Gbps        359.87 Mpps    |   172.74 Gbps        359.87 Mpps    |   345.52 Gbps        719.82 Mpps    |
+------------------+-------------------------------------+-------------------------------------+-------------------------------------+
+-----------------------------------------------------+
```

```
                          IRE Rates
+--------------------+-----------------------------------+
| Counter            |          Total                    |
+--------------------+-----------------------------------+
| CPU       Rate     |                        0.00 Mpps  |
| NIF       Rate     |                      719.75 Mpps  |
| OAMP      Rate     |                        0.00 Mpps  |
| OLP       Rate     |                        0.00 Mpps  |
| RCY       Rate     |                        0.00 Mpps  |
+--------------------+-----------------------------------+

+--------------------+-----------------------------------+
|                          MMU Rates                    |
+--------------------+-----------------------------------+
| Counter            |          Total                    |
+--------------------+-----------------------------------+
| DRAM      Rate     |                        0.00 Mpps  |
| OCB Write Rate     |                      719.75 Mpps  |
| OCB Read  Rate     |                      719.75 Mpps  |
+--------------------+-----------------------------------+

+-------------------------------------------------------------------------------------------------------------------+
|                                                  IQM Rates                                                        |
+--------------------+-----------------------------------+-----------------------------------+-----------------------+
| Counter            |              Core 0               |              Core 1               |              Total    |
+--------------------+-----------------------------------+-----------------------------------+-----------------------+
| EnQueue   Rate     |  224.56 Gbps        359.88 Mpps   |  224.56 Gbps        359.88 Mpps   |  449.13 Gbps  719.75 Mpps |
| DeQueue   Rate     |  224.56 Gbps        359.87 Mpps   |  224.57 Gbps        359.88 Mpps   |  449.12 Gbps  719.75 Mpps |
| Discard   Rate     |                       0.00 Mpps   |                       0.00 Mpps   |                 0.00 Mpps |
| DeQDelete Rate     |                       0.00 Mpps   |                       0.00 Mpps   |                 0.00 Mpps |
+--------------------+-----------------------------------+-----------------------------------+-----------------------+

+-------------------------------------------------------------------------------------------------------------------+
|                                                  IPT Rates                                                        |
+--------------------+-----------------------------------+-----------------------------------+-----------------------+
| Counter            |              Core 0               |              Core 1               |              Total    |
+--------------------+-----------------------------------+-----------------------------------+-----------------------+
| Incoming  Rate     |                     359.88 Mpps   |                     359.89 Mpps   |           719.76 Mpps |
| EGQ       Rate     |                       0.00 Mpps   |                       0.00 Mpps   |             0.00 Mpps |
| FDT       Rate     |                     359.88 Mpps   |                     359.89 Mpps   |           719.76 Mpps |
+--------------------+-----------------------------------+-----------------------------------+-----------------------+

+-------------------------------------------------------------------------------------------------------------------+
|                                                  EGQ Rates                                                        |
+--------------------+-----------------------------------+-----------------------------------+-----------------------+
| Counter            |              Core 0               |              Core 1               |              Total    |
+--------------------+-----------------------------------+-----------------------------------+-----------------------+
| EHP UC          Rate |                     359.87 Mpps   |                     359.88 Mpps   |           719.75 Mpps |
| EHP MC High     Rate |                       0.00 Mpps   |                       0.00 Mpps   |             0.00 Mpps |
| EHP MC Low      Rate |                       0.00 Mpps   |                       0.00 Mpps   |             0.00 Mpps |
| EHP Discard     Rate |                       0.00 Mpps   |                       0.00 Mpps   |             0.00 Mpps |
| PQP UC          Rate |                     359.87 Mpps   |                     359.88 Mpps   |           719.75 Mpps |
| PQP Discard UC  Rate |                       0.00 Mpps   |                       0.00 Mpps   |             0.00 Mpps |
| PQP MC          Rate |                       0.00 Mpps   |                       0.00 Mpps   |             0.00 Mpps |
| PQP Discard MC  Rate |                       0.00 Mpps   |                       0.00 Mpps   |             0.00 Mpps |
| FQP             Rate |                     359.87 Mpps   |                     359.88 Mpps   |           719.75 Mpps |
+--------------------+-----------------------------------+-----------------------------------+-----------------------+
```

Notes

The displayed Gbps rate is the internal data rate, so it may be lower than actual NIFthroughput (for IPG reasons).

In the example above, the actual traffic rate is 480Gbps.

OCBRead/Write transactions are 256B each.

IPTEGQRate is inaccurate.

Environment

SDK 6.4.9

Jericho / QMX / QAX / QUX