



## Packetized MMU Stats

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### About Packetized MMU Stats

Beginning with Cisco NX-OS release 9.2(2), the Packetized MMU Stats (PSTATS) is now supported. PSTATS uses the ASIC capability to read stats using direct memory access (DMA) instead of reading port-by-port or queue-by-queue. It uses the streaming telemetry framework to push data to a receiver.

### Guidelines and Limitations

The PSTATS feature has the following guidelines and limitations:

- The PSTATS feature is supported only on Cisco Nexus 3132C-Z and Cisco Nexus 3264C-E switches
- Because of a hardware limitation, either Out-of-Band or PSTATS can be enabled at one time
- You must change the Broadcom configuration variable to use this feature, which also requires a reload

### Using Packetized MMU Stats

Either the Out-of-Band or the PSTATS feature can be enabled at one time. By default, the Out-of-Band feature will be enabled.

Following are the commands to use for the PSTATS feature:

- To disable the default Out-of-Band feature and enable PSTATS (to begin fetching data using the PSTAT DMA):

```
hardware profile statistics pstat [peak]
```

You must reload to allow the enabling of the PSTATS to take affect:

```
switch# reload
```

The following displays all the commands entered by you that require a reload, and what is displayed with relation to PSTATS:

```
switch(config)# show system config reload-pending

Following config commands require copy r s + reload :
=====
0      hardware profile statistics pstat
=====
```



**Note** If you want to disable PSTATS and re-enable the default Out-of-Band feature, enter:

```
no hardware profile statistics pstat [peak]
```

You must reload to allow the enabling of the default Out-of-Band feature to take affect:

```
switch# reload
```

- To get the PSTATS statistics:

```
show hardware internal buffer info pstats [interface
<if-name-range>] [service-pool] [detail]
```

The telemetry framework uses the command to read the data from the hardware, registers all ports one by one, and pushes the data to the collector.

For example:

```
telemetry destination-group 100
ip address 171.68.248.76 port 50001 protocol gRPC encoding GPB
sensor-group 100 data-source NX-API
path "show hardware internal buffer info pkt-stats pstats" depth unbounded
subscription 100 dst-grp 100 snsr-grp 100 sample-interval 5000
```

- To get debugging information:

- At the DME level:

```
switch# show system internal dme running-config all dn sys/pltfm | grep pstat

"pstatCfg": "PSTAT_ENABLE_PEAK",
```

- At the pltfm\_config level:

```
switch# show system internal pltfm_config info all | grep -A 10 "STAT"
Buffer stat collect type and mode OOBSTA/PSTAT
Buf stat collect type OOBSTAT/PSTAT:1 [OOBSTAT]
Buf stat collect mode Instantaneous/Peak: 0 [Instantaneous]
```

- At the BCM level:

```
switch # bcm-shell module 1 "config show" | grep -i buffer
buffer_stats_collect_mode=0
buffer_stats_collect_type=1
switch#
```

- Verify the telemetry configuration using the **show run telemetry** command, as shown in this example:

```
switch# show run telemetry

!Command: show running-config telemetry
!Time: Tue Mar  6 18:36:38 2018

version 9.2(2)
feature telemetry

telemetry
 destination-group 100
  ip address 171.68.248.76 port 50001 protocol gRPC encoding GPB
 sensor-group 100
  data-source NX-API
  path "show hardware internal buffer info pkt-stats" depth unbounded
 subscription 100
  dst-grp 100
  snsr-grp 100 sample-interval 5000
```

Following is example file output when running telemetry on an ADS server:

```
D0308 16:38:23.229714038    2519 env_linux.c:77]           Warning: insecure environment
  read function 'getenv' used
E0308 16:38:23.230022365    2519 tcp_server_posix.c:148]    check for SO_REUSEPORT:
{"created": "@1520555903.230006737", "description": "SO_REUSEPORT unavailable on compiling
system", "file": "src/core/lib/iomgr/socket_utils_common_posix.c", "file_line": 175}
Server listening on 0.0.0.0:50001
Received GBP RPC at: Thu Mar  8 16:38:25 2018
Data size is: 722
header {
  node_id_str: C14-HAV-2029
  encoding_path: show hardware internal buffer info pkt-stats pstats
  collection_id: 30
  data_gpbkv {
    timestamp: 0
    name:
    fields {
      timestamp: 0
      name: keys
      value (invalid):
        fields {
          timestamp: 0
          name: show hardware internal buffer info pkt-stats pstats
          value: show hardware internal buffer info pkt-stats pstats
        }
    }
  }
  fields {
    timestamp: 0
    name: content
    value (invalid):
      fields {
        timestamp: 0
        name:
        value:
        subfields {
          name: TABLE_module
          fields {
            timestamp: 0
            name:
            value:
```

```

subfields {
  name: ROW_module
  fields {
    timestamp: 0
    name:
    value:
  }
  subfields {
    name: module_number
    timestamp: 0
    value (uint64): 1
  }
  subfields {
    name: TABLE_instance
    fields {
      timestamp: 0
      name:
      value:
    }
    subfields {
      name: ROW_instance
      fields {
        timestamp: 0
        name:
        value:
      }
      subfields {
        name: instance
        timestamp: 0
        value (uint64): 0
      }
      subfields {
        name: supports_8q
        timestamp: 0
        value (uint64): 1
      }
      subfields {
        name: total_instant_usage_1
        timestamp: 0
        value (uint64): 0
      }
      subfields {
        name: total_instant_usage_2
        timestamp: 0
        value (uint64): 0
      }
      subfields {
        name: total_instant_usage_3
        timestamp: 0
        value (uint64): 0
      }
      subfields {
        name: total_instant_usage_4
        timestamp: 0
        value (uint64): 0
      }
      subfields {
        name: rem_instant_usage_1
        timestamp: 0
        value (uint64): 63764
      }
      subfields {
        name: rem_instant_usage_2
        timestamp: 0
        value (uint64): 0
      }
      subfields {

```



```

header {
  node_id_str: C14-HAV-2029
  encoding_path: show hardware internal buffer info pkt-stats
  collection_id: 31
  data_gpbkv {
    timestamp: 0
    name:
    fields {
      timestamp: 0
      name: keys
      value (invalid):
        fields {
          timestamp: 0
          name: show hardware internal buffer info pkt-stats
          value: show hardware internal buffer info pkt-stats
        }
      }
    }
  fields {
    timestamp: 0
    name: content
    value (invalid):
      fields {
        timestamp: 0
        name:
        value:
        subfields {
          name: TABLE_module
          fields {
            timestamp: 0
            name:
            value:
            subfields {
              name: ROW_module
              fields {
                timestamp: 0
                name:
                value:
                subfields {
                  name: module_number
                  timestamp: 0
                  value (uint64): 1
                }
              }
            subfields {
              name: TABLE_instance
              fields {
                timestamp: 0
                name:
                value:
                subfields {
                  name: ROW_instance
                  fields {
                    timestamp: 0
                    name:
                    value:
                    subfields {
                      name: instance
                      timestamp: 0
                      value (uint64): 0
                    }
                  }
                subfields {
                  name: supports_8q
                  timestamp: 0
                  value (uint64): 1
                }
              }
            }
          }
        }
      }
    }
  }
}

```

```
subfields {
  name: total_instant_usage_1
  timestamp: 0
  value (uint64): 0
}
subfields {
  name: total_instant_usage_2
  timestamp: 0
  value (uint64): 0
}
subfields {
  name: total_instant_usage_3
  timestamp: 0
  value (uint64): 0
}
subfields {
  name: total_instant_usage_4
  timestamp: 0
  value (uint64): 0
}
subfields {
  name: rem_instant_usage_1
  timestamp: 0
  value (uint64): 63764
}
subfields {
  name: rem_instant_usage_2
  timestamp: 0
  value (uint64): 0
}
subfields {
  name: rem_instant_usage_3
  timestamp: 0
  value (uint64): 0
}
subfields {
  name: rem_instant_usage_4
  timestamp: 0
  value (uint64): 6960
}
subfields {
  name: max_cell_usage_1
  timestamp: 0
  value (uint64): 0
}
subfields {
  name: max_cell_usage_2
  timestamp: 0
  value (uint64): 0
}
subfields {
  name: max_cell_usage_3
  timestamp: 0
  value (uint64): 0
}
subfields {
  name: max_cell_usage_4
  timestamp: 0
  value (uint64): 212
}
subfields {
  name: switch_cell_count_1
  timestamp: 0
  value (uint64): 63764
}
```





```

subfields {
  name: ROW_module
  fields {
    timestamp: 0
    name:
    value:
    subfields {
      name: module_number
      timestamp: 0
      value (uint64): 1
    }
  }
  subfields {
    name: TABLE_instance
    fields {
      timestamp: 0
      name:
      value:
      subfields {
        name: ROW_instance
        fields {
          timestamp: 0
          name:
          value:
          subfields {
            name: instance
            timestamp: 0
            value (uint64): 0
          }
          subfields {
            name: supports_8q
            timestamp: 0
            value (uint64): 1
          }
          subfields {
            name: total_instant_usage_1
            timestamp: 0
            value (uint64): 0
          }
          subfields {
            name: total_instant_usage_2
            timestamp: 0
            value (uint64): 0
          }
          subfields {
            name: total_instant_usage_3
            timestamp: 0
            value (uint64): 0
          }
          subfields {
            name: total_instant_usage_4
            timestamp: 0
            value (uint64): 0
          }
          subfields {
            name: rem_instant_usage_1
            timestamp: 0
            value (uint64): 63764
          }
          subfields {
            name: rem_instant_usage_2
            timestamp: 0
            value (uint64): 0
          }
          subfields {

```

