



APPENDIX **A**

Monitoring NME-APA Module Utilization

This module explains how to monitor NME-APA modules that are installed in real traffic.

As with any network device, the NME-APA module has its performance and capacity envelopes. As the network evolves, the utilization of the NME-APA module can increase and these envelopes might be reached. It is, therefore, advisable to monitor NME-APA module to be sure that utilization remains at a level that supports reliable and consistent service.

When the NME-APA module reaches its performance envelopes, it activates certain mechanisms that insure that no traffic will be dropped while in this state. These mechanisms will prioritize packet handling over service related actions. As a result, symptoms of service loss might be experienced. Following are several examples:

- Broken reports during the congestion period (sometimes appears as saw-tooth pattern).
- No UDP traffic is being reported (this is because the NME-APA module will automatically filter all UDP traffic in certain cases as a last resort).

Monitoring the NME-APA module can be divided onto two main areas:

- Monitoring NME-APA module utilization
- Monitoring service loss

NME-APA Module Utilization Indicators

The NME-APA module exposes several indicators to allow the network operators to easily monitor whether it is working within its performance and capacity specifications:

- CPU Utilization
- Flows capacity
- Users capacity

CPU Utilization

- **CLI command**
show interface linecard 0 counters cpu-utilization

It is advisable to consider sizing of the solution when the CPU utilization exceeds 75% regularly at peak hours.

Flows Capacity

- **CLI command**

show snmp MIB cisco-service-control-tp-stats | include TpFlowsCapacityUtilization

It is advisable to consider sizing of the solution when the flows capacity utilization exceeds 90% regularly at peak hours.

Users Capacity

- **CLI command**

show snmp MIB cisco-service-control-user

The NME-APA module supports up to 500 users. You should make sure that the number of Introduced Users plus the number of Anonymous Users stays below this figure.

It is advisable that when users' utilization exceeds 90%, special attention should be given and sizing should be reconsidered.

Service Loss

Service Loss is an event which occurs when the NME-APA module does not provide the processing it was expected to perform for any transaction in the network. This can occur due to either CPU or Flows shortage.

There are two different situations which can result with service loss in the NME-APA module:

- **Temporary**—This might occur when some network pattern which is short in its nature occurred and caused the NME-APA module to exhaust some of its resources temporarily. An example could be a DDoS attack that the NME-APA module could not detect and filter.

This is usually measured in seconds.

- **Permanent**—In cases where the NME-APA module is installed in locations where the network traffic does not match its capacity and performance envelopes, permanent service loss can occur.

This is measured in hours.

Service loss is defined as the ratio of the number of packets that did not receive service as expected to the total number of packets that were processed by the NME-APA module.

Monitoring Service Loss

- **CLI command**

show snmp MIB cisco-service-control-tp-stats

It is expected that the NME-APA module user will define timeslots in which this variable is monitored (reset it between timeslots).

Note that the units for this variable are 0.001% and the information is rounded down.