

PM Quality Of Service Interface.

This interface provides a kernel and user mode interface for registering performance expectations by drivers, subsystems and user space applications on one of the parameters.

Currently we have {cpu_dma_latency, network_latency, network_throughput} as the initial set of pm_qos parameters.

Each parameters have defined units:

- * latency: usec
- * timeout: usec
- * throughput: kbs (kilo bit / sec)

The infrastructure exposes multiple misc device nodes one per implemented parameter. The set of parameters implement is defined by pm_qos_power_init() and pm_qos_params.h. This is done because having the available parameters being runtime configurable or changeable from a driver was seen as too easy to abuse.

For each parameter a list of performance requests is maintained along with an aggregated target value. The aggregated target value is updated with changes to the request list or elements of the list. Typically the aggregated target value is simply the max or min of the request values held in the parameter list elements.

From kernel mode the use of this interface is simple:

handle = pm_qos_add_request(param_class, target_value):

Will insert an element into the list for that identified PM_QOS class with the target value. Upon change to this list the new target is recomputed and any registered notifiers are called only if the target value is now different. Clients of pm_qos need to save the returned handle.

void pm_qos_update_request(handle, new_target_value):

Will update the list element pointed to by the handle with the new target value and recompute the new aggregated target, calling the notification tree if the target is changed.

void pm_qos_remove_request(handle):

Will remove the element. After removal it will update the aggregate target and call the notification tree if the target was changed as a result of removing the request.

From user mode:

Only processes can register a pm_qos request. To provide for automatic cleanup of a process, the interface requires the process to register its parameter requests in the following way:

To register the default pm_qos target for the specific parameter, the process must open one of /dev/[cpu_dma_latency, network_latency, network_throughput]

As long as the device node is held open that process has a registered request on the parameter.

pm_qos_interface.txt

To change the requested target value the process needs to write an s32 value to the open device node. Alternatively the user mode program could write a hex string for the value using 10 char long format e.g. "0x12345678". This translates to a pm_qos_update_request call.

To remove the user mode request for a target value simply close the device node.