Actual Measurement result of 3 OF HW switches.

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Here are graphs describe the distribution of the latency of 3 types of switches.

Experiment 1. Fast forwarding case:

Match pattern	Action
In-port X	IP DST mod

Figure 1. 2. shows "ASIC" powered result. Every switch has different distributions, but all done in sub-micro seconds. Switch A did around 2.7µ in very steep. C has 9µ or around cause it is 1G switch.

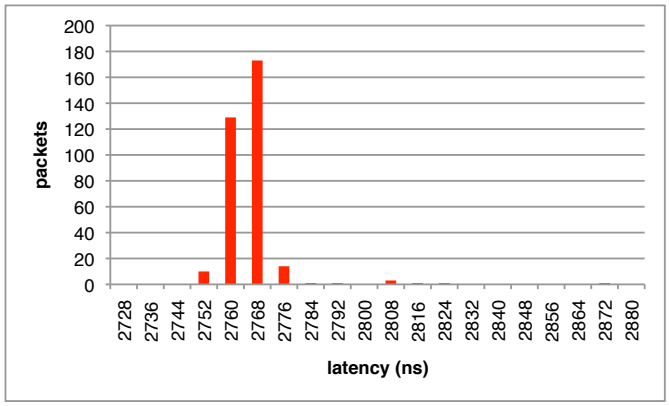

Figure 1. Switch A (10G) latency distribution

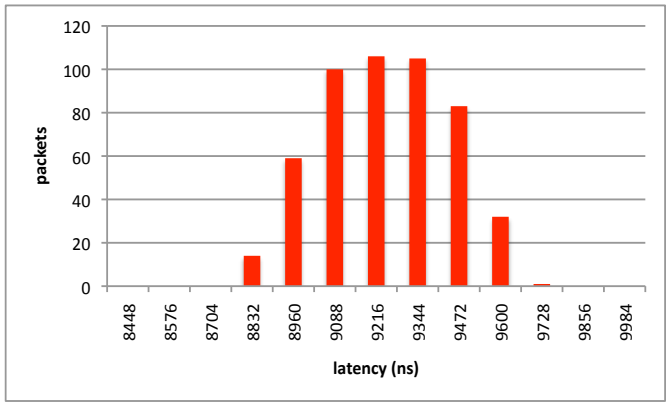

Figure 2. Switch B (1G) latency distribution.

Experiment 2. Slow forwarding case:

Match pattern	Action
IP SRC	IP DST mod

Only add an IP SRC matching added, the Switch did "software fallback". (Fig 3) Around 350-500µ. But still 2.7% packets exist on the outside of the graph, far right. The slowest one over 10ms. And this case, 1000 times slower forwarding.

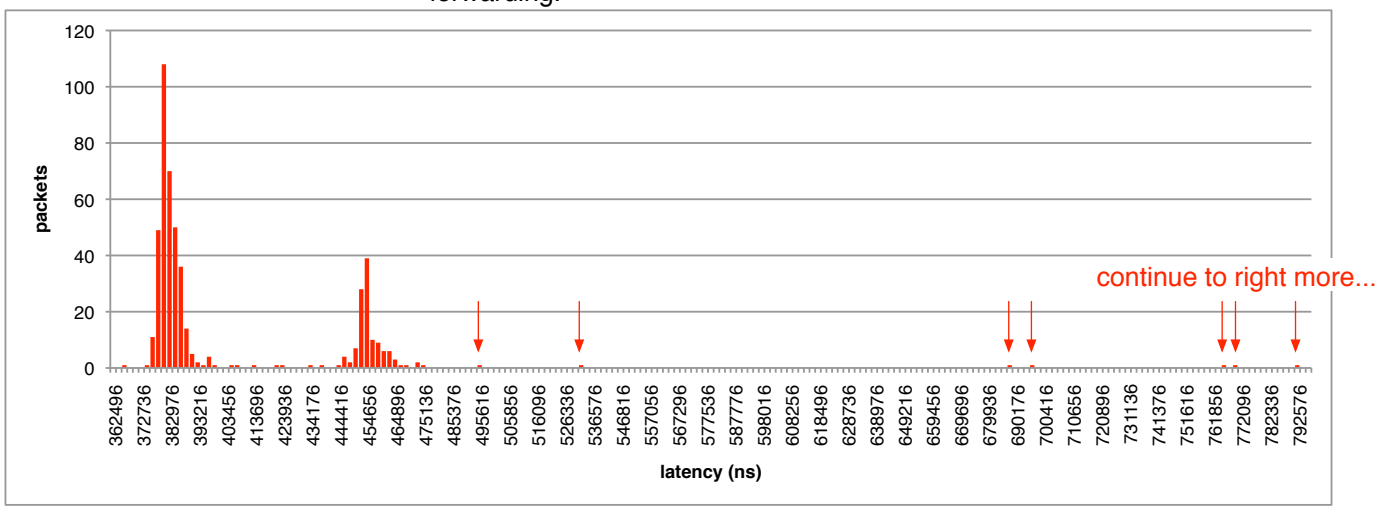

Figure 3. Switch B (1G) latency distribution, in software fallback situation

In this case, the maximum throughput is only 16Kpps. In 100Byte length packet, it means 12.8Mbps.

Experiment 3. When it will go slow?

	IP SRC Match	IP DST Mod	ToS Mod	latency
#1	✓	✓		slow
#2		✓		quick
#3	✓			quick
#4	✓		✓	quick

In switch B case;
IP matching and IP mod are able to handle by ASIC separately. But if you specify them at once, it will be slow.
BUT IP matching and ToS mod are able to specify both at once! Totally unexpected.... (sigh)