

Gap Analysis on Virtualized Network Test

draft-liu-dclc-gap-virtual-test-00

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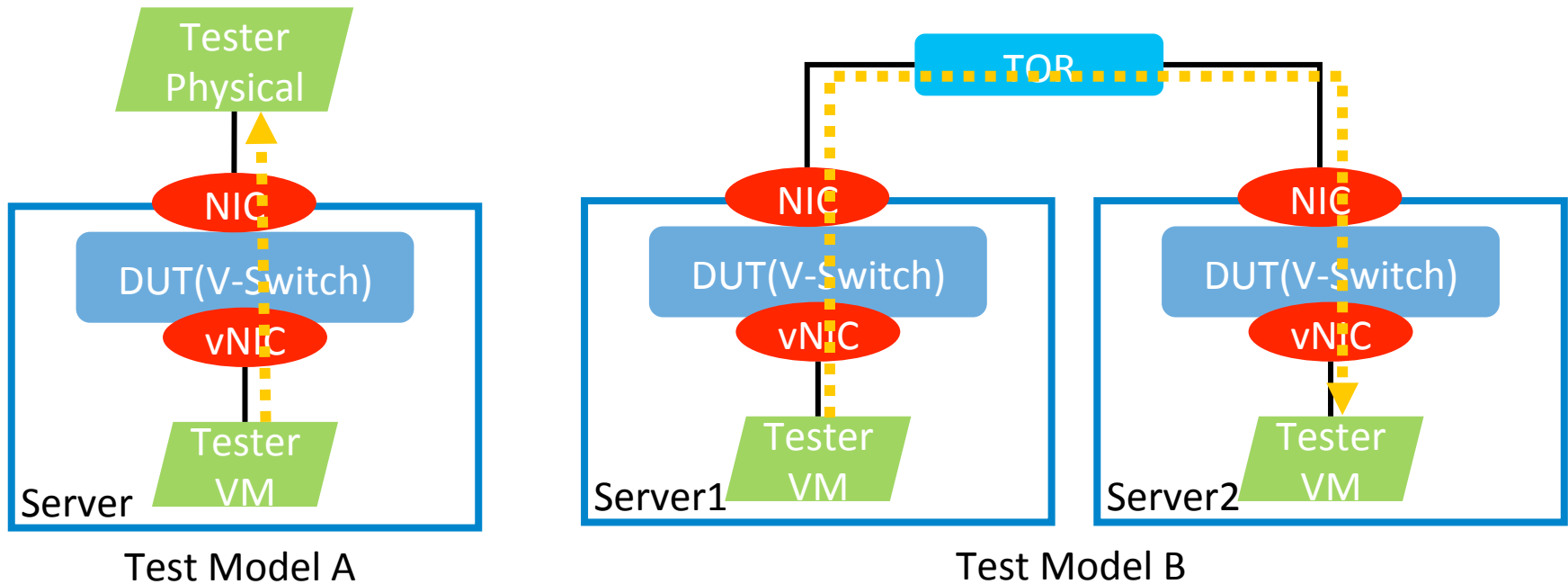
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Virtual network test practices

- DUT(VSwitch) and Virtual tester are on the same platform and share the same resources.
- Tester as a VM can be allocate vCPU and Memory resource while DUT can not.
- There will be unstable traffic as the tester running out of resource.
- Two kinds of traffic model list below:



Test Model A is connect a server with physical tester to make a throughput baseline.
Test Model B is connect two server to make a E2E test for performance, such as, latency.

Key Performance Indicators

- **No drop throughput under various frame sizes:**
 - Forwarding performance under various frame sizes is a key performance index of interest.
- **CPU and memory consumed by DUT :**
 - when adding one or more VM. With addition of each VM, DUT will consume more CPU and memory
- **Latency readings:**
 - Some applications are highly sensitive on latency. It's important to get the latency reading with respect to various conditions.

Throughput

- ✓ (Figure 1) Different from test on hardware switch using RFC2544As configure the tester to generate more traffic it will be CPU overloaded.
 - Use traffic model A can find the **infection point**.
- ✓ (Figure 2) Number of vCPU allocated to Tester VM do effect test result.
- ✓ (Figure 3) Number of vNIC and number of Tester VM effect result a lot.

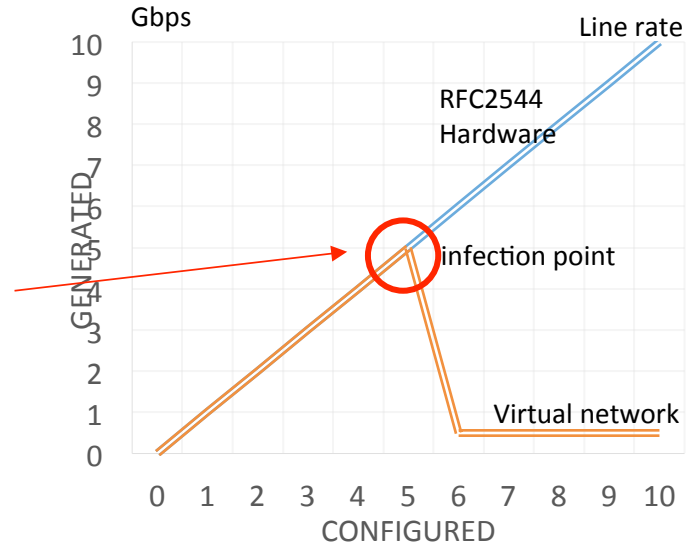


Figure 1 Infection point

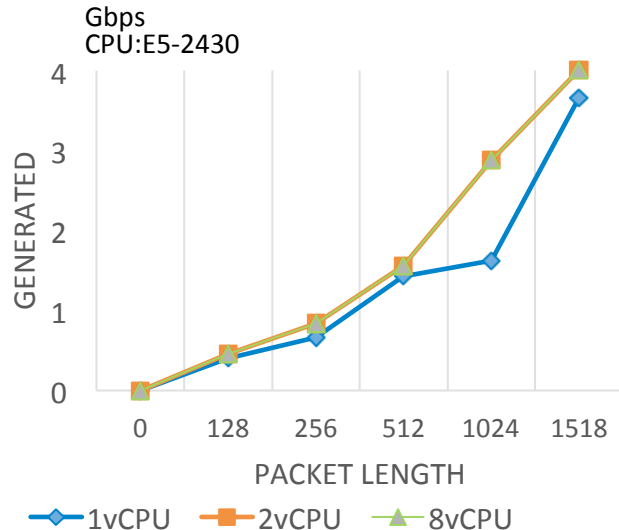


Figure 2 number of vCPU affection

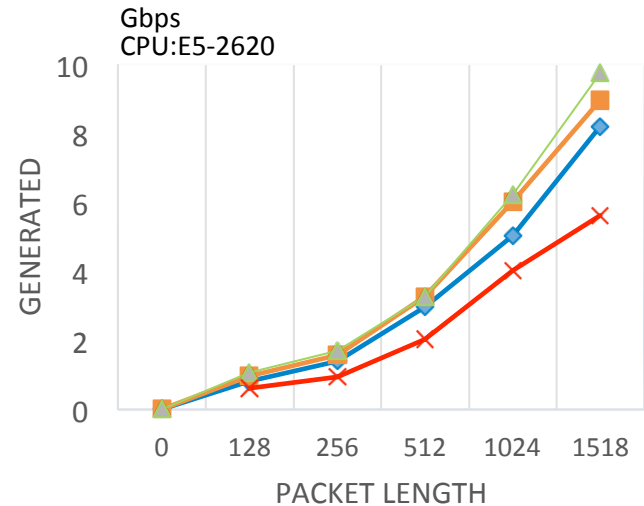


Figure 3 number of vNIC and Tester VM affection

vCPU and Memory consumption

- ✓ Important indicators to verified DUT performance compare with different vendors.
- ✓ CPU:
 - Different type of CPU triggered different result.
 - Packet encapsulation consumption of CPU but still can not reach line rate. So we have to think about new benchmark...
- ✓ Memory:
 - Not sensitive in this test.

Server 1: CPU E5-2430

Byte	Rate(GE)	Server CPU MHZ	Server Mem	VM CPU	VM Mem
0	0	505	3022	372	695
128	0.46	6085	3021	5836	695
256	0.84	6365	3021	6143	696
512	1.56	6330	3021	6099	696
1024	2.88	5922	3021	5726	696
1518	4.00	5713	3023	5441	696

Server 2: CPU E5-2620

Byte	Rate(GE)	Server CPU MHZ	Server Mem	VM CPU	VM Mem
0	0	505	2900	239	698
128	0.61	5631	2900	5117	698
256	0.94	5726	2896	5157	698
512	2.02	5786	2901	5217	698
1024	4.02	5884	2901	5097	698
1518	5.61	5856	2901	5197	698

Latency

- ✓ Latency test is different from hardware latency test.
 - (Figure 1) On hardware test case, traffic generate from port on physical tester, go through DUT, and terminate back in physical test itself. Latency is judged by a timer in the tester. And latency can be defined as *us*.
 - (Figure 2) Traffic generate from Server 1 to Server 2. the Timer is the Linux timer which can't synchronization to each other and low accuracy.

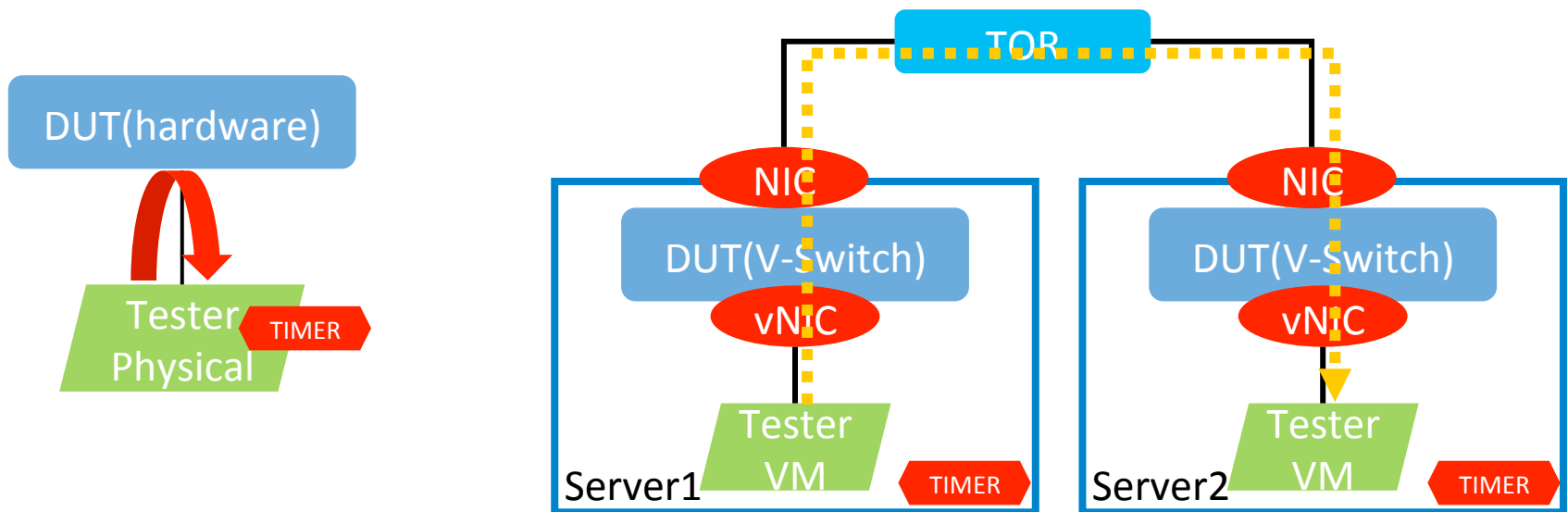


Figure 1 hardware latency

Figure 2 virtual network latency

Next Step...

Solicit comments and suggestions...

THANKS

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