Inspiring Virtualization Innovation

## Measuring Datacenter Virtualization Performance – SPECvirt_dc

- Development underway of next-generation benchmark to model typical, modern-day usage of virtualized infrastructure, such as VM resource provisioning, cross-node load balancing, and forced VM migrations.
- Benchmark to contain multiple phases focusing on different datacenter operation scenarios.
- Considering discrete workload tiles containing different number of VMs (small, medium, and large tiles) – tile mix would be added in pre-defined combinations during ramp-up phases.
- Provides methodical way to measure scalability which can be utilized across multiple vendor platforms.

Enhancements over SPECvirt_sc2013

- Multi-host benchmark which exercises datacenter operations under load.
- Dynamically provisions new workload tiles either by using VM templates or pre-existing VMs.
- Eliminating effects of workloads' application stack to focus on performance of total virtualization solution.

SPECvirt_dc Architecture (Under Development)

- Measures throughput in a mixed workload consolidation environment while undergoing datacenter operations – such as new VM provisioning and migration – in the background.
- Utilizes realistic, diverse workloads running on multiple virtualization hosts (minimum of 3).
- Benchmark run consists of two stages, a Throughput Measurement Interval (MI) and an Operations stage.
- Considering two class of metrics:
  - A base metric which uses pre-defined VM resource settings and an open source workload software stack.
  - A peak metric which allows vendor to customize and tune VM and software resources for optimal performance.
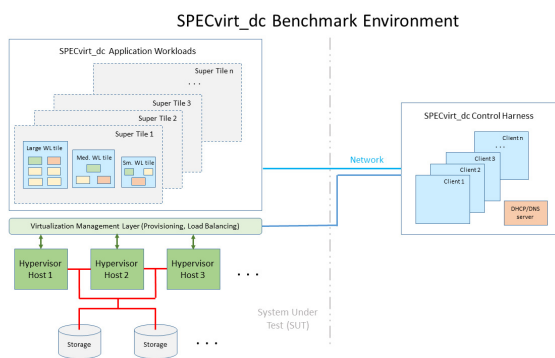

SPECvirt_dc Benchmark Layout Under Consideration
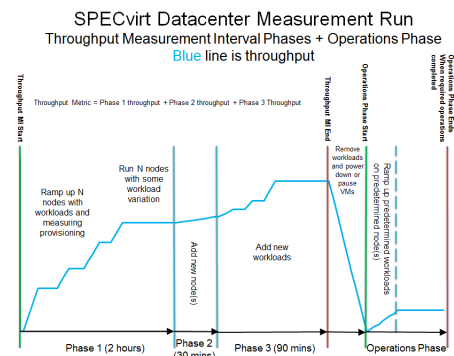
SPECvirt_dc Workload Profile Under Consideration

SPECvirt_dc Workloads

- Big-data analytics workload based on Intel's BigBench.
- J2EE ecommerce application server workload based on SPECjEnterprise2010.
- Synthetic workload which models resource utilization patterns of a web server, a mail server, and/or a streaming/collaboration application.
- Each workload has pre-defined set of VMs which are bundled as a workload tile. A set of all three workload tiles is a "super tile".
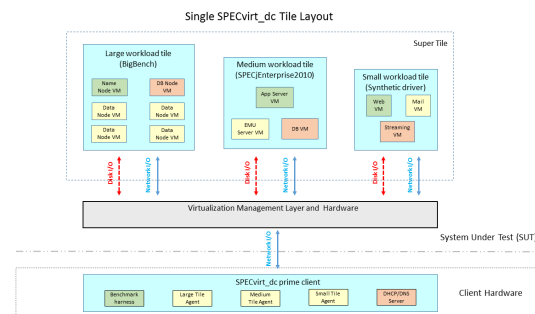
Proposed SPECvirt_dc Workload Tile Profile