Event-Correlation: Infrastructure Metrics/Events and Test Performance Metrics/Events

This page enlists the correlations that helps in reasoning the VSPERF test performances. An example reasoning would be - The throughput, at a particular duration, in the test is low due to CPU utilization reaching 100% (or CPU availability going to 0). The Infrastructure metrics are taken from the Barometer project. The type of correlation could be 'positive', 'negative' or null. In positive, as one variable increases, the other variable also increases, whereas in 'negative' as one variable increases, the other variable decreases. The null correlation indicates that the variables are independent.

<table>
<thead>
<tr>
<th>Metric and Events</th>
<th>Description (Important events to consider for correlation)</th>
<th>Test performance metric and corresponding event</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| CPU               | 1. CPU (host and VMs) usage is x% (x=100?)  
2. Socket Failure | 1. Throughput:  
2. Delay | Definition of ‘x’? |
| Memory            | 1. Available memory (memfree) is y (y = 0?) | | Definition of ‘y’? |
| Disk              | 1. Read-Write IOPS >= Maximum IOPS | | Definition of Max-IOPS? |
| Interface         | 1. Interface down.  
2. The errors and dropped for both Rx and Rx > threshold. | | Definition of ‘Threshold’? |
| OVS Stats and Events | 1. Link Status of OVS interface Down  
2. Errors and Dropped (both Rx and Tx) > threshold  
3. Collisions > threshold | | Definition of ‘Threshold’? |
| DPDK Stats        | 1. Free hugepages < threshold  
2. memory errors > threshold  
3. The errors and dropped for both Rx and Rx > threshold.  
4. Link status is down. | | Definition of ‘Threshold’? |

Possible Architectures

Option-A

```
Correlation Engine

Metrics and Events collection Agent (Collects)
Traffic-generator
```

Option-B

```
Correlation Engine

Metrics and Events collection Agent (Collects)
Traffic-generator
```

Challenges

1. Event-definition from the infrastructure metrics.  
2. Definition of thresholds.  
3. Time Synchronization (Infrastructure metrics timestamps and test-result timestamps)  
5. Probability of the correctness and completeness of the correlation.