



# Bridging OPNFV and ETSI

Yardstick and the methodology  
for pre-deployment validation of  
NFV Infrastructure

Ana Cunha (Ericsson)

[ana.cunha@ericsson.com](mailto:ana.cunha@ericsson.com)

# Agenda

- The facts
- The questions
- The ETSI-NFV methodology
- The realization: OPNFV Yardstick



# The facts

NFV Use cases in [ETSI GS NFV 001](#):

include a large variety of applications ...

each defining specific requirements ...

and complex configuration on the NFVI and test tools

# The questions

NFVI + VNF ?

VNF requirements?

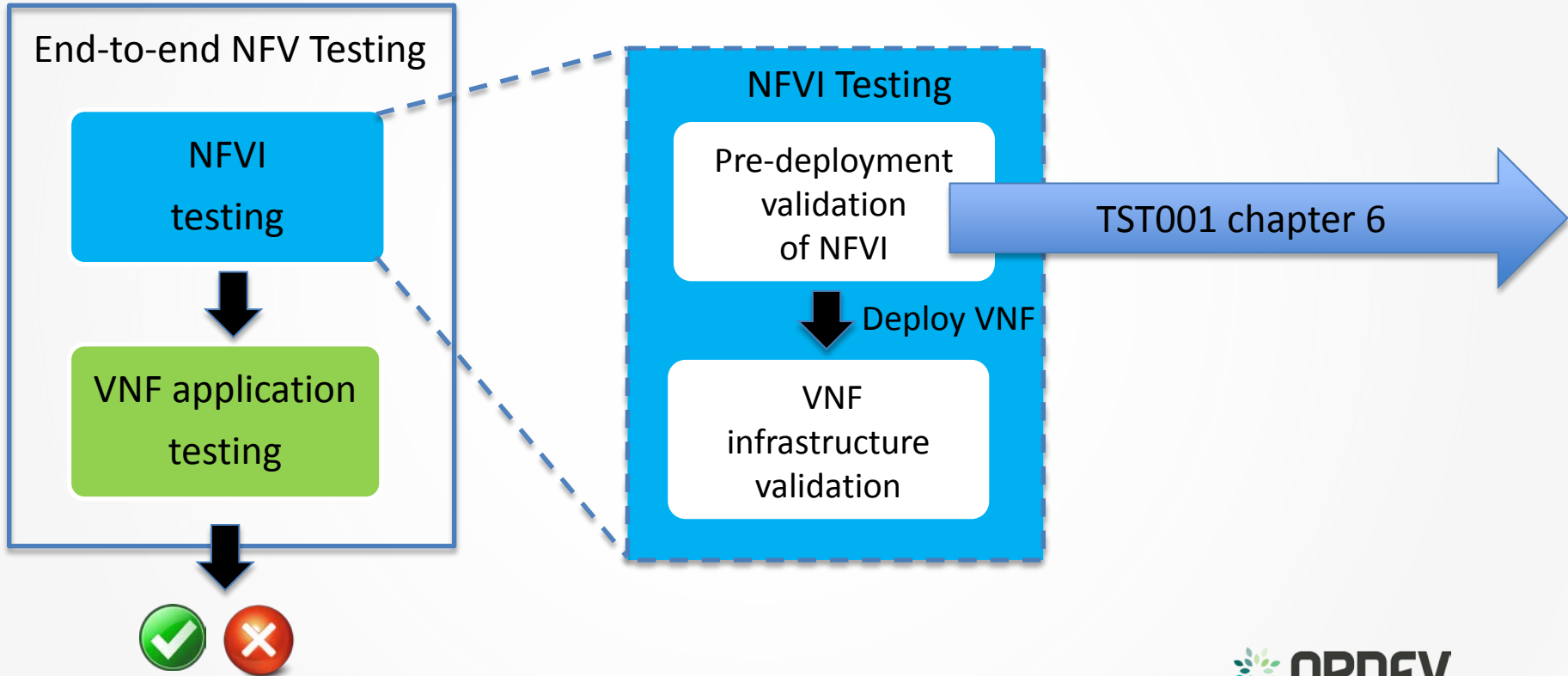
NFVI characteristics ?

HW faults?

Bottlenecks ?



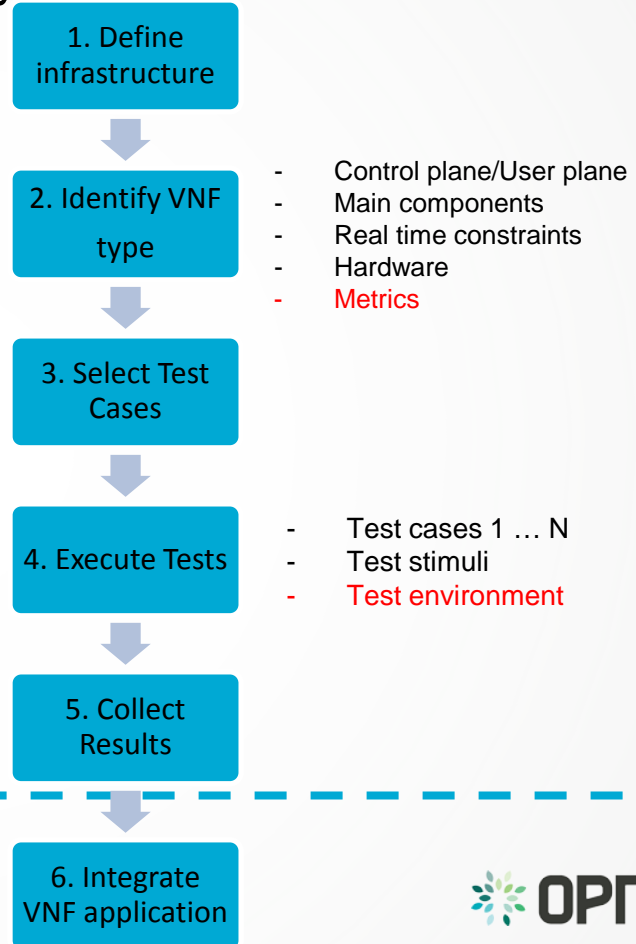
# End-to-end Testing process



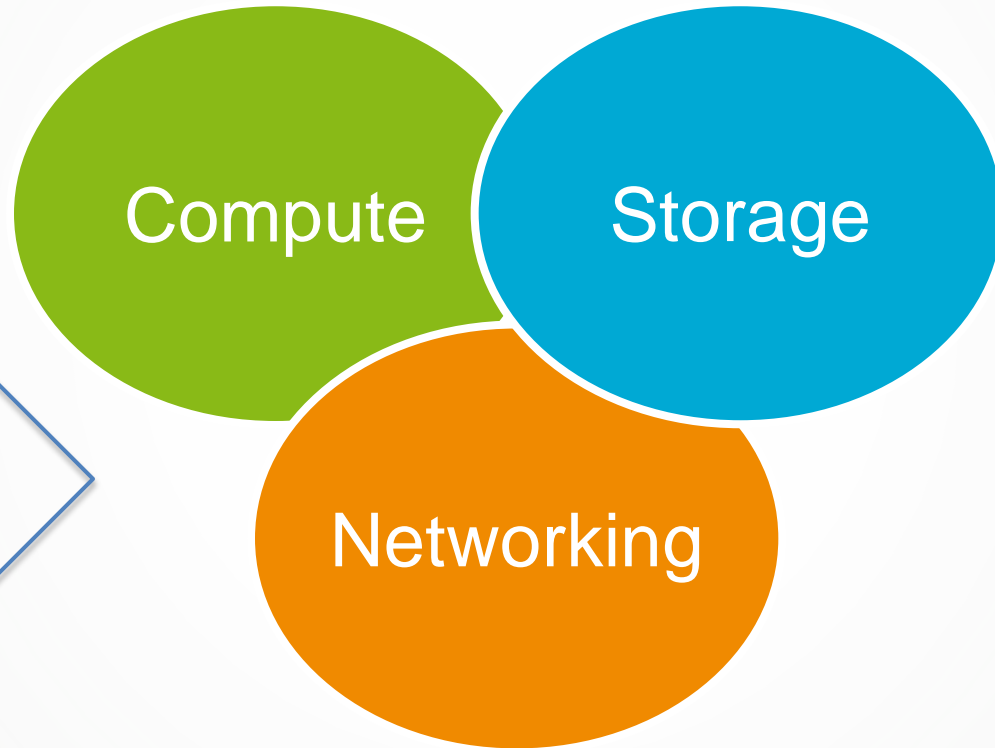
# The methodology

ETSI GS [NFV-TST001](#)  
Chapter 6  
Pre-Deployment validation of NFV infrastructure

## Pre-Deployment validation of NFVI

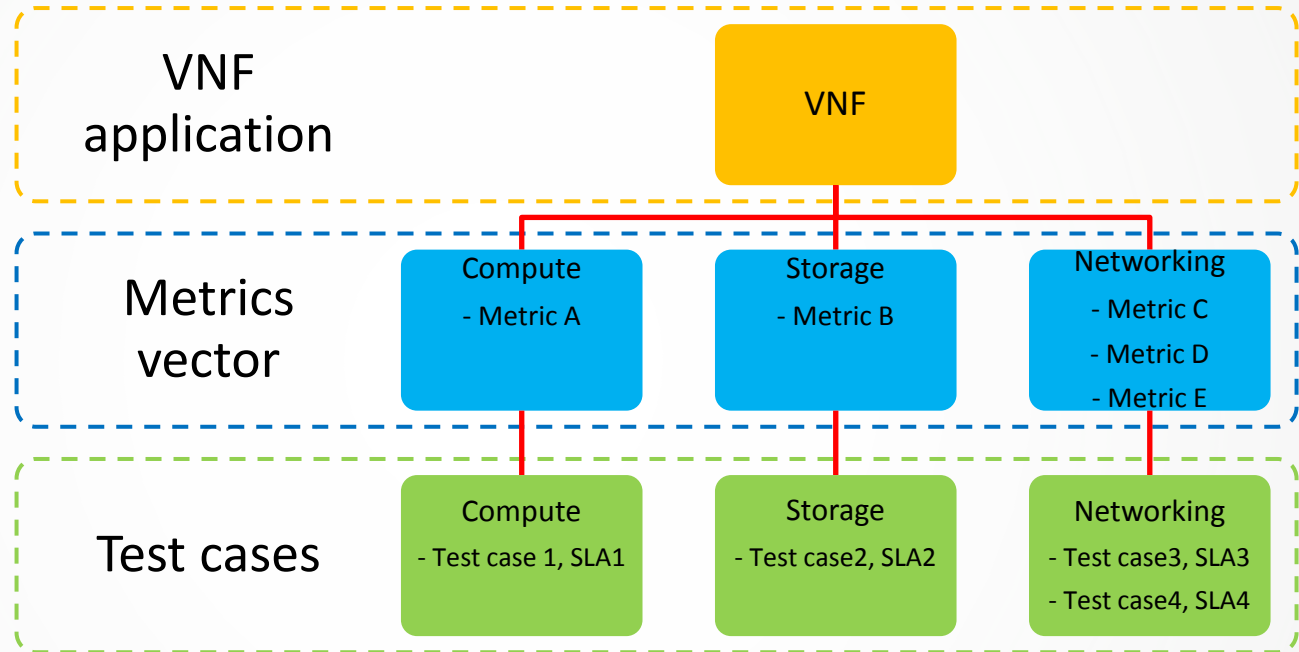


# Metrics Categories



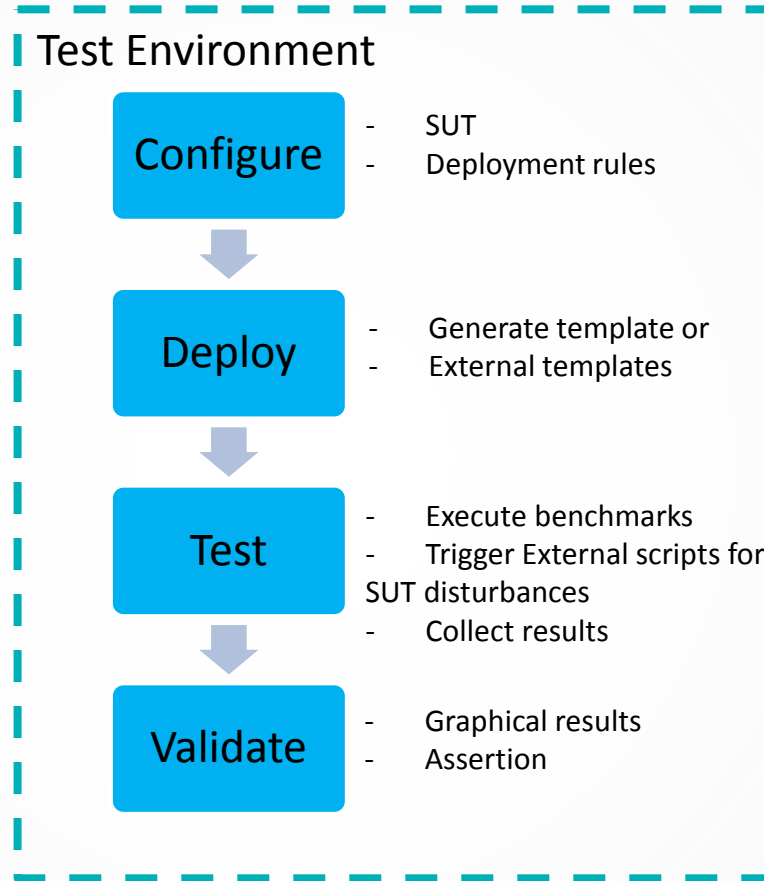
Sub-categories:  
Performance/speed  
Capacity/Scale  
Reliability/availability

# Test cases selection



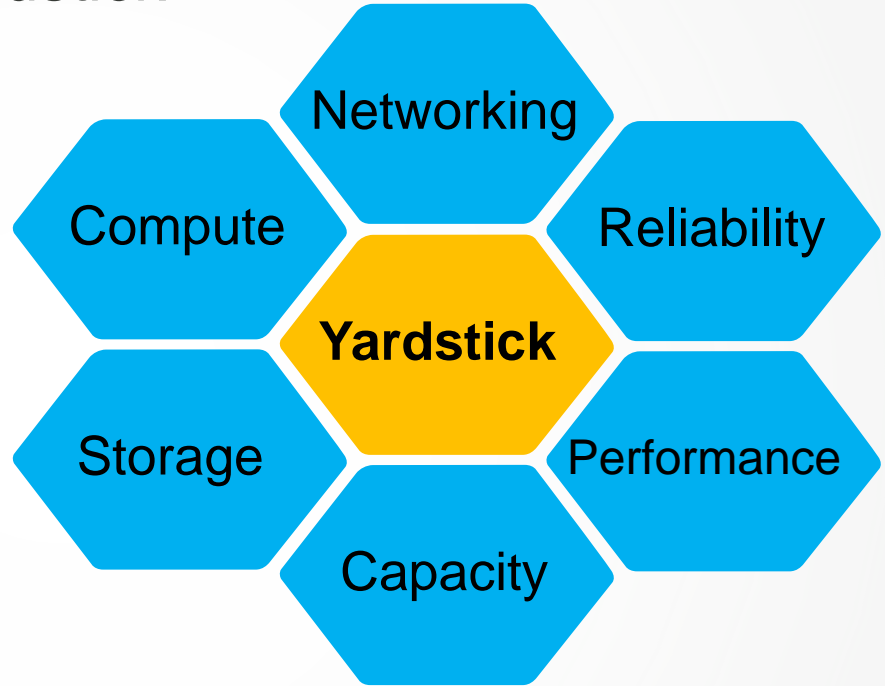


# The test execution



# The realization: OPNFV Yardstick

- ✓ Vendor independent
- ✓ Infrastructure independent
- ✓ Aligned with TST001
- ✓ Open Source

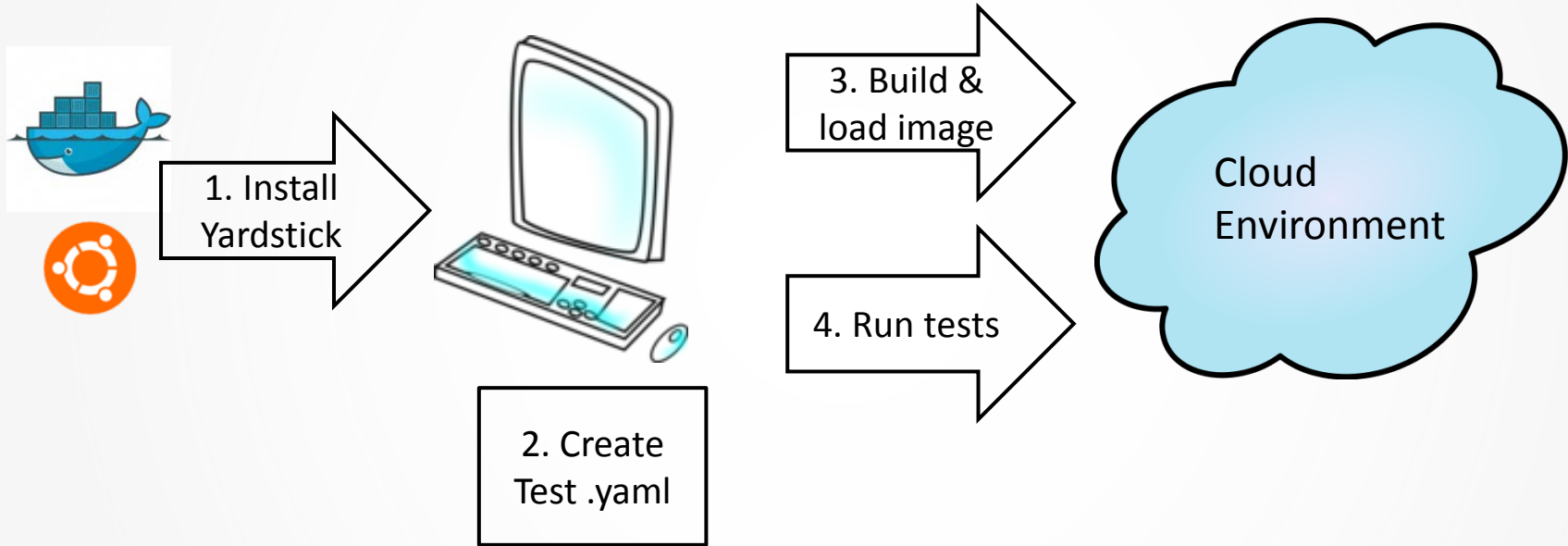


[OPNFV Yardstick Project Wiki](#)

[Yardstick test cases](#)

[Project status](#)

# Get started with Yardstick !



[Yardstick installation video](#)

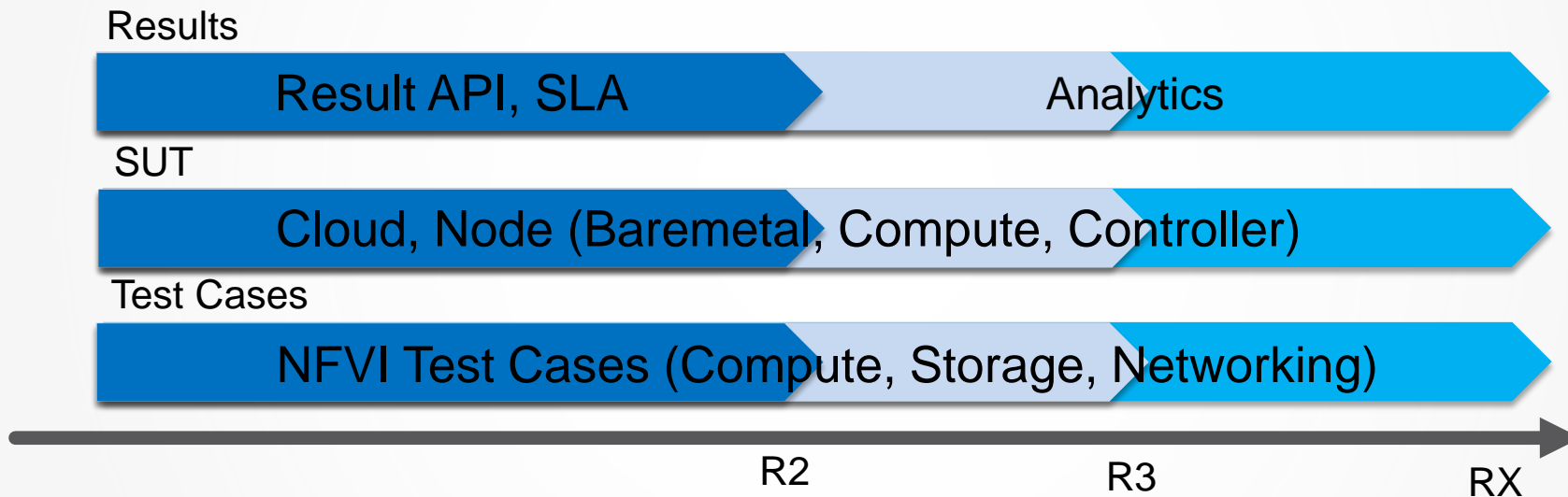
	Performance/Speed	Capacity/Scale	Reliability/Availability
Compute	<ul style="list-style-type: none"> <li>- Latency for random memory access</li> <li>- Latency for cache read/write operations</li> <li>- Processing speed (instructions per second)</li> <li>- Throughput for random memory access (bytes per second)</li> </ul>	<ul style="list-style-type: none"> <li>- Number of cores and threads</li> <li>- Available memory size</li> <li>- Cache size</li> <li>- Processor utilization (max, average, standard deviation)</li> <li>- Memory utilization (max, average, standard deviation)</li> <li>- Cache utilization (max, average, standard deviation)</li> </ul>	<ul style="list-style-type: none"> <li>- Processor availability (Error free processing time)</li> <li>- Memory availability (Error free memory time)</li> <li>- Processor mean-time-to-failure</li> <li>- Memory mean-time-to-failure</li> <li>- Number of processing faults per second</li> </ul>
Network	<ul style="list-style-type: none"> <li>- Throughput per NFVI node (frames/byte per second)</li> <li>- Throughput provided to a VM (frames/byte per second)</li> <li>- Latency per traffic flow</li> <li>- Latency between VMs</li> <li>- Latency between NFVI nodes</li> <li>- Packet delay variation (jitter) between VMs</li> <li>- Packet delay variation (jitter) between NFVI nodes</li> </ul>	<ul style="list-style-type: none"> <li>- Number of connections</li> <li>- Number of frames sent/received</li> <li>- Maximum throughput between VMs (frames/byte per second)</li> <li>- Maximum throughput between NFVI nodes (frames/byte per second)</li> <li>- Network utilization (max, average, standard deviation)</li> <li>- Number of traffic flows</li> </ul>	<ul style="list-style-type: none"> <li>- NIC availability (Error free connection time)</li> <li>- Link availability (Error free transmission time)</li> <li>- NIC mean-time-to-failure</li> <li>- Network timeout duration due to link failure</li> <li>- Frame loss rate</li> </ul>
Storage	<ul style="list-style-type: none"> <li>- Sequential read/write IOPS</li> <li>- Random read/write IOPS</li> <li>- Latency for storage read/write operations</li> <li>- Throughput for storage read/write operations</li> </ul>	<ul style="list-style-type: none"> <li>- Storage/Disk size</li> <li>- Capacity allocation (block-based, object-based)</li> <li>- Block size</li> <li>- Maximum sequential read/write IOPS</li> <li>- Maximum random read/write IOPS</li> <li>- Disk utilization (max, average, standard deviation)</li> </ul>	<ul style="list-style-type: none"> <li>- Disk availability (Error free disk access time)</li> <li>- Disk mean-time-to-failure</li> <li>- Number of failed storage read/write operations per second</li> </ul>

	Performance/Speed	Capacity/Scale	Reliability/Availability
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<b>Storage</b>	<ul style="list-style-type: none"> <li>- Sequential read/write IOPS</li> <li>- Random read/write IOPS</li> <li>- Latency for random read/write operations</li> <li>- Throughput for random read/write operations</li> </ul> <p><b>R2</b></p>	<ul style="list-style-type: none"> <li>- Storage/Disk size</li> <li>- Capacity allocation (block-based, object-based)</li> <li>- Block size</li> <li>- Maximum sequential IOPS</li> <li>- Maximum random IOPS</li> <li>- Disk utilization (max, average, standard deviation)</li> </ul> <p><b>R2</b></p>	<ul style="list-style-type: none"> <li>- Disk availability (Error free disk access time)</li> <li>- Disk failure rate</li> <li>- Number of disk read/write operations</li> </ul> <p><b>R2</b></p>

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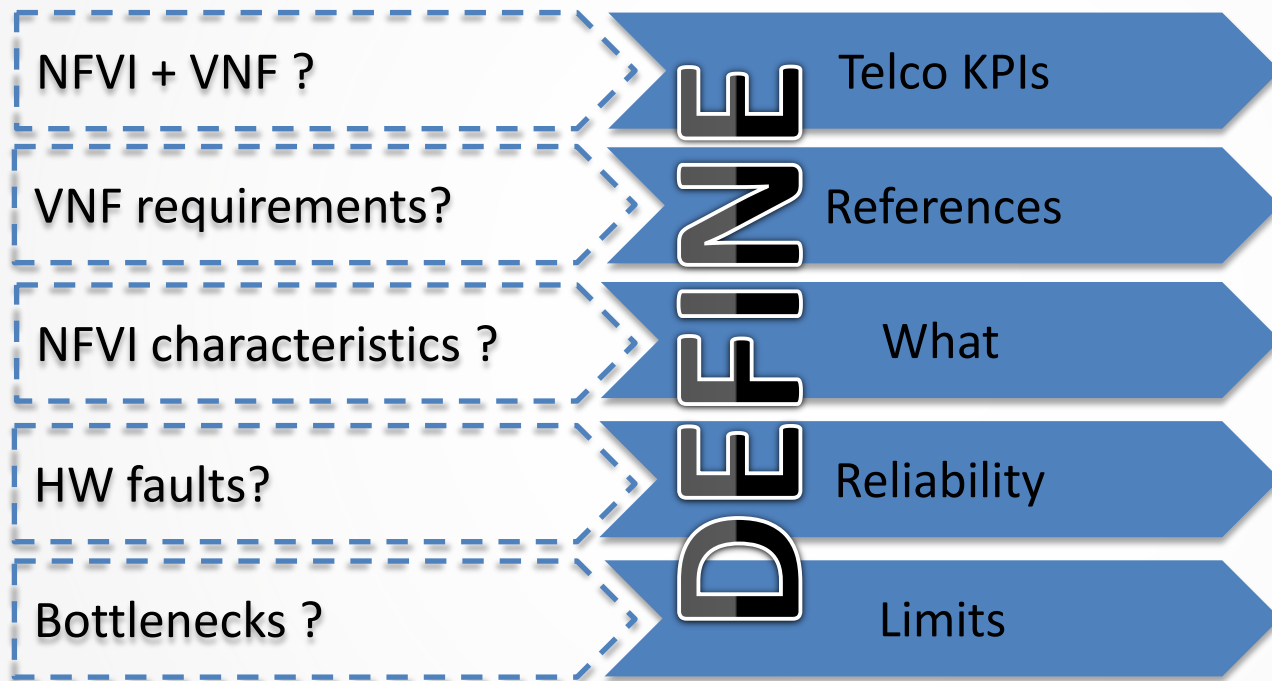
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# Yardstick Evolution - Framework Capabilities





# Challenges



Want to help ?

Join us!

[Yardstick](#)

Thank you