Proposed Reliability and Availability Standardization Effort

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Starting with the Slim Waist: Virtual Machine Level Standardization

- Everything on virtual machines (VM)
  - Various services, applications and functions with different reliabilities/availabilities
  - Hard to standardize, but need to *later on*
- VM on everything
  - Various hardware and software implementation with different reliabilities/availabilities
  - Hard and no need to standardize and no need to standardize

Target VM Reliability/Availability

- Each network service/application/function may require a given set of "*n*" VMs to achieve a desired reliability/availability (+ performance or security) during a given SLA contract period *T* time units
- Map the desired reliability/availability requirement of the service/application/function to that of the "n" VMs (e.g., 99.9%)

Manage VM Reliability/Availability

- Ways to monitor VMs, detect VM failures, recovery services from failed VMs, backup VMs provisioning/allocation
- Ways to measure (and even predict) the VM reliability/availability
- Ways to construct SLA (and reliability/availability) management framework

Advanced Topics/Measures

- Whole or partial system reliability/availability
  - Whole: a multi-component system such as a service function chain (SFC)
  - Partial: a subset of “connected” components such as first several functions in a SFC
- Multicast vs. unicast service reliability/availability
  - Coverage (percentage of all multicast branches)
  - Fairness (differentiation among the branches)

Concluding Remarks

- VM-level standardization is both meaningful and feasible as a good starting point
- Important topics include how to measure (and predict) VM reliability/availability, and how to deal with multi-component systems and multicast branches

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