Path computation requirements for cross-stratum optimization
<draft-tovar-cso-path-computation-requirements-00>

Alejandro Tovar, Luis M. Contreras
Telefónica I+D

Giada Landi, Nicola Ciulli
Nextworks

(Presented by: Óscar Gonzalez, Telefónica I+D)

Taipei, CSO meeting, November 2011
Networking challenges for cloud-alike services

• Cloud-alike services include heterogeneous range of applications and variable access and use of IT resources
  ✓ Stress of the network between user and datacenters, and among datacenters, small and big customers

• No (or little) interaction during service provisioning between networked applications and the underlying network
  ✓ Sub-optimal decisions on resource utilization for both the application and the network

• Application-aware provisioning of joint IT + connectivity services is required for optimal resources utilization
  ✓ Open, interoperable tools and mechanisms to support cross-layer interactions between the applications and the IT + network resources should be standardized

82nd IETF, Taipei
Cross-stratum path computation applicability

• The motivation is the automation of efficient provision of both computing resources and network connectivity tailored to application driven needs.

• Target scenarios
  • <draft-lee-cross-stratum-optimization-datacenter-00>
    ✓ Resource optimization (for both IT and network resources)
    ✓ Responsiveness to quickly changing demands
    ✓ Enhanced service resilience
    ✓ Quality of application experience (QoE) enhancement

• Additional scenarios
  ✓ Energy efficiency
  ✓ Inter-domain extension of the demanded services
Path computation requirements

- **R1** – To handle path computation requests selecting both the IT resources and the associated path for their network connectivity
- **R2** – To provide mechanisms for quoting IT resource and/or network connectivity services for further decision on final connectivity
- **R3** – To include IT-related parameters in protection and recovery mechanisms in order to provide resiliency in combined services
- **R4** – To implement mechanisms and procedures for advanced reservation of both IT and network resources to be connected on an scheduled basis
- **R5** – To incorporate re-planning capabilities to optimize the use of the IT and network resources, scaling up or down such resources following real needs
- **R6** – To handle energy-related objective functions to be able of minimizing the overall energy consumption for both IT and network resources
- **R7** – To be able to efficiently support the previous requirements in inter-AS scenarios