Autonomicity IS a property

Autonomic Communications Roadmap

WAC 2005 Panel

Spyros Denazis
Hitachi Sophia Antipolis Laboratory, Hitachi Europe Ltd

Dissecting Autonomicity

- Autonomic is by definition self-centric
- It revolves around an intelligent control loop
  - Collect - Decide - Enforce
- Collect = Monitoring
  - Building a picture about the network, i.e. self-aware
- Decide = Inference & Plan
  - Inference is the process whereby a problem is diagnosed
  - Plan is the process whereby a solution is selected
- Enforce = Deployment & Configuration
  - Functionality is added
  - Behaviours are changed
- Evolution in the making
  - A distributed, adaptive, global system that is continuously changing
What are the binding elements behind all this?

- Autonomicity gives rise to an abstract vision which is meaningless unless it is transformed into tangible universal **scenarios** that concretises the vision
  - Reduces confusion and avoids rediscovery-of-the-wheel syndrome
- The autonomic loop is lifeless without the existence of **semantic** “languages” exchanged between the different entities of the loop operating at different layers and different contexts
  - This amounts to a huge modelling task in many layers and contexts
  - Such semantic languages will collectively describe behaviours and create a sense of purpose
- **Components**, everywhere and of every type to enable network evolution
  - Components act as building blocks to compose more complex structures
  - Services and Network functionality are described as components
  - They need a “language” to bring them to life

---

Modular Router Architecture

... as a specific example to support components

**IETF ForCES**
ToDo List towards a Roadmap

Based on the premise that Autonomicity is rather a property manifesting itself in conjunction with the application domain, we need,

- Select characteristic application domains with representative scenario(s) that describe autonomicity in tangible ways.
- Select existing functionality that can be transformed into an autonomic one.
- Define/Select the abstractions - still elusive - necessary for representing information and enforcing decisions (low level programmability).
  - Such abstractions become an integral part of the new languages.
- Select/define technology suitable for supporting/enabling/hosting autonomicity.
  - Modular router is such an example.
- Transfer knowledge from other fields in order to build algorithms for making decisions.

- I consider this as Phase 1 that can be detailed.
- Phase 2 should basically aim at large scale trials and testbeds of the implemented scenarios.
- Phases 3 onwards remain unknown.

THANK YOU!