

Our vision



Vrije
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University of Perugia

- o Internet victim of its own success: ossification
 - o Technological innovation meets natural resistance
 - o e.g. no deployment of IPv6, no inter-domain multicast, etc.
- o No more dumb (or pretending to be dumb) network, please.
- o We need in-network services
- o We need an easy way to dynamically install services to routers and end systems alike

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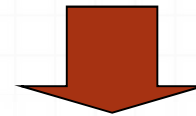


Future Internet architecture?

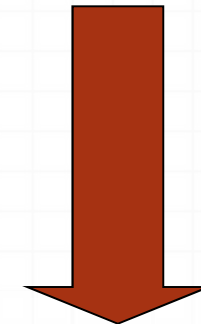
- o Long-term constant: service model
 - o equivalent of railroad track & road width
- o Identify core functions we need
 - o routing
 - o congestion control
 - o name lookup
 - o path state establishment
 - o ...
- o Learn from history
 - o why didn't these get done "right"?



1 interface
TB disk
1-32 multi-core processors



10+ interfaces
0 GB disk
1 low-end processor



.. can now be regarded as one



Our Starting Point: NetServ

<http://www.cs.columbia.edu/irt/project/netserv/>

- In-network service container
- Java-programmable, signal-driven router
- “GENI Lite” – deploy modules, not VMs
- Active networking 2.0 – why can it work now?
 - Discrete approach: signaling driven, not packet driven
 - Advanced virtualization and isolation technology
 - Advanced hardware & software performance

The big question: security We are currently working on it!

- Resource control and isolation, Module authentication
- IP address ownership - Anonymous modules

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