Active Networks: Tradeoffs for Network Management

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How can A.N. help?

- More rapid deployment of solutions
- Proprietary solutions + IP as universal link layer solution
- Adaptive Solutions - Wireless + FEC
- Intelligent Layer Violations
- Intrusion Detection and Active Firewalls
Active Router Control: Activating the Internet

IP Router/Forwarders co-located with Active Elements:

- Forwarding Tables
- Routing Policies and Decisions (and New Services)

LAN
Measurement, Control and Policy

Policies

Route Updates

Router A

Router B

Measure

Measure
Risks and Challenges

- Tradeoff between security, performance, flexibility and usability
- New features => new security risks
- Composability + Feature Interaction
- Administrative Domains
- Standards versus flexibility
RCANE Vertical Architecture:

Application

Execution Environment A

Node Operating System (e.g., Nemesis, Scout, Linux, NT?)

“A” share of machine

Application

Execution Environment B

“B” share of machine
The Basic Opportunity: Internet routing does not utilize the available network topology unless manually configured:

Goal: Resource Discovery and Exploitation!