

Adaptation and Replication

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Latency

Latency

- Replication
- Adaptation

Replication

- Deliberate redundancy converts extra capacity to latency reduction

Replication

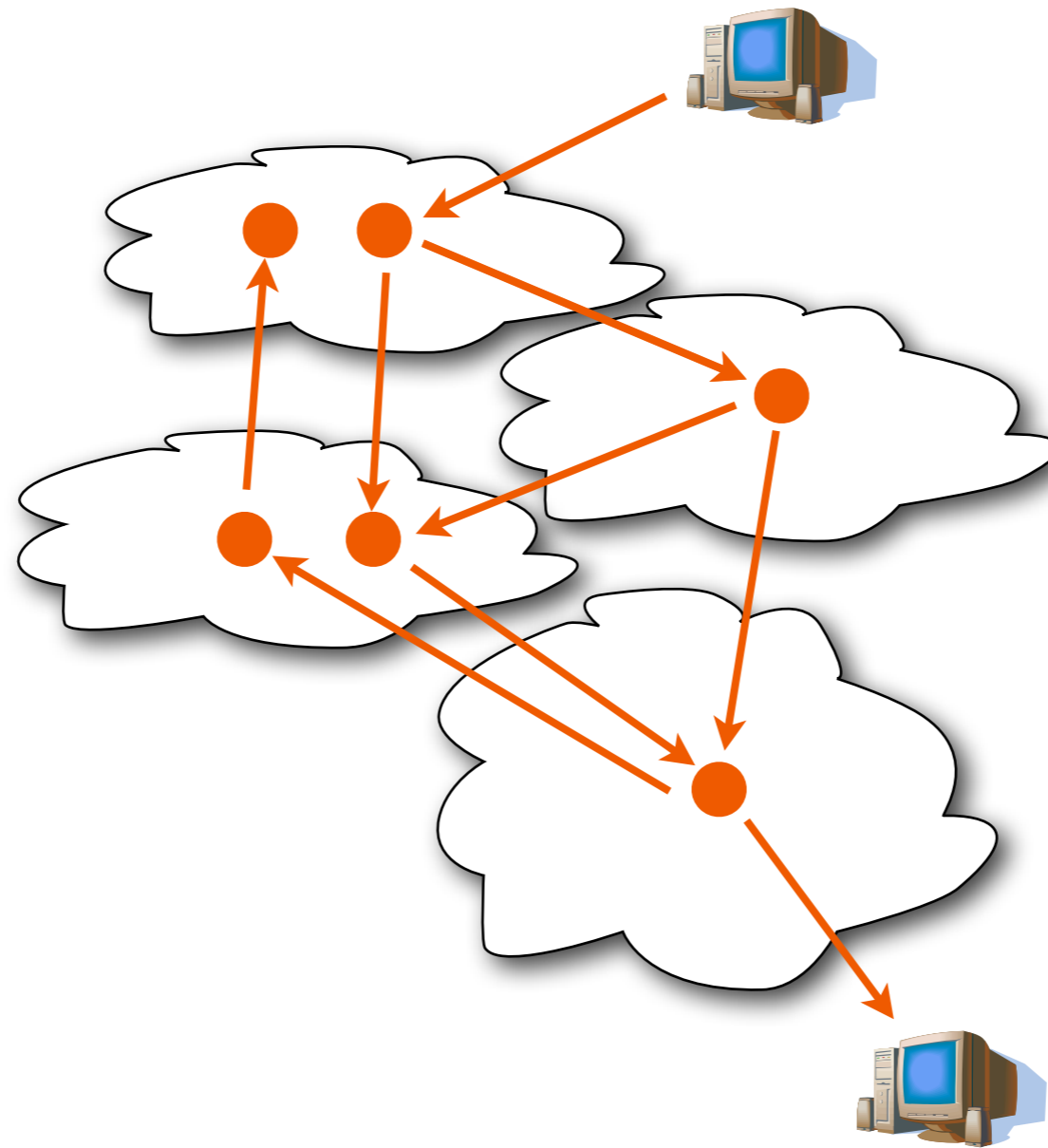
- Some applications:

Application	Experiments on
TCP Handshake	PlanetLab
DNS	PlanetLab
Overlay multipath	PlanetLab
Memcached	ProtoGENI
QoS	PlanetLab (?)

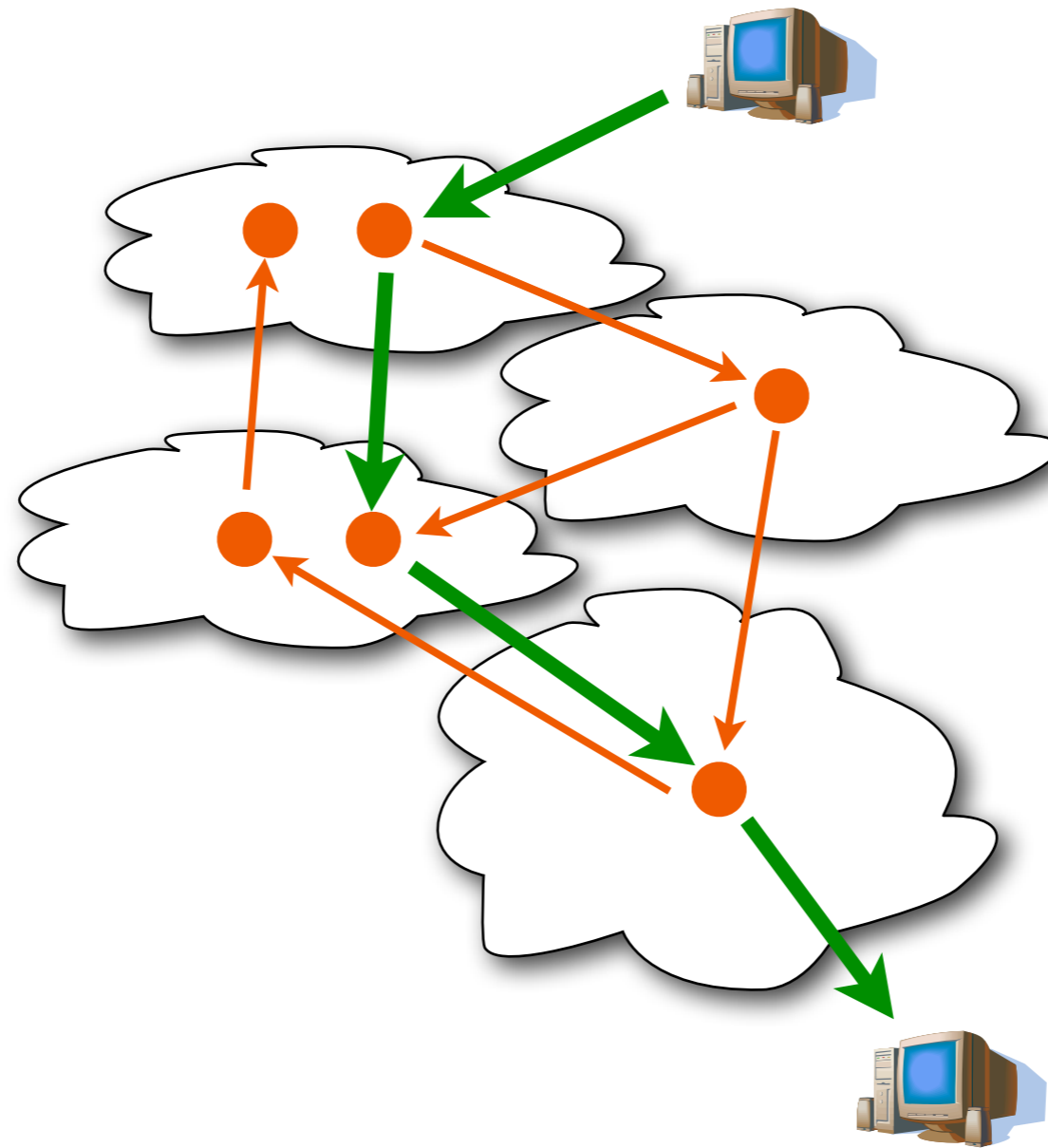
Replication

- Not hard to do
- Need to just duplicate packets
 - Can be done at end hosts

Adaptation



Adaptation



Adaptation

- Goal: design mechanism to adaptively pick best path
- Metric = latency

Adaptation

- Experiment requirements:
 - Efficient multipath source routing
 - Realistic background traffic

Adaptation

- First implementation: PlanetLab

X Efficient multipath source routing

✓ Realistic background traffic

Adaptation

- Second implementation: OpenFlow
- Efficient multipath source routing
- Realistic background traffic

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- Solution:
 - MPLS?

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- Solution:
 - MPLS?
 - Software router?

Adaptation

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Adaptation

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- Problem: cross-traffic

Tooling

Summary

1. Novel Internet architectures

- OpenFlow 1.x?

2. Background traffic

Thank you!