

PlanetLab Introduction

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Planetlab: What is it?



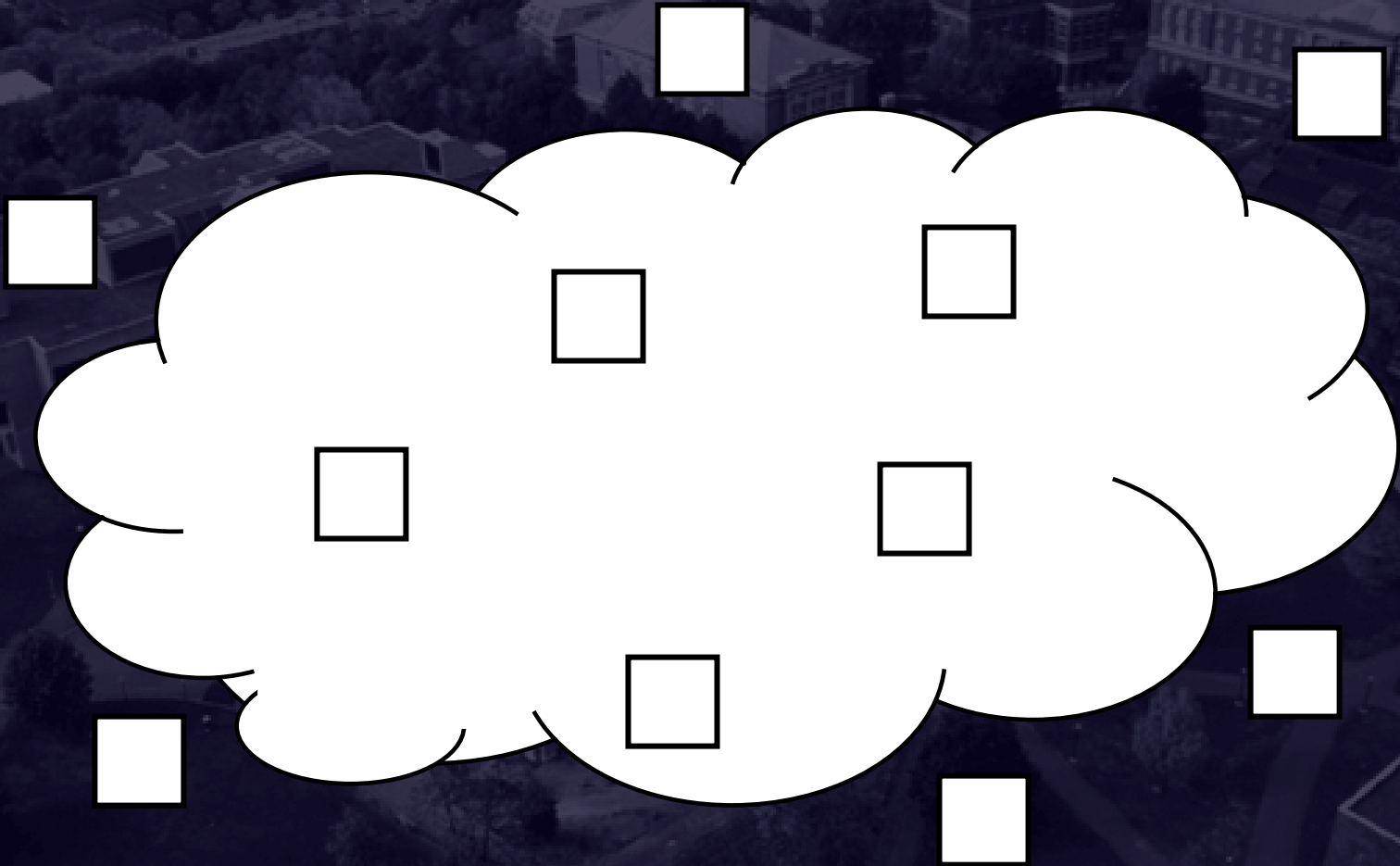
- ❑ 670 machines spanning 325 sites and 35 countries
 - ❑ nodes within a LAN-hop of > 3M users
- ❑ Supports *distributed virtualization*
 - ❑ each of 600+ network services running in their own *slice*
 - ❑ RPI is part of it

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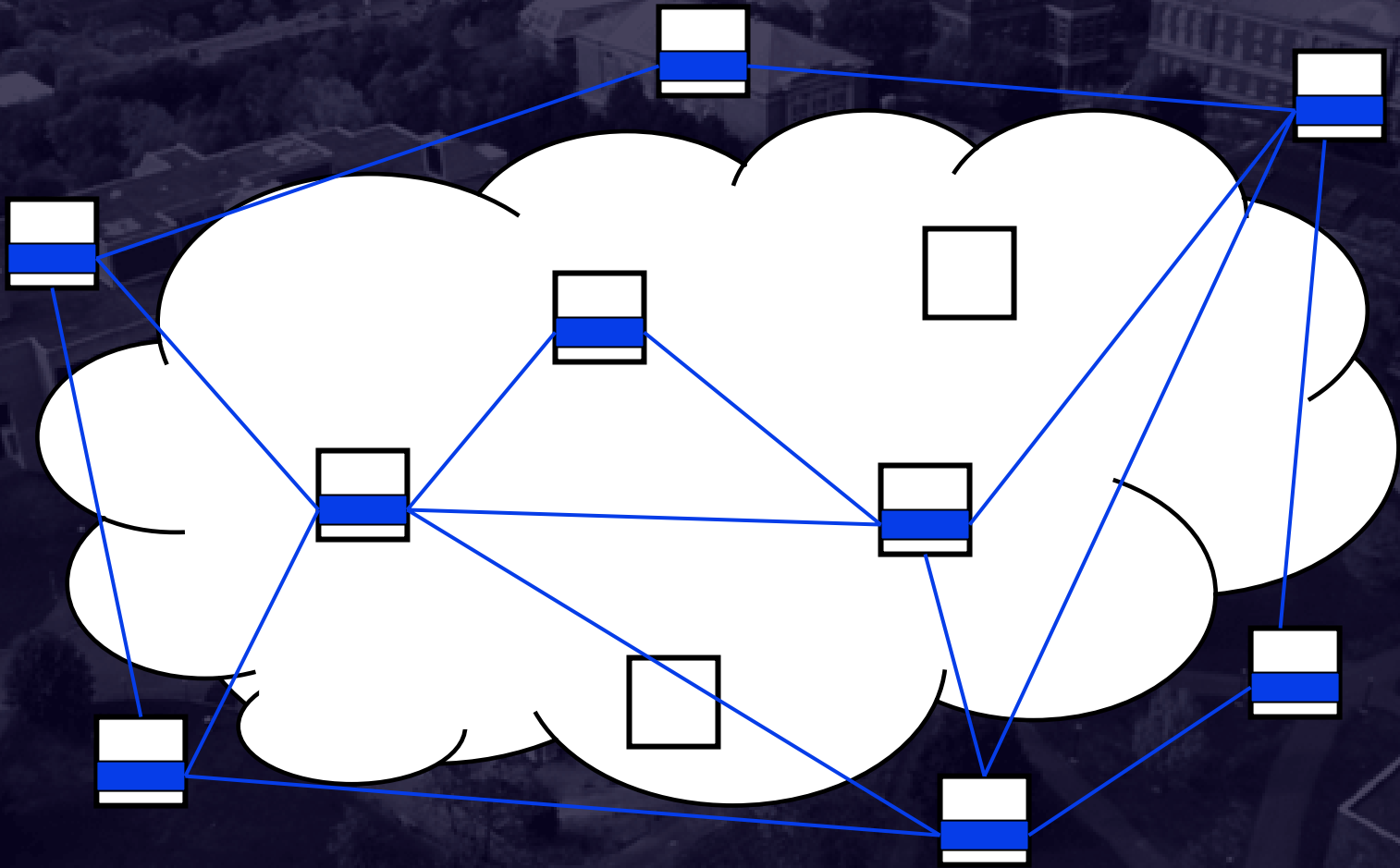
Motivation

- ❑ A new class of services & applications is emerging that spread over a sizable fraction of the web
 - ❑ CDNs as the first examples
 - ❑ Peer-to-peer, ...
- ❑ Architectural components are beginning to emerge
 - ❑ Distributable hash tables to provide scalable translation
 - ❑ Distributed storage, caching, instrumentation, mapping, ...
- ❑ The next internet will be created as an overlay on the current one
 - ❑ as did the last one
 - ❑ it will be defined by its services, not its transport
 - ❑ translation, storage, caching, event notification, management
- ❑ **There is NO vehicle to try out the next n great ideas in this area**

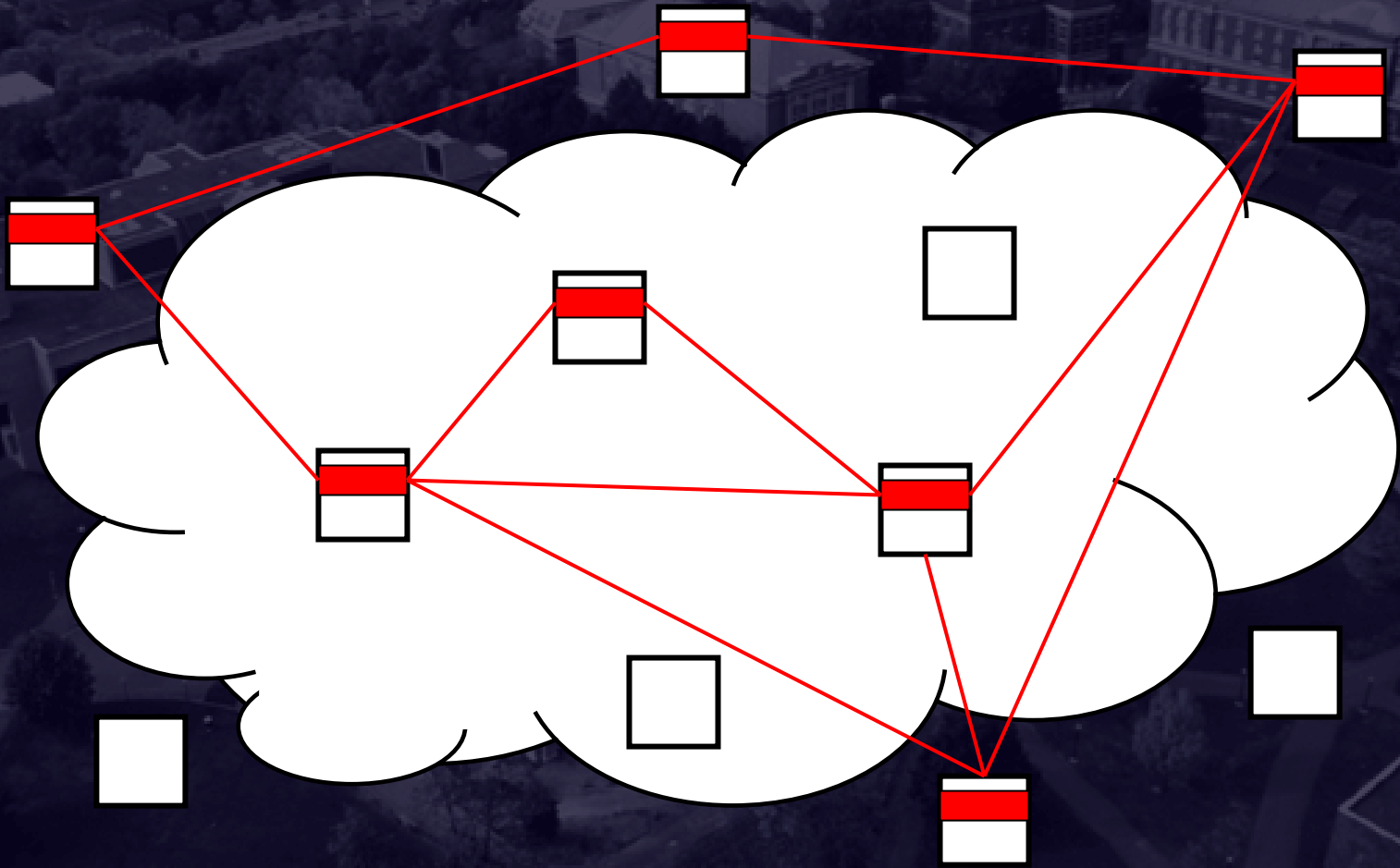
Slices



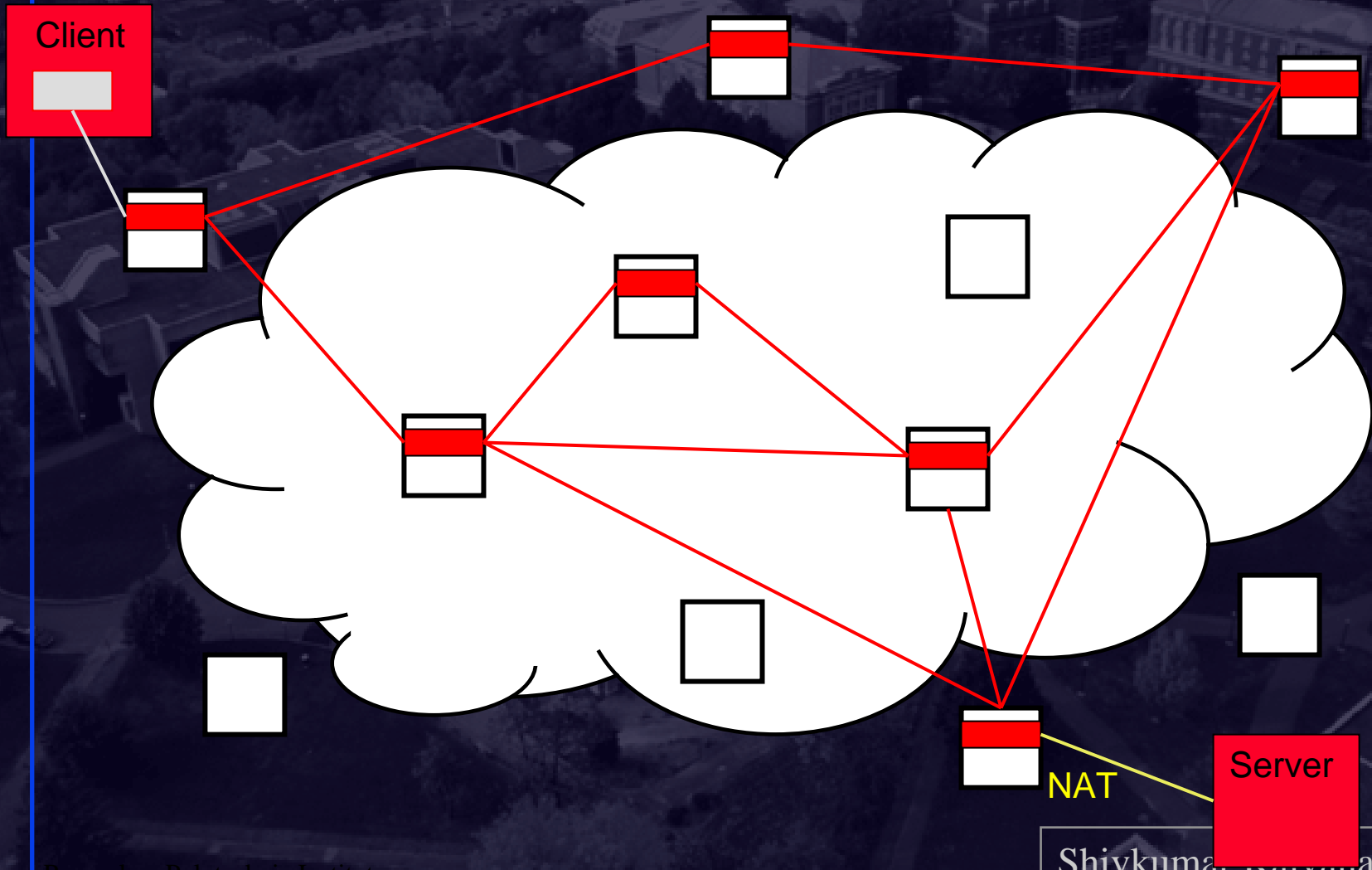
Slices



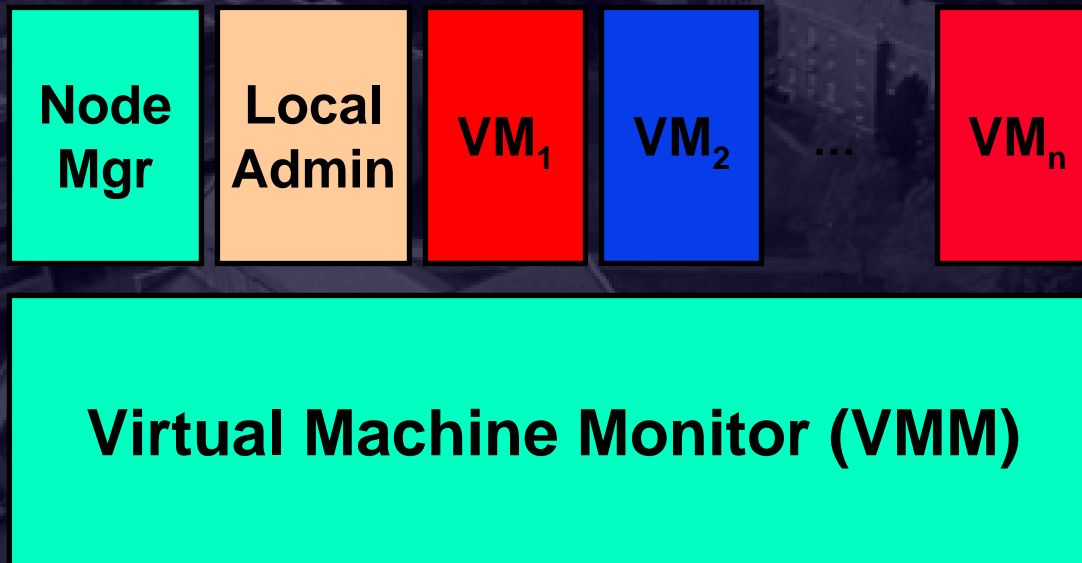
Slices



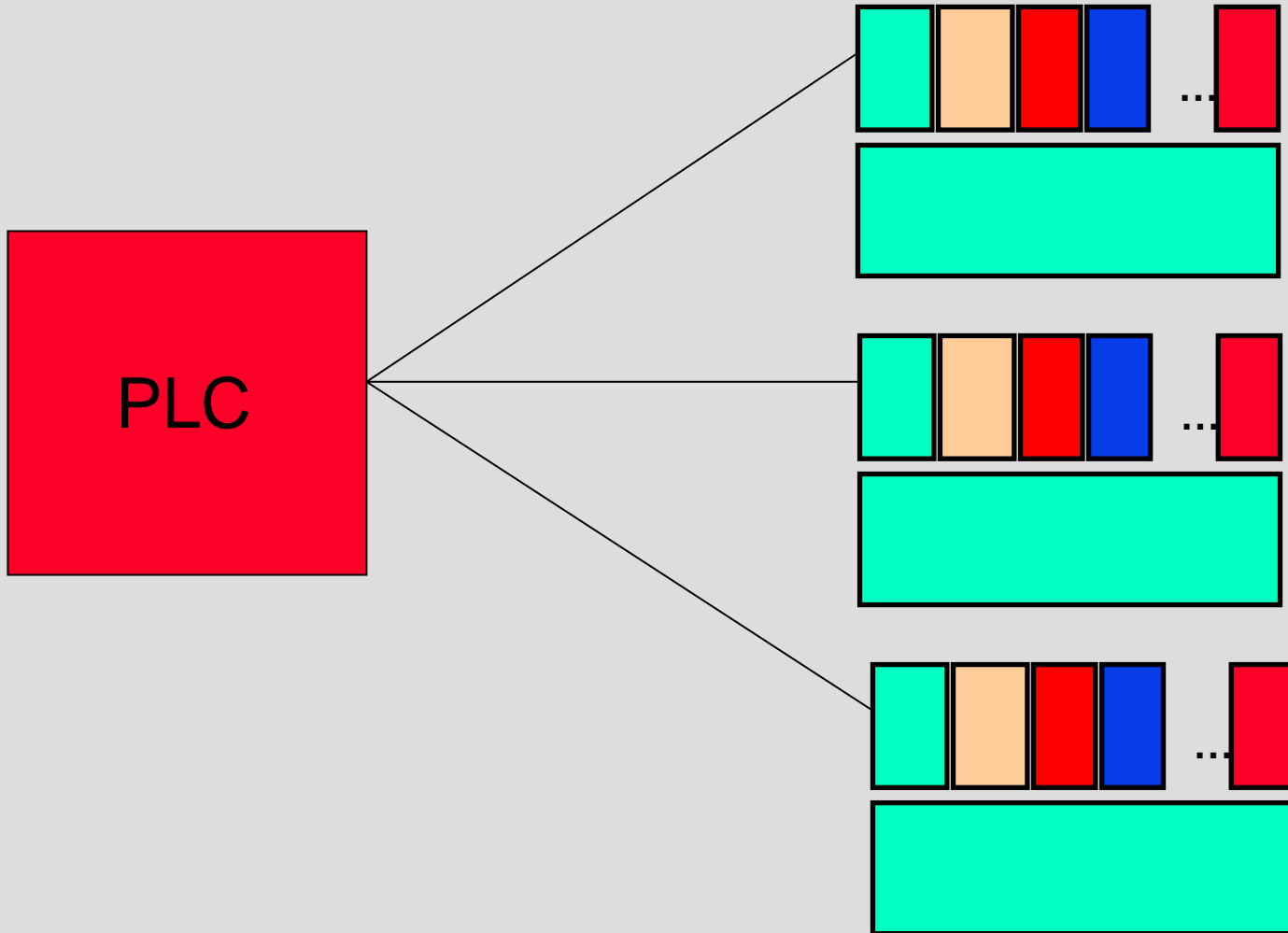
User Opt-in



Per-Node View



Global View



Long-Running Services

- ❑ Content Distribution
 - ❑ CoDeeN: Princeton
 - ❑ Coral: NYU
 - ❑ Cobweb: Cornell
- ❑ Storage & Large File Transfer
 - ❑ LOCI: Tennessee
 - ❑ CoBlitz: Princeton
- ❑ Anomaly Detection & Fault Diagnosis
 - ❑ PIER: Berkeley, Intel
 - ❑ PlanetSeer: Princeton
- ❑ DHT
 - ❑ Bamboo (OpenDHT): Berkeley, Intel
 - ❑ Chord (DHash): MIT

Services (cont)

- ❑ Routing / Mobile Access
 - ❑ i3: Berkeley
 - ❑ DHARMA: UIUC
 - ❑ VINI: Princeton
- ❑ DNS
 - ❑ CoDNS: Princeton
 - ❑ CoDoNs: Cornell
- ❑ Multicast
 - ❑ End System Multicast: CMU
 - ❑ Tmesh: Michigan
- ❑ Anycast / Location Service
 - ❑ Meridian: Cornell
 - ❑ Oasis: NYU

Services (cont)

- ❑ Internet Measurement
 - ❑ ScriptRoute: Washington, Maryland
- ❑ Pub-Sub
 - ❑ Corona: Cornell
- ❑ Email
 - ❑ ePost: Rice
- ❑ Management Services
 - ❑ Stork (environment service): Arizona
 - ❑ Emulab (provisioning service): Utah
 - ❑ Sirius (brokerage service): Georgia
 - ❑ CoMon (monitoring service): Princeton
 - ❑ PlanetFlow (auditing service): Princeton
 - ❑ SWORD (discovery service): Berkeley, UCSD

Usage Stats

- ❑ Slices: 600+
- ❑ Users: 2500+
- ❑ Bytes-per-day: 3 - 4 TB
- ❑ IP-flows-per-day: 190M
- ❑ Unique IP-addr-per-day: 1M

For more info....

- PlanetLab website: <http://www.planet-lab.org/>