





PlanetLab-Based Control Framework for GENI

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PLC+Geniwrapper Parts List

-  Slice Interface
 - create & control slices/slivers
 -  Registry Interface
 - bind & resolve naming info
 -  Management Interface
 - query & reboot components
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-  * Researcher Interface
 - slice interface & so much more

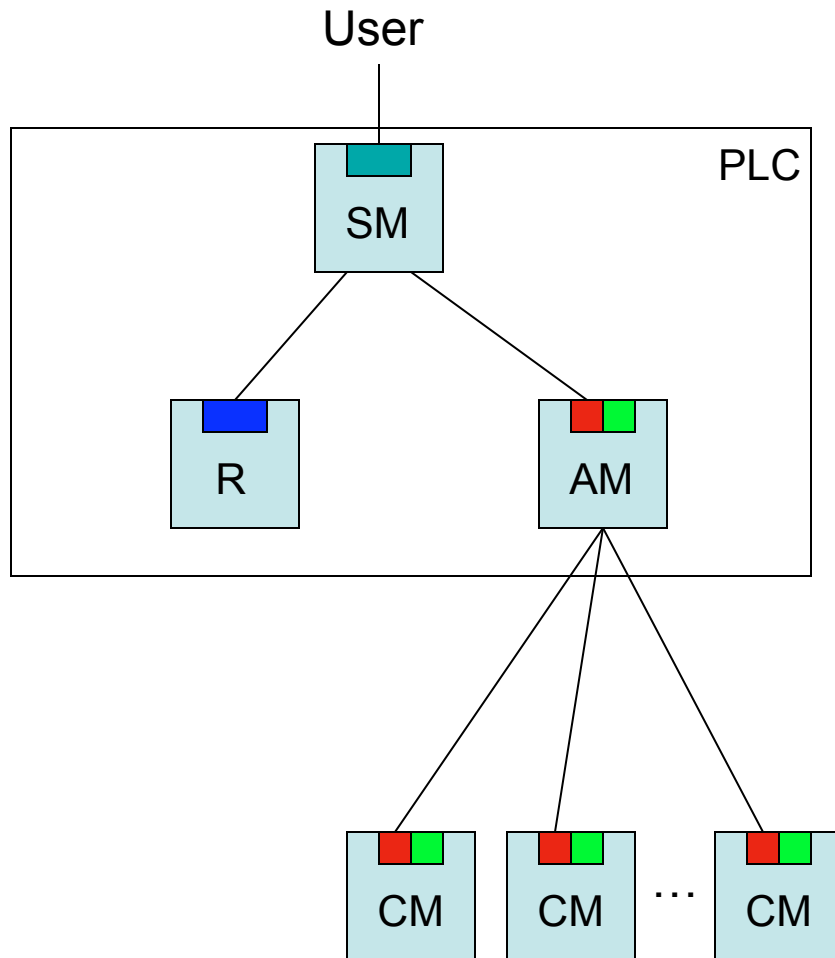
- Registry (R)
 - users, slices, components, authorities
 - exports registry interface

- Slice Manager (SM)
 - creates & controls slices
 - exports researcher interface

- Aggregate Manager (AM)
 - responsible for a set of components
 - exports slice & mgmt interfaces

- Component Manager (CM)
 - controls a component
 - exports slice & mgmt interfaces

Vanilla PlanetLab



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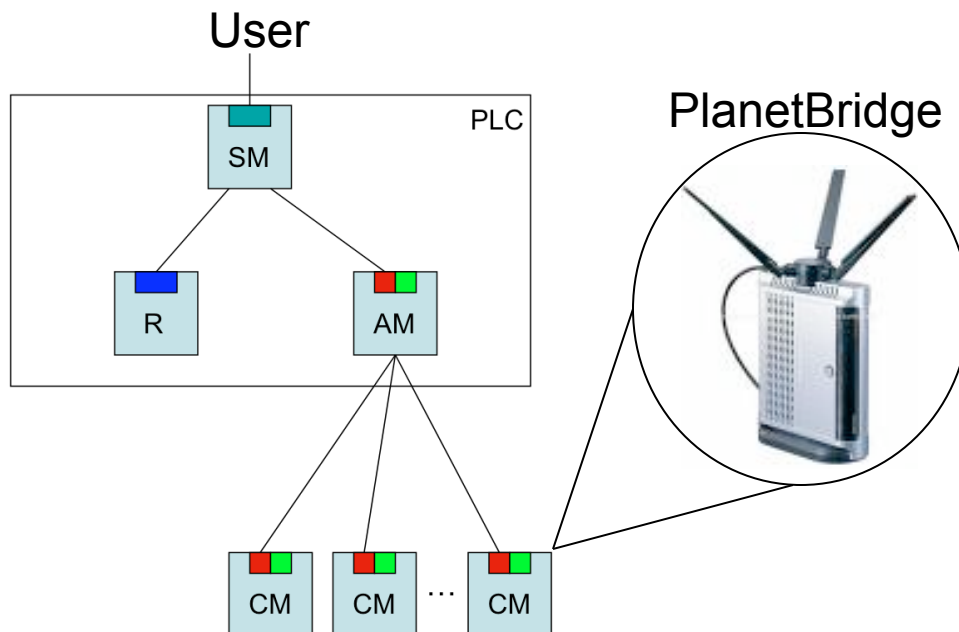
Aggregate Manager (AM)

- responsible for a set of components
- exports slice & mgmt interfaces

Component Manager (CM)

- controls a component
- exports slice & mgmt interfaces

Wireless & Disconnected Ops



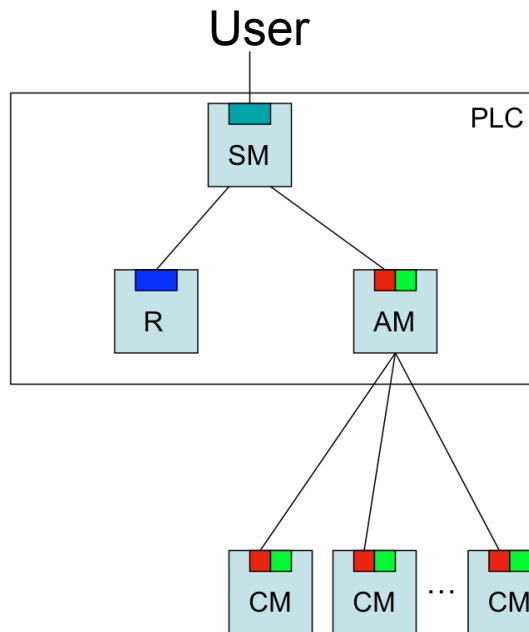
Managed Wifi + LAN Services

- At our own homes
- Schools (Brazil, ...)
- Villages (Ghana, ...)

Component Platform Software

- Disconnected Ops Support
- Network namespaces (Trellis/VINI)

Multiple Aggregates



PlanetBridge

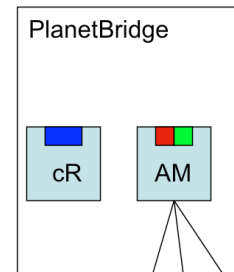


Managed Wifi + LAN Services

- At our own homes
- Neighborhood Network
- Schools (Brazil, ...)
- Villages (Ghana, ...)
- Neighborhood Network

Component Platform Software

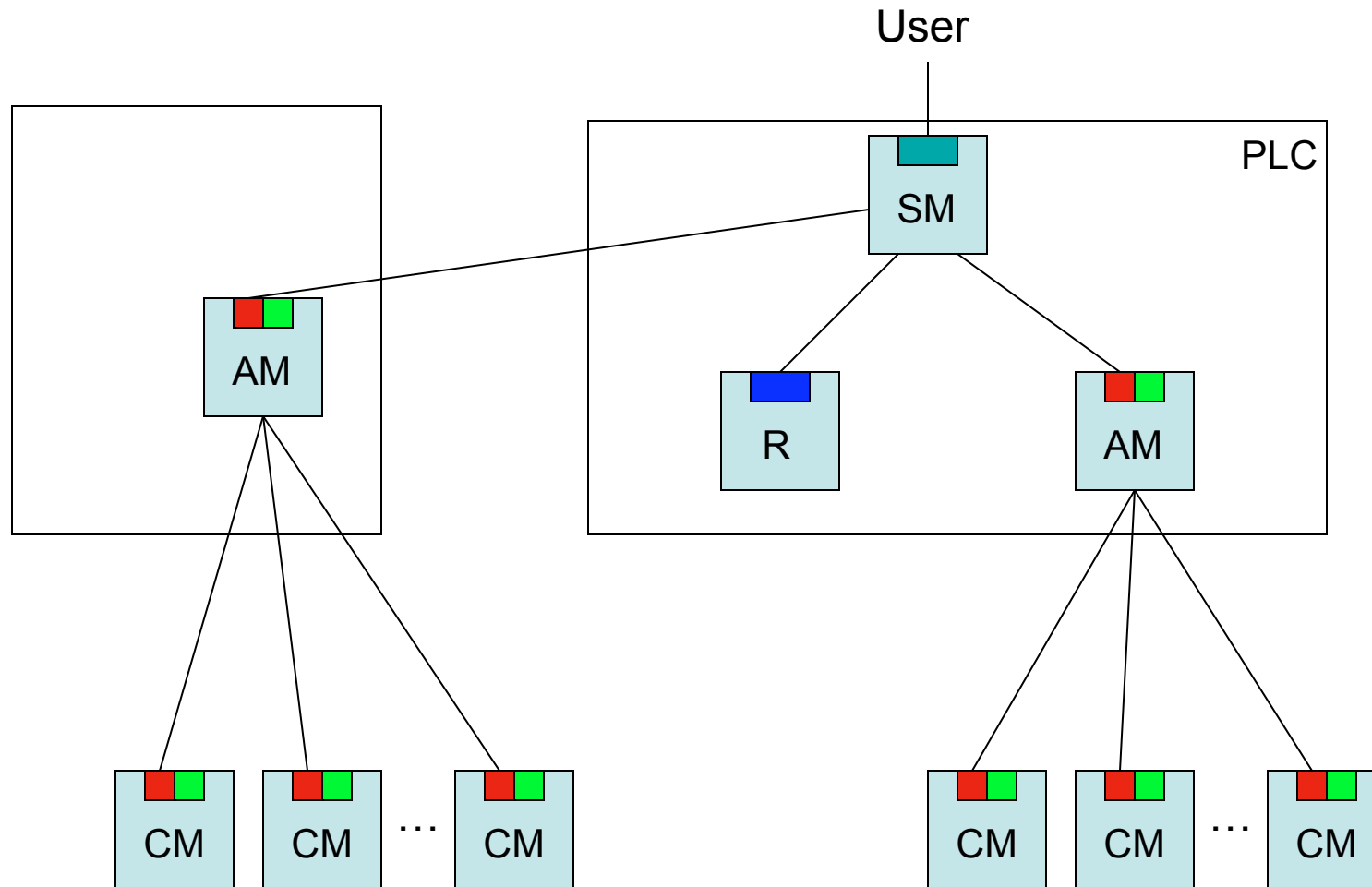
- Disconnected Ops Support
- Network namespaces (Trellis/VINI)



Litte CM

- Configuration info.

Multiple Aggregates



Multiple Aggregate Deployments

- PlanetBridge
 - Managed wireless gateway
 - Soon to be deployed to “Volunteers”
 - ▶ Princeton, Brazil, Ghana, India, ...
- VINI Backbone
 - Layer-2+ test bed for native Layer-3 research
 - deployed on Internet2 & NLR
- Measurement-Lab (M-Lab)
 - ~40 nodes deployed in ~10 PoPs

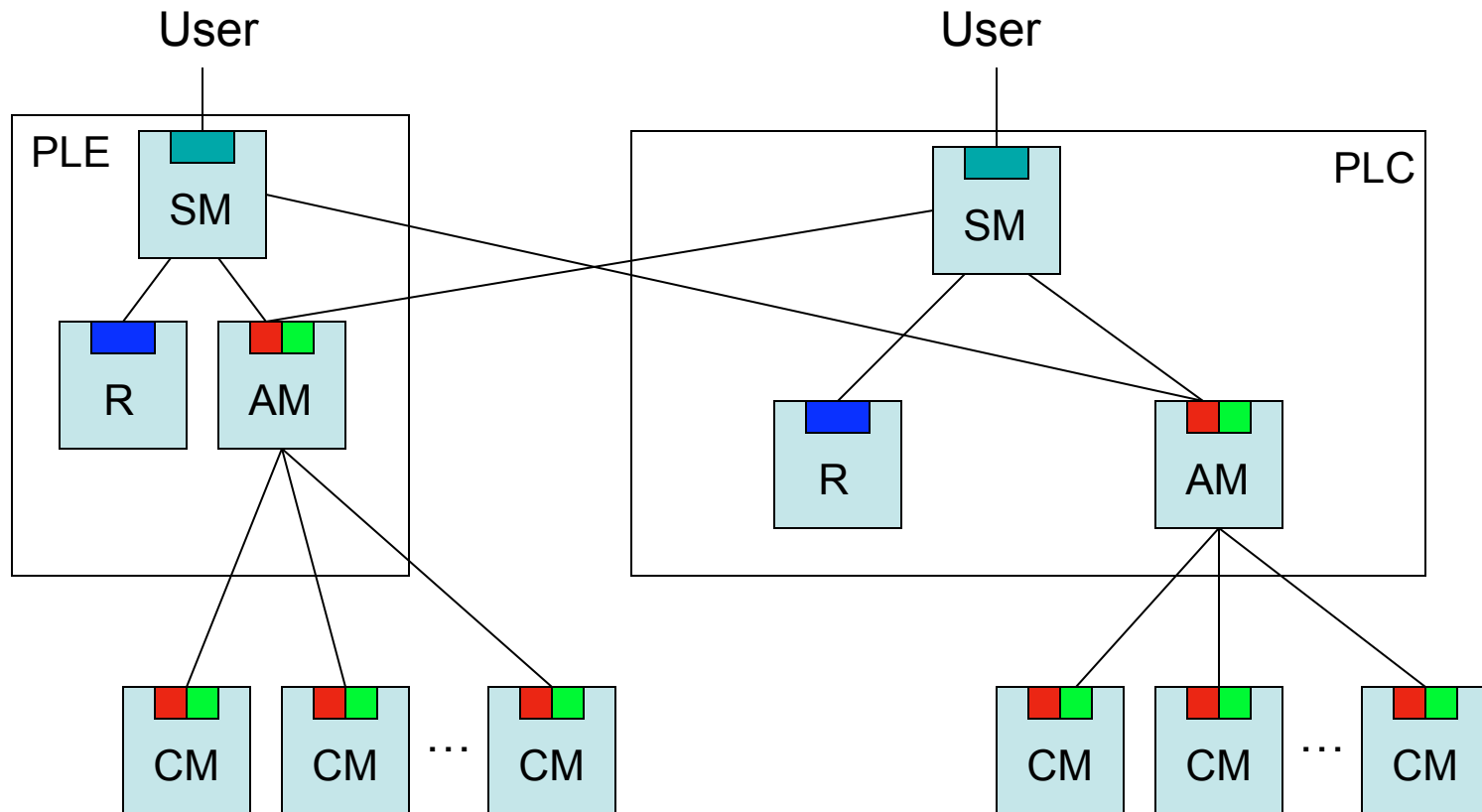
PL Ecosystem: Components

- Support for Wireless
 - OneLab (INRIA, UPMC, ...)
 - PlanetBridge

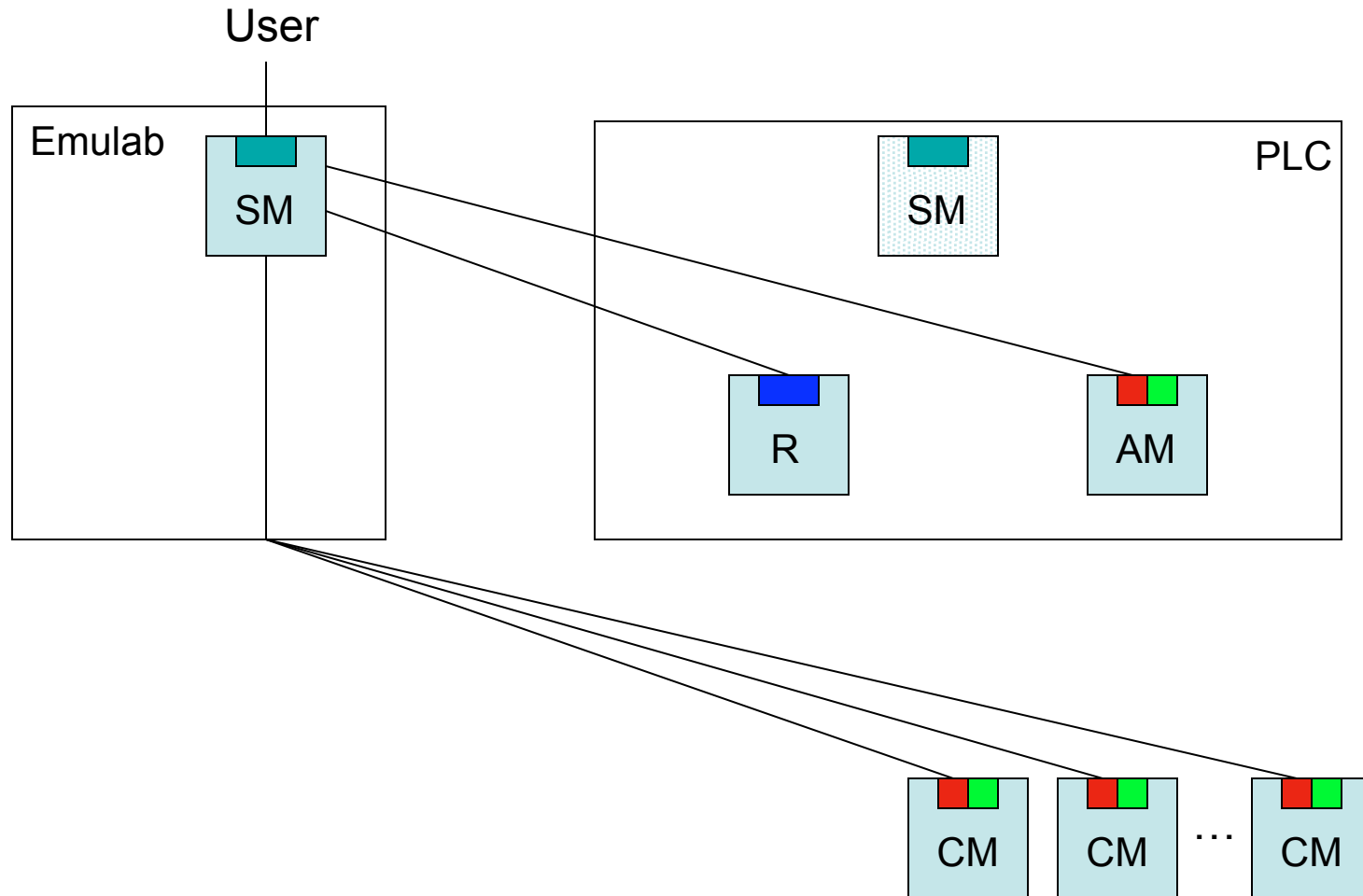
- Support for High-Performance
 - NetFPGA (Stanford)
 - Network Processors (WashU)
 - OpenFlow Enterprise (Stanford)
 - Cisco Service Node (Cisco)
 - Scaleable Clusters (HP)

Ecosystem: Federation Partners

- OneLab (EU), CoreLab (JP), G-Labs (Germany)
- South Korea, Brazil, ...



Ecosystem: Alternative SM



Ecosystem: Telco Aggregates

- Federated Aggregate
 - Polish Telecom R&D with PLE/PLC
- Standalone Aggregates
 - AT&T R&D (internal & external)
 - Polish Telecom
 - ▶ Hosts commercial, unified CDN from CoBlitz.com
 - ... more to come ...

About the Code

svn.planet-lab.org

- MyPLC distribution (set up & extend a “private planetlab”)
- developer’s mailing list
- browse source code : **geniwrapper**
 - /plc : plc wrapper (extends PLC)
 - registry & slice interfaces
 - /component : node wrapper (extends NM)
 - slice & mgmt interfaces
 - /util : secure remote invocation machinery
 - /cmdline : client tools
- module documentation
 - interface specs
 - evolving data model for rspecs (EMF-based)