ProtoGENI

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3rd GEC

HP, Palo Alto, California

October 28, 2008

4 Things

4 Things

- Control Framework

4 Things

- Control Framework
- Nationwide Backbone

4 Things

- Control Framework
- Nationwide Backbone
- Diverse Components

4 Things

- Control Framework
- Nationwide Backbone
- Diverse Components
- Integrated Projects

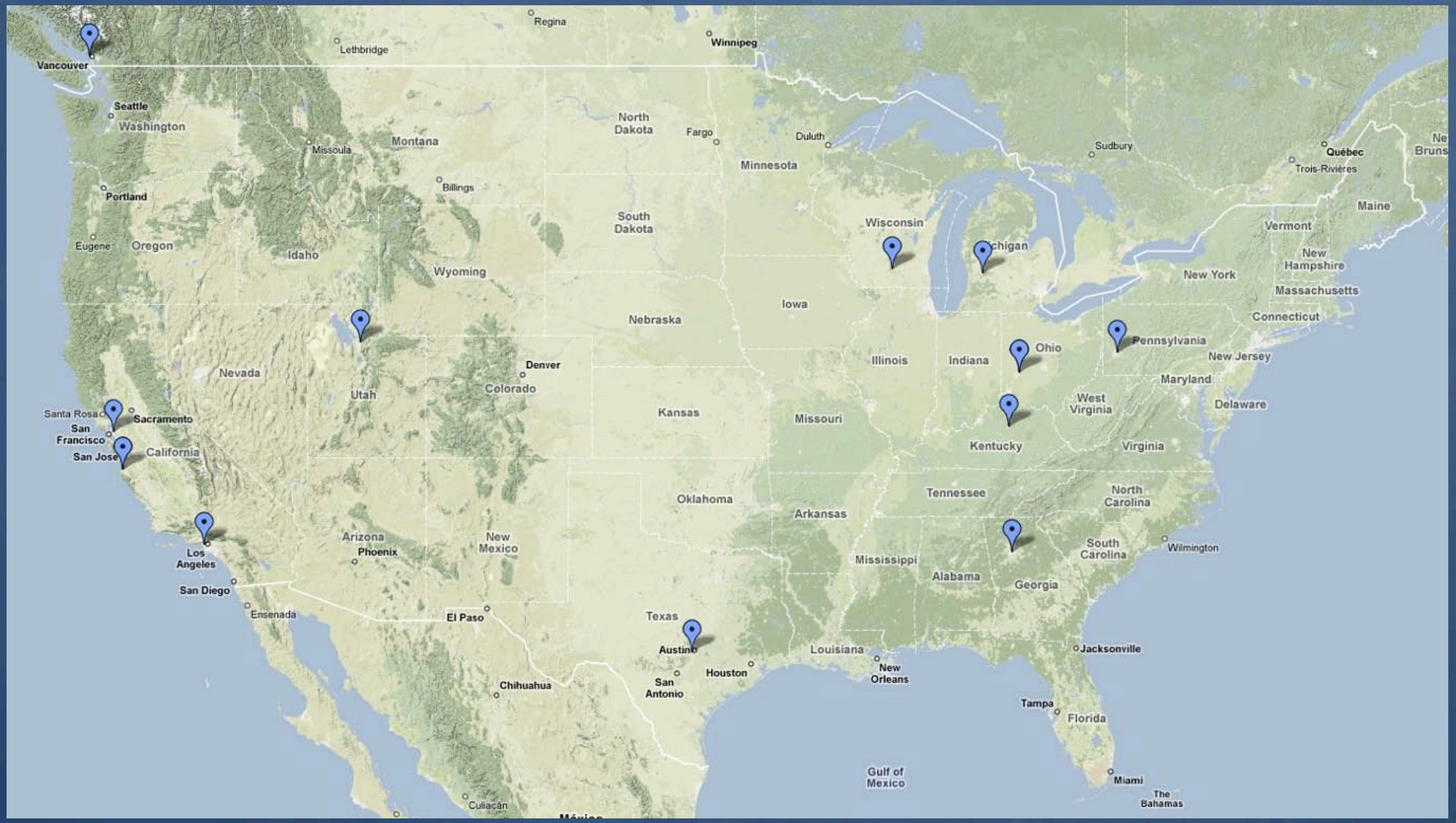
Control Framework

Control Framework Pieces

- Clearinghouse
- Security Model
- Aggregate Component Manager(s)
- Operations & Management
- Data Structures and Wire Formats

Building on…

- Emulab:
  - Component / link management
  - Resource allocation
  - User management
- PlanetLab and VINI: PC slicing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Portland
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New Hampshire
Massachusetts
Iowa
Nebraska
Connecticut
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Colorado
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Maryland
West Virginia
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San Jose
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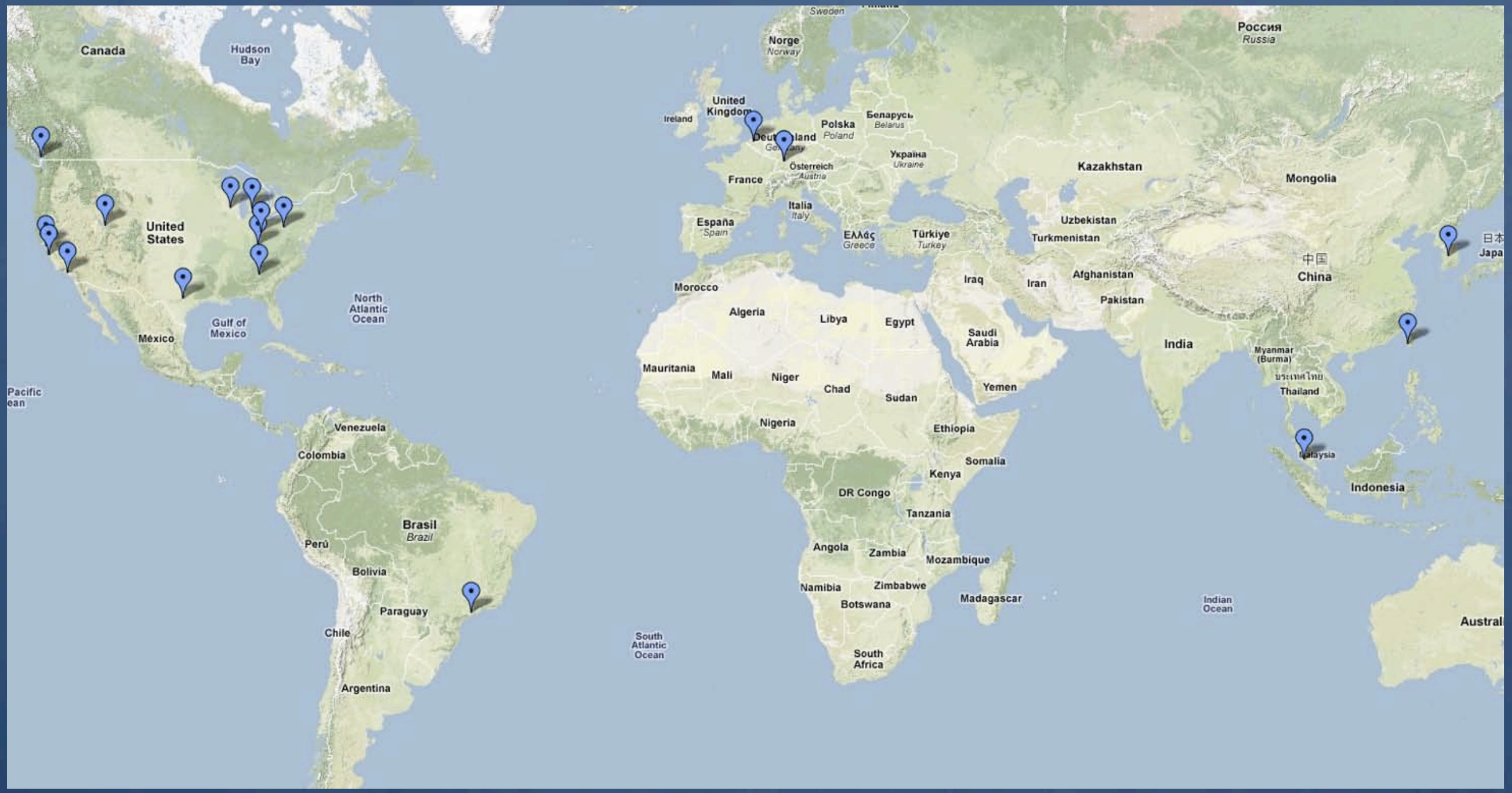
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Uzbekistan
Turkmenistan
Iraq
Iran
Afghanistan
Pakistan
Saudi Arabia
Yemen
India
中国
China
日本
Japa
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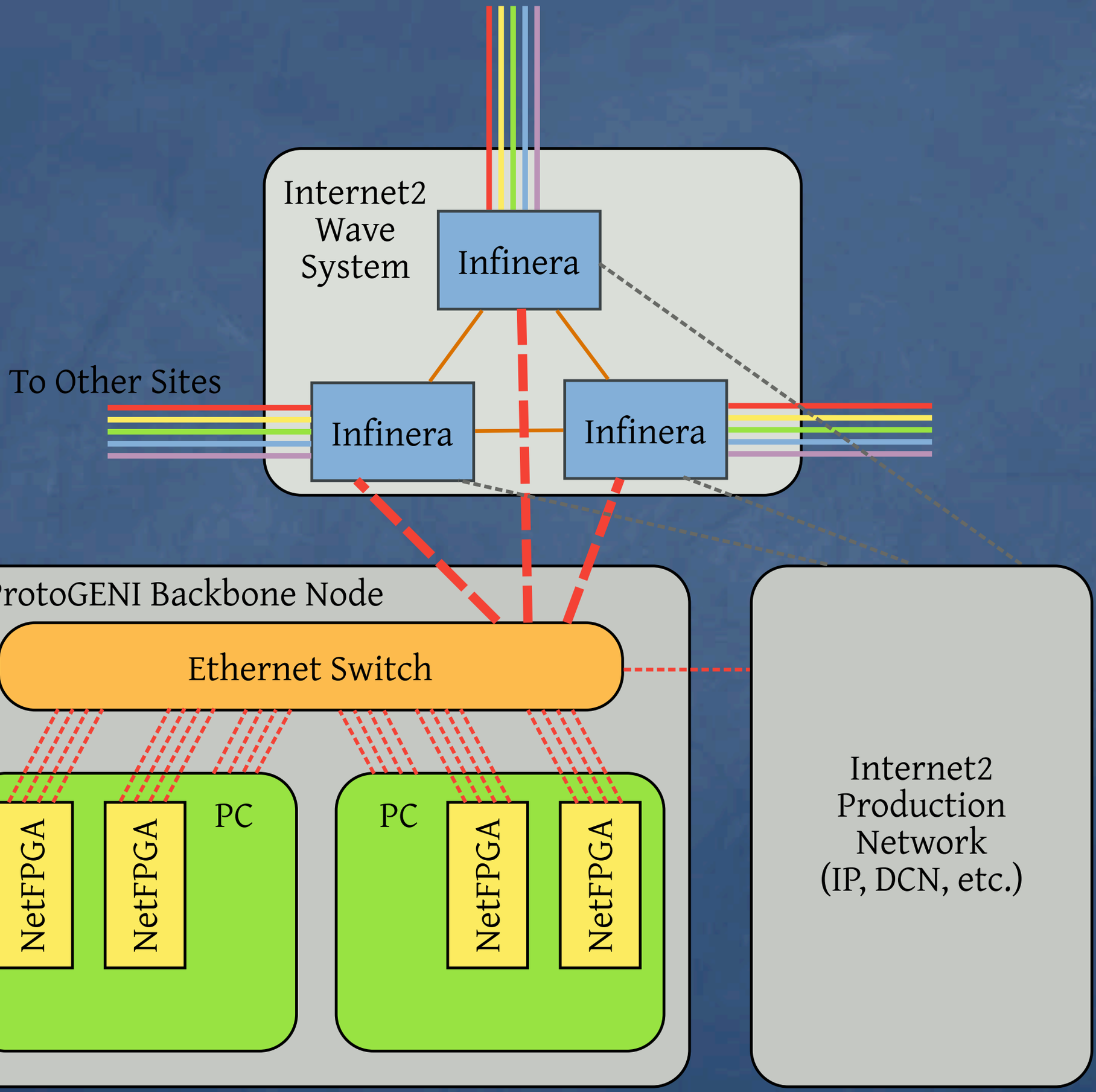
ประเทศไทย
Thailand
Malaysia
Indonesia
Indian Ocean
Austral

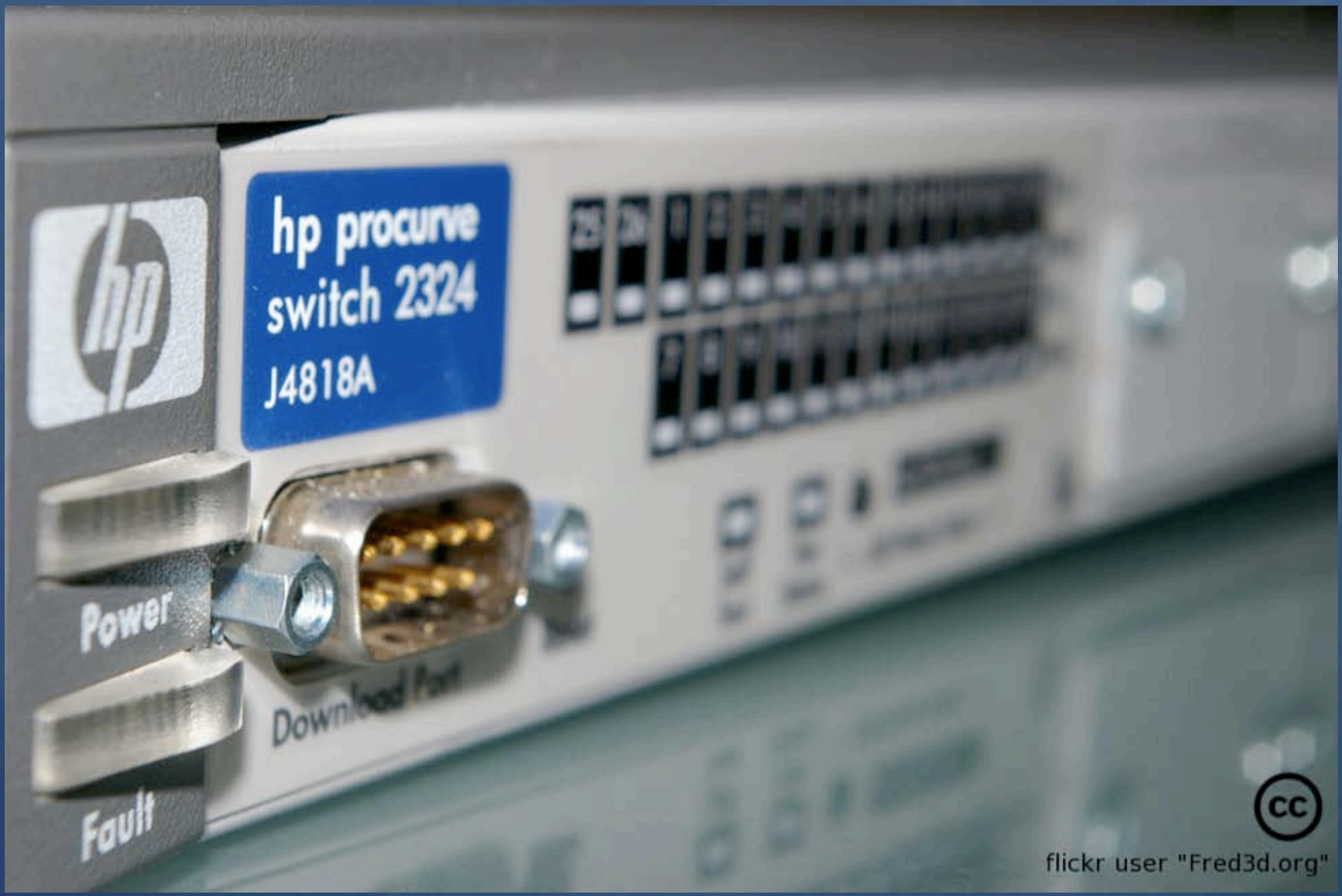
Backbone

INTERNET2®

INTERNET2®


Internet2
Wave
System
Infinera
To Other Sites
Infinera
Infinera
ProtoGENI Backbone Node
Ethernet Switch
PC
NetFPGA
NetFPGA
PC
NetFPGA
NetFPGA
Internet2
Production
Network
(IP, DCN, etc.)

Components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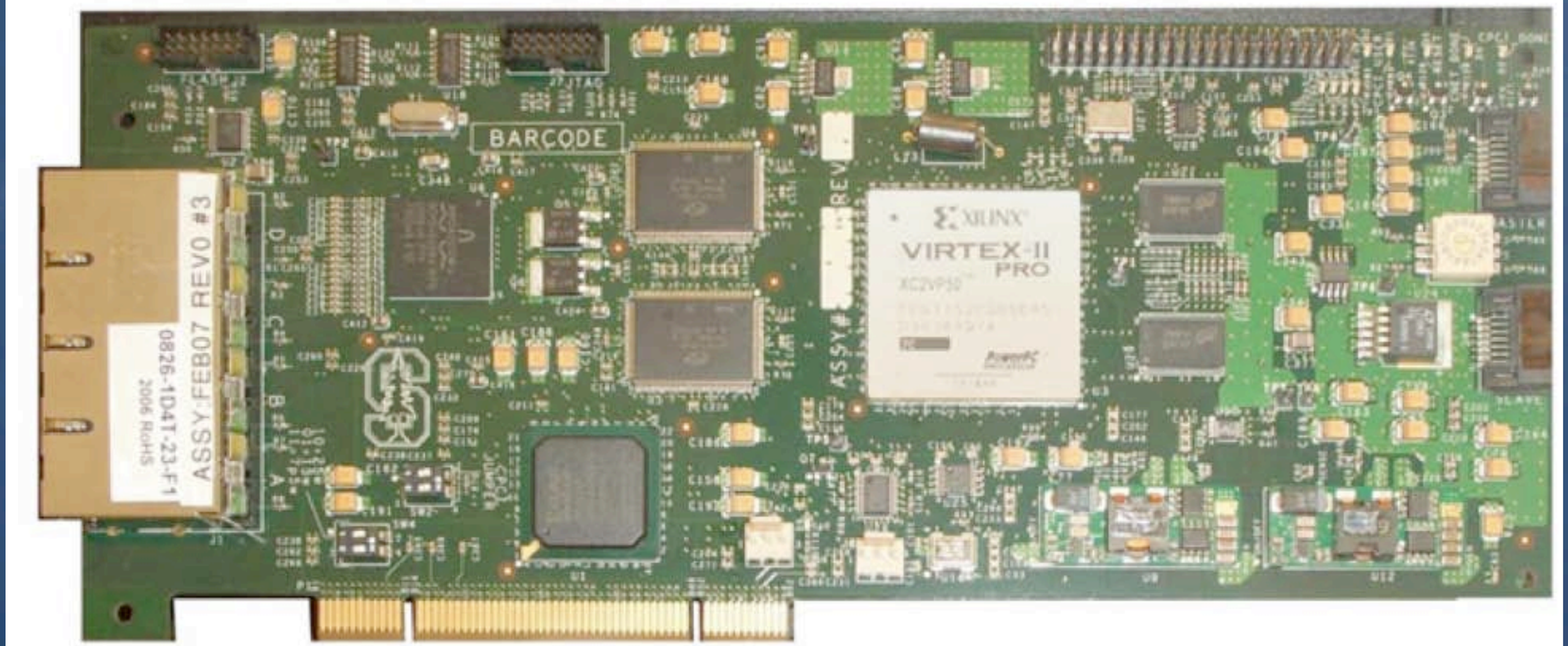
J4818A
Power
Fault
Download Port
flickr user "Fred3d.org"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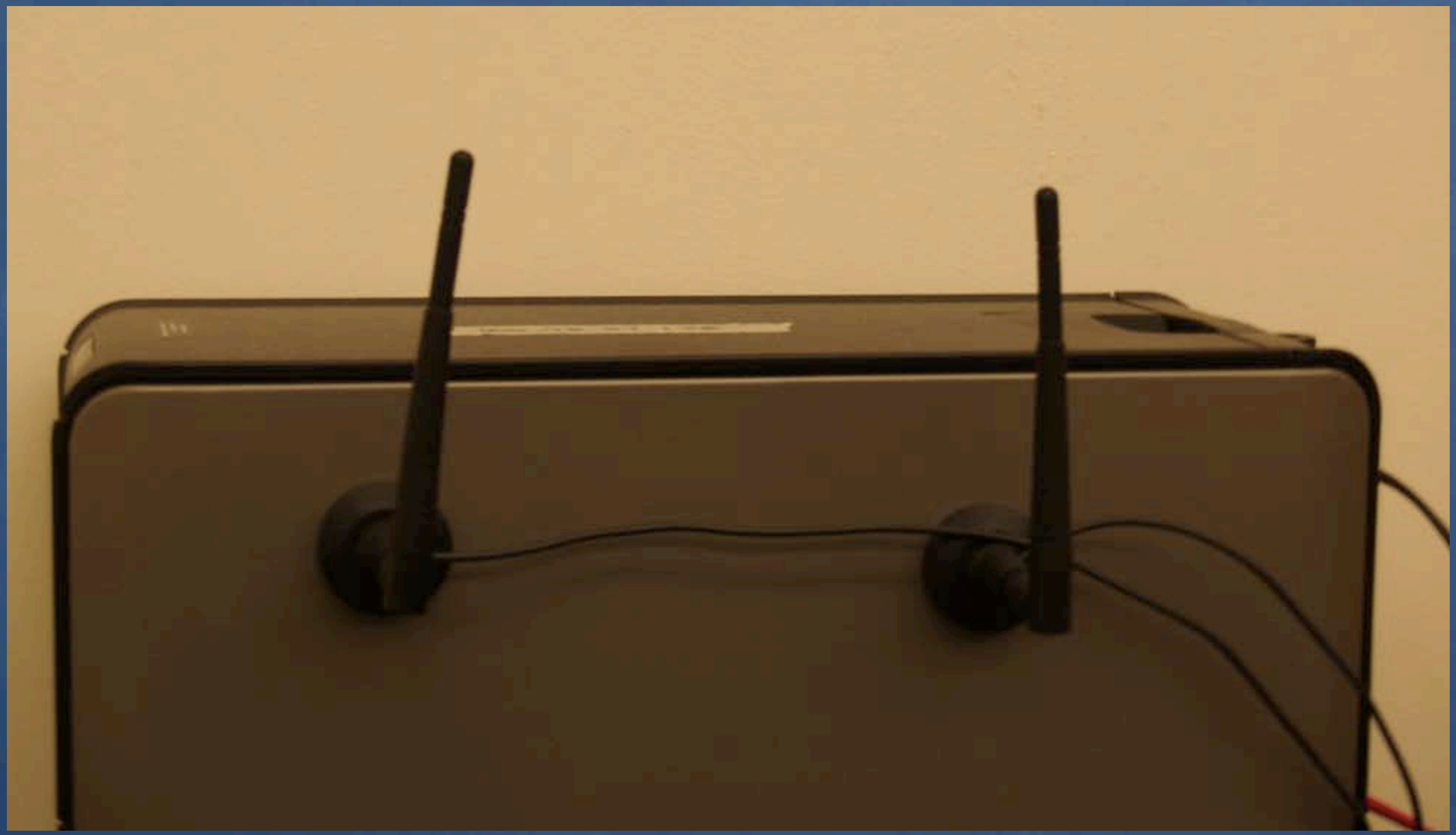
PRO
ASSY:FEB07 REVO #3
0826-1D4T-23-F1
2006 RoHS



Merrill Engineering Building - 3rd floor

10 Meters

pcwf144
pcwf131
pcwf143
pcwf12
pcwf14
pcwf141
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pcwf145
pcwf142
pcwf201
pcwf174
pcwf9
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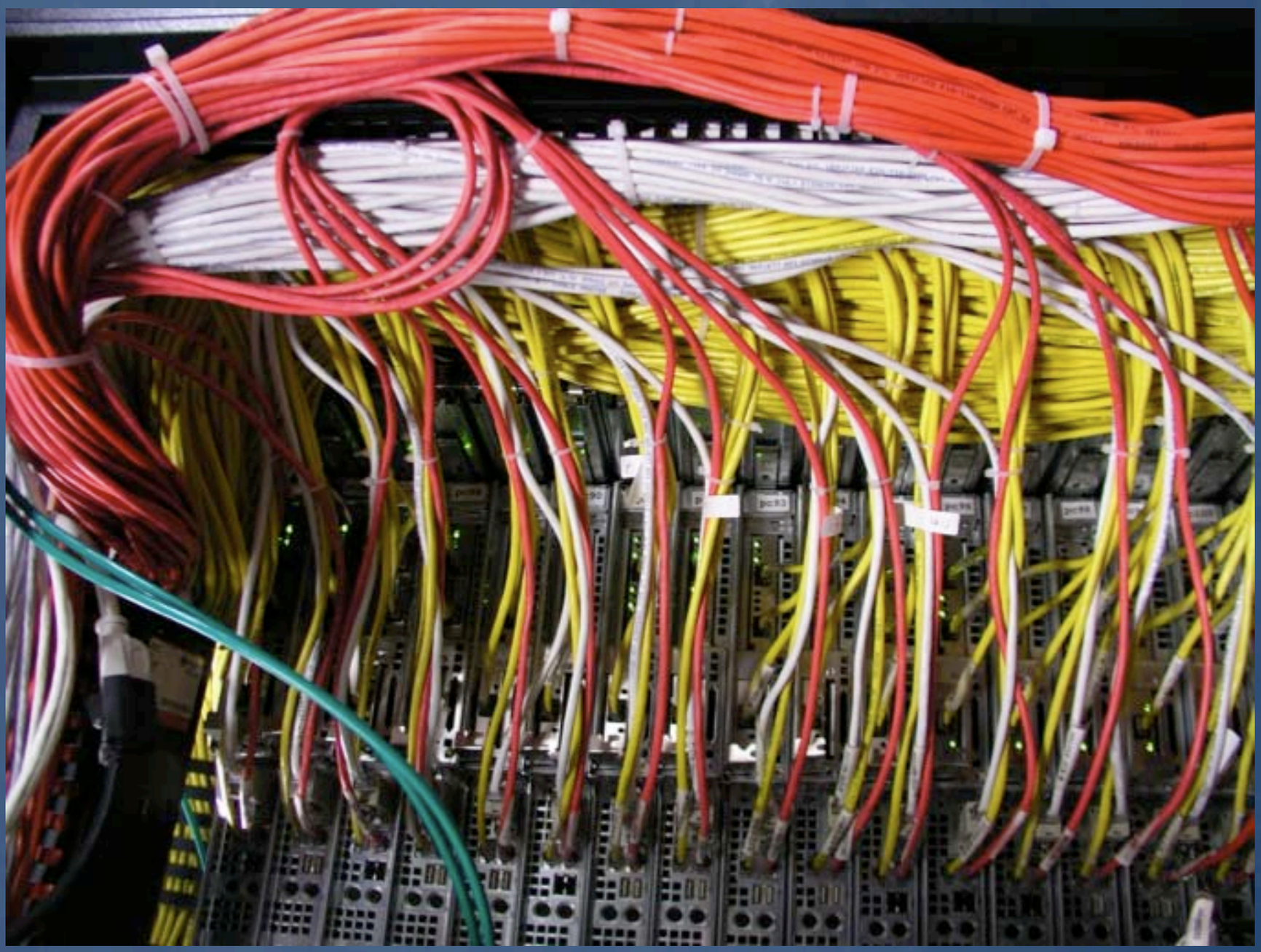
pcwf148
pcwf130
pcwf5
pcwf3
pcwf136
pcwf149
pcwf4
pcwf151

Ettus Research
USRP2
RF1
RF2
REF CLOCK
PPS IN
SD MEMORY
MIMO EXPANSION
GB ETHERNET
A
B
C
D
E
F
POWER 6V DC 3A



Integration

ProtoGENI
University of Utah

Instrumentation Tools
University of Kentucky

Measurement System
University of Wisconsin

CMU Testbeds
Carnegie Mellon

BGP Mux
Georgia Tech

GENI Clearinghouse

Services

Registries

Configurable Network

Aggregate Manager

Nationwide Backbone

Distributed Components

Configurable Network

Measurement and Storage Service

Configurable Network

Instrumentation Toolset

Urban Wireless Mesh

Residential Broadband

Wireless Emulator

Configurable Network

BGP Gateway

Experiment Plane

Measurement Plane

● Control Plane

■ Ops and Mgmt Plane

ProtoGENI Partners

- Internet2: Backbone links and hosting space
- HP: Switches and Programmable Edge Cluster

Cluster Projects

- Instrumentation Tools (Kentucky)
- Measurement System (Wisconsin)
- Virtual Tunnels and BGPMux (Georgia Tech)
- HomeNet and Wireless Emulator (CMU)
- Security Architecture (Sparta)

6-12 Months

Now + 6-12 months (1)

- Clearinghouse running + more functionality
- Two aggregate managers running + partner sites running AMs and connected to our clearinghouse
- Exclusive and shared components + better sliced components through VINI kernel

Now + 6-12 months (2)

- First backbone sites deployed
- Extensive VLAN support + VLANS across country (including shared components)
- A few edge sites + more edge sites

Now + 6-12 months (3)

- Tunnels on exclusive components + tunnels on shared components
- Embedding service for Emulab + embedding service for ProtoGENI
- Basic RSpec + more advanced RSPEC
- Basic credentials + more advanced credentials

www.protogeni.net