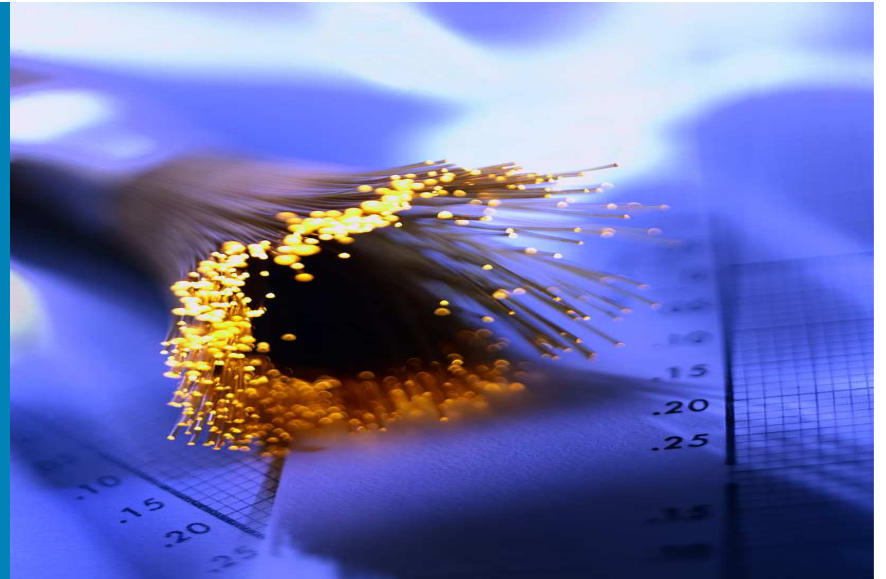




C-Wave Overview



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Agenda

- **Background & Goals**
- **What is C-Wave?**
- **Topology and Connections**
- **Services**
- **Projects and Applications**
- **C-Wave Partners**

Background

- **High Performance Facilities Based R&E Networks Operational**

 - NLR, Internet2, Regional Networks

 - Key concept is network control at multiple layers

- **Opportunities to explore new areas of networking and applications research.**

- **Ongoing challenge: *“How do you connect researchers to these resources in a reasonable and flexible manner based on industry-researcher partnerships?”***

- **One such resource that meets these requirements is C-Wave**

C-Wave Goals

- **Explore new areas of networking and applications research.**
- **Connect researchers to networks and applications in a reasonable and flexible manner based on industry-researcher partnerships.**
- **Leverage the multiple high performance R&E networks that have been funded and deployed.**
- ***Flexible, Opportunistic, Lightweight***

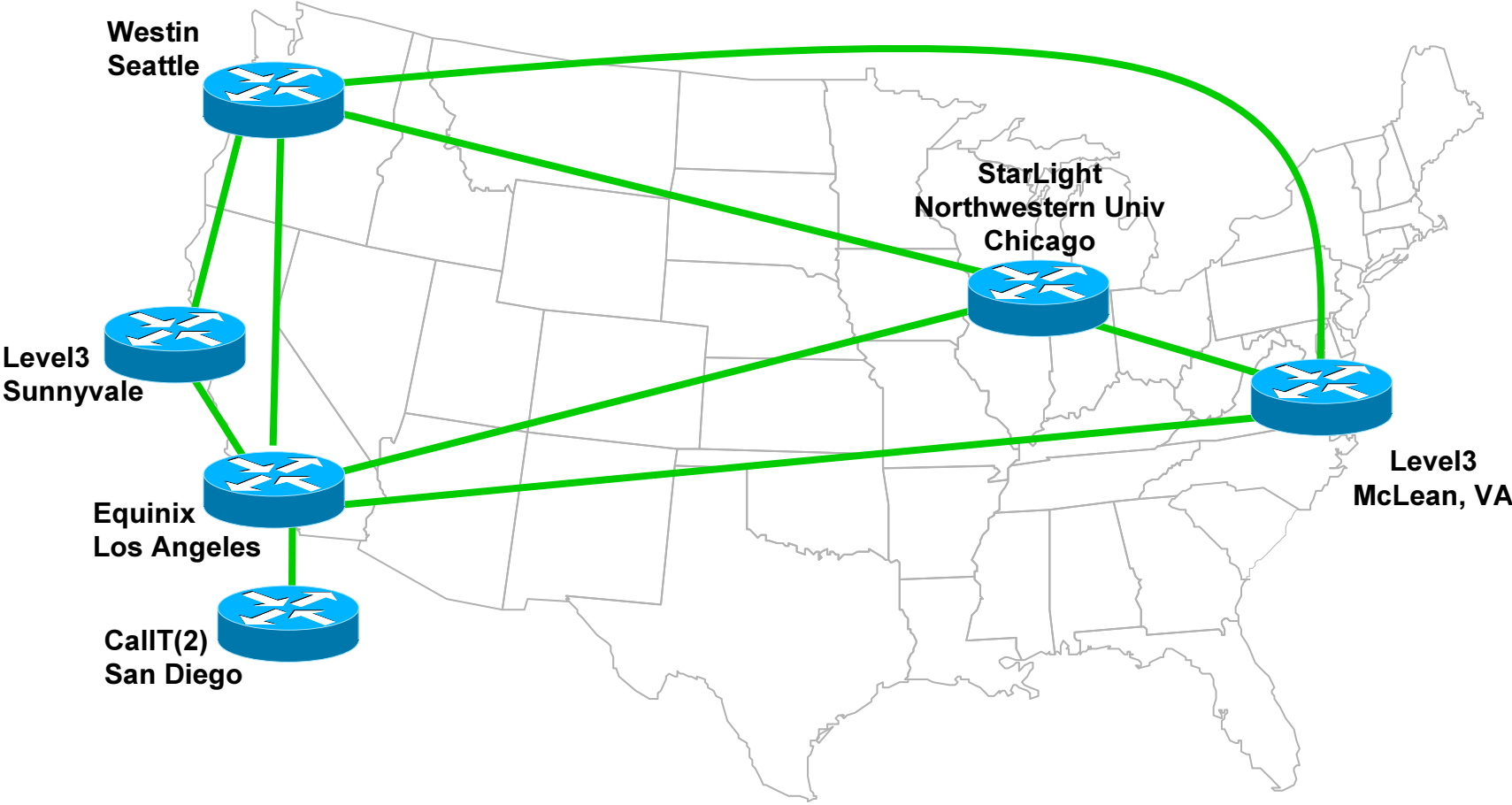
What is C-Wave?

- **Access to 10G Waves (Layer-1 p2p)**
 - Per project allocation
- **Switched Network**
 - 10GE backbone links
 - Flexible Architecture with MPLS Backbone
- **User Connectivity Qualification Based on**
 - Project requirements (BW & time frame)
 - Research merit
 - Partnership opportunity
 - (Switched Network is preferred over dedicated waves)*
- **Simple Operational Model**

What C-Wave isn't...

- **Not for permanent deployments**
Prototype, experiment, research
- **Not a highly connected network**
No peering with NLR, Internet2, commodity, etc.
- **Not designed for production applications**
- **Not Designed for critical, non-stop applications**
Redundant trunks and power only
- **No 24 x 7 x 365 support**
- ***...but the cost/benefit ratio is appealing***

C-Wave Current Switched Topology



C-Wave Capabilities & Services

- **Protocols**

 - ISIS

 - MPLS

 - iBGP

- **Services**

 - EoMPLS p2p

 - Statically routed IP

 - L3 VPN (special case)

 - Switched layer 2 (minimal, special case upon request)

- **Preferred Connection**

 - GE or 10GE 802.1q Trunk

Projects and Users

- **CineGrid**
- **TransLight**
- **Holland Festival**
- **Internet2 Meeting Demonstration at Cal IT2**
- **SC'07**
- **CaveWave @ SC'07**
- **ALS Research (UMC-Utrecht to UCLA)**
- **HIPERSTORE**
- **EnLIGHTened**
- **UltraLight**
- **Center for Analysis and Prediction of Storms (CAPS) Hazardous Weather Testbed (HWT) Spring Experiment**
- **LSU/LONI**
- **Internally Sponsored Research Programs Under Discussion**

C-Wave Partners

- **Principal partner: National LambdaRail**
 - Provides wave transport and other services for the C-wave core
- **Other partners include CENIC, PNWGP, Cal IT2, iCAIR, EVL and StarLight**
 - Provide access waves, collocation facilities, and technical assistance
- **We seek to extend such partnerships with other R&E entities as we expand this program**

Wrap Up

- Questions?
- Contact us at c-wave@cisco.com
- Thanks to our partners!
- Thank you!

