

Research Support and Connection Capabilities of **LEARN** Your Regional Network

University of Houston
Houston, Texas

February 18, 2011

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LEARN Mission

LEARN – Lonestar Education And Research Network – is a 501(c)(3) non-profit collaboration of Texas higher education institutions that supports their research, education, health care, and public service missions through the innovative development, operation, and utilization of advanced statewide networking, access to global resources, and related services.

Who: Non-Profit; Higher Education...

What: Advance Networking

How: Owned Infrastructure and Leased
DWDM Waves

Where: Texas

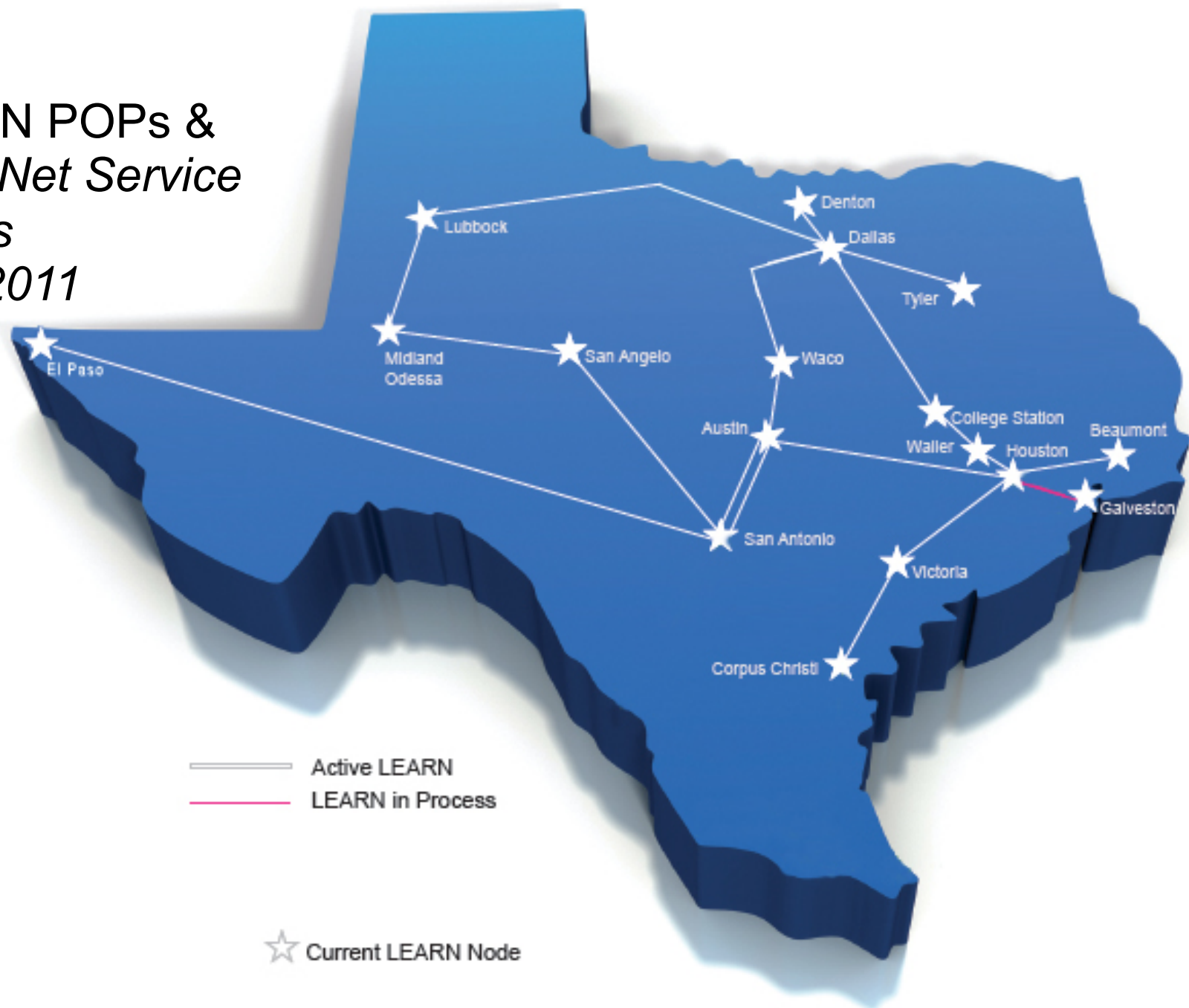
LEARN HQ



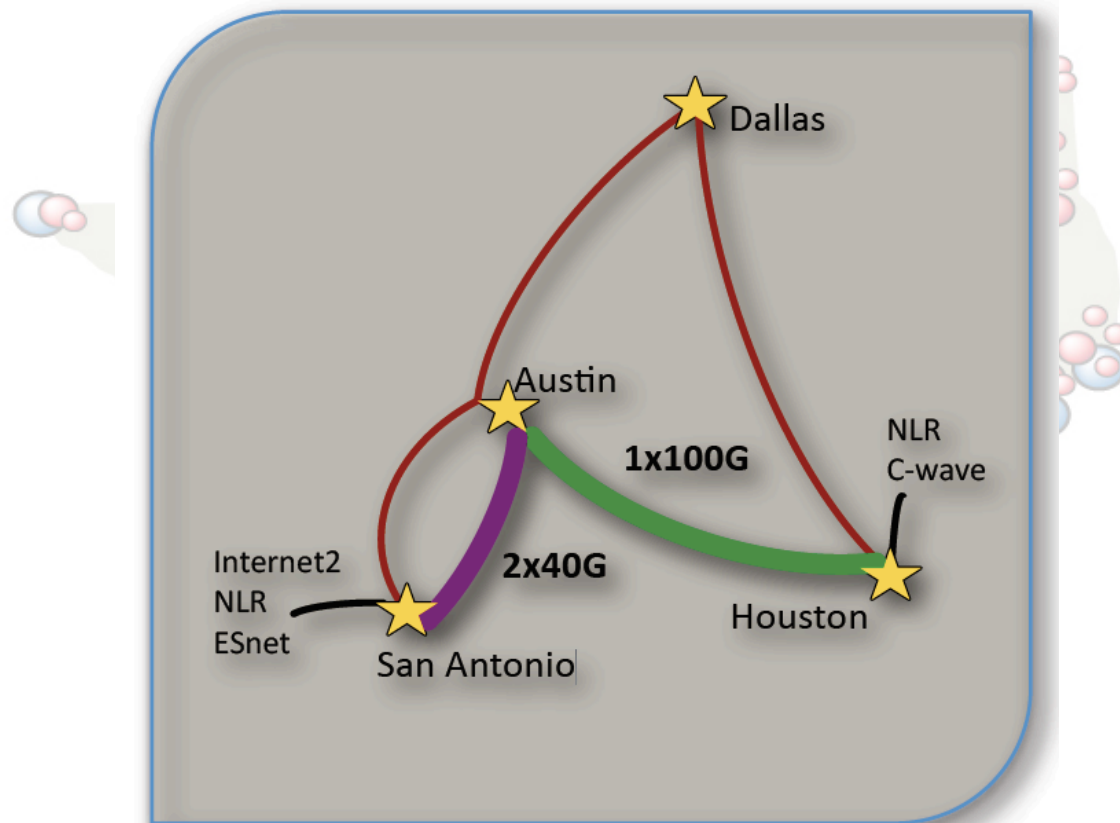
LEARN Services

- ★ Layer1 Service: 1 or 10 Gigabit Dedicated Links
- ★ Layer 2 Service: VLAN over L2 backbone
- ★ Layer3 Service:
 - NLR PacketNet
 - Internet2 Network
 - Texas Intranet
- ★ Co-location Services
 - Co-lo and rack space
 - Enterprise class data center space with AC power
 - Cross connects

LEARN POPs &
WaveNet Service
Nodes
Jan. 2011

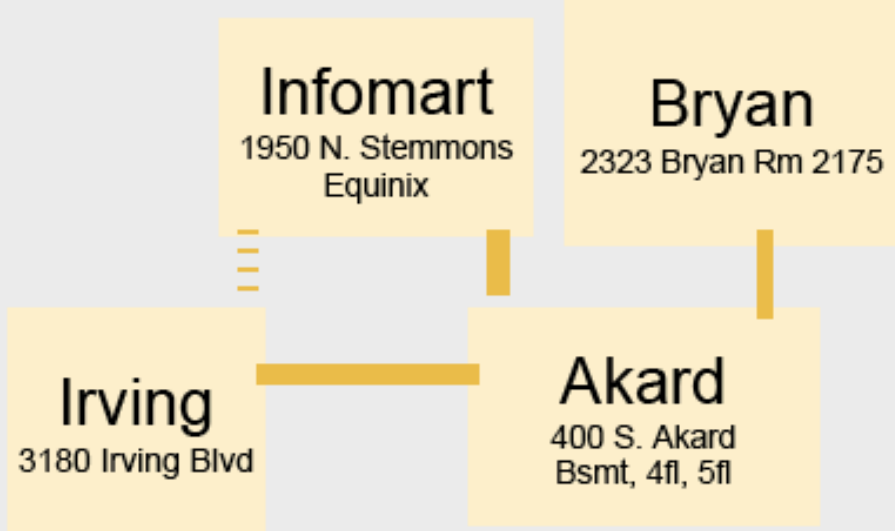


Supercomputing 2008 – Austin Texas

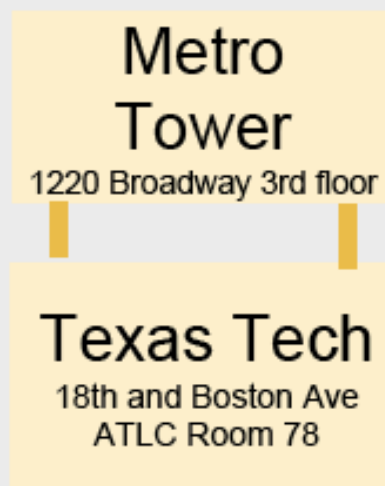


LEARN DWDM Metro POPs *Jan. 2011*

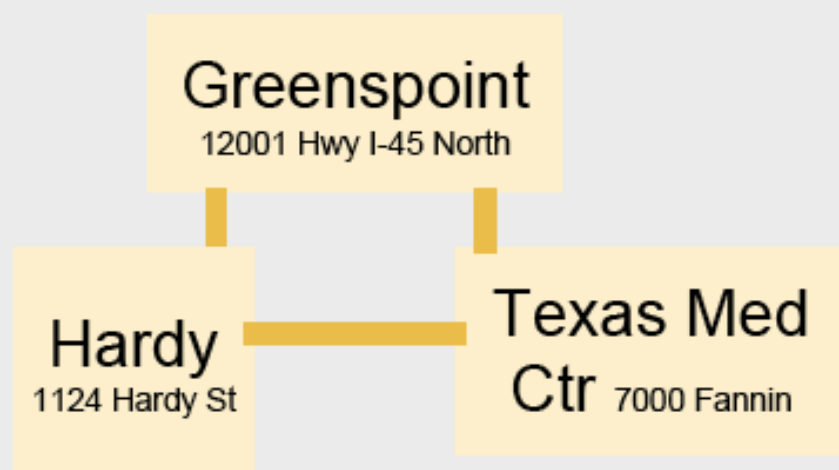
Dallas DWDM Metro Network



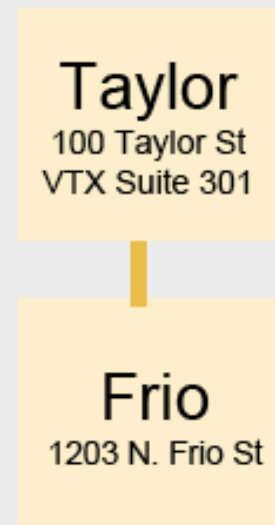
Lubbock DWDM Metro



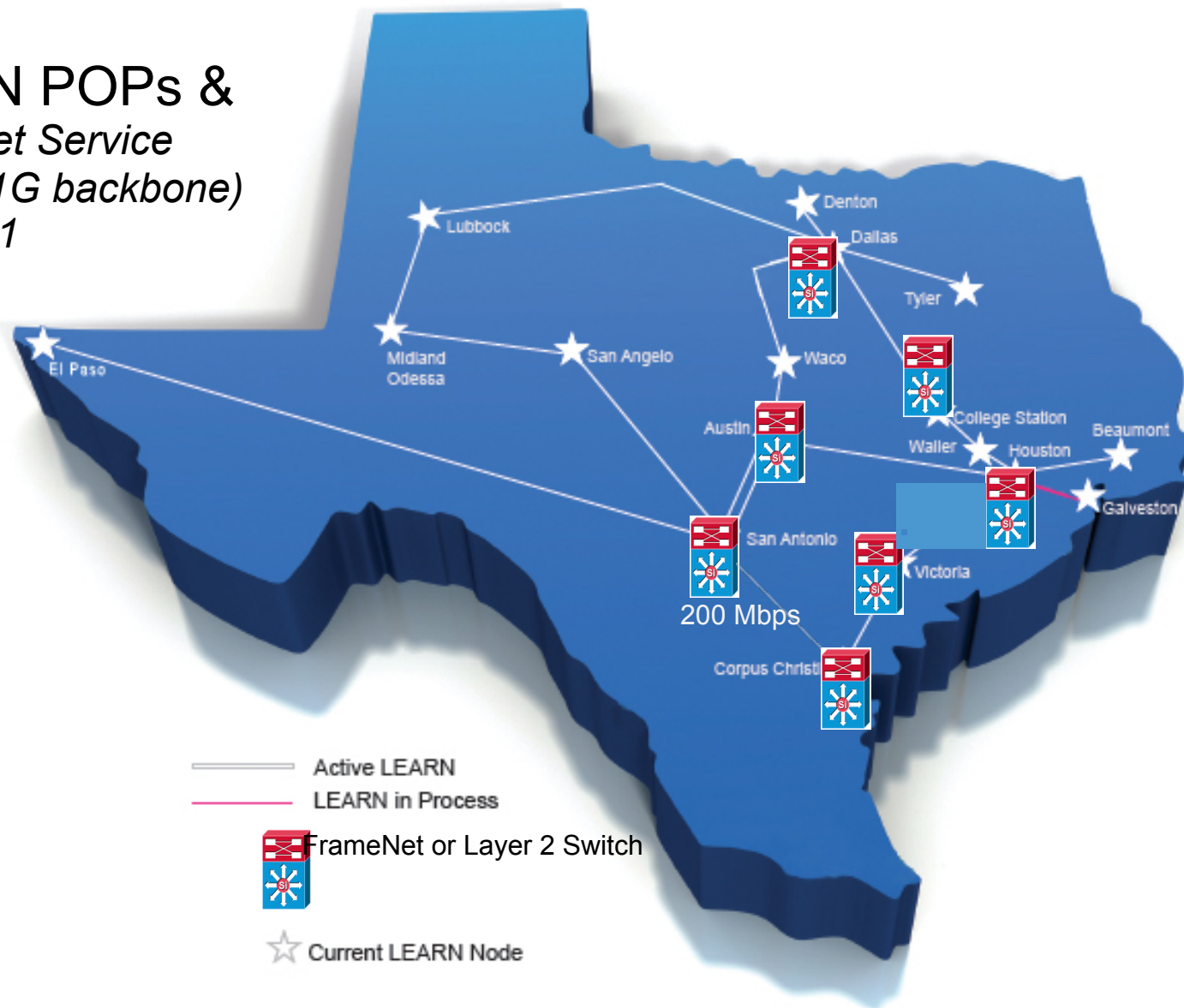
Houston DWDM Metro Network



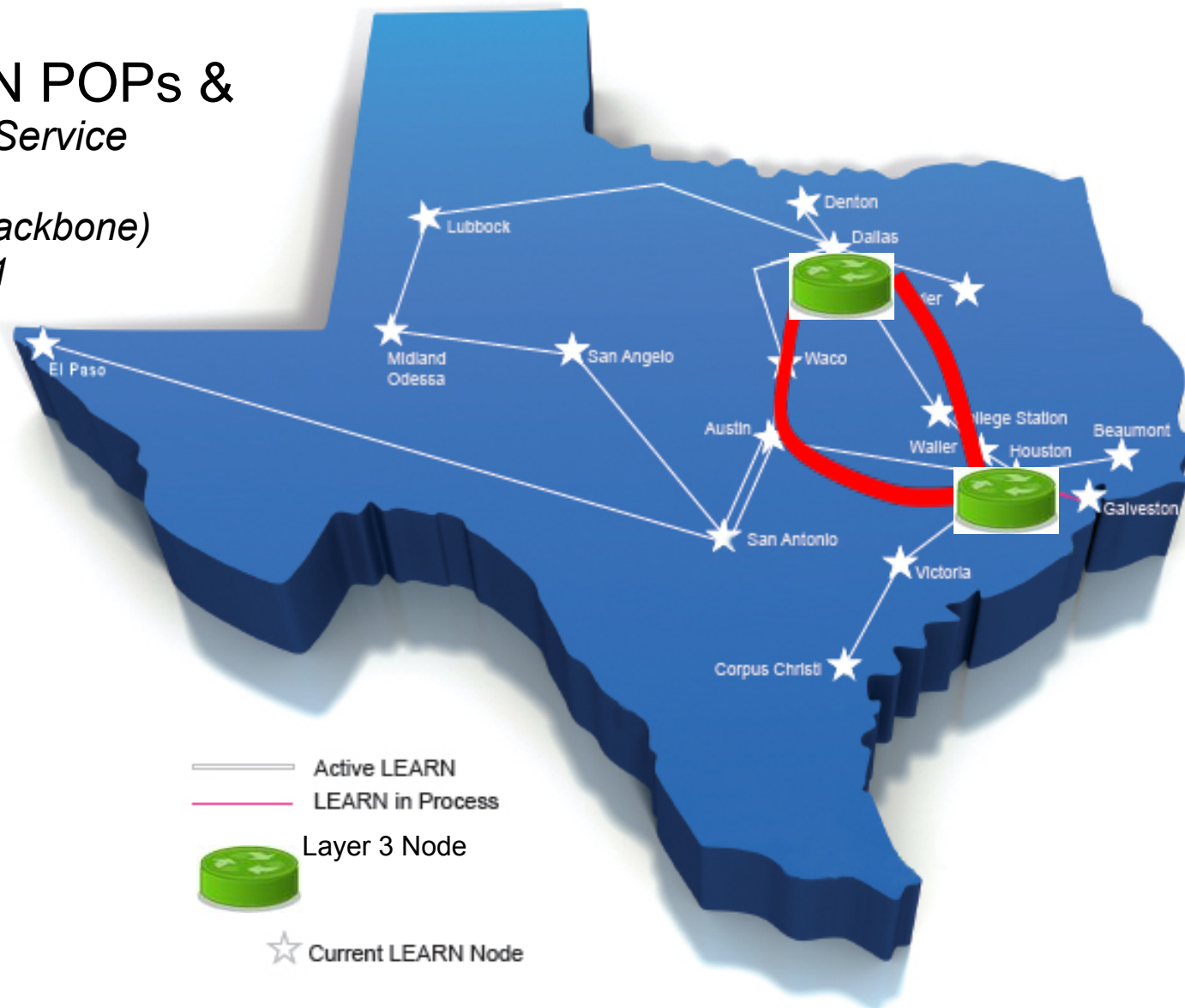
San Antonio DWDM



LEARN POPs & FrameNet Service Nodes (1G backbone) Jan. 2011

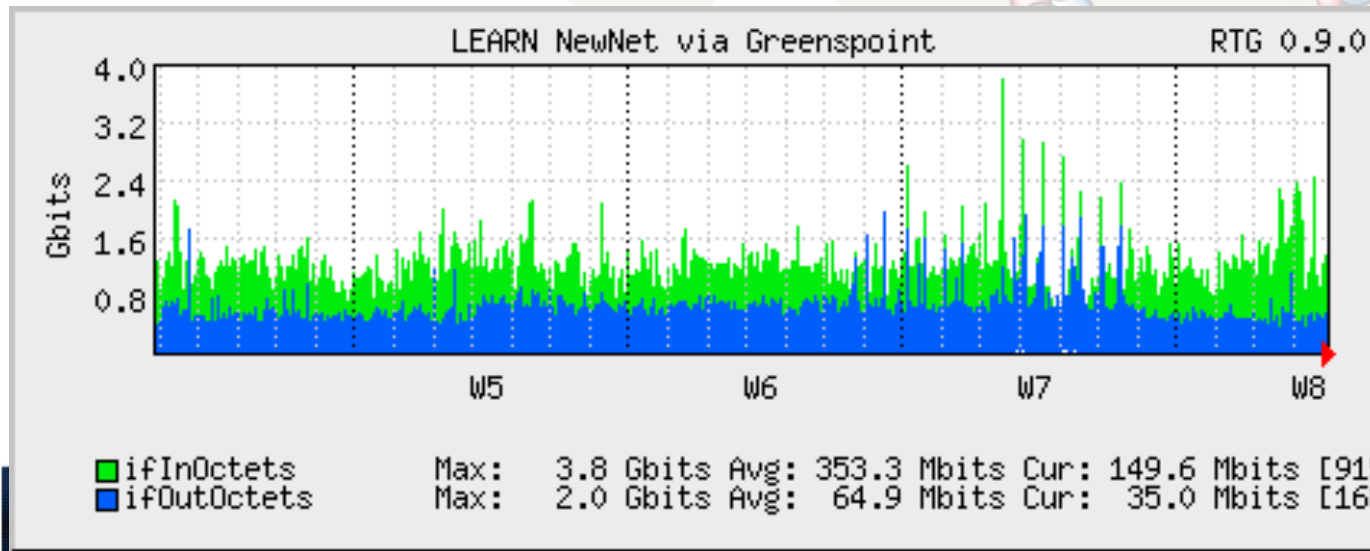
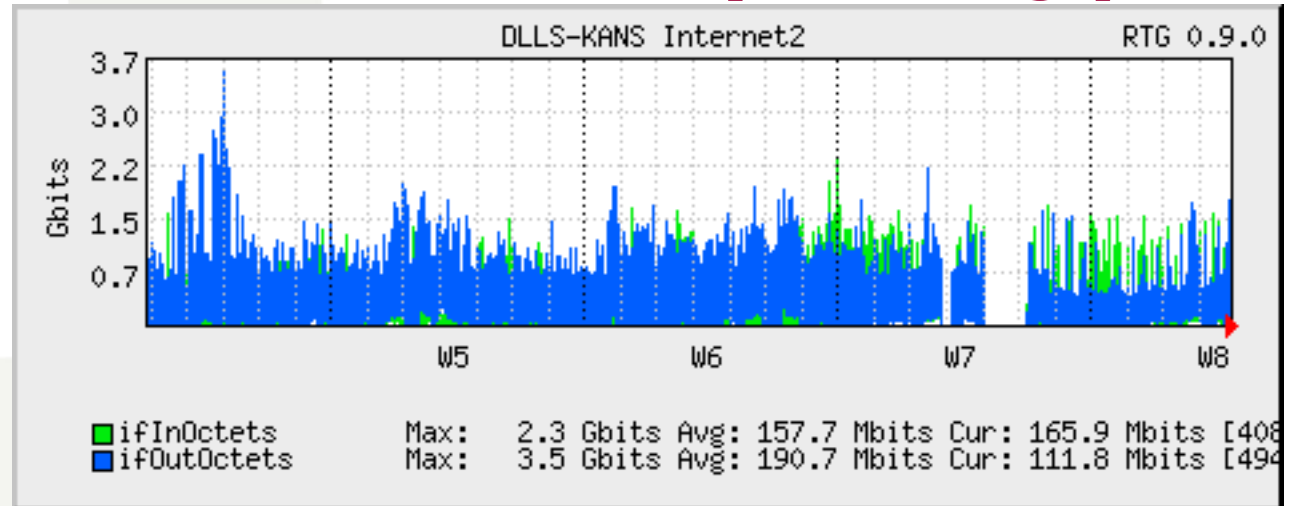


LEARN POPs &
Layer 3 Service
Nodes
(Ten G backbone)
Jan. 2011



Internet2 IP Utilization (10s Avg.)

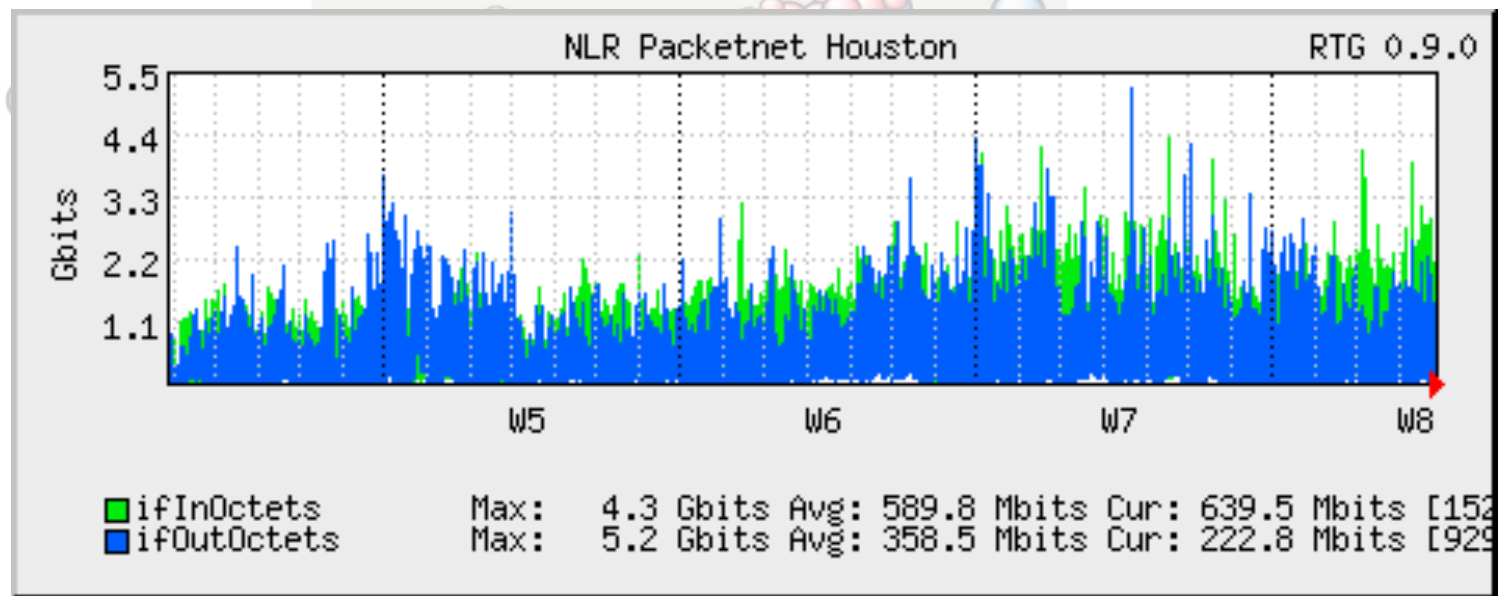
Dallas



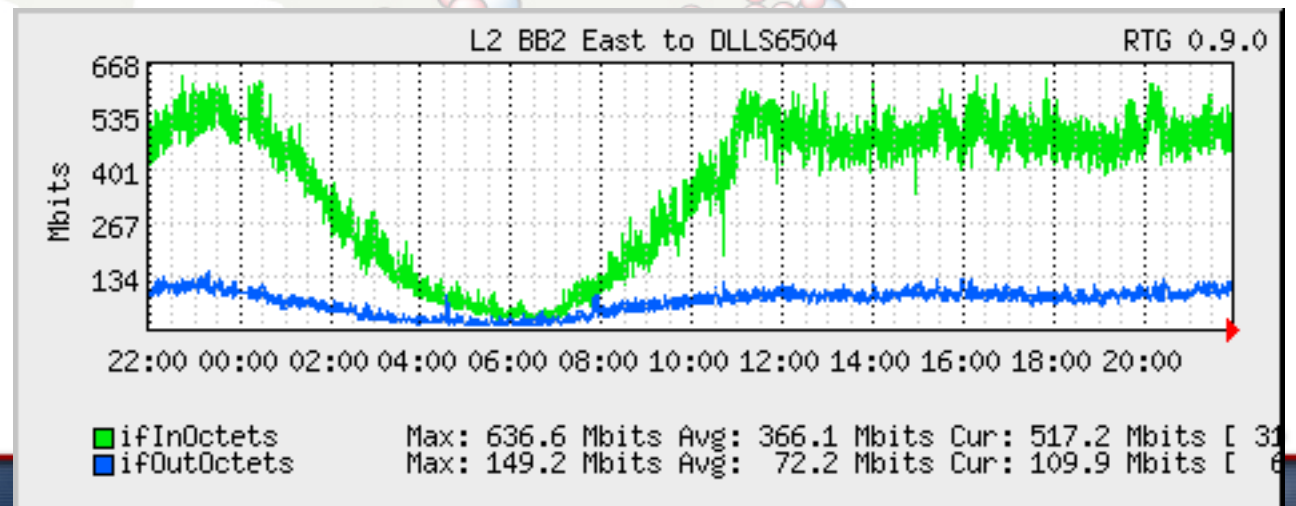
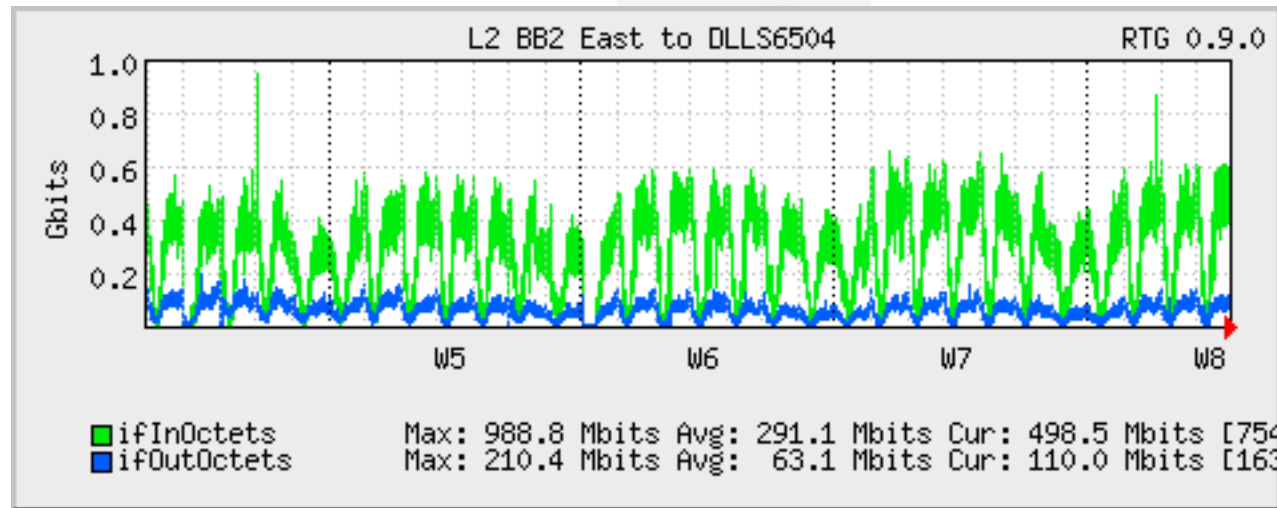
Houston

NLR IP Utilization (10s Avg.)

Houston



LEARN FrameNet Backbone



What's Under the Hood?

- ★ Nortel/Ciena CPL and OM5200
- ★ ADVA Optical RayExpress
- ★ ADVA Optical FSP 3000 (R7)
- ★ Juniper MX Series for Routing
- ★ Cisco 6500 and 4500 for Switching
- ★ Commercial and Open Source network management tools

National R&E

★ National LambdaRail - NLR

★ Internet2 backbone upgrade

- Ciena CPL and OM6500 for Layer 1
- Some Infinera (Northern Tier Footprint)
- Juniper T1600 with 100G for Routing
- MX Series for TR-CPS

10G IP Layer Topology



Regional R&E

★ LEARN Intranet (v4 and v6 peering) is Live and Growing...

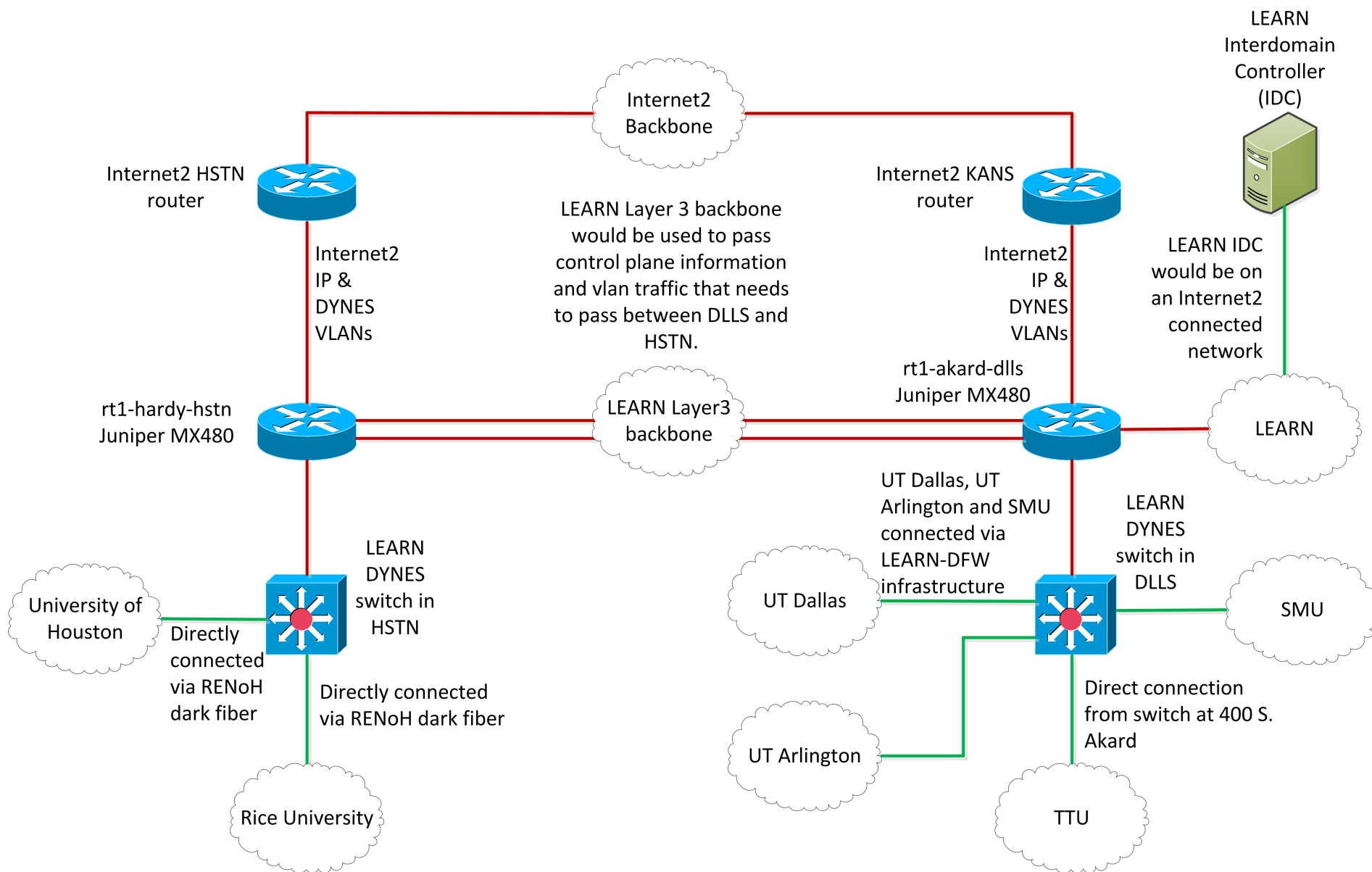
- 4 out of 5 aggregators are peering with new AS 13359
- In works...SETG and TMC's Collaborative Healthcare Alliance
- Regional partners: ARE-ON and SLR/SOX, ONENet to follow

★ Route packets locally; improve performance

★ Vehicle for Collaboration

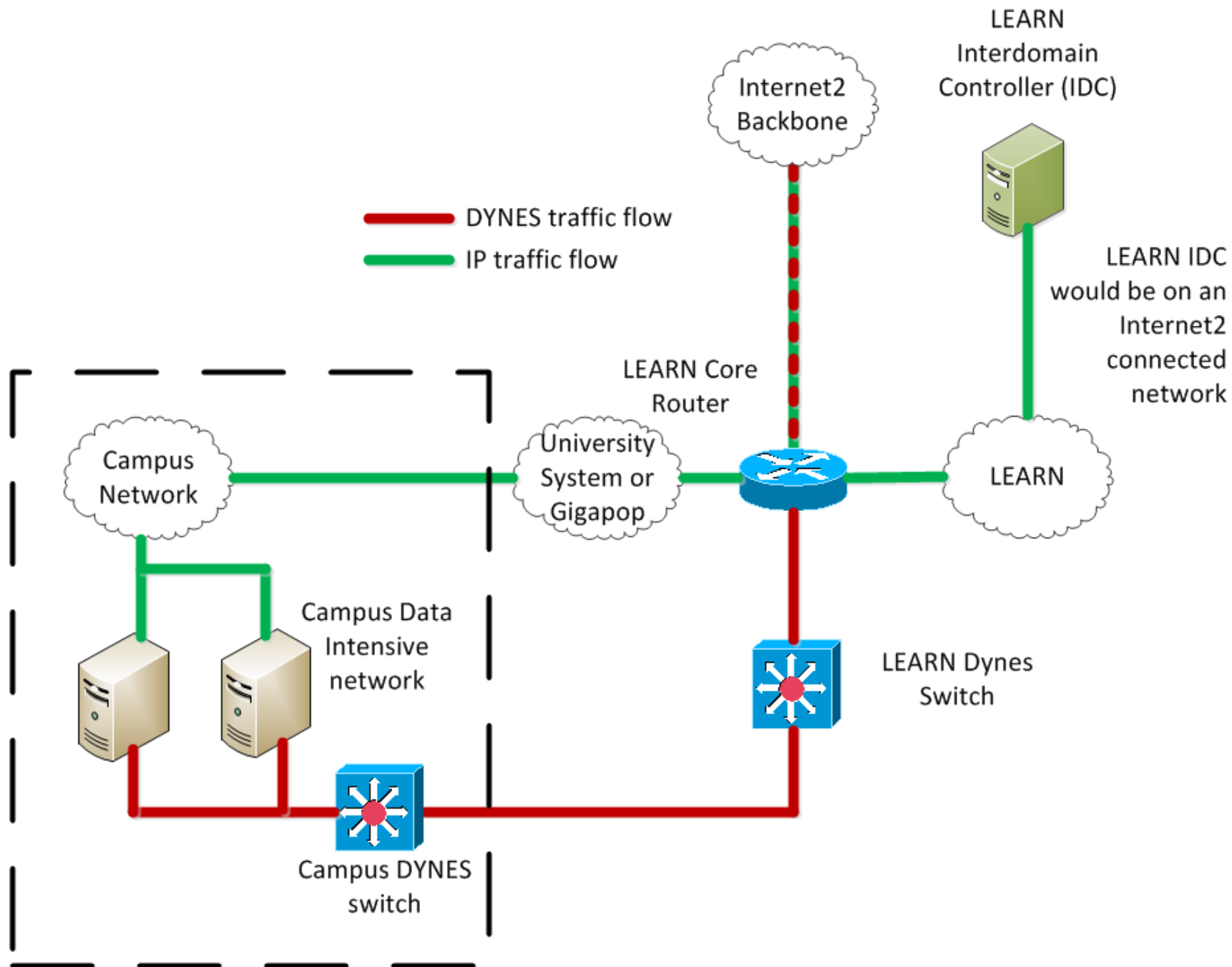
DYNES

- ★ NSF funding to support data intensive scientific research
- ★ Internet2 solicited DYNES applications
 - Application Received:
 - ★ 8 from Regionals and 33 Campuses
- ★ All 6 Texas applications will be awarded:
LEARN and Rice/UH, SMU, TTU, UTA, UTD
- ★ DYNES grant will cover costs to deploy Dynamic Circuit Network in Texas



— 10Gb/s ethernet

— 10Gb/s or 1Gb/s ethernet



Further Discussions...

- ★ Engage campus network operator
- ★ LEARN will work with you in collaboration with the campus network team

A light gray map of the state of Texas is centered on the slide. It is populated with numerous small, semi-transparent red and blue spheres of varying sizes, scattered across the state's outline.

Thank You!

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