

# *The Florida LambdaRail*



Veronica Sarjeant

Chief Operations Officer

Florida LambdaRail, LLC

PNWGP Advisory Council Meeting

Seattle, Washington

November 15, 2005



**FLR**  
Florida LambdaRail

---

Florida's Research and Education Network

# *New Opportunity: the National LambdaRail*



- The “enabling event” for creation of the FLR
- Articulated a new value proposition - owned assets
- Control of networking destiny
  - own, manage, and allocate own networks (underlying assumption)
  - able to deliver more cost-effective, scalable data communications
  - provide a platform for advanced applications and networking research
- Eliminate the issue of “place” for connectivity and collaboration
  - Time and place for geographically dispersed teams bridged via transmission over high-speed, large-bandwidth connections
- Grow bandwidth in cost-neutral manner
- Keep pace with continuing evolution of IT

# *Drivers & Motivations*



- Improve networking costs
  - More bandwidth needed, more bought, more \$\$ spent
  - FLR expects to grow bandwidth in a cost-neutral manner
  - FLR replacing traditional “dollars per megabit” model
  - FLR’s acquisition of dark fiber reduces cost of bandwidth – replaces ongoing monthly service charges with capital cost
- Ability to better support corporate research partners
- Desire for end-to-end networking control
  - Customer-controlled and managed network offers end-to-end visibility and control of connections and bandwidth
  - Easily modifiable interconnections and peering relationships

# *Prior Efforts At Building a High Speed Network for R&E*



- Florida institutions have a long history of collaboration and cooperation
- Legislature has provided many incentives for institutions to work together—a few examples:
  - Common course numbering system
  - University gen ed requirements met by CC AA degree
  - Florida Academic and Career Tracking for Students—FACTS advising system
  - Florida Information Resources Network—FIRN

# *Prior Efforts At Building a High Speed Network for R&E*



- Enduring interest in building a statewide high-speed Research and Education network
- FL institutions had made two prior attempts...

Circa 1997

- Attempt to expand FIRN's mission (State K-12 network) to provide high-speed connectivity to universities for research and economic development
- DOA because of failure to obtain state funding

# *Prior Efforts At Building a High Speed Network for R&E*



Circa 1999

- Original Internet2: NSF connection grants assisted development of a Florida gigapop at UF (ATM network)
- Abilene (Switched ethernet backbone) was launched before the universities were able to leverage the FL gigapop/I2 investment
- Died when Abilene fundamentally redefined the value proposition/financial basis for the operations of regional gigapops

# *New Opportunity:*



- Consequently, when we learned of the NLR initiative...
- 6 FL universities were able to make a moral commitment in just 3 working days!
- Executive management support despite:
  - No high speed network in FL to connect to
  - Committing to defining/building a network...without any notion as to how it would be done or what it would cost
- They got it! Grasped strategic importance
- A real tribute to the leadership, vision, and commitment of the university executive leaders!

# *FLR Goals and Uses*



- Build a high-speed FL network for R&E
- Put FL universities on an equal footing with the best research institutions in the nation
- Produce cost avoidance/reduction - aggregate commodity Internet & Internet2 services
- Provide services to other FL colleges & universities
- Increase potential for corporate partnerships and economic development, e.g., Scripps Research Institute

# *The Build Out*



## ■ The Florida LambdaRail (FLR):

- Established May 2003 as a not-for-profit limited liability corporation
- Equity stakeholders (i.e. “owners”) are public and private Florida universities
- 501(c)(3) tax-exempt

## ■ 10 equity participants:

- FAU, FIT, FIU, FSU, Nova SE, UCF, UF, UM, UNF & UWF

## ■ \$20M+ budget over 5 years

## ■ No dependence on add’l. state funding (!)

## ■ Members expect to offset a significant portion of their costs by aggregating services and future cost avoidance

# *Ownership/Management*



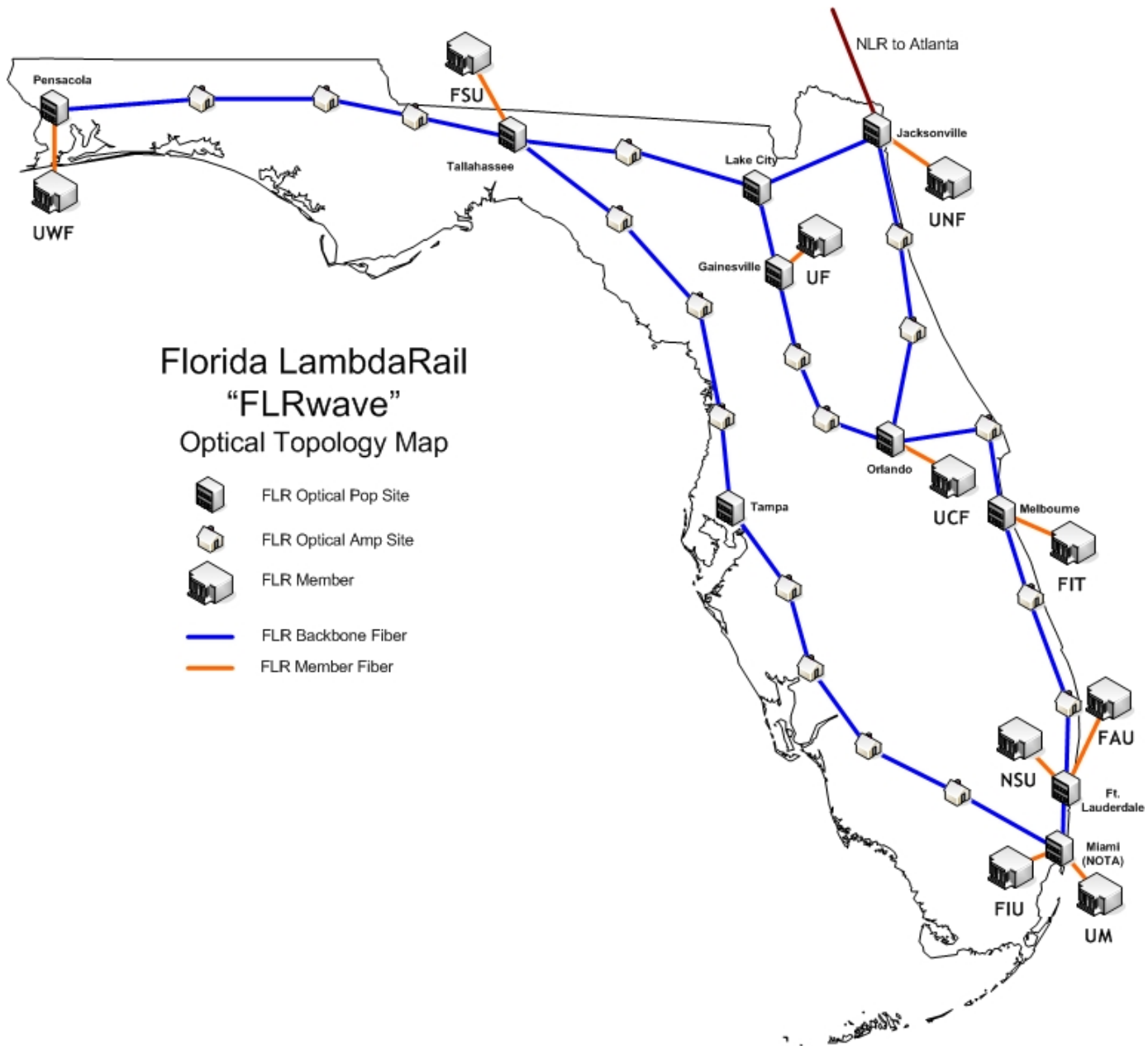
## ■ 33 Units of Ownership

- Based on level of size and interest in participating
- 1-4 units possible (one-1, two-2, and seven-4)
- Share of cost in direct proportion to units of ownership






## ■ Centralized oversight and authority

## ■ Contracts for all services - no employees

- Administrative: FSU
- CTO/NOC: UF
- Financial: UM
- Legal: outside firm
- Business Development: FSU
- Governmental Relations: FIT
- PR/Marketing: outside firm (probably)

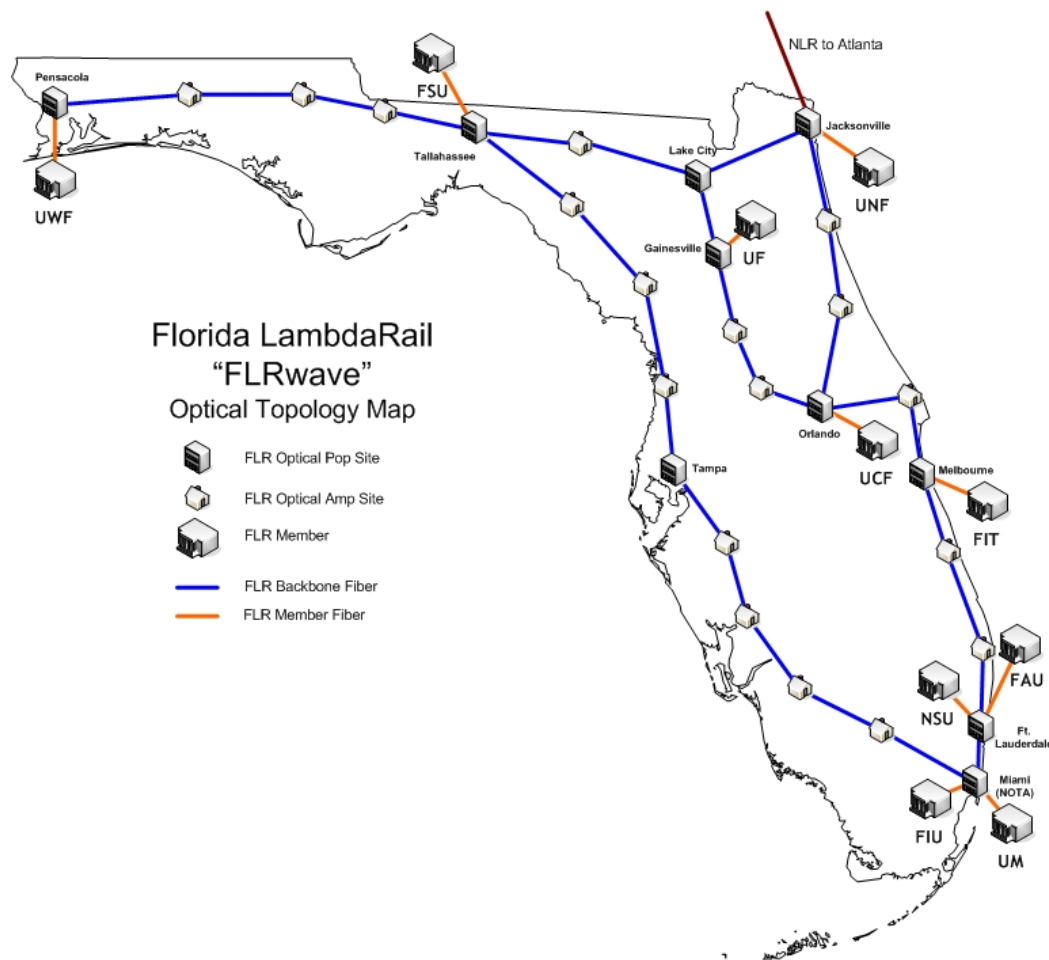


# Florida LambdaRail "FLRwave" Optical Topology Map

-  FLR Optical Pop Site
-  FLR Optical Amp Site
-  FLR Member
-  FLR Backbone Fiber
-  FLR Member Fiber

# *FLR Optical Infrastructure*

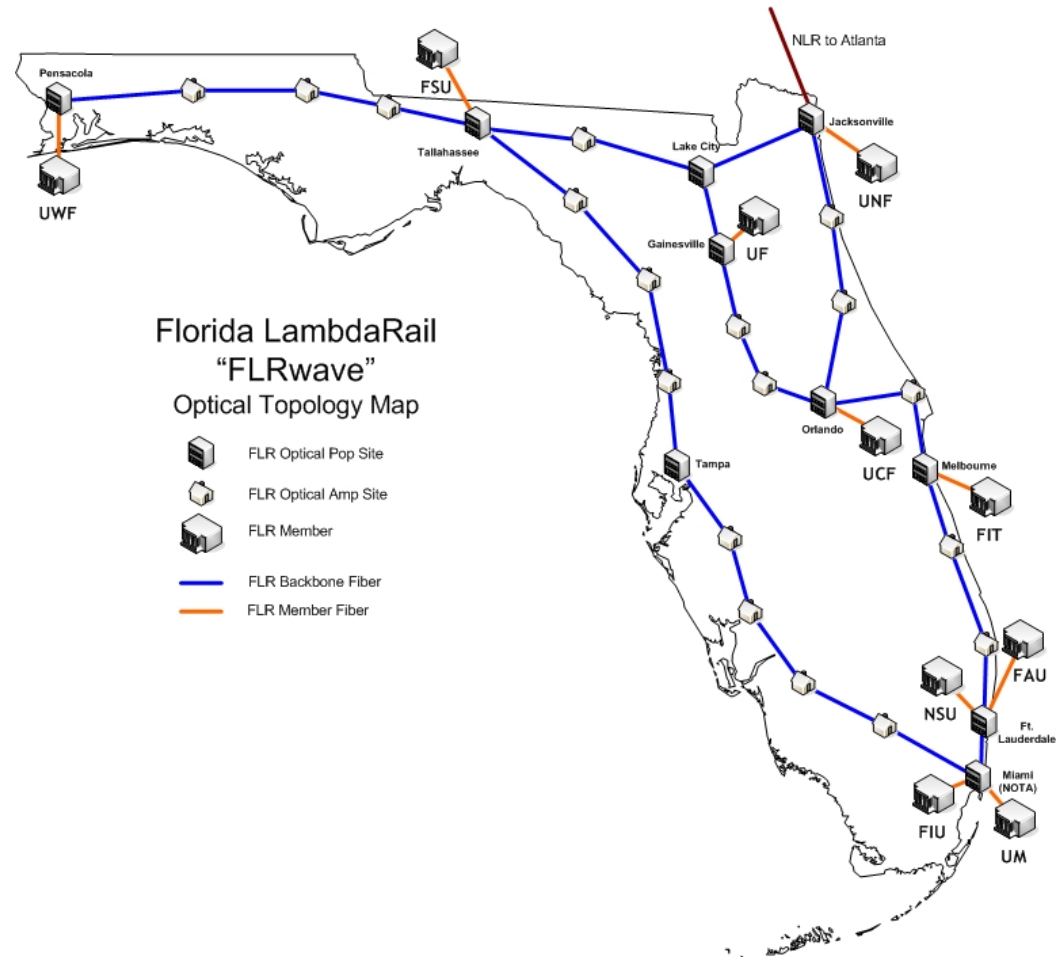
- 1,540 route miles
- Obtained through Level 3 via the I2/FIBERCO initiative
- Dense Wave Division Multiplexing (DWDM)
- Cisco 15454 optical electronic system
- 10 Gbps
  - 32 wavelength per fiber pair
  - 10 billion bits per second (10Gbps)
  - Multiple waves (primary/secondary access, research)



# *FLR Optical Infrastructure*

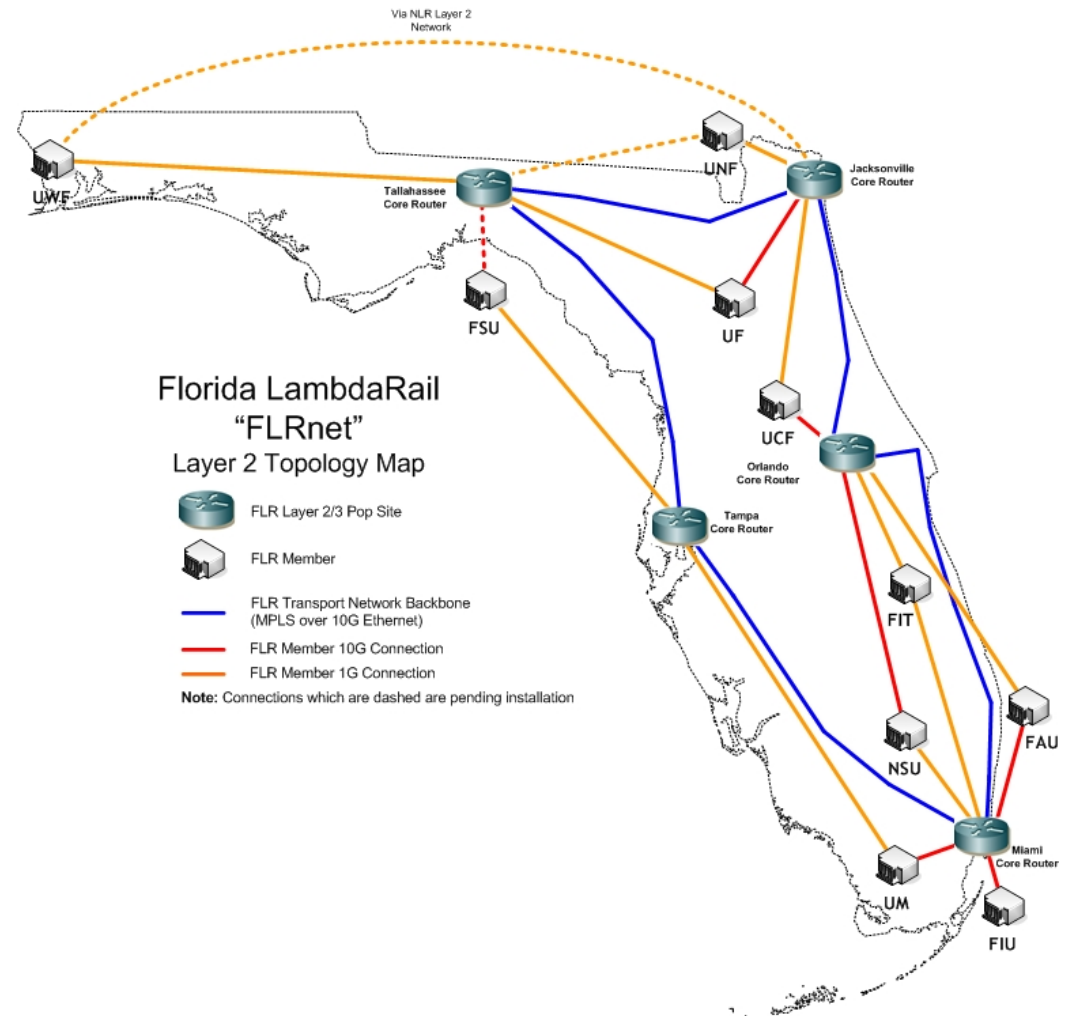
- Statewide dedicated shared circuit linking nodes located in Jacksonville (connection to the NLR node), Orlando, Melbourne, Ft. Lauderdale, Miami, Tampa, & Tallahassee with spurs to Pensacola, & Gainesville

- Monitored by FLR NOC



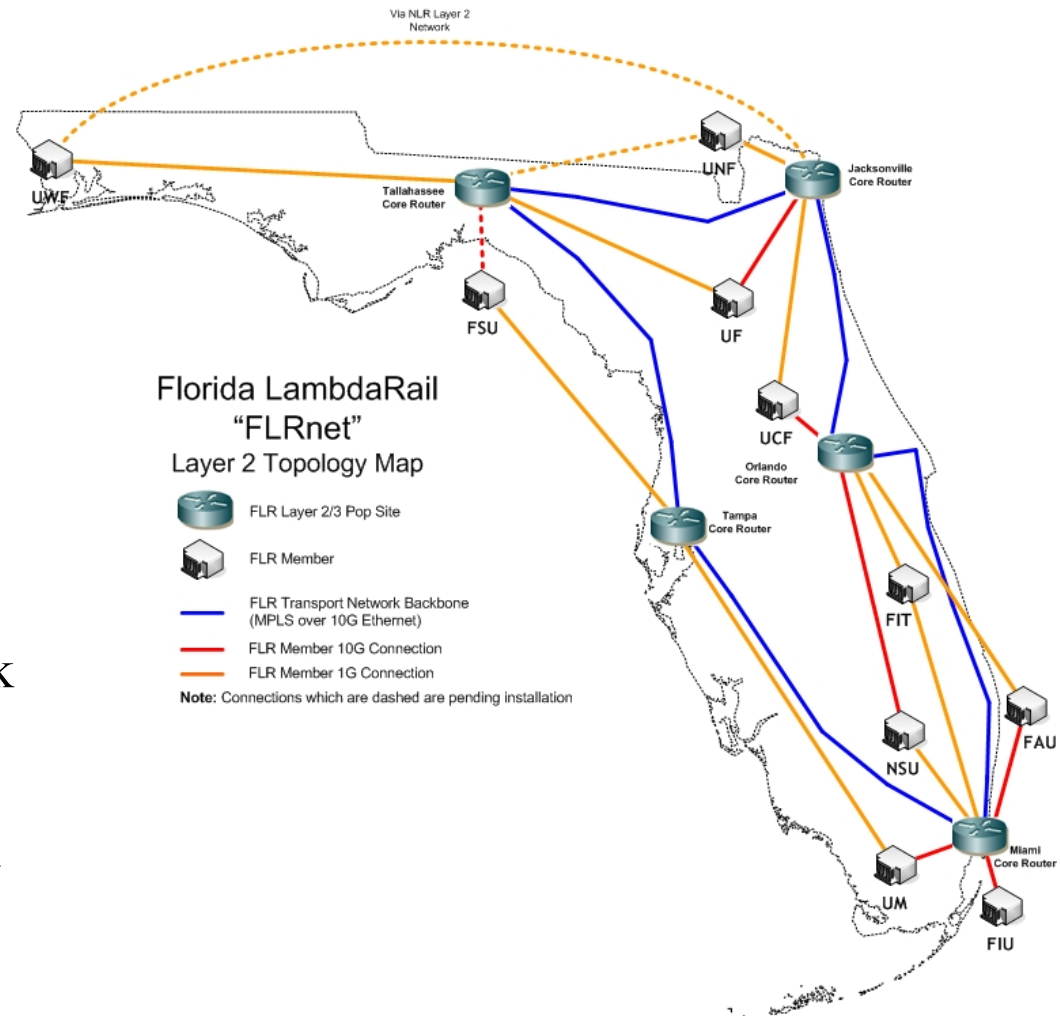
# FLR Transport Infrastructure

- Ethernet based MPLS transport facility
- Cisco 7609 transport
- IPv4 and IPv6 transit
- Layer2 or Layer3 VPNs
- Each Equity member provided a primary 10-Gbps and a secondary 1-Gbps connection



# The Florida LambdaRail

- Services offered:
  - dedicated and switched (bandwidth on demand)
  - 10-Gigabit Ethernet or single Gigabit Ethernet data circuits
  - Connectivity to commercial ISP
  - Connectivity to Internet2/Abilene network
  - High speed transport between participants
  - Network peering between other data networks
  - dedicated wavelengths between FLR participants or FLR and NLR participants



# *Implementation*



- Fully lit, up and running-April 1<sup>st</sup>, 2005
- Last campus up and running-September 15<sup>th</sup>, 2005
- 1250Mb commodity Internet services
  - 750 Mb provided by Level 3 (Tampa/Orlando)
  - 500Mb provided by Cogent (Miami/Tampa)
- Connection to National LambdaRail
  - 10GE lambda via Jacksonville node
  - Pensacola planned as a redundant path once NLR-Phase 2 is completed

# *Implementation*



## ■ Connection to Internet 2/Abilene Network

- 10GE lambda from Jacksonville to Atlanta (leased from NLR)
- Increased bandwidth (average 100 Megabit/sec to 10-Gb)
- Southern LightRail (Sox) layer 2 transport to Abilene Network
- Direct peering with Abilene Network via layer 2
- Mutual peering with Sox
- Investigating 1-Gb connection to Houston for I2 backup

# *Participants*



## ■ Equity Members

- Accredited investors and owners
- Substantial long-term investment in and commitment
- Direct connection to an FLR node
- May resell FLR services to Affiliates
- Share in a percentage of the “mark-up component” of the revenue from sponsored Affiliates
- Revenue sharing based upon unit level of participation

# *Participants*



## ■ Associates

- Serves as a connector of other participants
- Board approved
- Multi-year agreement
- Annual participation fee
- Direct connection to an FLR node
- May resell FLR services to Affiliates
- Share 40% of “mark-up component” of revenue from sponsored Affiliates

# *Participants*



## ■ Affiliates

- Interested in FLR services
- Sponsored and supported by Equity Member or an Associate
- Board approved
- Connect through Sponsor's network
- One time transaction fee
- Annual commitment for services
- Can not resell FLR services

# *Challenges*



- Funding!
- No State of FL support
- Public universities funding a private company
  - Never done before
  - State prohibition on public institutions investing money in a private company
  - A new public higher education governance structure now in place where control shift to the individual universities

# *In Summary...*



- Better position to pursue opportunities and major funding for research
- Equal footing with the best and most progressive universities in the nation
- Redefined our ability to collaborate and compete
- Increased the value of existing network services
- Committed to serve the research and education community today and in years to come

# *In Summary...*



**Already  
An  
Award  
Winner!**

**From  
South  
Florida  
Business  
Journal**



*Questions?*



[www.flrnet.org](http://www.flrnet.org)

[veronica.sarjeant@flrnet.org](mailto:veronica.sarjeant@flrnet.org)