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Internet2
@
The University of the
Virgin Islands

This presentation discusses improvements made to the UVI network to accommodate a connection to Internet2, as well as faculty projects currently underway which will benefit from this new access.

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UVI at a Glance

- Two campuses (St. Thomas & St. Croix)
- Approximately 2500 students
- Heavy reliance on videoconferencing
- Mostly a commuter school
- Information & Technology Services component
  responsible for faculty technology training

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Internet2 Network Design
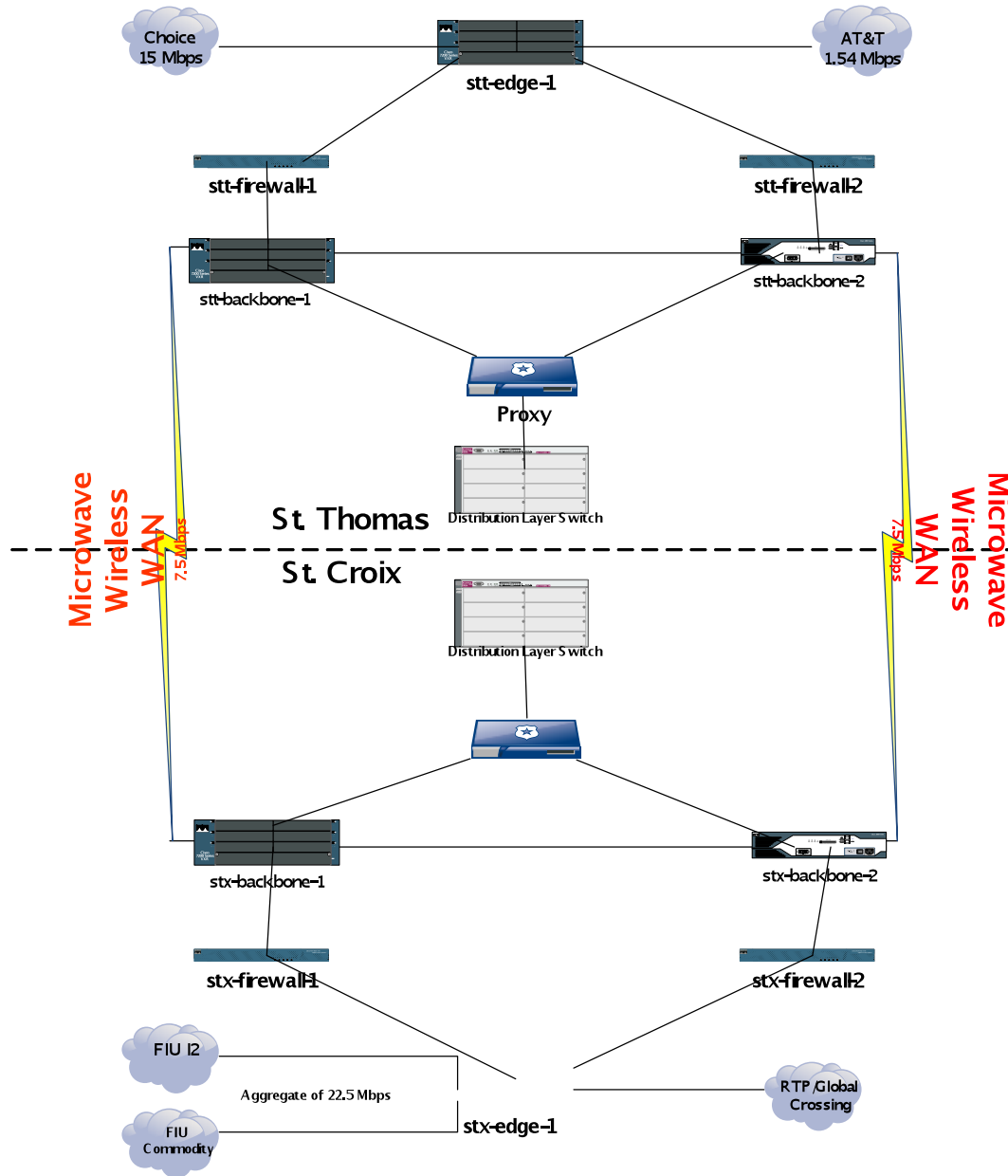
New UVI Backbone I2 Topology

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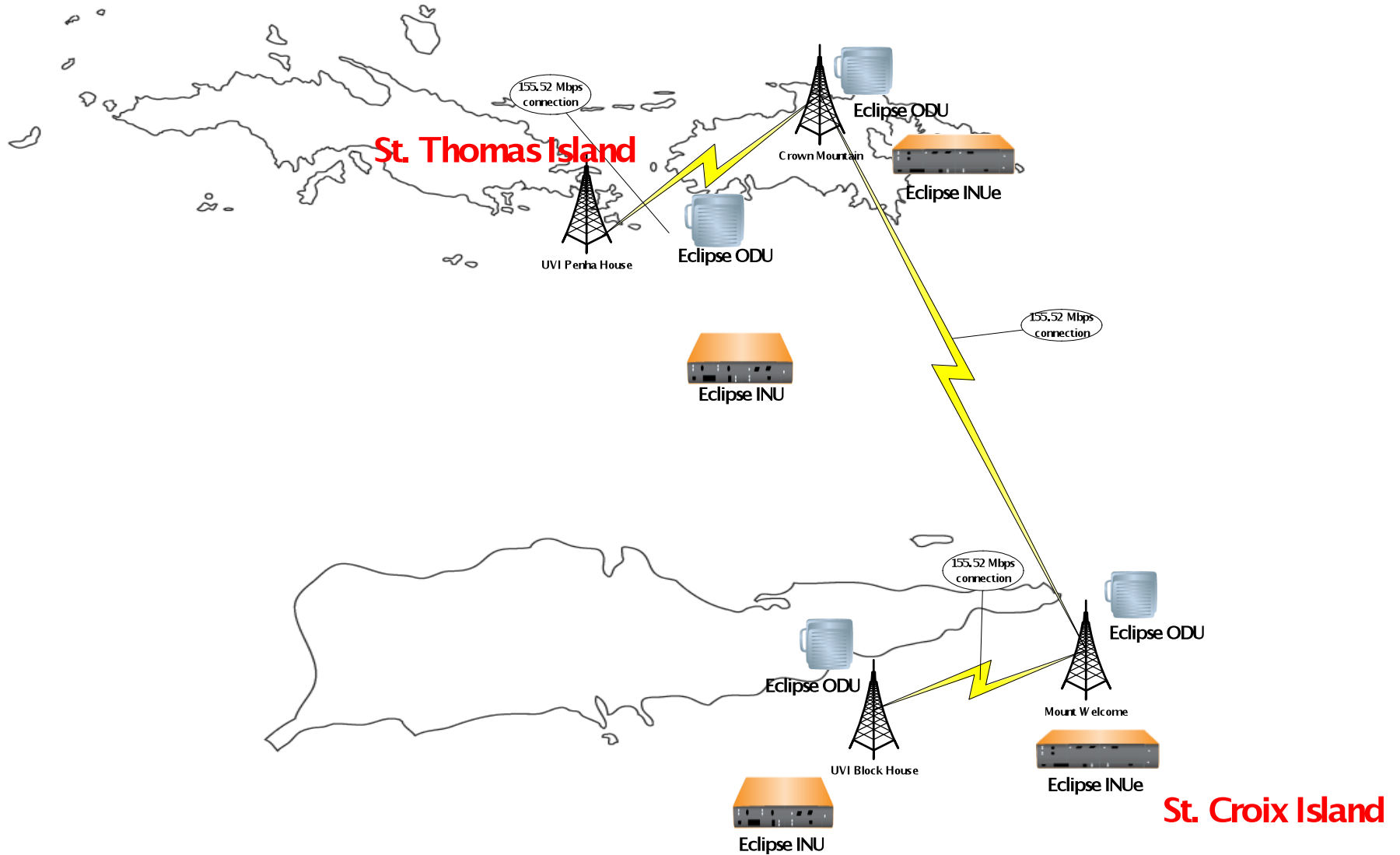
New UVI Backbone I2 Topology

- Upgraded the Cisco 7206 routing equipment

- Added Cisco 2821 routers as a redundant path

- Implemented Border Gateway Protocol (BGP) to support multi-homing to multiple ISPs

- Upgraded Cisco system software to support BGP and configuration to support I2 routing

- Restructured backbone architecture to create uniformity on both Islands in

Microwave **Wireless** WAN 155.52 Mbps

155.52 Mbps connection

Eclipse ODU

Crown Mountain

Eclipse INUe

St. Thomas Island

UVI Penha House

Eclipse ODU

Eclipse INU

155.52 Mbps connection

155.52 Mbps connection

Eclipse ODU

Eclipse ODU

Mount Welcome

UVI Block House

Eclipse INUe

St. Croix Island

Eclipse INU

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Microwave Wireless WAN 155.52 Mbps

- Installation in 2010
- Increase WAN bandwidth from 7.5 Mbps to 155.52 Mbps to accommodate I2 traffic
- Carrier-grade Eclipse wireless backhaul solution from Harris Stratex
  - Highly scalable software design
  - Optimized wireless nodes that support multi-outdoor units (ODUs)
  - Efficient Terminal Options solutions for transport of OC3 data
  - Scalable Capacity Architecture that supports smooth network upgrades
  - High speed data transport and QoS features
  - Advance Network control through Java-based management tools

Potential Uses of the I2 Network

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GPS Regional Monitoring Systems

- Dave Smith, Ph.D., Physics Professor is UVI Coordinator
- UVI, St. Thomas campus, supports GPS position monitoring station
- PR Seismic Network Program installed 8 high-rate GPS Networks in PR and USVI – with more to come
- Project seeks to develop Broadband Earthquake Observation System in PR & USVI –
- Stations collect and disseminate high resolution GPS data 24/7
- Internet2 access at UVI will help this process

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GPS Regional Monitoring Systems

- Project is part of an NSF Major Research Instrumentation Project
- Established through MOU between UVI and the University of Puerto Rico, Mayaguez
- Purpose – Improve earthquake monitoring and tsunami early warning system in the Caribbean

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Radar Site Data Collection

- Prof. John Munro, CIS professor is principal investigator for UVI portion
- Initiative supports collaborative project of:
  - Clemson University – Cornell University
  - University of Puerto Rico – Univ. of the Virgin Islands
- Imaging radar site located on St. Croix, USVI
- Hundreds of gigabytes of data produced during 2–3
    hour evening operation

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Radar Site Data Collection

- Observations and radar site data collected provide an opportunity for educational experiences in upper atmospheric research

- Project also has space weather relevance

- Internet2 connection would facilitate data

   transmission to Cornell from USVI

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Conclusion

- Efficient, redundant, and easily scalable backbone topology

- State-of-the-art Microwave Wireless WAN with increased bandwidth and Java based monitoring tools

- Network enhancements ensure UVI's capacity to support demands for high performance networking in the Territory

- Increased opportunities for faculty training and research collaborations