

Building Software Defined Infrastructure/Services at Mid-Atlantic Crossroads (MAX)

Workshop on Prototyping and Deploying Experimental Software Defined Exchanges (SDXs)

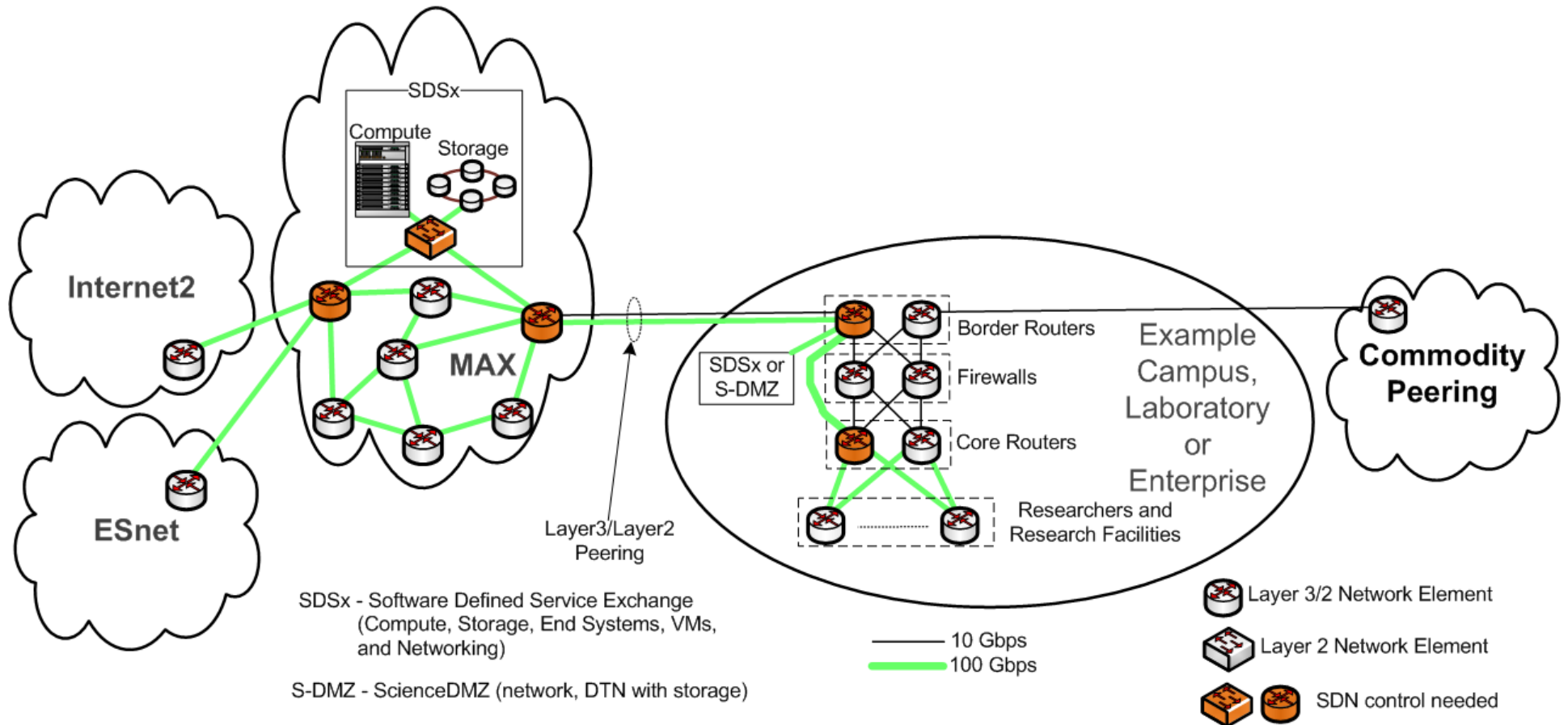
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Tom Lehman
University of Maryland
Mid-Atlantic Crossroads (MAX)



Science Application Support Considerations

- Example Topology between Regional and Enterprise Infrastructure
- Multiple options for SDI/Services and ScienceDMZ



MAX Regional Network

- Architecture vision is for a "Software Defined Service (SDS)" capability which uses SDI embedded within the network
 - compute (VMs), high performance storage, SDN
- This SDS can be used for:
 - hosting applications on well engineered high performance VMs
 - basic data transfer node functions
 - resources to run parts of a larger workflow process
- Believe that this will evolve to an SDS Exchange (SDSx) over time as it gets connected to other resources like HPC, AWS, researchers running complex workflows which involve other resources and infrastructures

MAX Regional Network

- MAX SDS components
 - network elements: brocade, dell, juniper
 - compute: Cisco UCS, OpenStack
 - Storage: CEPH/Ethernet
- Partially deployed today
- GENI Racks may also be connected to SDS network element
 - can leverage GENI Federation infrastructure as part of multi-domain services

Enterprise Side

Currently Studying Options

- **Option 1: Nothing deployed on Campus**
 - Researchers will use MAX SDS/I to host their applications (this is the option in use today)
 - MAX will utilize SDI to provide "ScienceDMZ as a Service"
- **Option 2: Deploy SDS/I inside Enterprise**
- **Option 3: Deploy ScienceDMZ inside Enterprise**
- **All of these options involve considerations regarding internal Enterprise network upgrades**
 - no upgrades
 - partial upgrade to 100G and some SDN control
 - full 100G and SDN upgrade

Multi-Domain Architectures

- There are lots of things needed to realize a multi-domain Software Defined Service/Infrastructure capability
- But not enough time to discuss those in this presentation
- Will save that for the workshop discussions