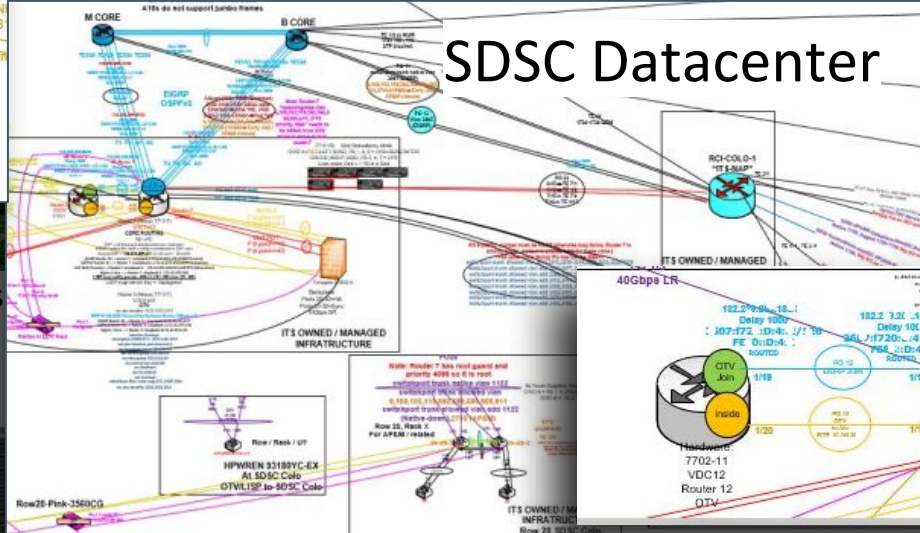
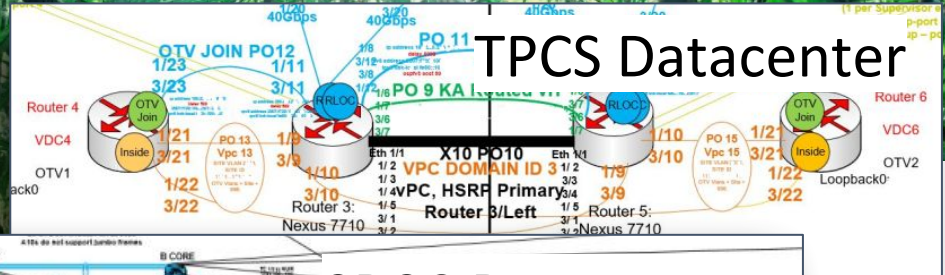
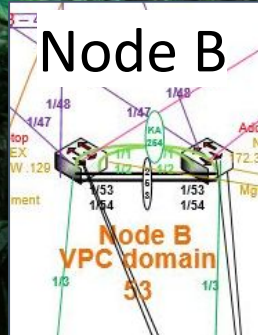


Campus **L>SA**  
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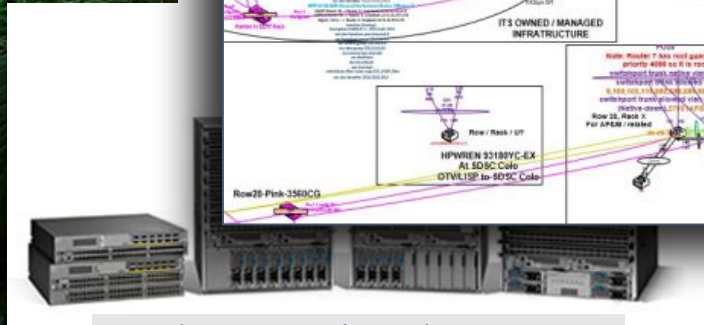
# Cisco Nexus OTV Spanning Buildings

Rachel Hassett  
Brian Dunne

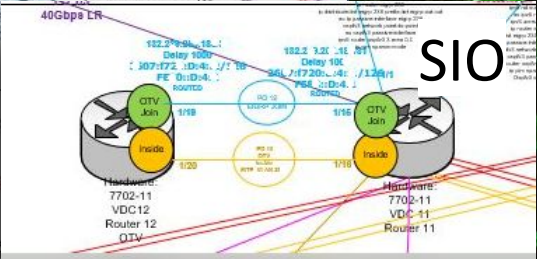
There's a few new devices in our data centers



data centers



Non-datacenter based connectivity



SIO

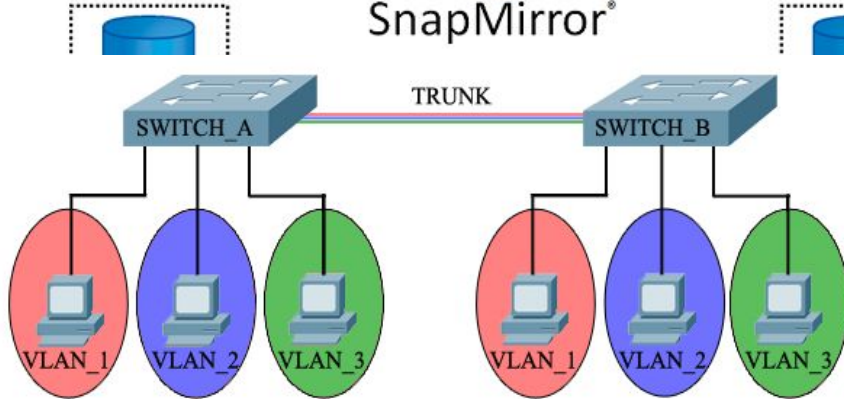
# Quick Definitions:

## Production Site

## DR Site



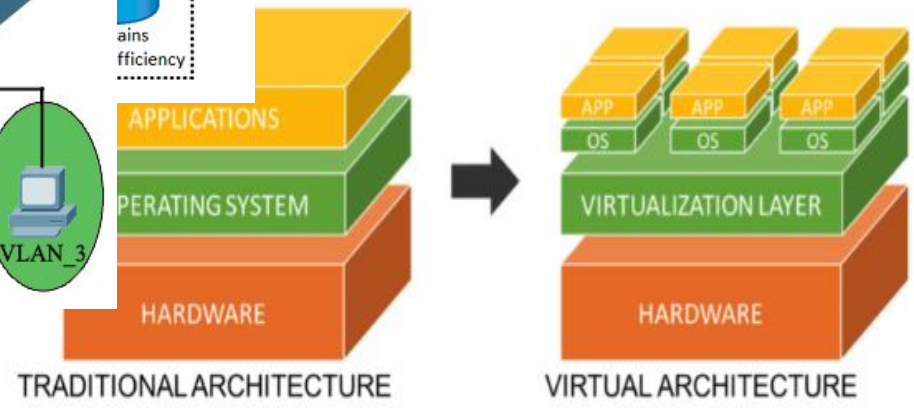
SnapMirror®



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on

## VM

Virtual machine - virtual hardware is presented to the virtual machine, including virtual network card



VMs through virtual switches, vmkernels, vmnics

TRADITIONAL ARCHITECTURE

VIRTUAL ARCHITECTURE

# ITS Cisco Nexus Environment

Team: Brian Dunne, Janet Keith

ITS has implemented host mobility on campus using Cisco Nexus at SDSC Colo, SIO Colo, TPCS and Node B. Unlike Traditionally Spanned Vlans, this solution offers redundant HSRP gateways coupled with Spanning-Tree isolation.

- OTV (overlay transport virtualization) - Layer 2 frame encapsulated in Layer 3 packet to span vlan
- LISP (location id separation protocol) - informs the network routing protocols about host location
- vPC (virtual portchannel) - makes two switches appear to downstream devices as a single switch
- VDC (virtual device context) - Virtualization Nexus Routers/Switches for the above OTV/LISP functions

# OEC (Office of Engineering Computing)

Team: Rachel Hassett, Todd Clopine, Ian Kaufman

Jacobs Hall:

4 ESXi hosts (Aeon Computing Eclipse servers)  
Netapp FAS2554 storage - 2-node cluster (NFS  
datastore)

SDSC (DR site):

2 ESXi hosts (Aeon Computing Eclipse servers)  
Small local SSD storage for independent storage  
Netapp FAS2554 storage - single node (NFS  
datastore)

Virtualization Layer:

VMware ESXi Enterprise Plus  
vCenter Standard (next to implement: vCenter HA)  
Netapp SnapMirror  
~120 VMs

Goal: Set up a more usable DR site for our virtual infrastructure

# Collaboration

ITS asked OEC to pilot the new OTV/LISP configuration, to span a new VLAN between Engineering and SDSC.

Over the course of the last year, we've had multiple planning sessions, brainstorming, architecting and re-architecting, purchasing and installing equipment, TESTING TESTING TESTING

As of May 16th, OEC's new spanned VLAN is in production

## Benefits

In OEC's specific environment, the biggest benefit is that we have reduced the number of steps to recover systems in a disaster.

### Disaster Recovery - prior to OTV/LISP

1. Make DR Netapp Primary storage
2. Register VMs on DR ESXi hosts
3. Boot up VMs
4. Re-IP VMs, change DNS entries
5. Modify firewall rules
6. Test!

### Disaster Recovery - after OTV/LISP

1. Make DR Netapp Primary storage
2. Register VMs on DR ESXi hosts
3. Boot up VMs
- ~~4. Re-IP VMs, change DNS entries~~
- ~~5. Modify firewall rules~~
6. Test!

Another big benefit is being able to live migrate VMs from one site to the other, if necessary.

# Curious?

A few main requirements if you're interested in spanning a VLAN across sites here on campus, in virtualization scenarios:

- Virtualized server environment in multiple locations, with VMs that may need to run in either location
- Cisco Nexus Routers
- <10ms latency between sites for OTV
- Dedicated sysadmin in your department to collaborate/coordinate with ITS

To find out more about ITS' implementation:

Brian Dunne  
bdunne@ucsd.edu

To find out more about OEC's implementation:

Rachel Hassett  
rhassett@ucsd.edu