



Bridging the P-20 Divide Through Colocation - *A Plan Comes Together*

The



DEPARTMENT OF
EDUCATION

Data Center Move Project

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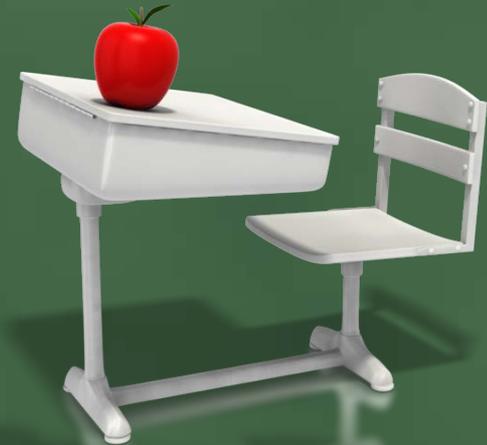
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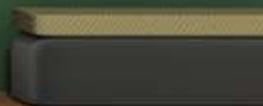
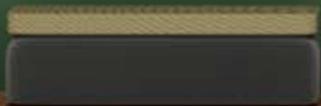
*Please hold all questions until the end of
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BACKGROUND

“History will be kind to me for I intend to write it.”

– *Winston Churchill*



November 2003

- 43 servers
- Poor backup software/strategy
- No central control of administration or access
- Frequent unplanned downtime
- Low customer confidence

Late 2004

- Consolidated down to 22 servers
- Established backup policy and procedures
- Centralized control, administration, and access
- Implemented a Storage Area Network (SAN)
- Saved approximately \$250k/biennium in maintenance costs
- Awarded 3rd Prize in Microsoft Server 2k3 Challenge
- ODE still needed to move to a new facility



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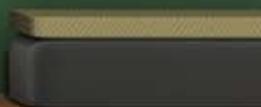
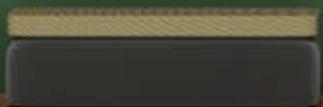
Computing and Networking Infrastructure Consolidation (CNIC)

“To reduce costs while maintaining or improving service levels through consolidation of the state’s computing and networking infrastructure.”

- Vision Statement

Mandated Consolidation

- CNIC project started in 2004
- Participation was mandated by Governor Kulongoski
- Goal was to consolidate the data centers of the twelve largest state agencies into a single State Data Center (SDC)

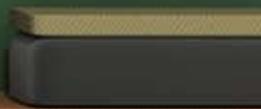
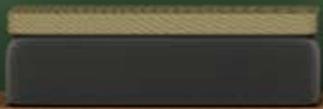


ODE Participation

Could ODE allow servers housing student-level data to reside in a shared facility staffed by personnel who were not employees or contractors of the SEA, knowing that these individuals would have full administrative access to said servers?



NO!



Family Policy Compliance Office Response

“Based on the information you have provided, we conclude that SDC staff do not qualify as “authorized representatives” of ODE under 99.31(a)(3) of the FERPA regulations because they are not employees or contractors under ODE’s direct control. ... Therefore consolidating ODE data into the SDC in the circumstances you described would not meet FERPA requirements, and we are aware of no other exception to the consent requirement in FERPA that would permit ODE to re-disclose personally identifiable information from education records to SDC staff.” - *LeRoy Rooker, Director FPCO*



Oregon State University Open Source Laboratory

“Behind the scenes, the Open Source Lab powers many of the most important open source projects in the world.”

- Justin Erenkrantz, President of the Apache Software Foundation

An Idea

- Baron Rodriguez (ODE) and Curt Pederson (OUS) had a beer
- K-12 and Higher Education Partnership
- Colocation of data for research
- Funding Source TBD

A Solution

- Open Source Lab (OSL) began in 2003
- State-of-the-art facilities
- Located in Corvallis at the Oregon State University (34 miles away)
- OSU staff already aware of, and compliant with, FERPA regulations
- Colocation versus hosted facility

The Grant

- ODE applied for a SLDS grant through the Institute of Education Sciences (IES)
- ODE specified that it would colocate its data center at OSU's Open Source Lab
- ODE was awarded \$3.7M in early 2009



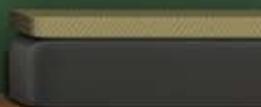
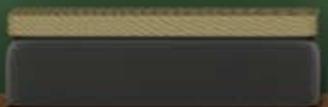
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The Plan

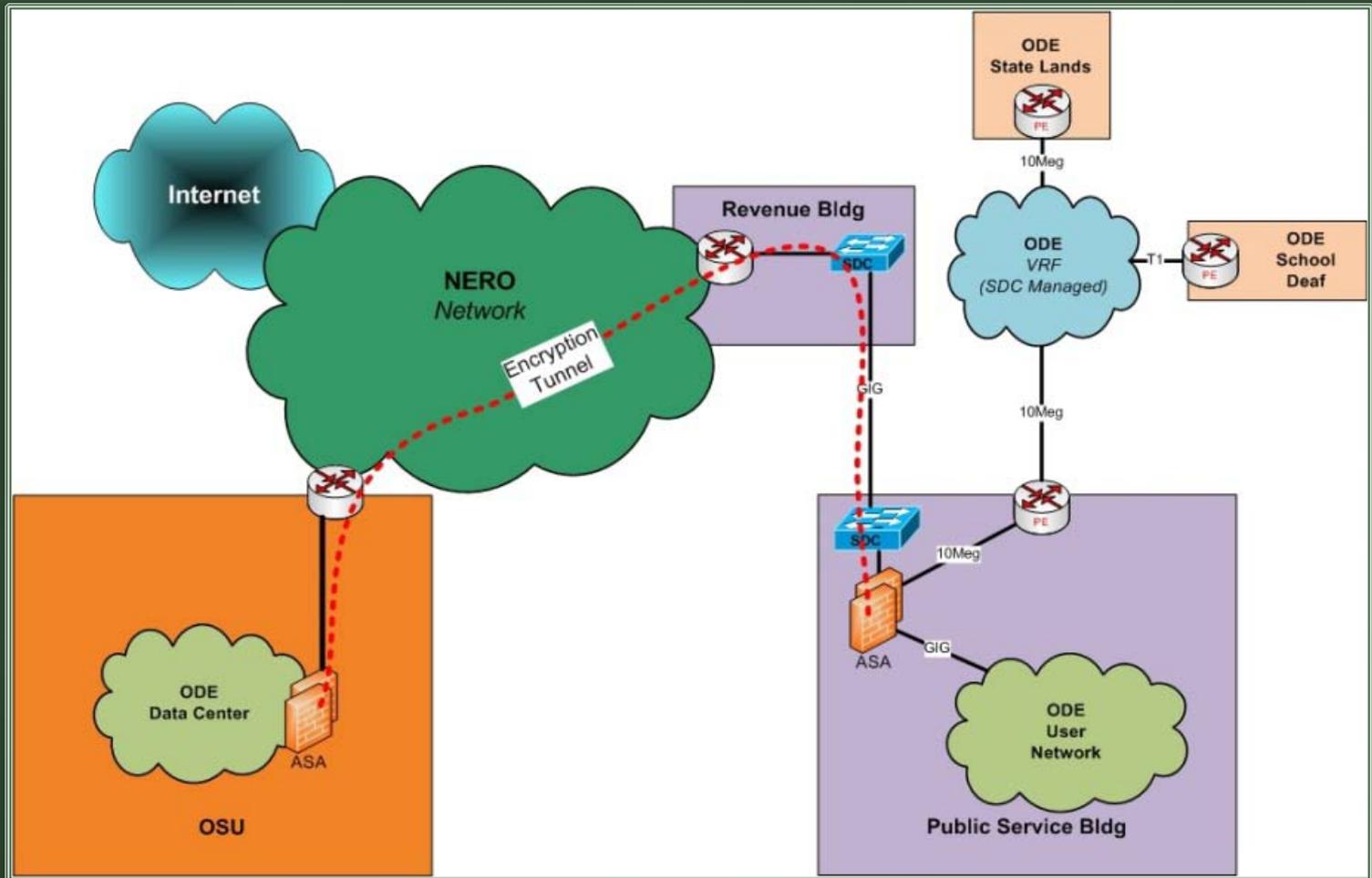
“So it begins.”

– Theoden, Lord of the Rings

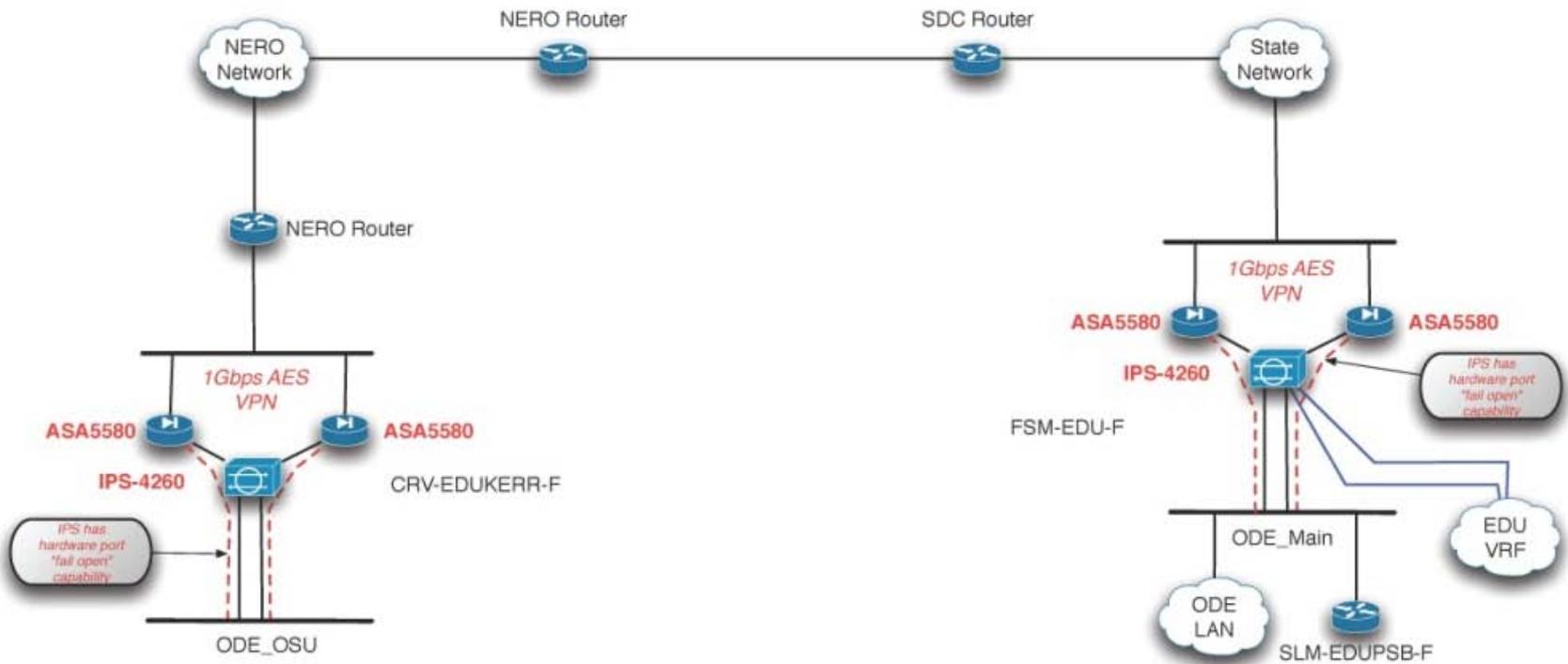


Project Overview

- First data center move project meeting was held October 9th, 2009
- Technical staff from all entities/agencies were represented
- Initial technical plan was drafted in December 2009



ODE Data Center Move



Phase I

- Gigabit to the Desktop
- Replace twelve 100Mbps switches with twelve 1Gbps switches with power over Ethernet (POE) capability
- Install two Cisco wireless access controllers and ten Cisco wireless access points

Phase II

- Install firewalls in failover configuration at the public service building and the Open Source Lab
- Configure firewall rules to match the existing rules at the State Data Center
- Configure all ODE public DNS records with new IP addresses
- Setup encrypted VPN tunnel between ODE and the OSL
- Un-rack, un-cable, pack, move, install, re-rack, and re-cable the entire ODE data center and have it operational **in a single weekend**

Phase III

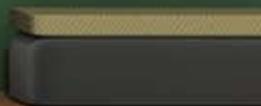
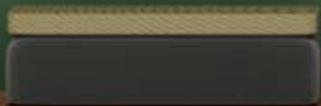
- Migrate user networks at the public service building, Oregon School for the Deaf (OSD), and State Lands locations to new Internet Service Provider (ISP) - Network for Education and Research in Oregon (NERO)
- Configure firewall rules to match those in place by the Oregon State Data Center
 - Required contacting all external entities that had firewall rules for ODE



The Results

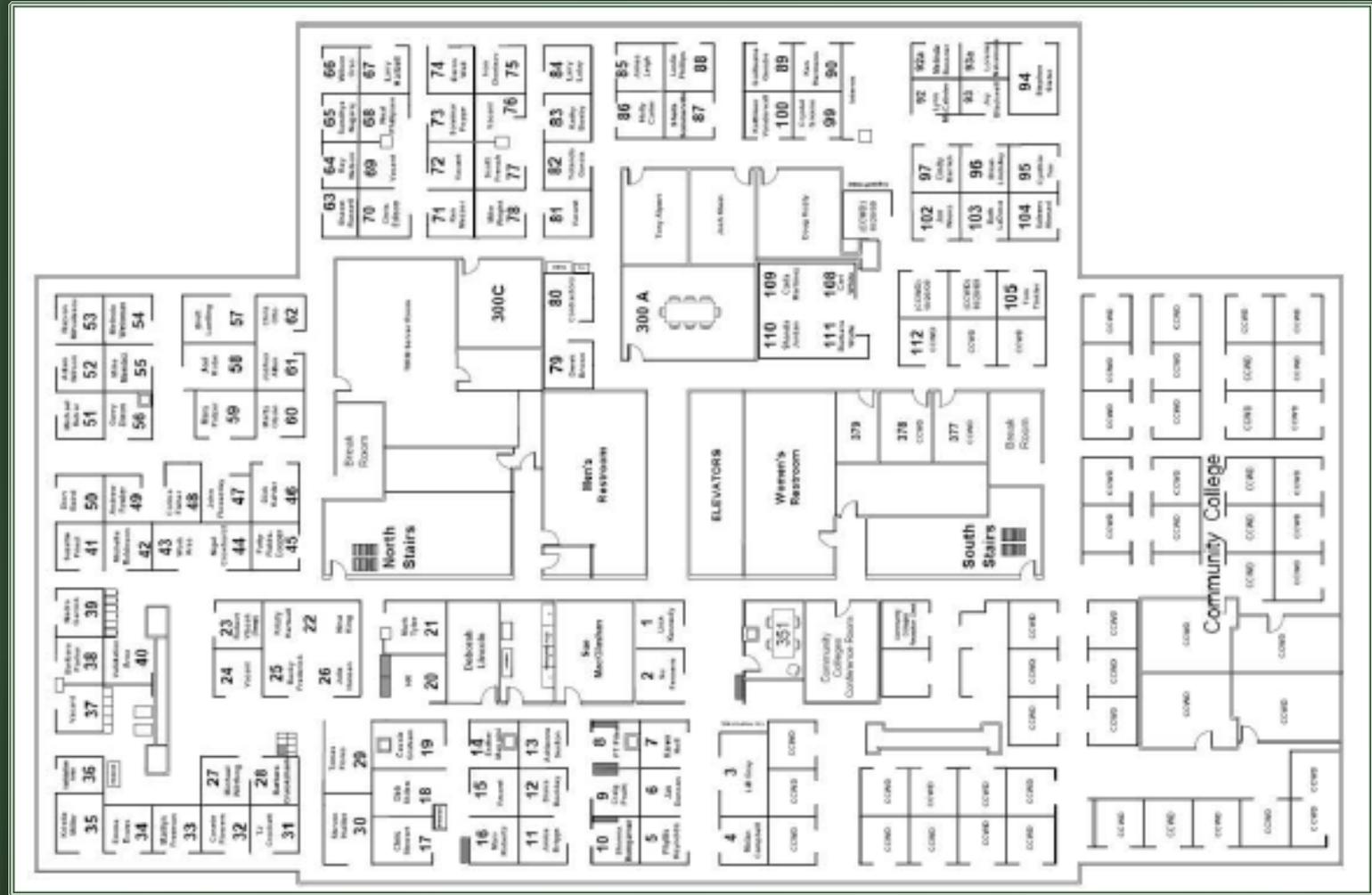
“I love it when a plan comes together.”

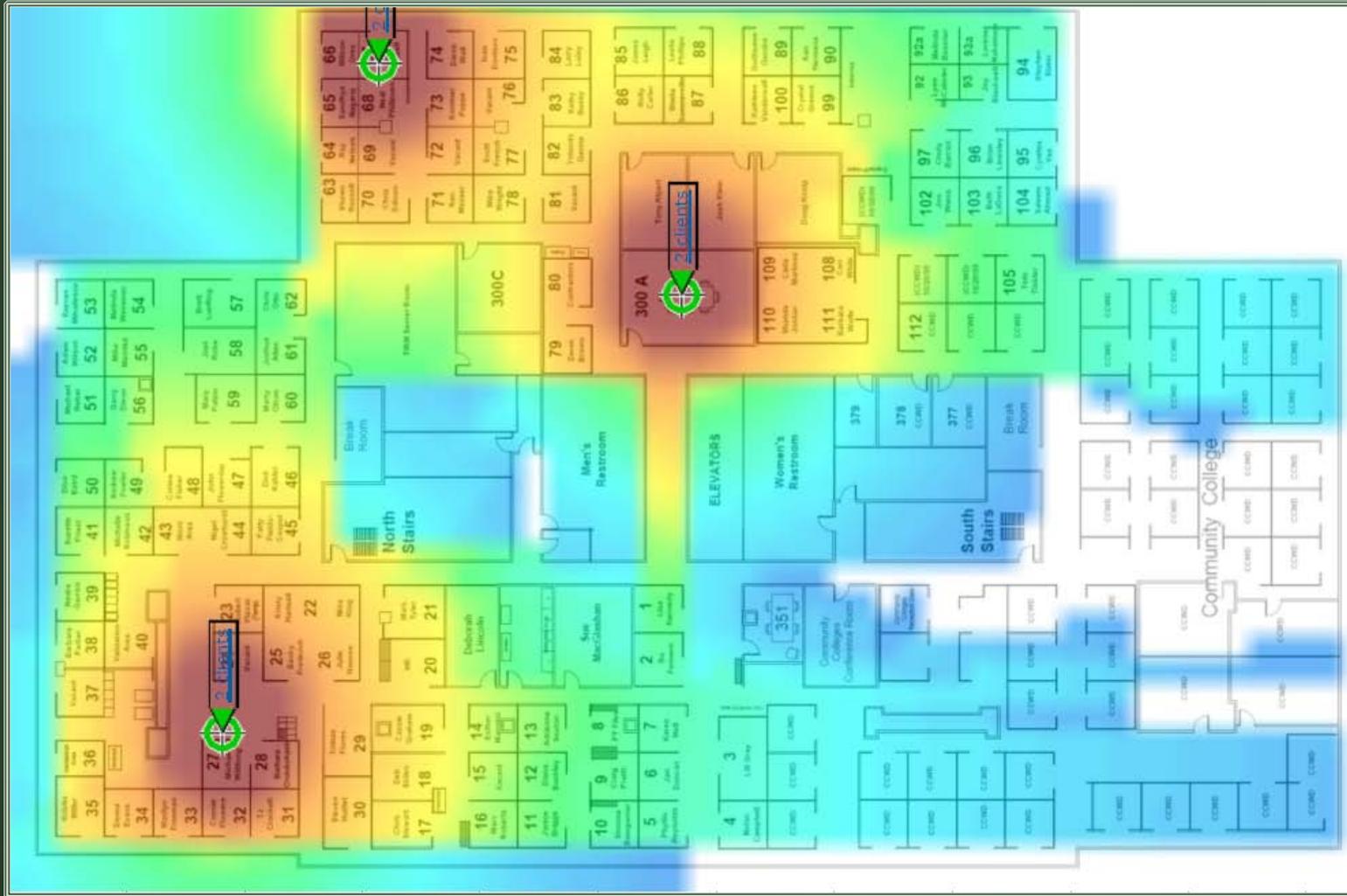
– Col. John ‘Hannibal’ Smith, The A-Team



Phase I

- ODE reserves two hours of downtime every Thursday. Phase I was conducted during this downtime over two weeks.
- Installed twelve Cisco 1Gbps switches w/POE
- Installed two Cisco wireless access controllers
- Contractor installed wireless access points and helped configure wireless access controllers





Phase II

- Installed firewalls in failover configuration mode at the public service building and the Open Source Lab
- Setup encrypted VPN tunnel between ODE and OSL
- Configured firewall rules to match the existing rules at the State Data Center
- Configured all ODE public DNS records with new IP addresses
- Un-racked, un-cabled, packed, moved, installed, re-racked, and re-cabled the entire ODE data center and had it operational **in less than 20 hours** with no errors



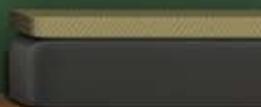
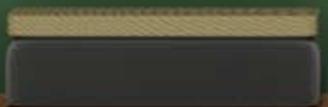
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Phase III

- Migrated user networks at the public service building, Oregon School for the Deaf (OSD), and State Lands locations to new ISP (NERO)
- Configured firewall rules to match those in place by the Oregon State Data Center
- Completed the actual cutover in 15 minutes, tested for an additional 45 minutes



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Lessons Learned

- Planning Pays Off
- Vendor Management
- Tenant/Landlord Relationship (cabling)





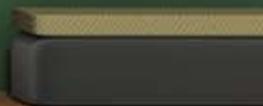
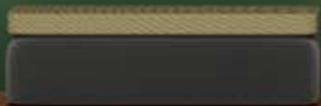
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Summary

“We’ve come a long long way together, through the hard times and the good.”

– Fatboy Slim



Benefits & Savings

- Improved business continuity and reduced downtime due to facilities
- Increased control – firewalls
- Segmented points of presence
- Colocation for research – poised for collaboration

Collaboration

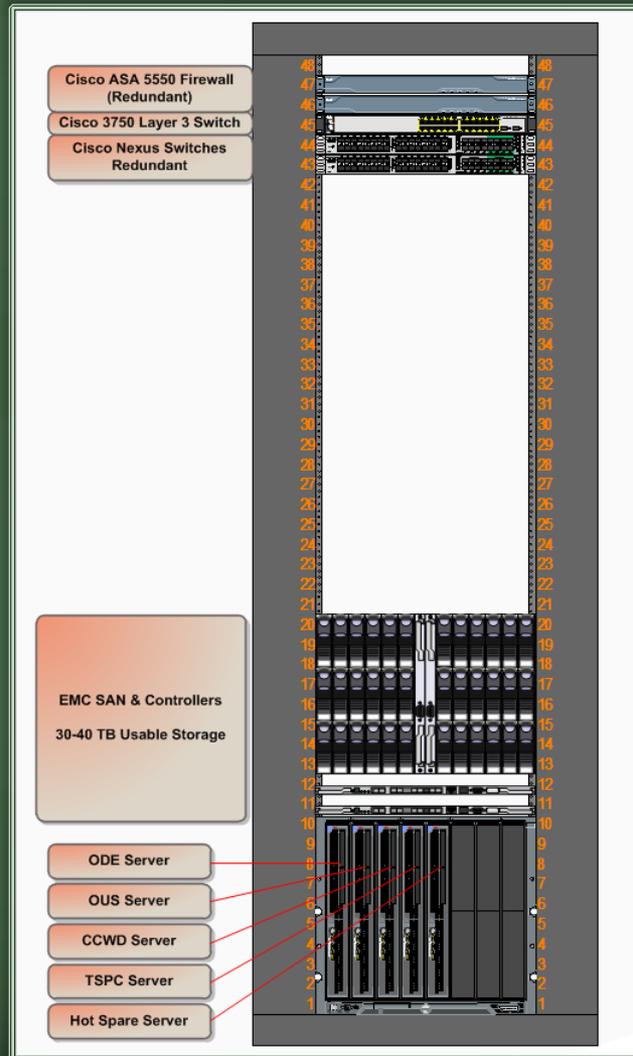
- K-12 Partnership with Higher Education
- Majority of K-12 LEA partners already on NERO network
- Oregon Virtual School District (ORVSD) already located at OSL
 - <http://www.orvsd.org/>
- “Neutral” location for P-20 data sharing

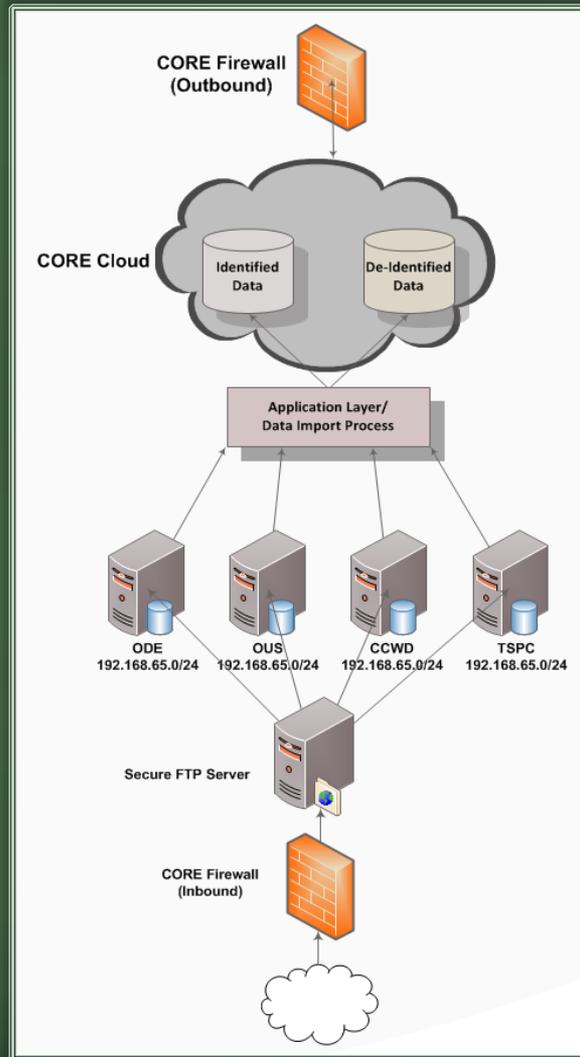
Advancing Longitudinal Data for Educational Reform (ALDER)

- \$10.5M Statewide Longitudinal Data Systems Grant awarded in May 2010
 - <http://alder.orvsd.org/>
- Leverage higher education partnership established in FY09 grant to develop Multi-Sector Warehouse
- Leverage Direct Access to Achievement (DATA) FY07 grant for professional development around data quality
 - <http://www.oregondataproject.org/>

ALDER Multi-Sector Warehouse

- True P-20/W data warehouse
- Partners include: Early Childhood, ODE, CCWD, OUS, TSPC, and OED
- Colocated at OSU Open Source Lab
- Data made available for research through IR governing board
- Coming in 2014







Questions?

