

Steelcase

Deployment of Open Networking & SDN in a Large Enterprise

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Steelcase

Agenda

- **Steelcase Company Overview**
- **Open Network/SDN Introduction**
- **ON/SDN Data Center Design**
- **ON/SDN Data Center Implementation**
- **Further ON/SDN Implementations**
- **Looking forward with Open Networking**

Steelcase Overview

- **100+ year old company**
- **3+ Billion Annual Revenue**
- **#1 Manufacturer of office furniture**
- **Products in corporate, healthcare, educational markets (desks, walls, floors, cubicles, etc.)**
- **HQ in Grand Rapids, Michigan**
- **100+ locations world-wide (~20 countries)**
- **Active/Active data center pair in Grand Rapids, MI**



Steelcase Technology Products

WAYFINDING + SCHEDULING



Live Map



Room Wizard



Find

WELLBEING



Rise

COLLABORATION



Surface Hub
+ Virtual Puck



media:scape

WORKPLACE ANALYTICS



Workplace
Advisor Study



Workplace
Advisor Subscription

ON/SDN Introduction

2014 - What was happening at Steelcase

- Imminent DC move
- 3 simultaneously active data centers
- Old DMZ network
- Need for reduced latency/incremental performance gains
- Moving from 1Gb to 10Gb infrastructure



Additional Considerations

Analytics and
Visibility for
**faster time
to resolution**

Simplified
Design

Uptime and
flexibility in
architecture

Cost

Open Networking In the Data Center – Timeline

- March 2014 – First intro. to SDN vendor
- June 2014 – First demo
- July 2014 – Design sessions
- Dec. 2014 – POC 1
- Jan. 2015 – POC 2
- Feb. 2015 – Final decision

Current vendor did not have a viable solution at the time



Vendor relationships



Deepen our understanding of SDN



Intriguing possibilities



Proof of concept



Decision

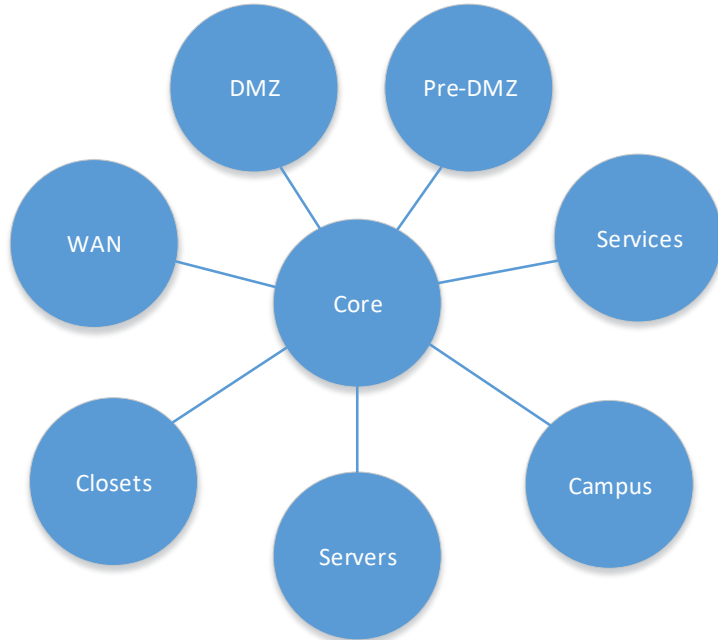
Open Networking In the Data Center – Decision

	<u>Open-Network</u>	<u>Incumbent</u>
• Cost	✓	
• Complexity	✓	
• Design flexibility	✓	
• Performance	✓	
• Visibility	✓	
• Lowest Risk		✓

ON/SDN Design

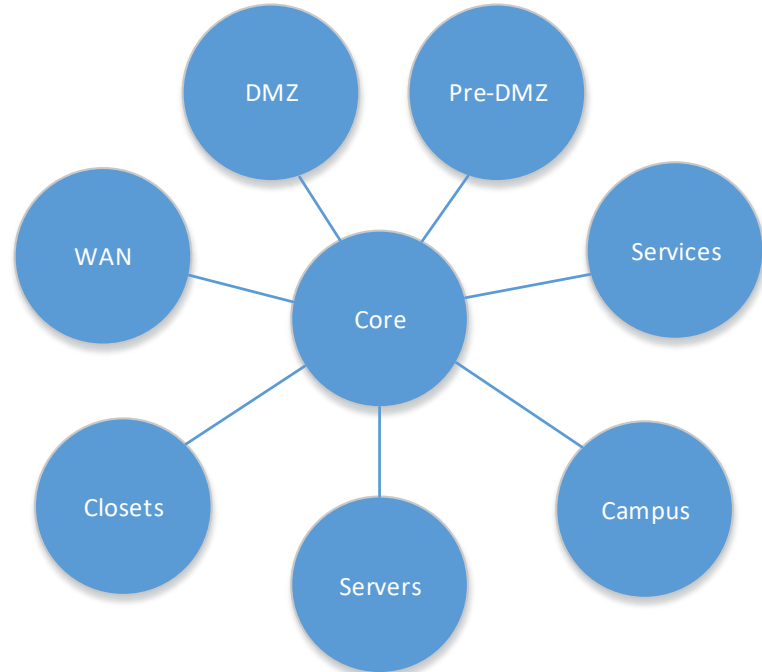
ON/SDN in the Data Center – Logical Design

Logical Design



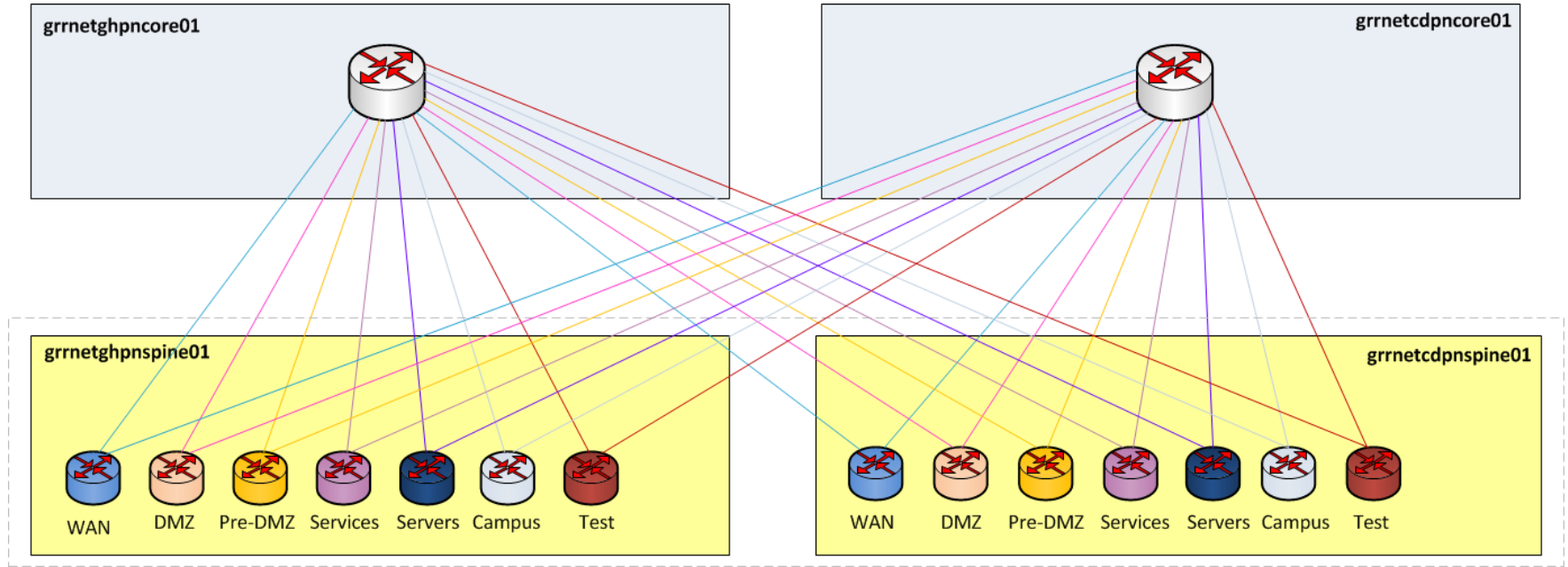
Hardware Based Routers

New Logical Design

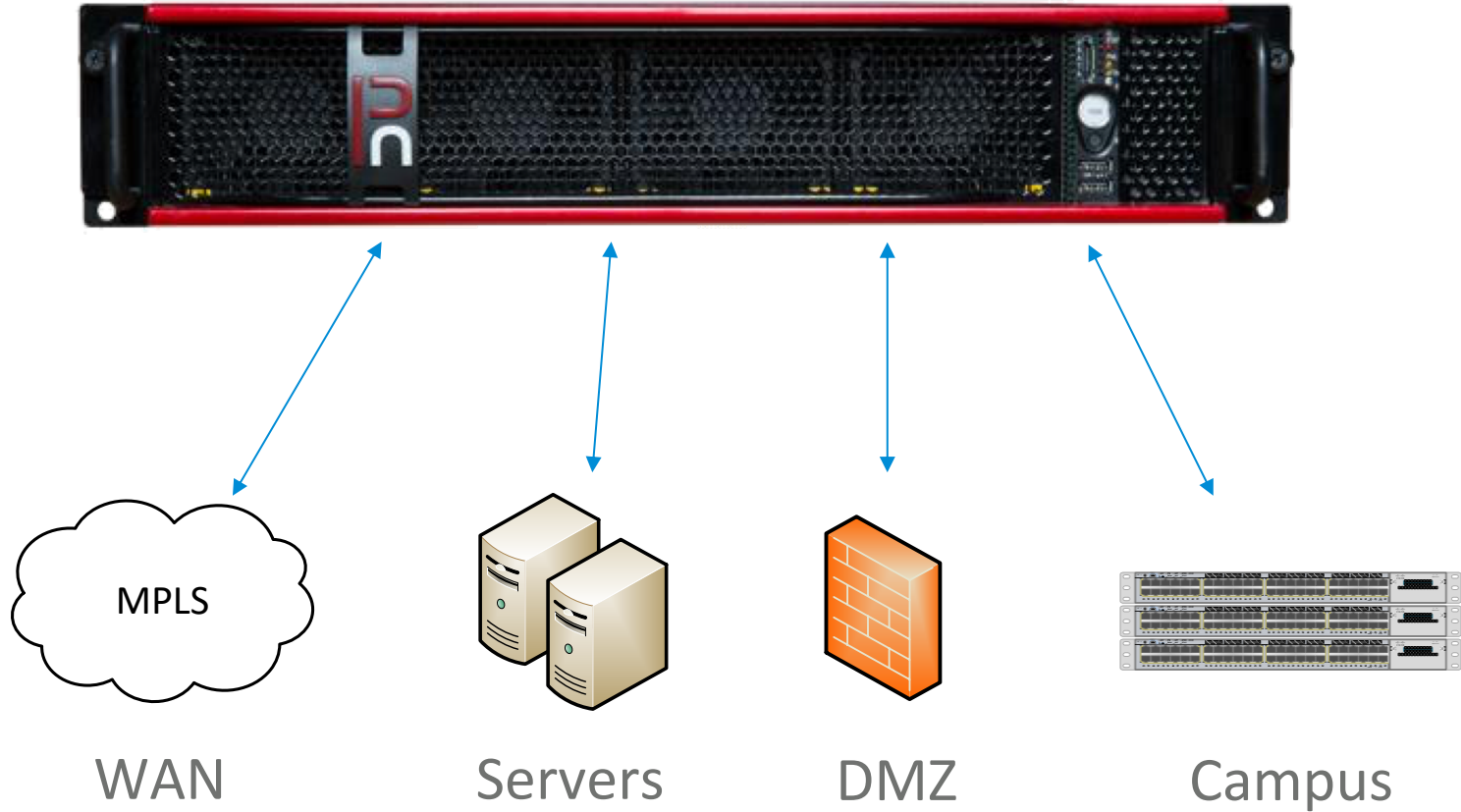


Virtualized!

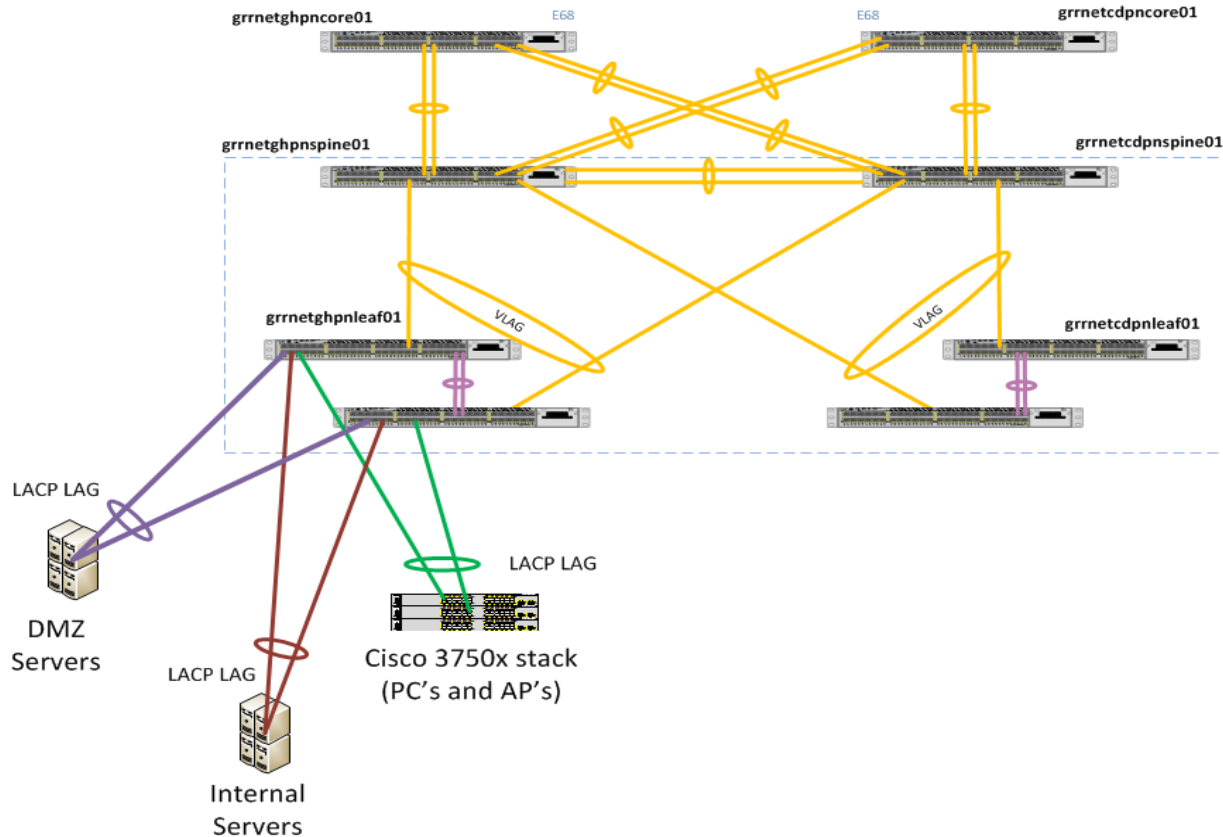
ON/SDN in the Data Center – Routing Design



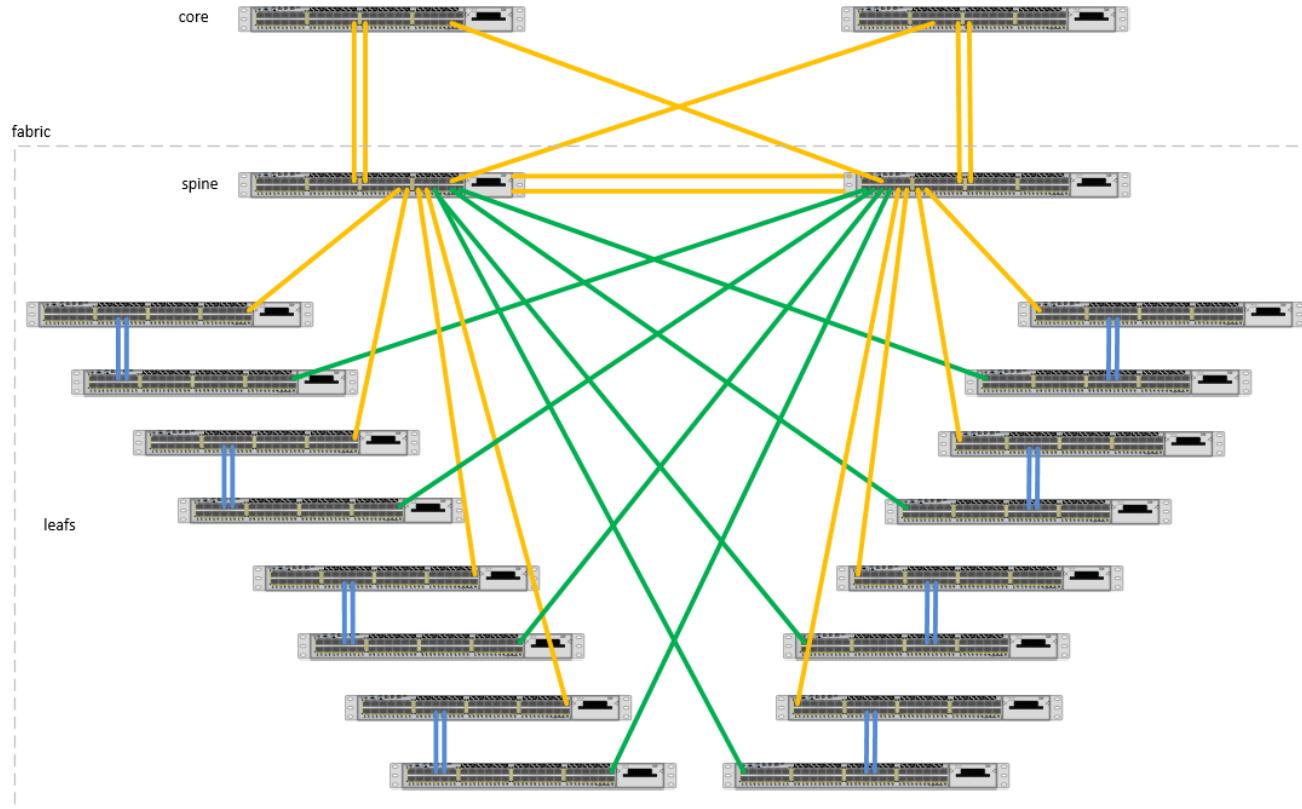
ON/SDN in the Data Center – Logical Design



ON/SDN in the Data Center – Physical Design

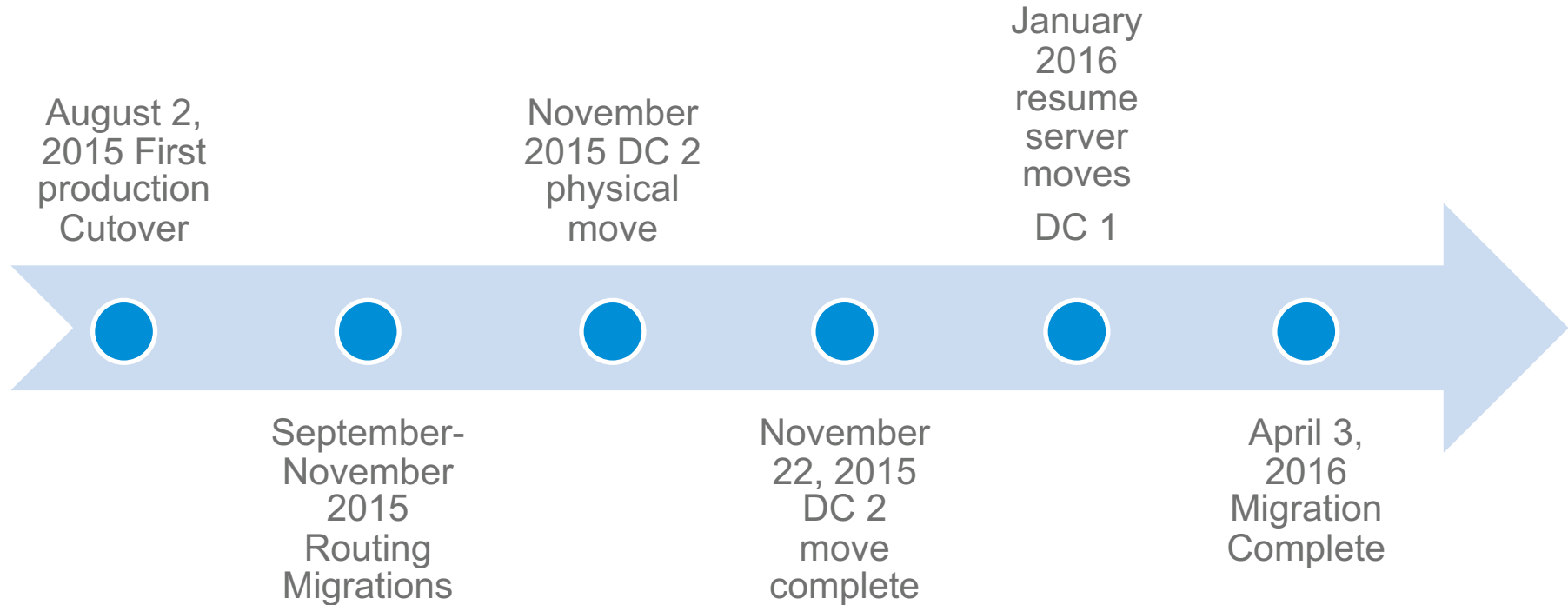


ON/SDN in the Data Center – Physical Design

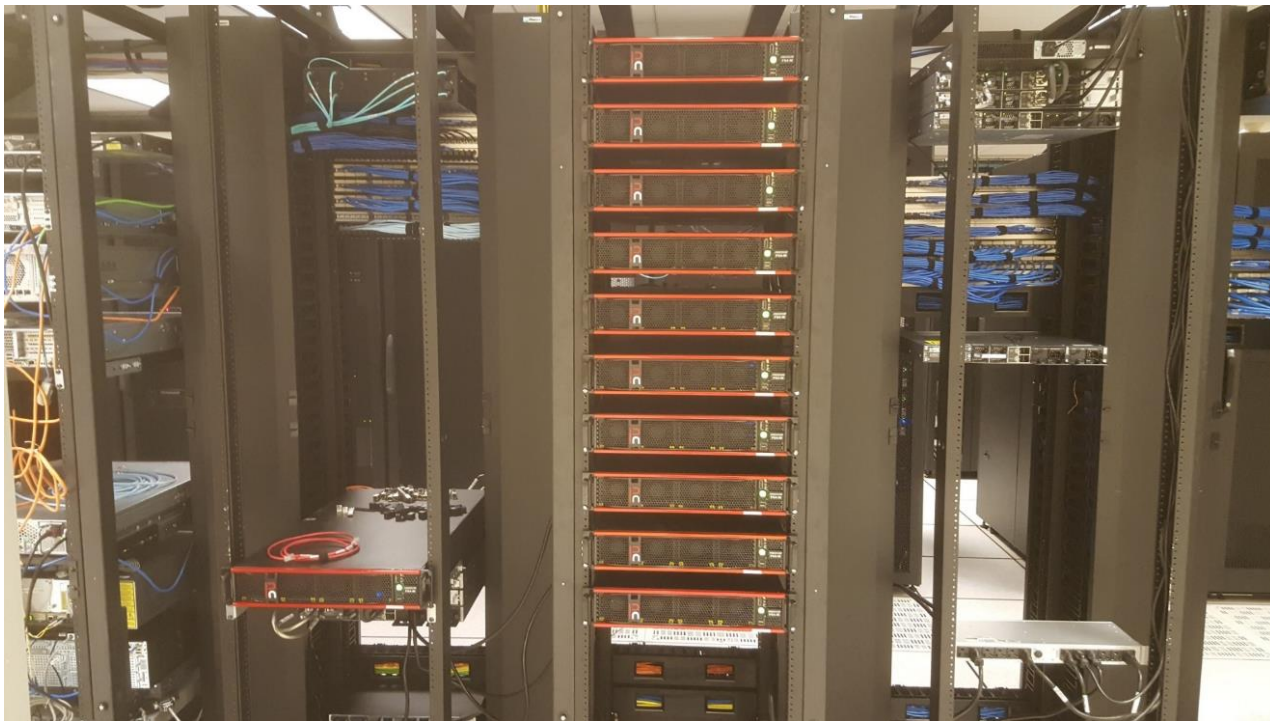


ON/SDN Implementation

ON/SDN in the Data Center - Implementation



ON/SDN in the Data Center – Implementation



ON/SDN in the Data Center - Implementation

•The Good

- Did not have to do a fork-lift upgrade
- Open network based system is extremely fast
- Control entire fabric from any switch or single REST API
- Open network based built-in Analytics are what we were hoping to find
- No significant design changes since day one
- Committed to open standards, industry-standards

•The Other

- All virtualization/clustering can add complexity in certain areas
- Shifting risk profile
- Test Network

Further ON/SDN Implementations

Further ON/SDN Implementations

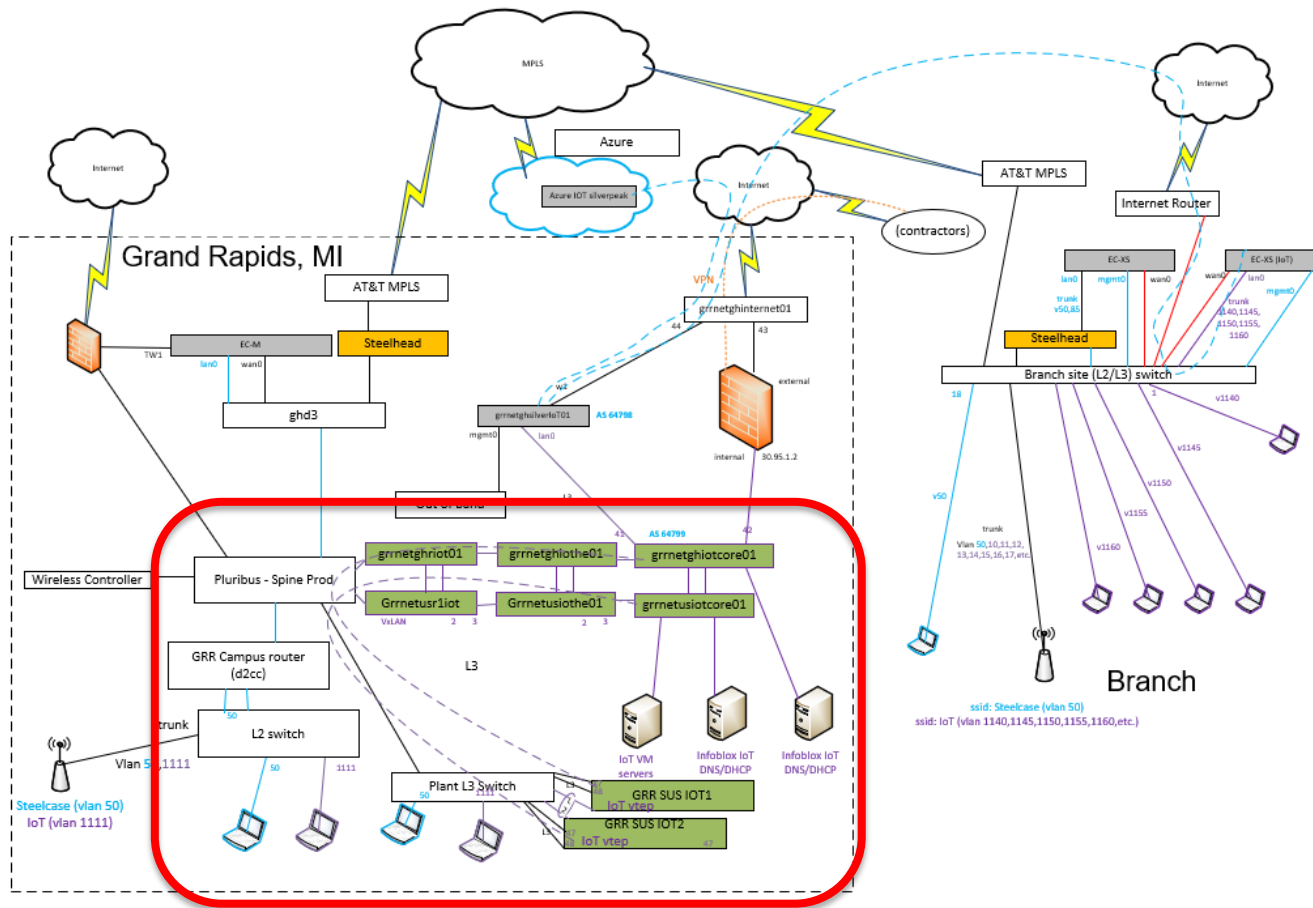
**Grand Rapids Data Center
Internet Routing**

**Munich Innovation Center
Core Network**

**Grand Rapids Campus
IOT VXLAN Overlay**

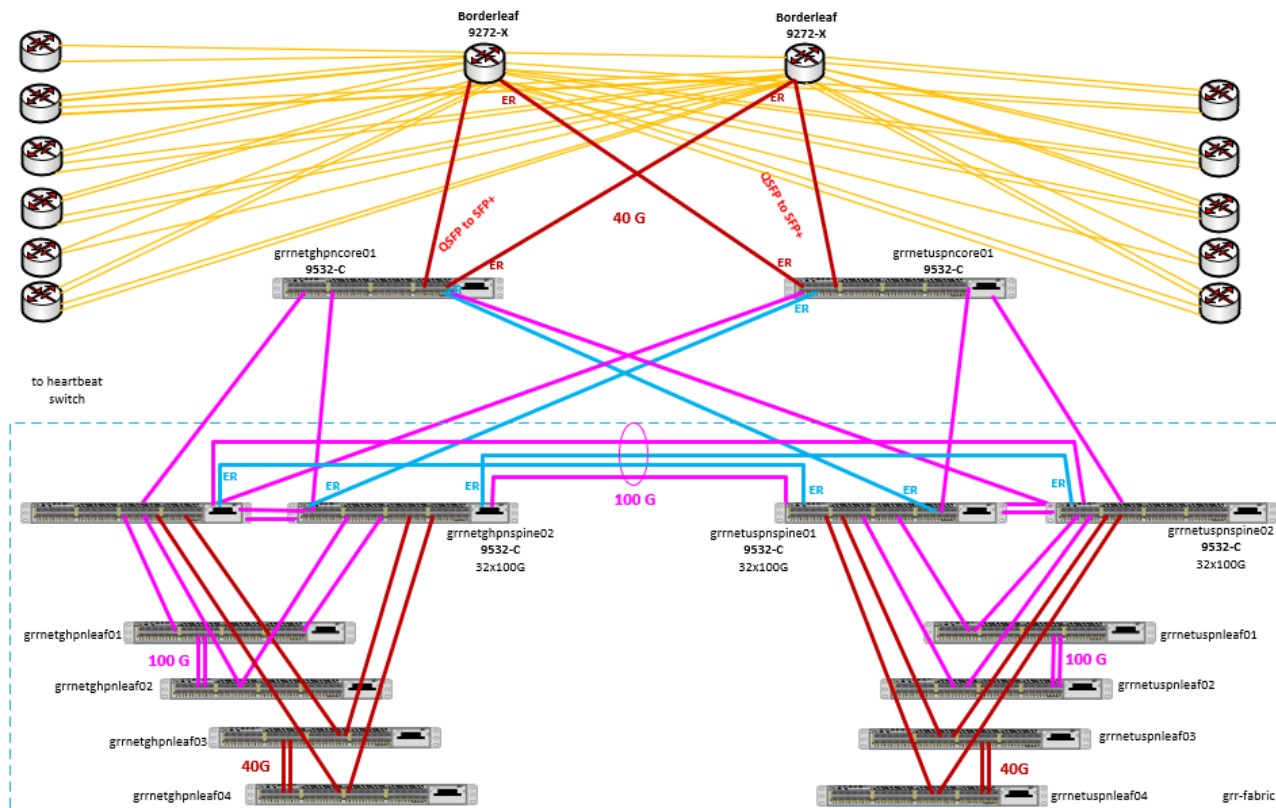


Further Implementations - IOT Vxlan Overlay



ON/SDN Looking Forward

Looking Forward Data Center 2.0



Looking Forward Data Center 2.0

DC 2.0 Benefits

- Improved Redundancy
- New 100g Backbone
- 25g At The Leaves
- Reduced Fiber Runs
- Increased Analytics Capabilities
- Increased Automation

Looking Forward Explorations

- Cloud Opportunities
- Stretch Fabrics
- 5g
- Edge Compute



ON/SDN Summary

- If you are not exploring Open Networking and SDN, start!
- Determine the needs of YOUR company
- Differentiate between flavors of “SDN”
- SDN and Open Networking have real benefits
- The industry is changing EXTREMELY quickly, open networking enables that change
- Exciting time for Network Engineers !!!

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