

# Simplificando el Data Center

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2 de Octubre de 2013

2010–2020

# The connected culture

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PROLIFERATION OF DEVICES



CONTENT CONSUMPTION



CONNECTED SOCIALIZATION



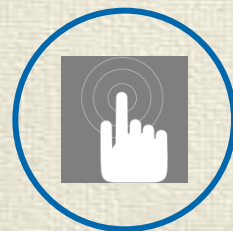
MACHINE TO MACHINE

# The Pursuit of Agility

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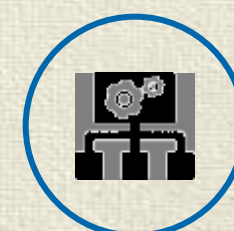
Applications are Driving IT Transformation



Virtualization



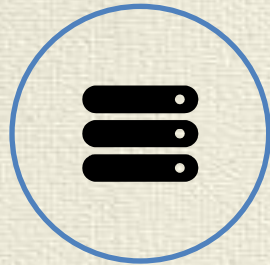
Clouds



SDN

# The network Needs to Be agile

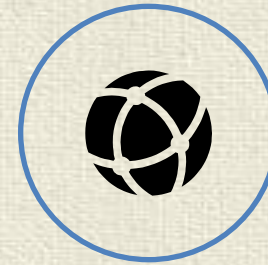
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Compute



Storage



Network

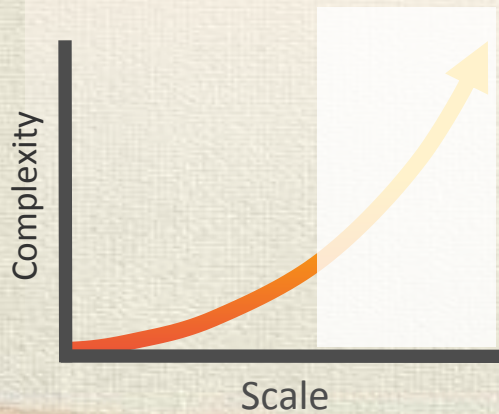


# 3 problems with networks today

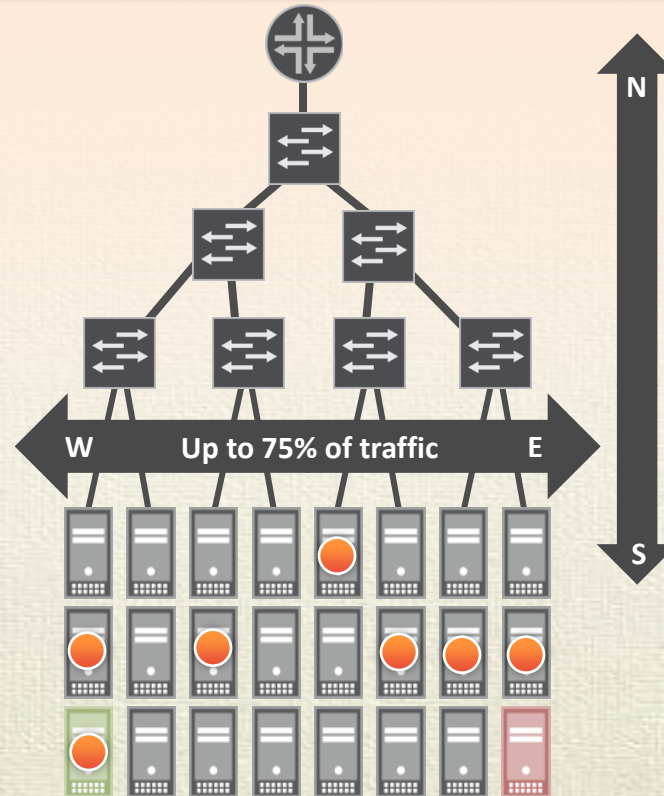
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## The challenges

- Too slow
- Too expensive
- Too complex



## Multi-tier legacy network



Unnecessary layers add hops and latency

Up to 50% of the ports interconnect switches, not servers or storage

Spanning Tree disables up to 50% of bandwidth

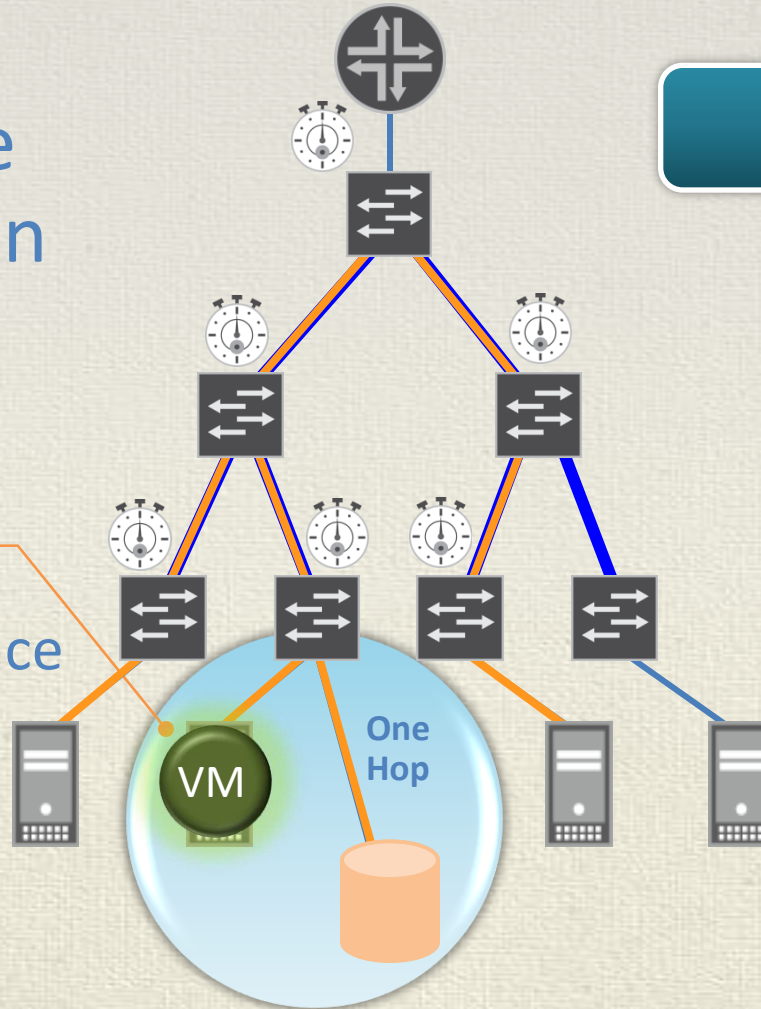
# THE TYRANNY OF TREES

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Typical tree configuration

Location matters in a tree architecture

**Bubbles**  
Optimal performance



# Definition of High-Performance Networking

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Data Center network must be:



**Scalable**



**Fast**



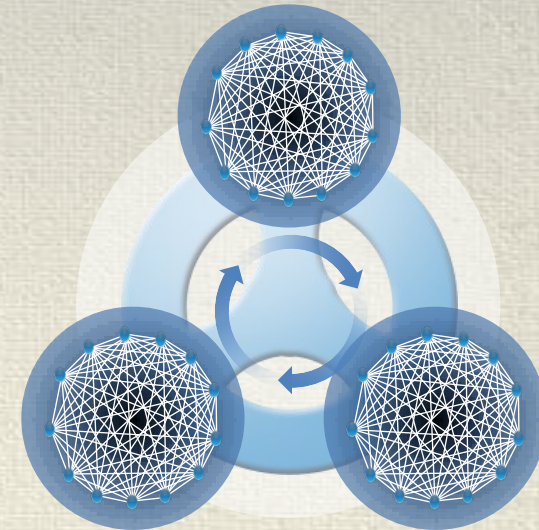
**Reliable**



**Secure**



**Simple**

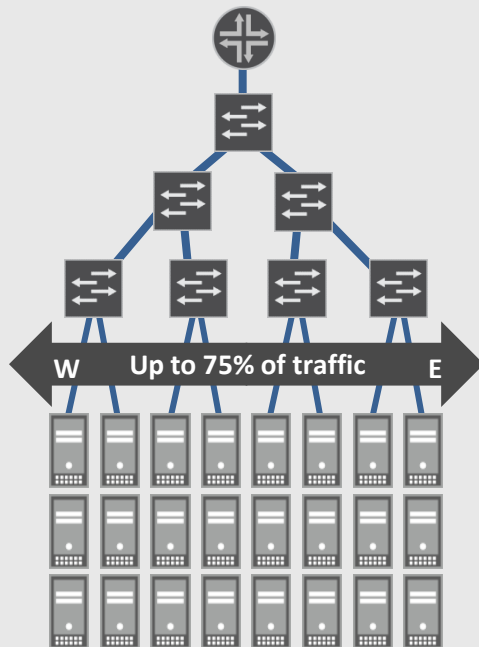


The Network is the  
foundation of the  
Data Center

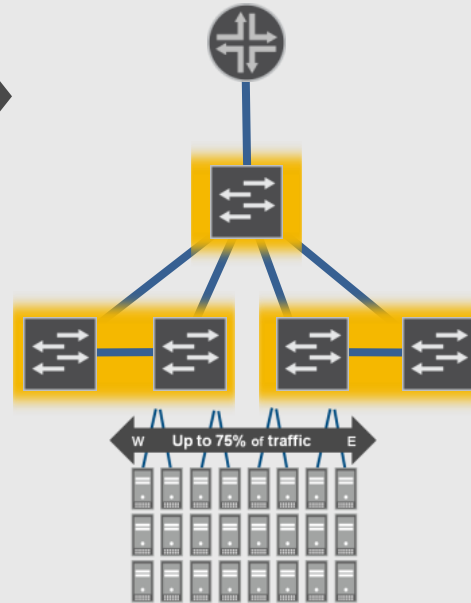
# Tier's

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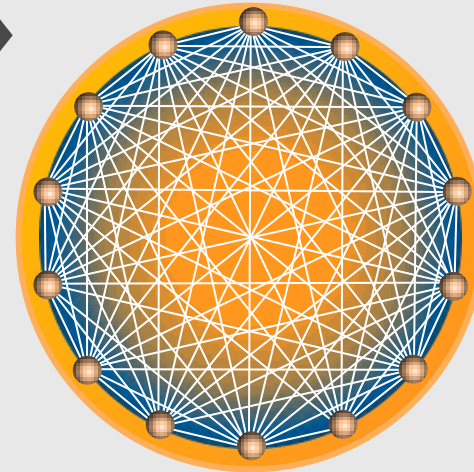
3. Legacy three-tier data center



2. Two-tier data center



1. Single Tier - data center fabric



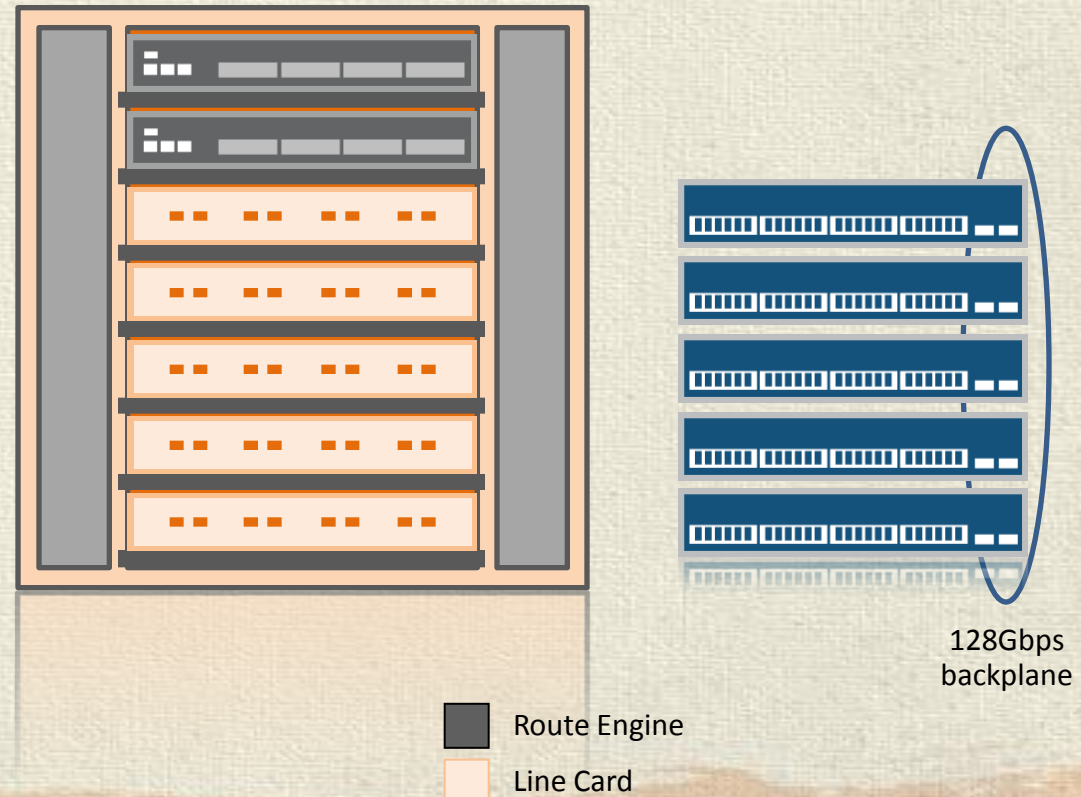


# Modular Chassis and Virtual Chassis Technology

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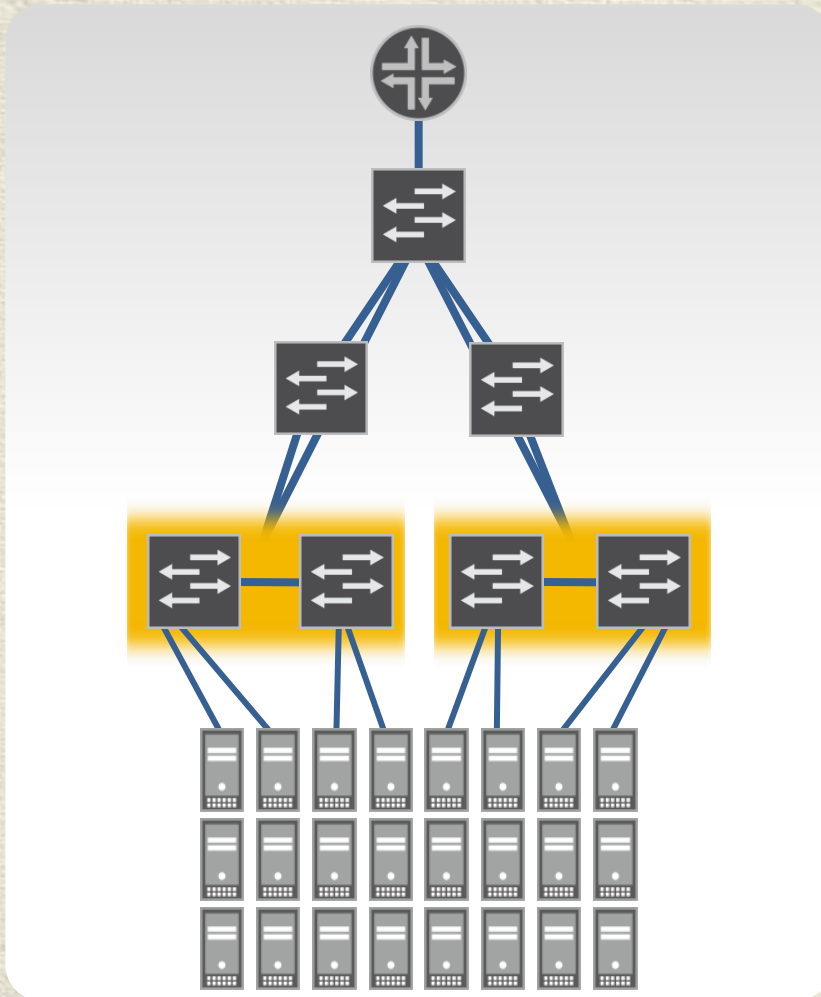
## Benefits of a Modular Chassis

- ✓ High availability
  - Redundant RE
  - Redundant switch fabric
  - Redundant power
  - Redundant cooling
- ✓ Easy to manage
  - Single image
  - Single configuration file
  - One management IP address
- ✓ Performance and scale
  - Modular configuration
  - High-capacity backplane
- ✓ Additionally, Virtual Chassis offers:
  - Physical placement flexibility
  - Pay-as-you-grow expansion
  - Lower power consumption
  - Decreased heat generation
  - Less consumed space



# SIMPLIFYING THE NETWORK

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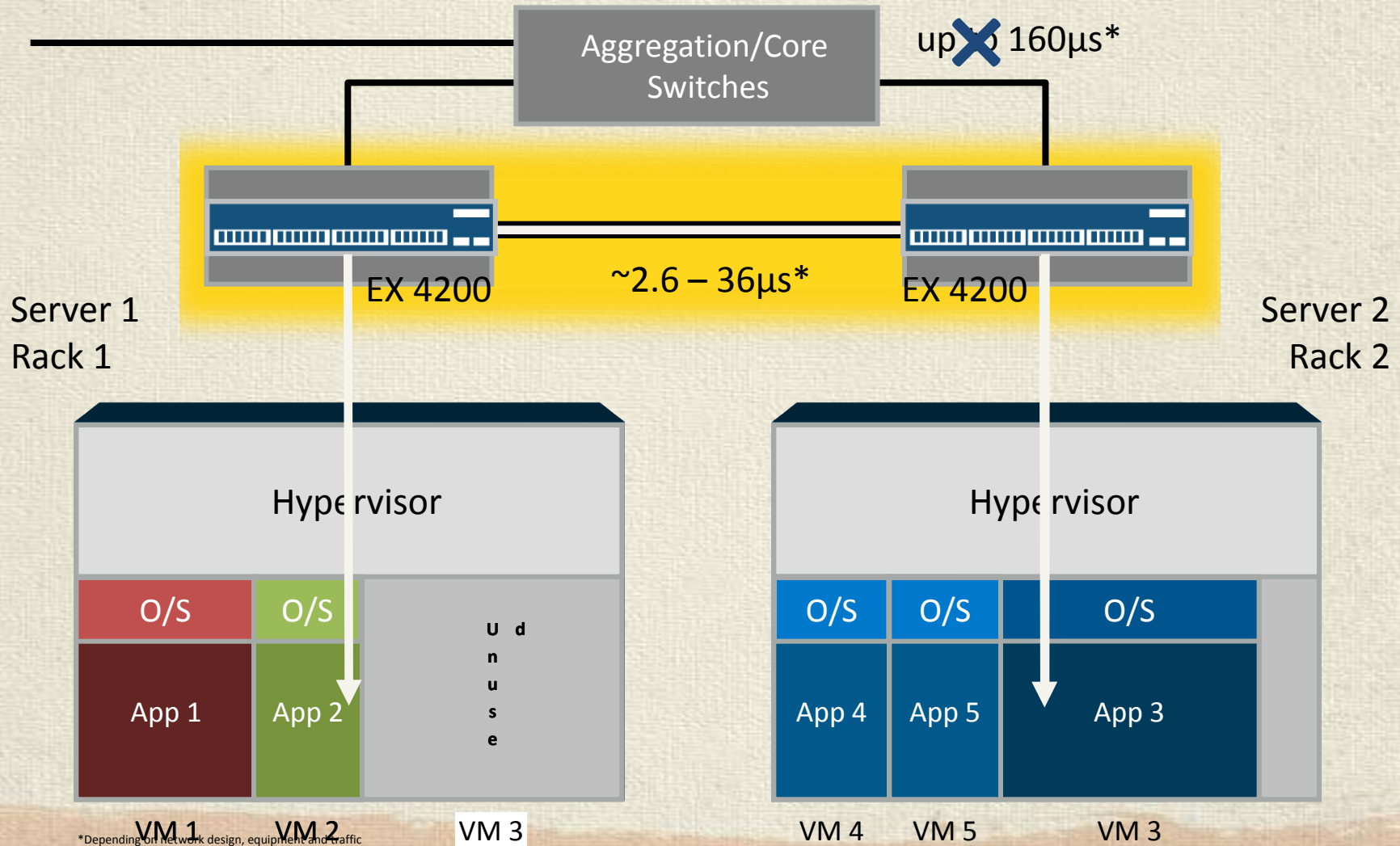
Virtual Chassis in Access  
(2008)

Connect the access to the core  
Eliminate the Aggregation  
Tier

- Benefits:
- 1. Fewer devices, fewer links  
(up to 35% lower cost)
  - 2. Operational Simplicity
  - 3. Lower Latency

# Improving Performance and efficiency

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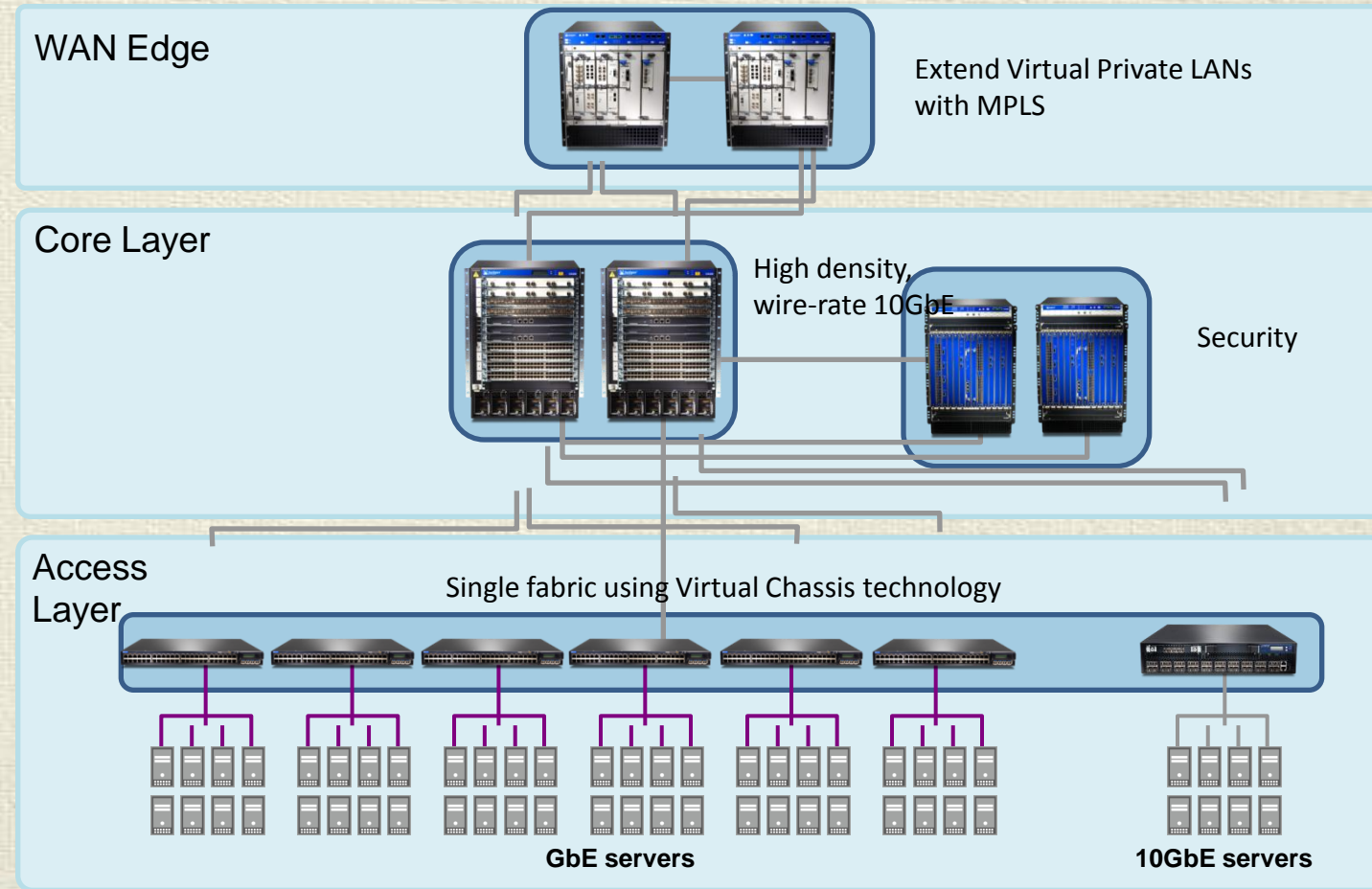


\*Depending on network design, equipment and traffic

# Simplifying the data center network

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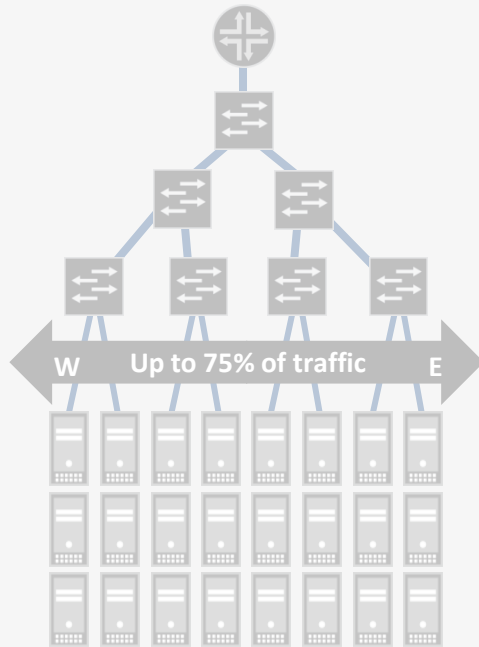
- 1 Lower latency
- 2 Increased bandwidth
- 3 Higher reliability
- 4 Less power and space
- 5 Simplified management
- 6 Consolidated security



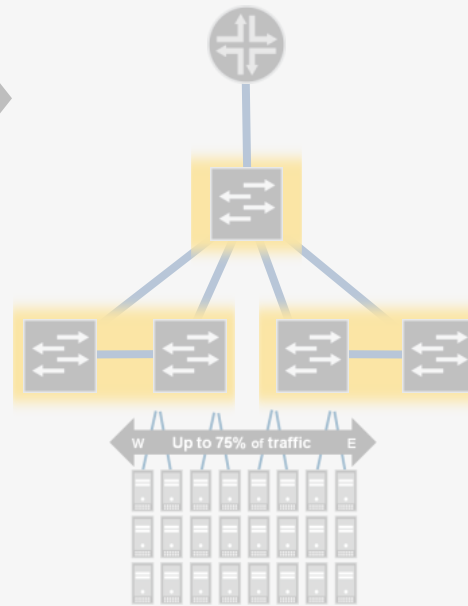
# 1 tier architecture

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3. Legacy three-tier data center



2. Two-tier data center



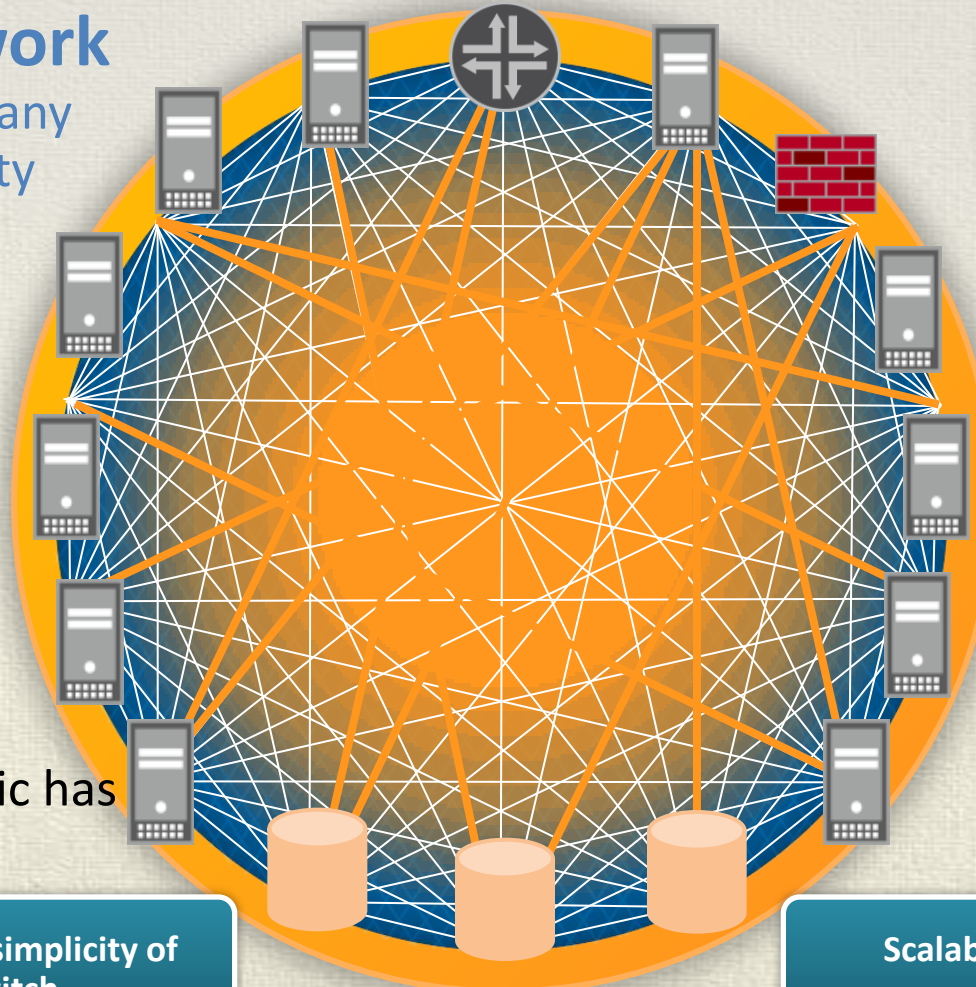
1. Single Tier - data center fabric



# TRANSFORM THE NETWORK

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**One Network**  
Flat, any-to-any  
connectivity



**Single device  
N=1**

- Switch Fabric**
- Data Plane
    - Flat
    - Any-to-any
  - Control Plane
    - Single device
    - Shared state

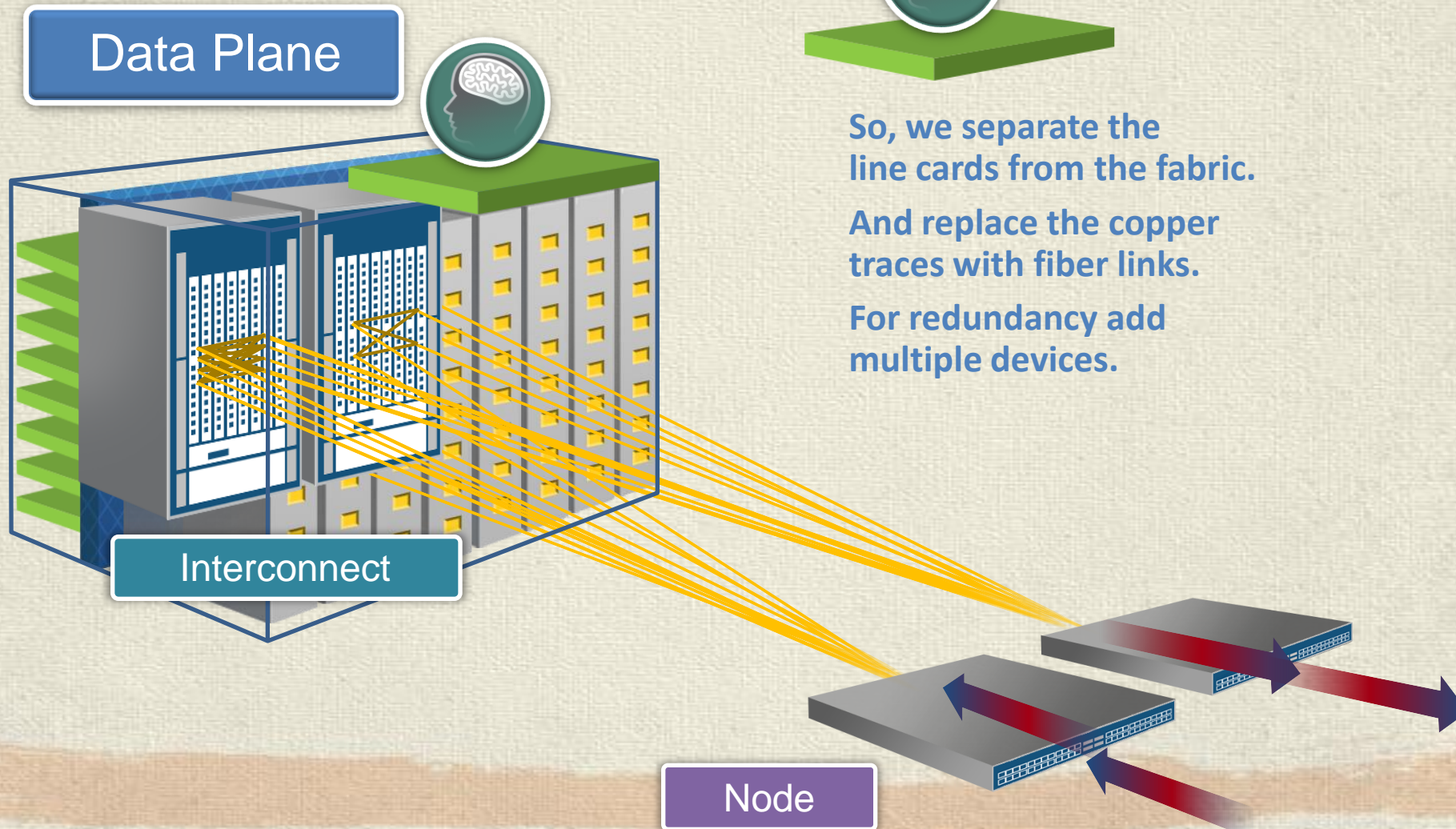
A Network Fabric has  
the....

**Performance and simplicity of  
a single switch**

And the...

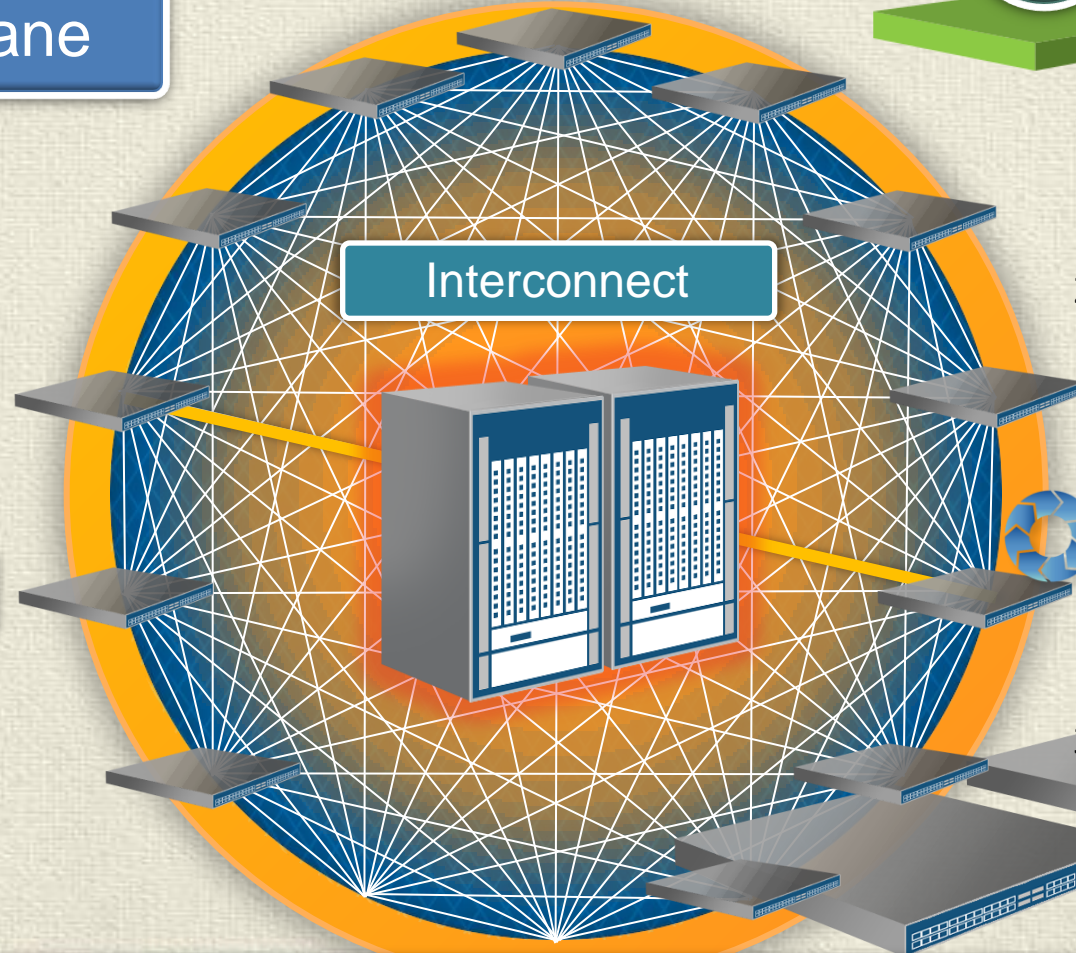
**Scalability and resilience  
of a network**

# SCALING THE DATA PLANE



# SCALING THE DATA PLANE

Data Plane



Node

1. All ports are directly connected to every other port
2. A single "full lookup" at the ingress Node device

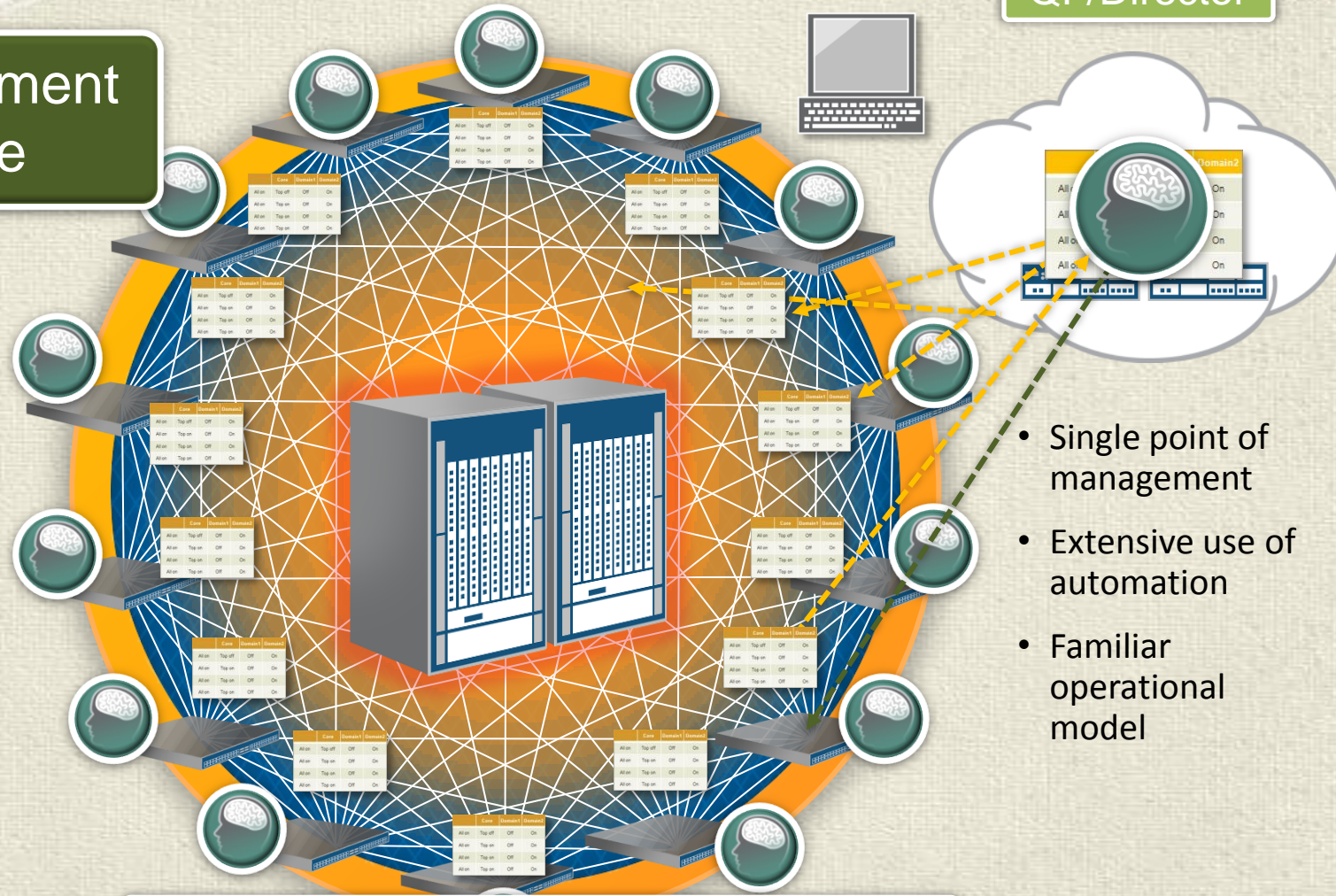
3. Blazingly fast:  
Always under 5us  
3.71us (short cables)

QFabric is faster than any Ethernet chassis switch ever built



# SCALING THE MANAGEMENT PLANE

Management  
Plane

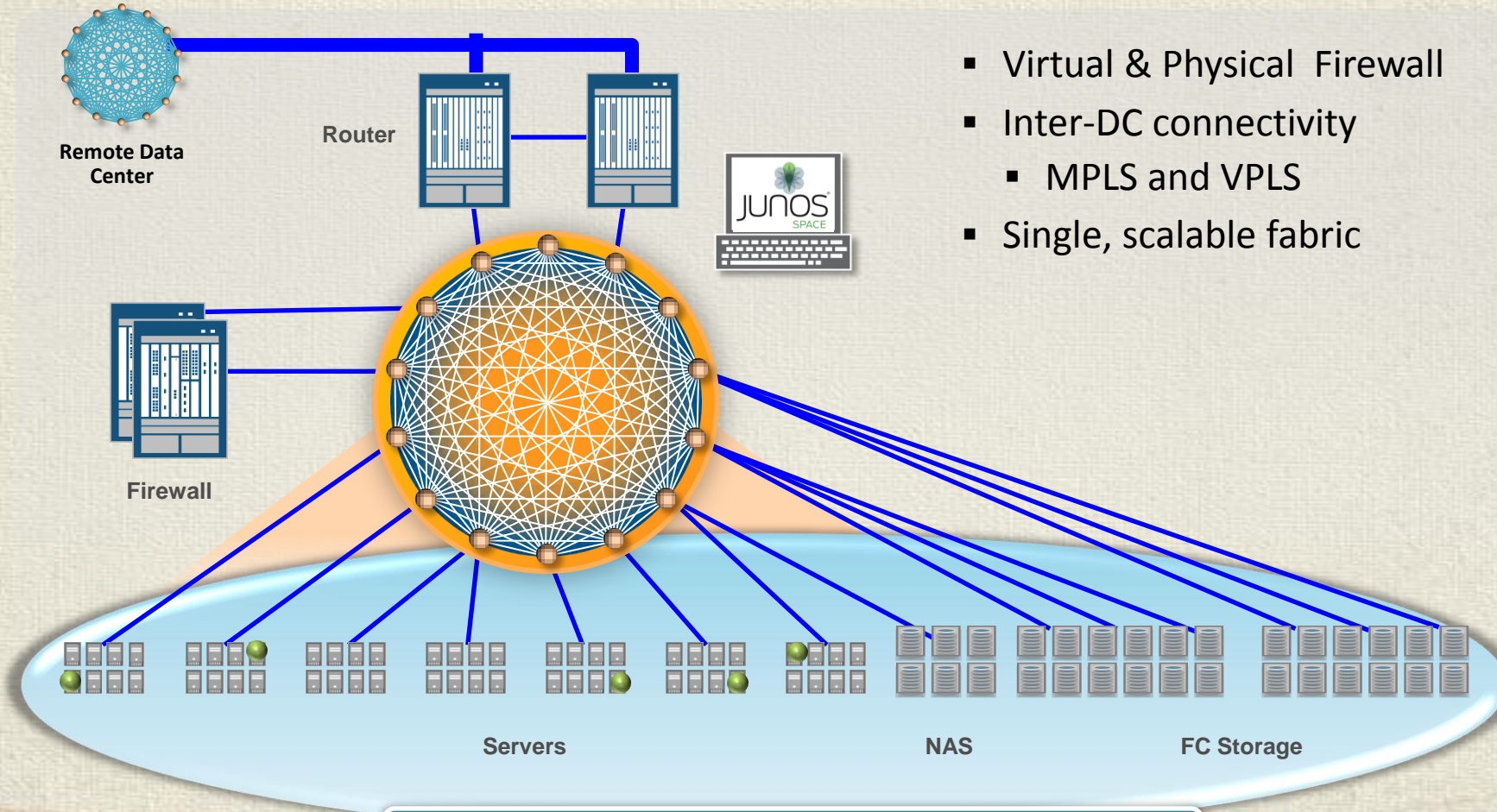


- Single point of management
- Extensive use of automation
- Familiar operational model

Managed as a single switch - N=1

# 1 tier - Fabric

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- Virtual & Physical Firewall
- Inter-DC connectivity
  - MPLS and VPLS
- Single, scalable fabric

One large, seamless resource pool

# QFABRIC AT A GLANCE



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## Scalability



10's to 6000 ports

## Runs Junos



Rich functionality

## Performance



<5μs, Low jitter

## Lossless



DCB compliant

## Simplicity



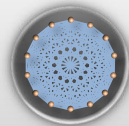
N=1

## Storage



FCoE gateway  
and transit

## Designed for Modern DC

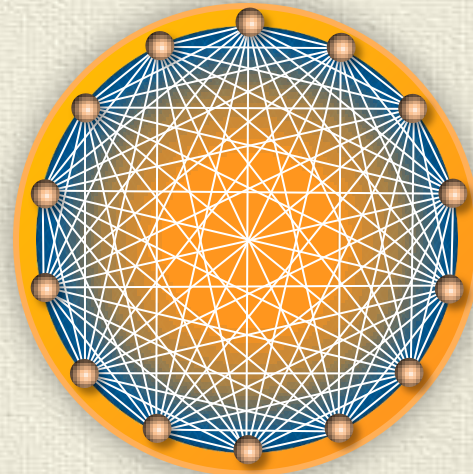


Virtualization and  
Convergence

## Seamless Layer 2 and Layer 3



Flexible VLAN capability



Simplicity is the ultimate  
sophistication.

-Leonardo da Vinci

