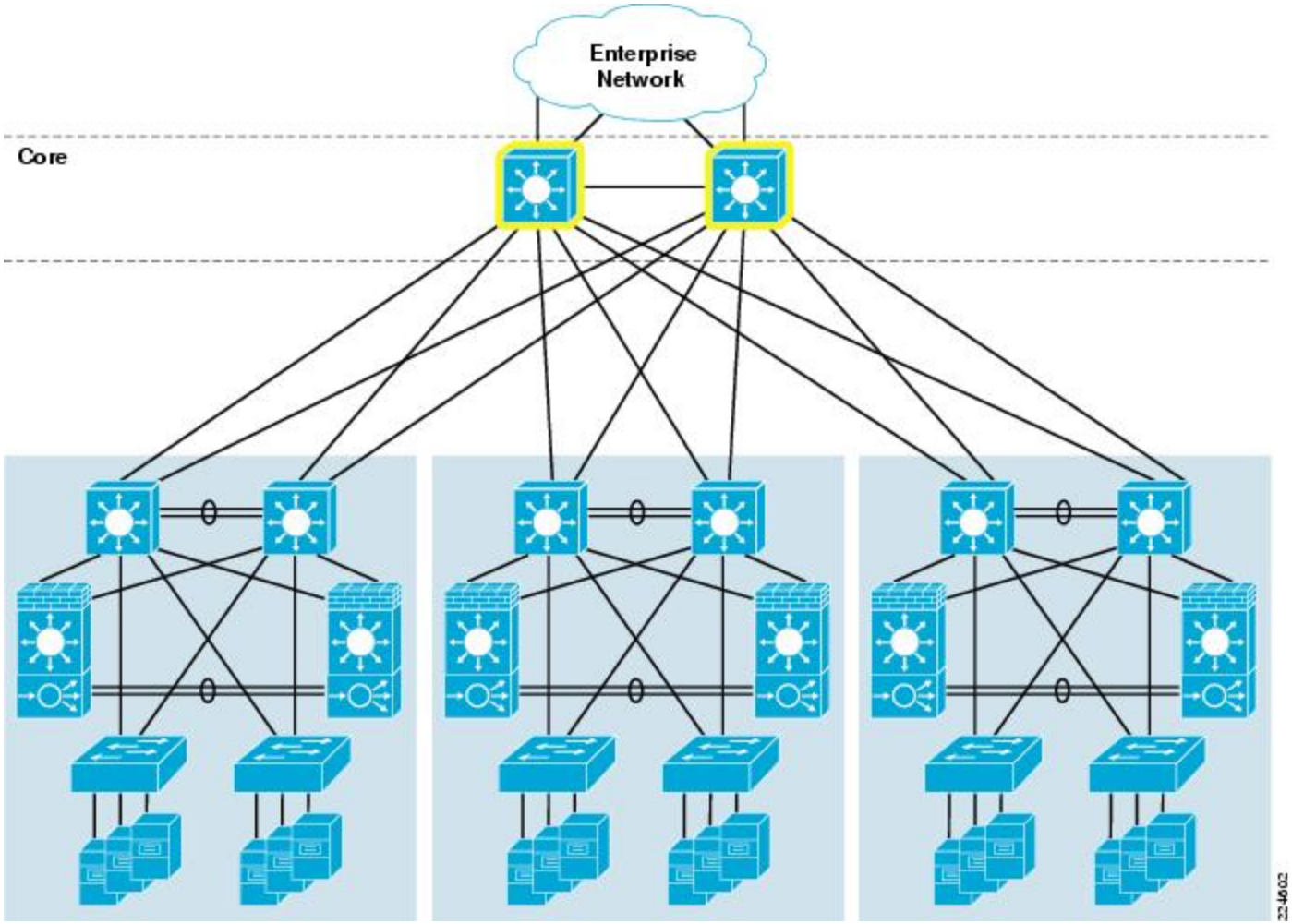
Changing Data Center

Tom Edsall – CTO Insieme Networks

Data Center Network



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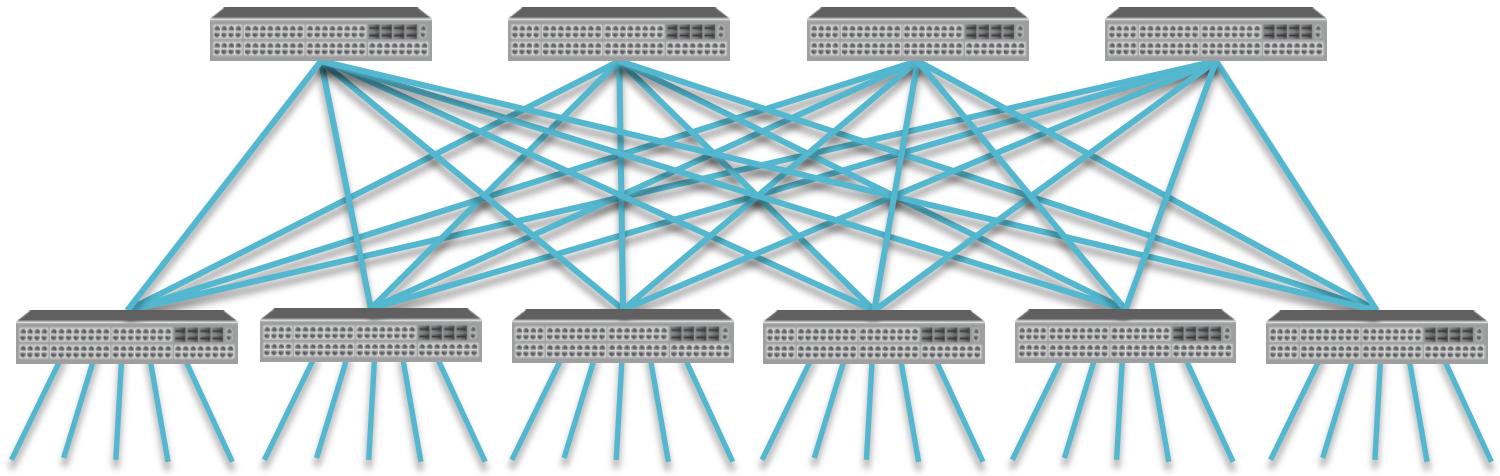
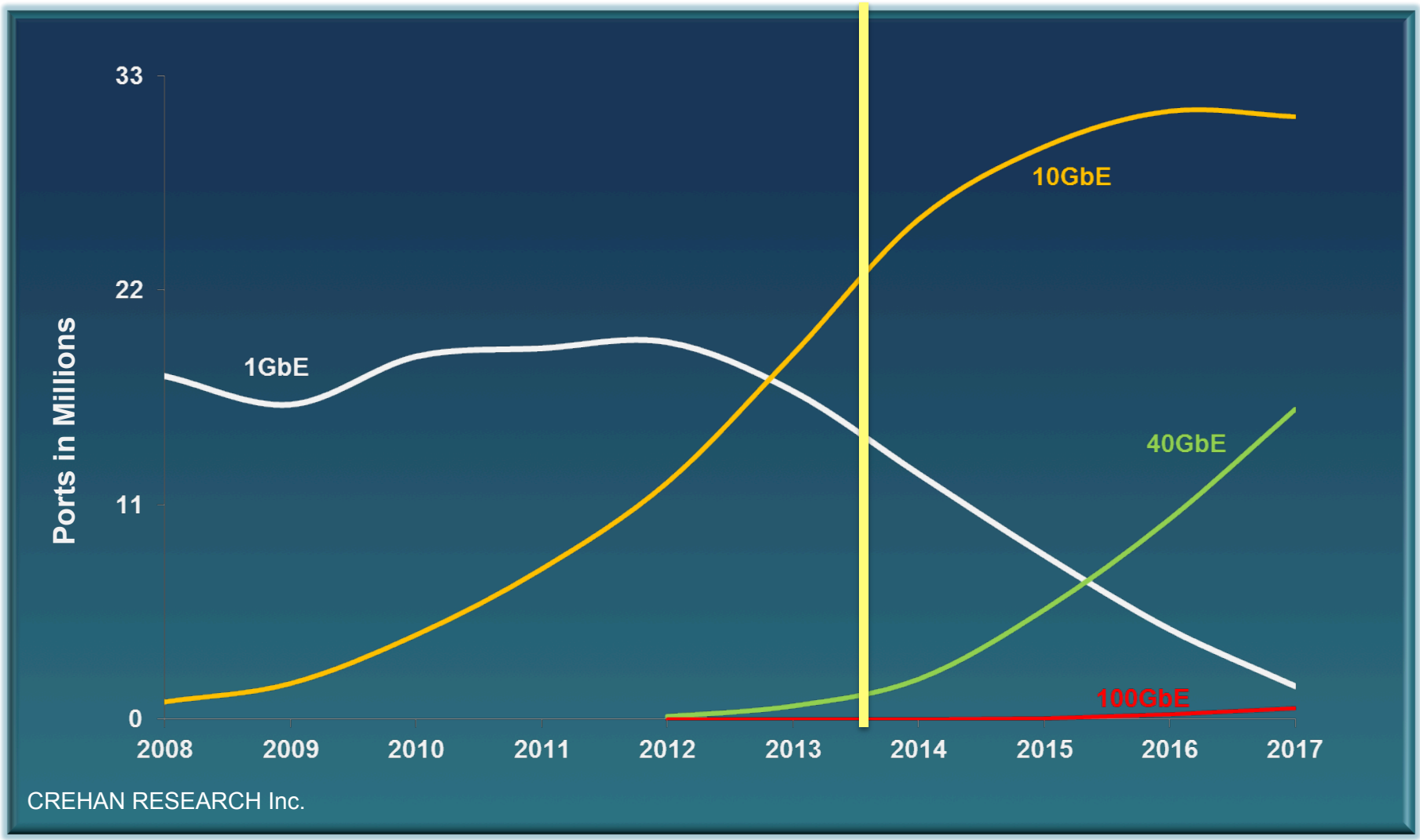


Data Center Ethernet Switch Ports



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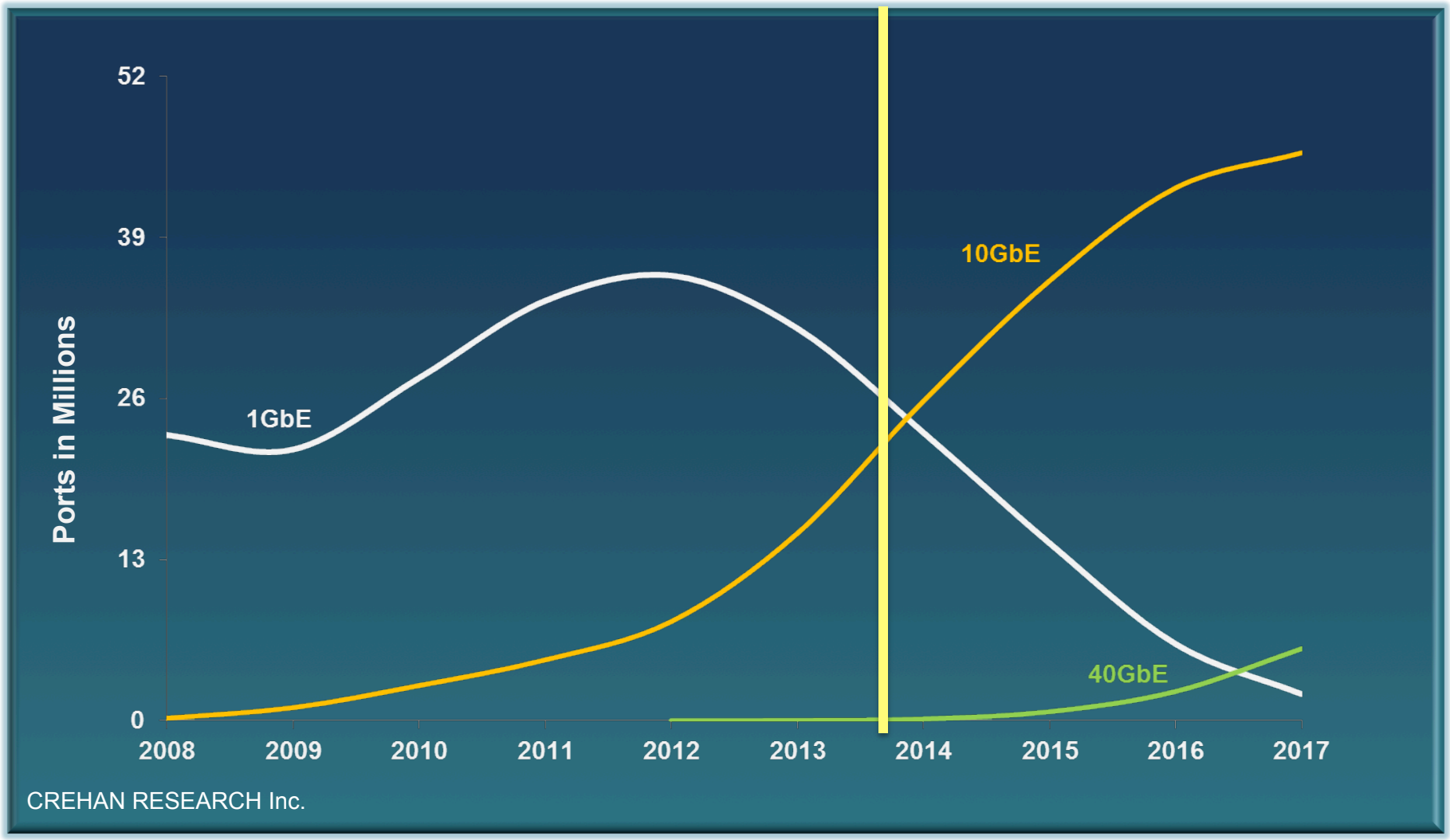
Server-class Adapter & LOM Ethernet Ports



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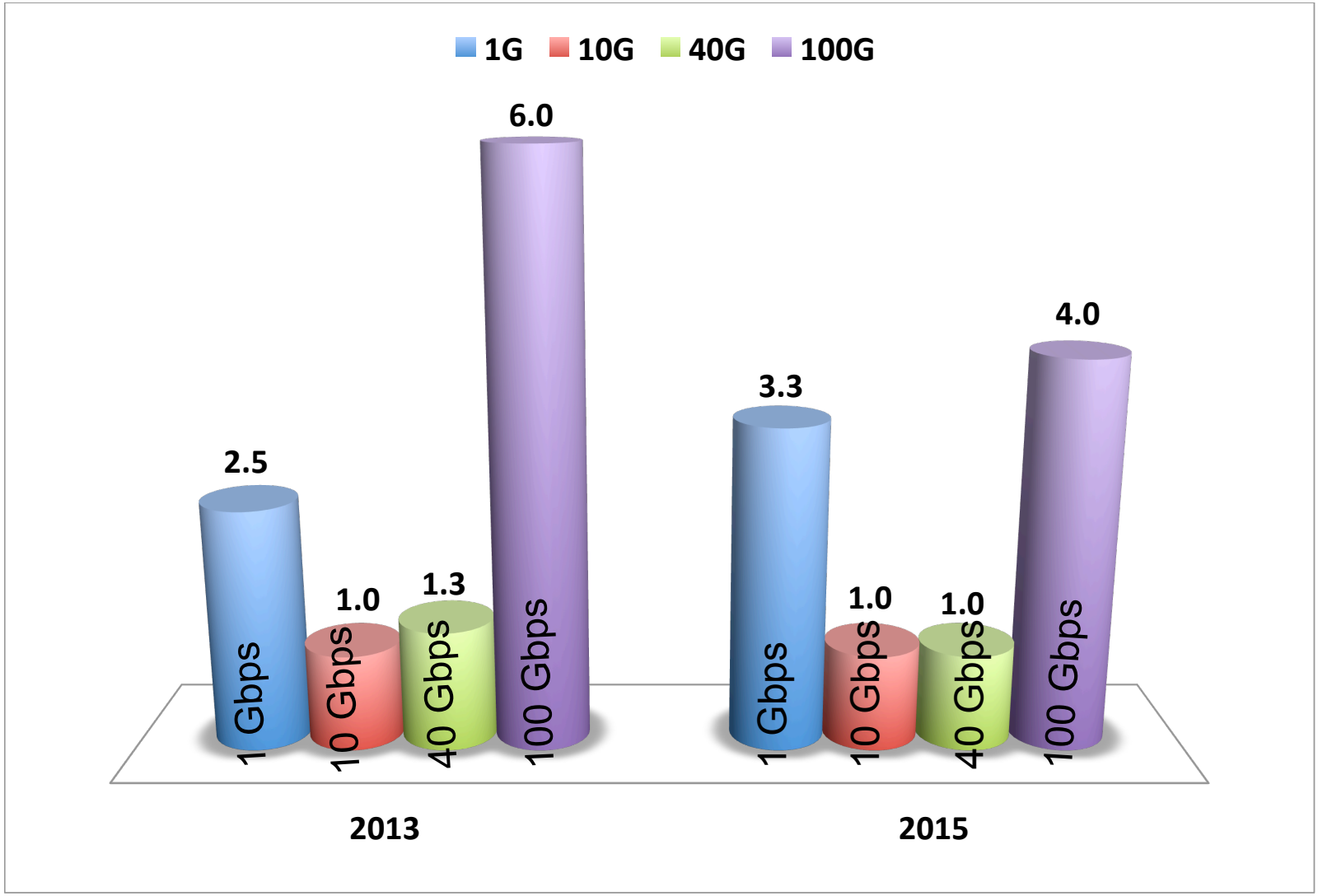
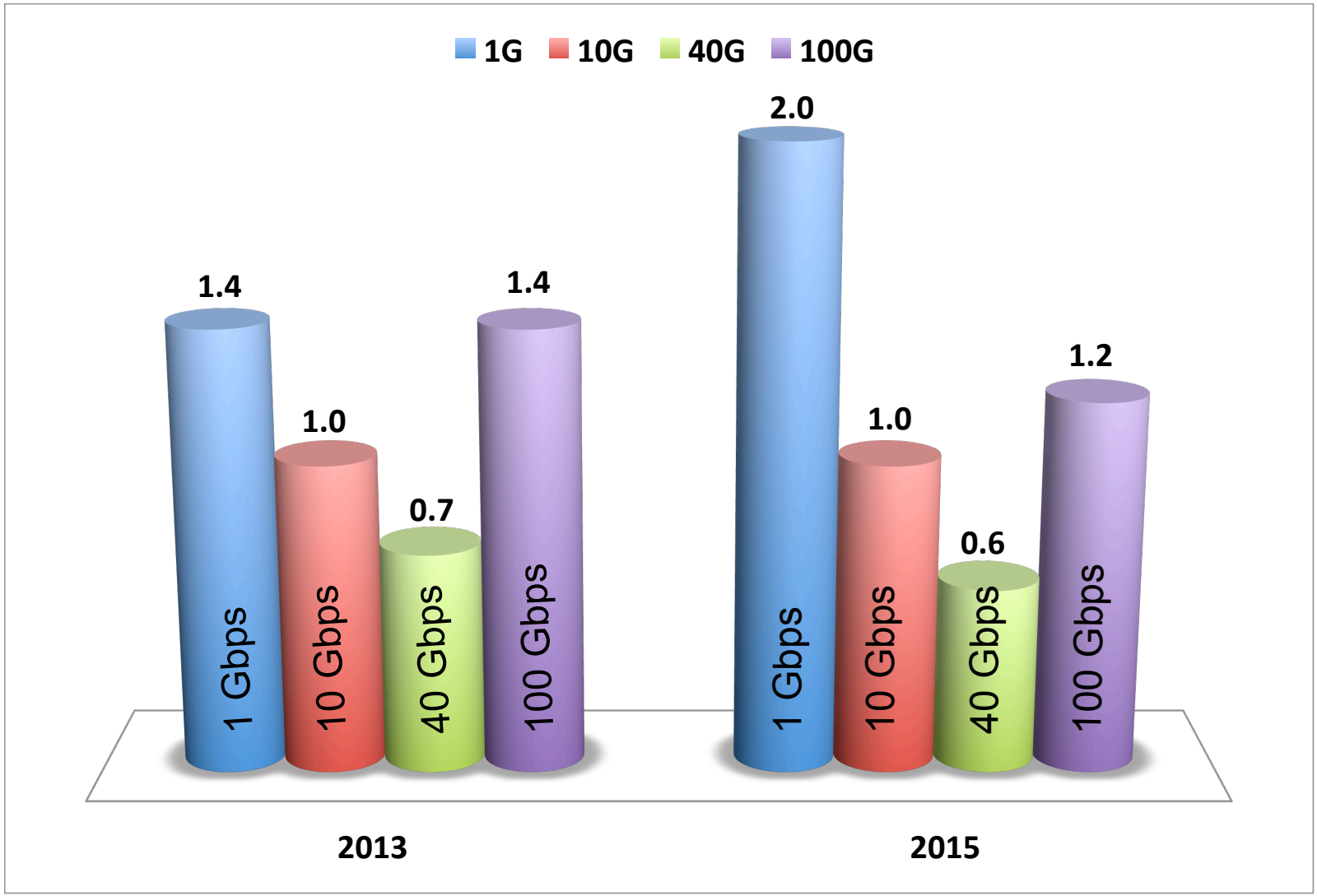
Normalized Bandwidth Cost vs. Port Speed – Fixed & Modular Switches



Normalized Bandwidth Cost vs. Port Speed – Modular Switches



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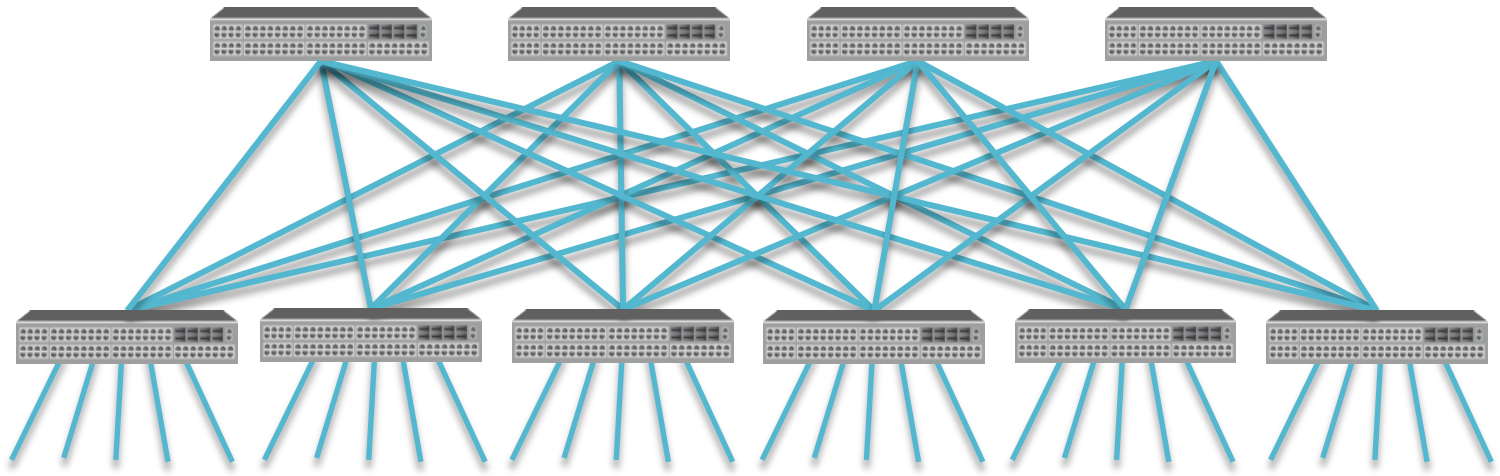

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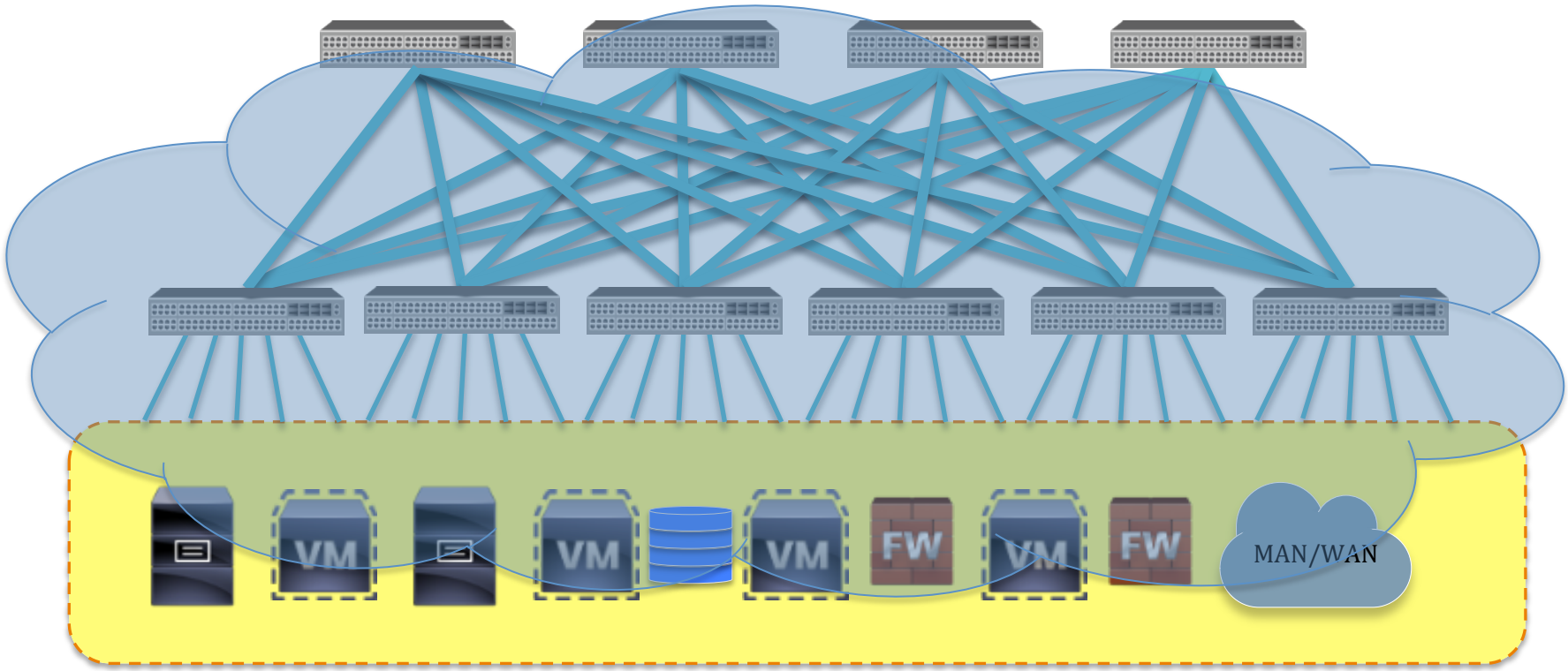

How Much Virtualization?

"The adoption rate of server virtualization in 2012 is predicted to be 14.3% of total new physical x86 servers and will reach 21.3% of total servers in 2016."

Gartner 10/3/2012

http://www.gartner.com/id=2210316

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How Much Virtualization?

"Gelsinger noted that today there is a range of estimates ranging from 50 to 60 percent on virtual workload penetration."

www.serverwatch.com 1/29/13

"…you're running as many as 6 out of 10 workloads in virtual machines."

Forrester – Dave Bartoletti's blog 2/1/13

"Total virtual OS instances will contribute 70.2% of total OS instances in 2012 and reach 82.4% of total OSs in 2016."

Gartner 10/3/2012
http://www.gartner.com/id=2210816

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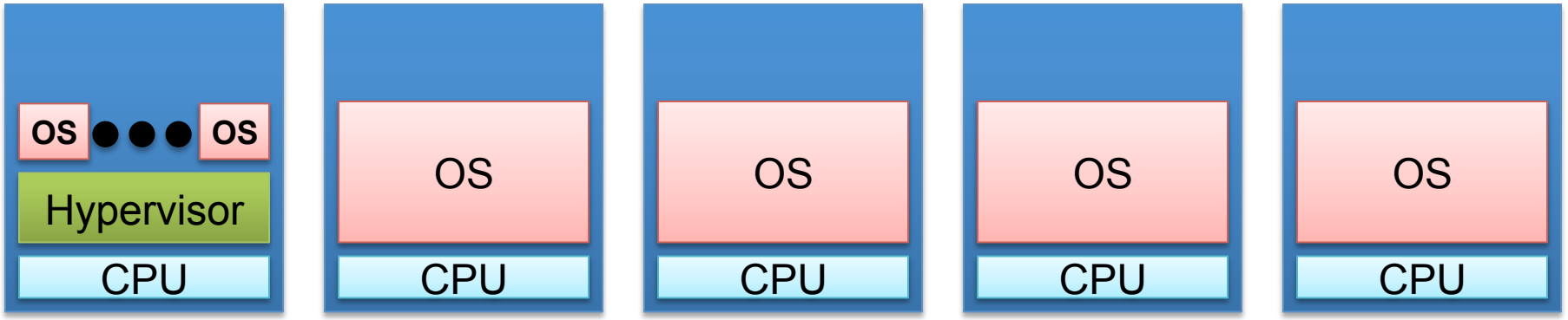
How Much Virtualization?

20% Virtualized



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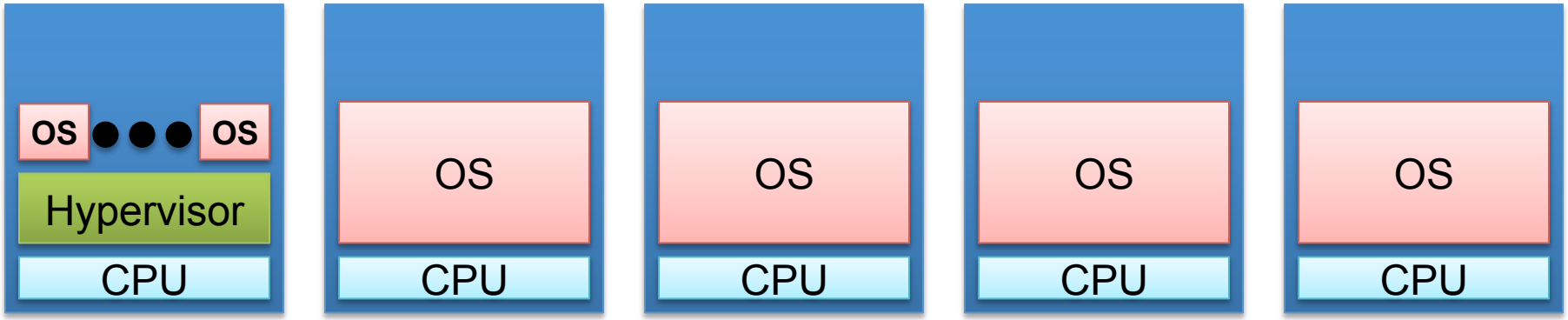
How Much Virtualization?

$$\frac{\#\text{Virtualized Workloads}}{\#\text{Total Workloads}} = \frac{10}{14} = 71\% \checkmark$$



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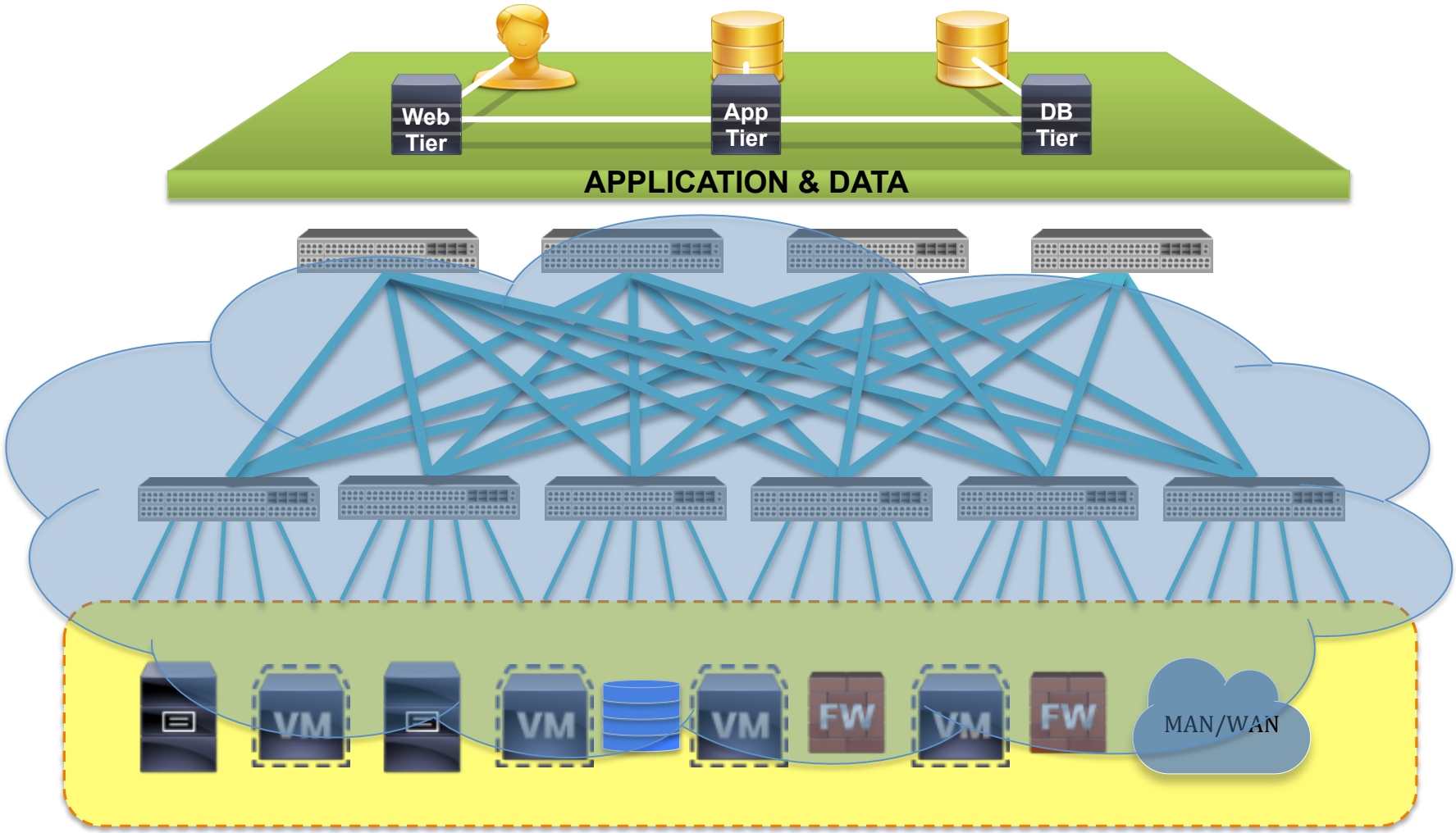
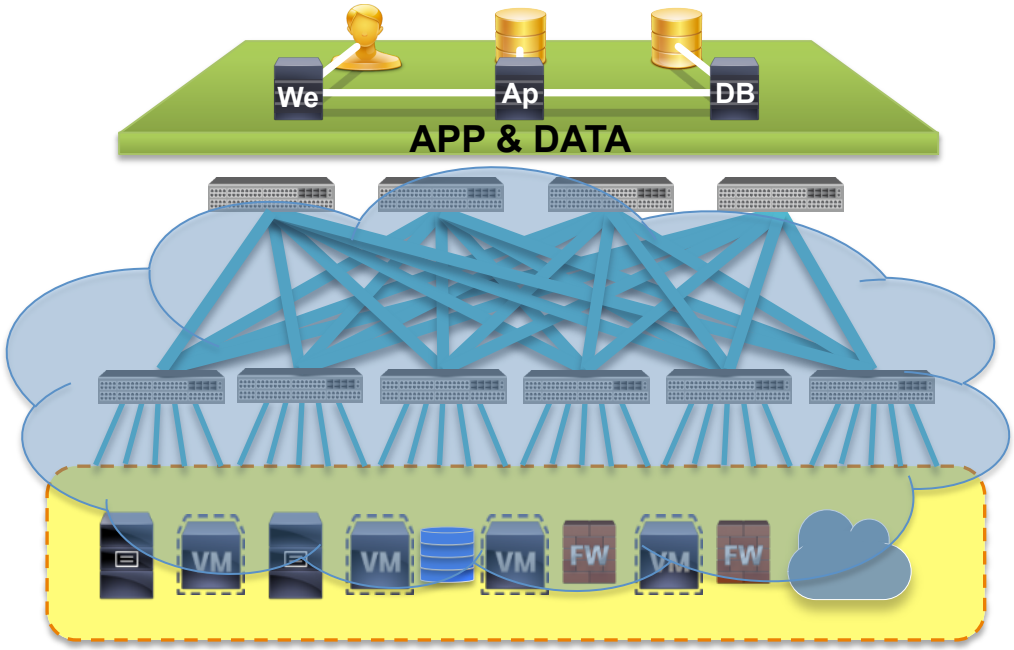


A Few Words About…

- Application Focus
- Complexity
- Scale
- Performance
- Operations
- Security
- Approach



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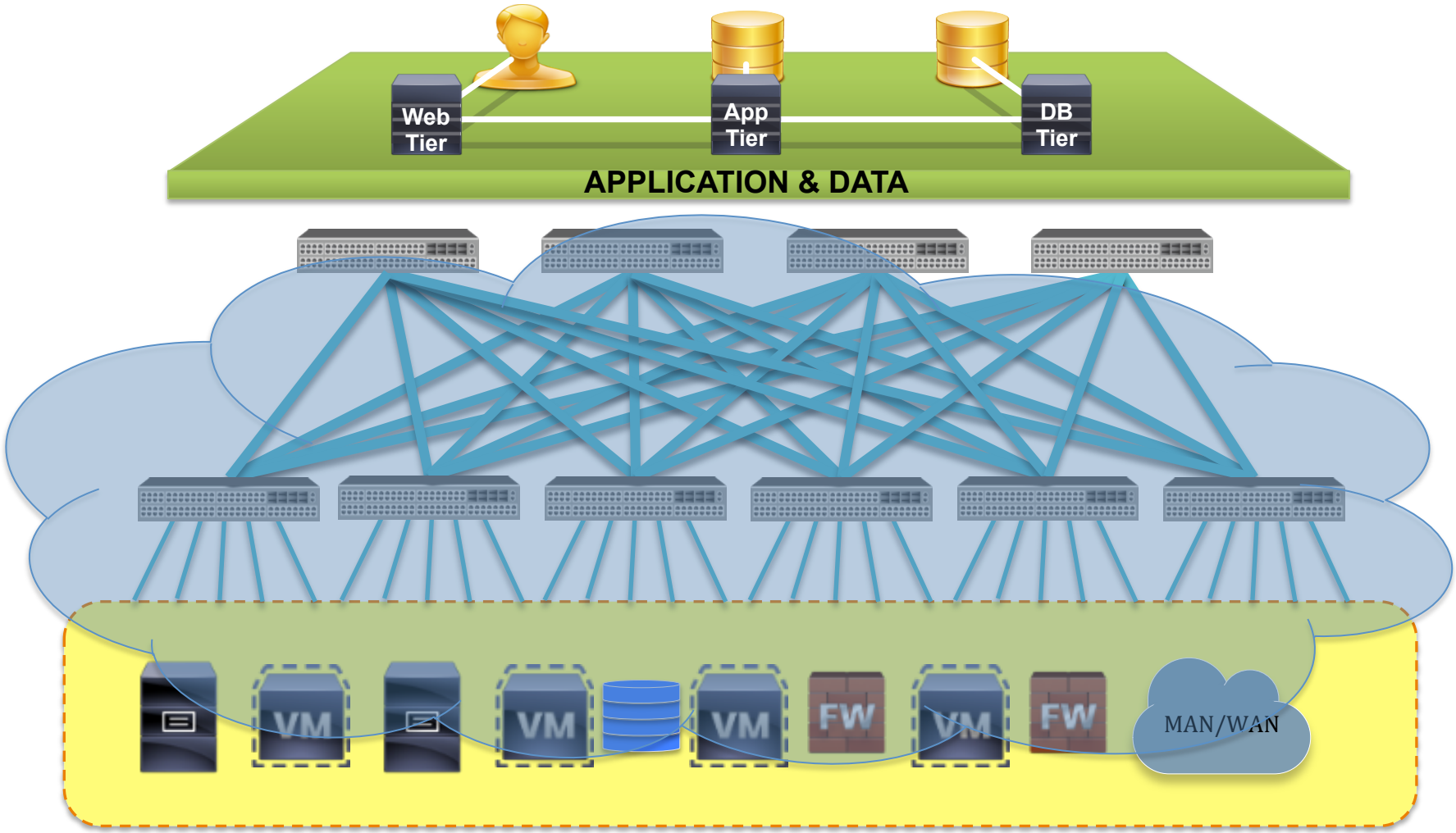

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A Few Words About…

- Complexity
- Scale
- Performance
- Application Focus
- Operations
- Security

Complexity is Moving

- Complexity of traditional networking is decreasing
  - Simple topology
  - Fewer protocols
  - Few features
- New complexity coming in
  - Virtualization
  - Lights out management
  - Multiple services
  - Dynamic and elastic

Must Address Scale

- Scale up and scale down
- Scale data plane
  - Abstraction
  - Simplification
- Scale control
  - SDN
  - Focus on real goals
- Scale management
  - Abstraction
  - Simplification
  - Automation
  - Servers per admin

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Application centricity

- Lost in translation
- Scope
- Performance

Must Address Trouble Shooting

- Abstraction hides detail
- Multipathing spreads information
- Scale and dynamism adds complexity

Approach

- Solutions should not be artificially constrained by assumptions
- Polarized approaches usually not the best
- Focus on what is most important
- Question everything

My Take on what we need

- Application Centric
- Lower TCO
  - Simplify
    - Single network model
  - Automated
  - Agile
    - Virtualized
  - Maintainable
    - Full visibility – virtual and physical
- Performance
- Open
- Secure