Changing Data Center

Tom Edsall – CTO Insieme Networks
Data Center Network
Data Center Network
Data Center Ethernet Switch Ports

CREHAN RESEARCH Inc.
Server-class Adapter & LOM Ethernet Ports

Ports in Millions

CREHAN RESEARCH Inc.
Normalized Bandwidth Cost vs. Port Speed – Fixed & Modular Switches
Normalized Bandwidth Cost vs. Port Speed – Modular Switches
Data Center Network
Data Center Network
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
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=2210616
How Much Virtualization?

20% Virtualized
How Much Virtualization?

\[
\frac{\text{#Virtualized Workloads}}{\text{#Total Workloads}} = \frac{10}{14} = 71\% \checkmark
\]
Data Center Network

Web Tier
App Tier
DB Tier
APPLICATION & DATA

MAN/WAN
A Few Words About…

• Application Focus
• Complexity
• Scale
• Performance
• Operations
• Security
• Approach
Data Center Network
A Few Words About…

• Complexity
• Scale
• Performance
• Application Focus
• Operations
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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
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