Interop 2008

Overcoming the Pitfalls of Traditional Networking

INTEROP®

THE LEADING BUSINESS TECHNOLOGY EVENT

Agenda

- Today's networking challenges
- Pitfalls of traditional networking
- Traditional vs intelligent networking
- VoIP/convergence networking challenges and solutions
- Virtualization networking challenges and solutions
- How intelligent bandwidth can help

Today's Networking Challenges

- More networked apps
- More services
- More complexity
- More stringent application requirements
- More stringent users expectations
- More security challenges

Same staffing

Pitfalls of Traditional Networking (and common misperceptions)

- More bandwidth will solve the problem
- I'll solve that problem in the core of the network
- Proprietary technologies and single vendor solutions
- Just get it working, we'll worry about security later
- Save $ with high speed switches in the Core/Distribution

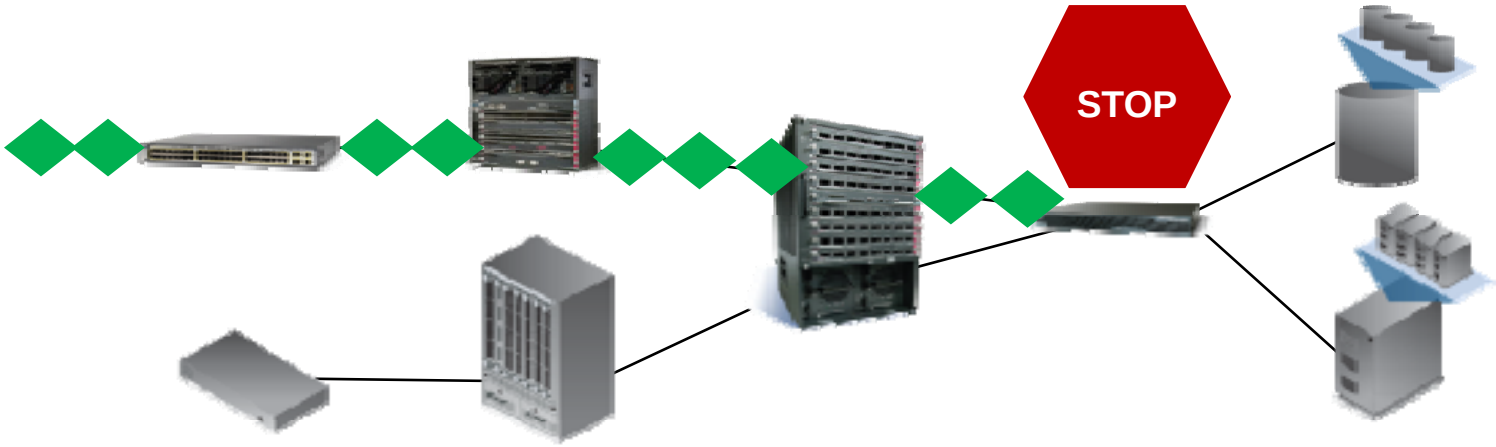
More Bandwidth Will Solve the Problem

- Pitfalls
  - Bandwidth abuse – “cuz they can”
  - Most problems are not due to insufficient bandwidth
  - Often bandwidth is added in the wrong location
  - Not all bandwidth is created equal

- Solution – Intelligent bandwidth
  - Easily controls “bandwidth abuse”
  - Ensures appropriate bandwidth and quality of service by user/application

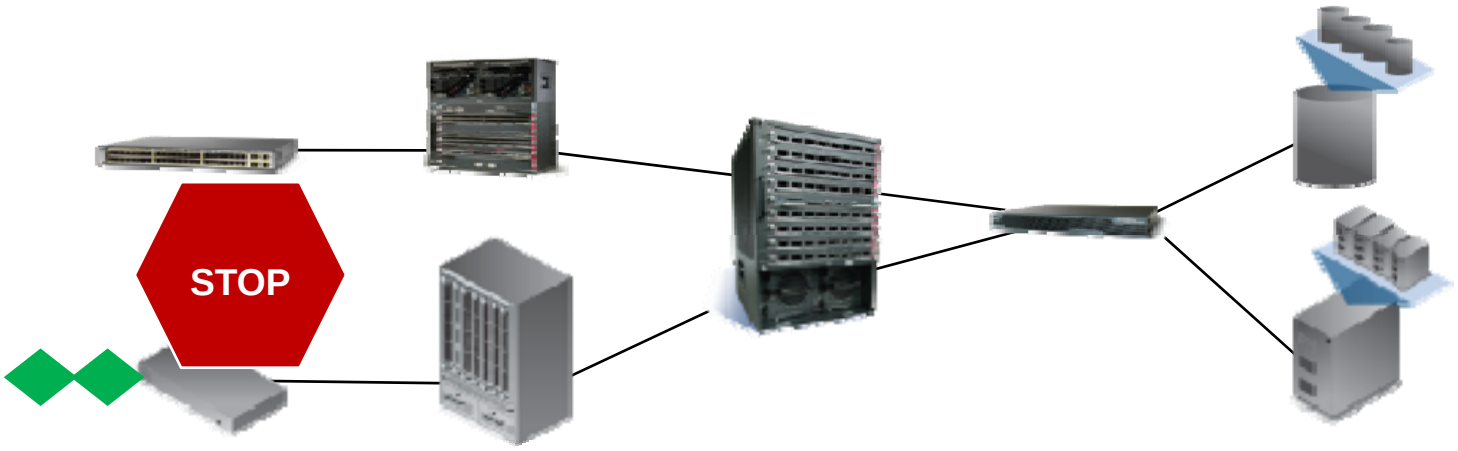
I'll Solve that Problem in the Core of the Network

- Pitfalls
  - Too far from the actual problem
  - Problem then affects the edge, distribution and core before getting fixed?
  - Device performance



I'll Solve that Problem in the Core of the Network

- Solution
  - Stop the problem at the source
    - Distributed Intrusion Prevention
    - VoIP/application tailored IDP
    - Appropriate use policies



Proprietary Technologies and Single Vendor Solutions

- Pitfalls
  - Seems like a good idea at the time
    - The hangover is expensive
  - Locks you in and costs more
- Solution
  - Open standards protect you in the long run
    - Simplifies integration
  - Avoid single-vendor solutions
    - More vendors = better negotiating leverage
    - Save 25%-35%*

IEEE

IETF

ITU

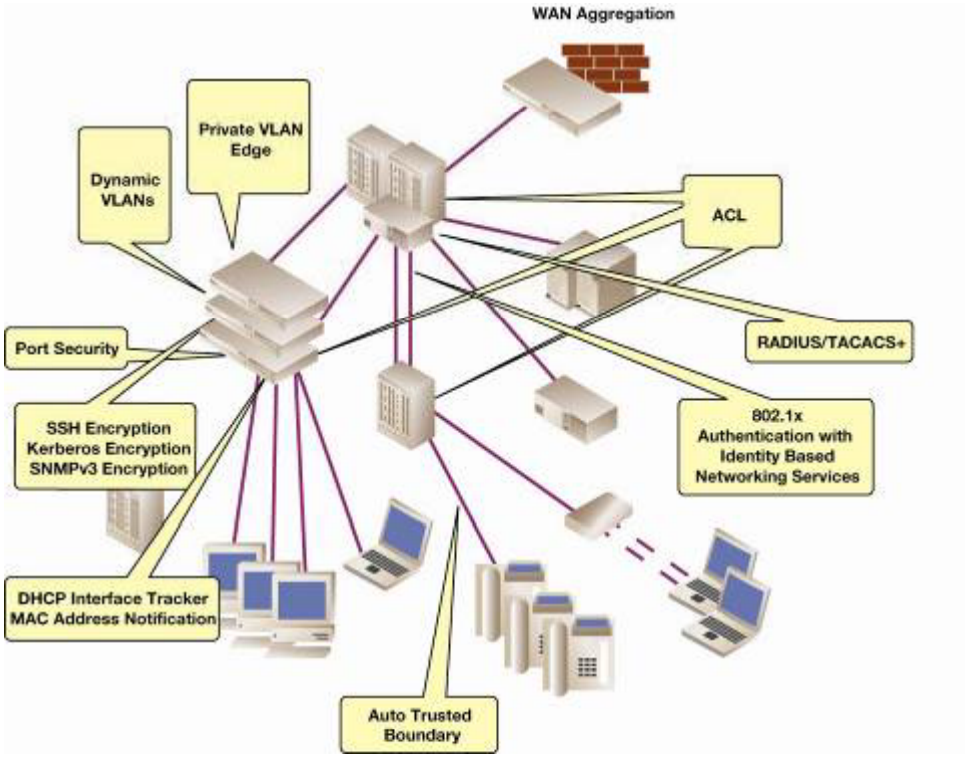
TRUSTED COMPUTING GROUP™

*Gartner Influence Curve

Just Get it Working, We'll Worry About Security Later

- Pitfalls
  - Usually "forced" upon us
    - Due to cost, overhead and management challenges
  - Watch for compliance issues
  - Unavoidable?

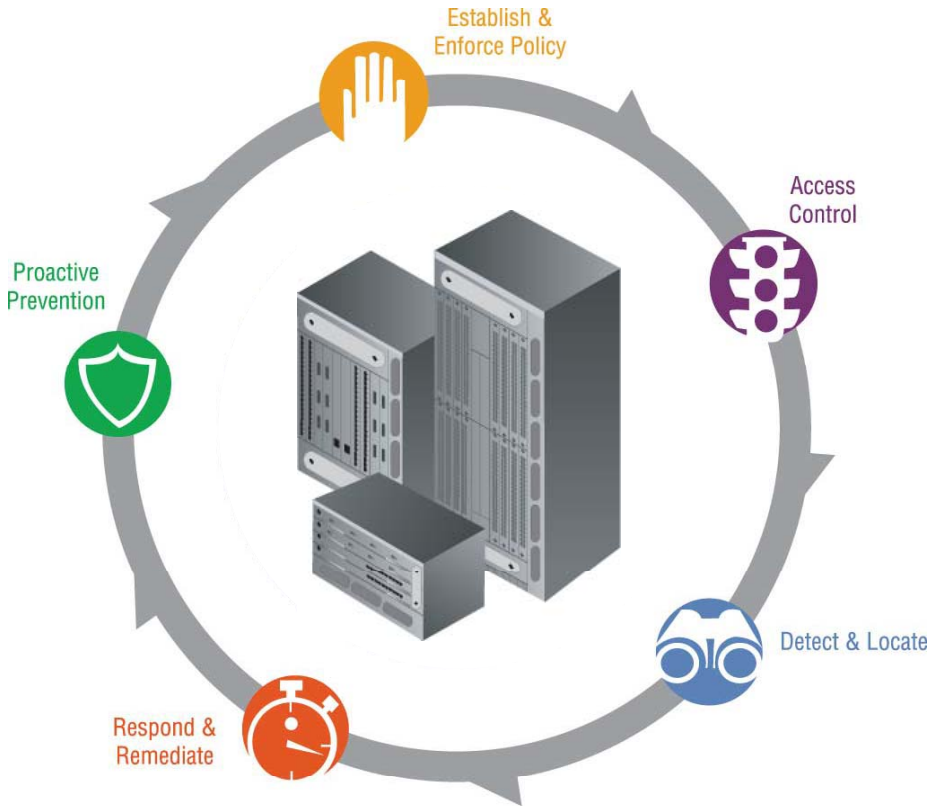
Bolt-On Security



Just Get it Working, We'll Worry About Security Later

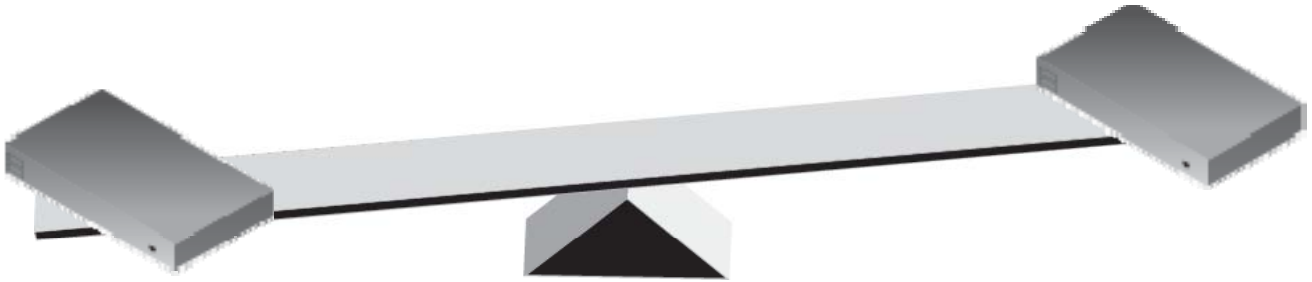
- Solution
  - Design in from the start
  - Factor in compliance requirements
  - Avoid "bolt-on" solutions

Built-In Security



Save $ with Cheap High Speed Switches in Core/Distribution

- Pitfalls
  - Not all switches/routers are created equal
  - Buffering, buffering, buffering
- Solution - Minimize merchant silicon-based solutions
  - Okay at edge
    - Depends on performance/security needs
  - Never okay at the distribution, core, data center
  - More than 300K - 1MB buffering/port



Intelligent Networking Helps

- ~~More bandwidth will solve the problem~~
- ~~I'll solve that problem in the core of the network~~
- ~~Proprietary technologies and single vendor solutions~~
- ~~Just get it working, we'll worry about security later~~
- ~~Save $ with high speed switches in the Core/Distribution~~

Example - Traditional vs Intelligent

Traditional Approach

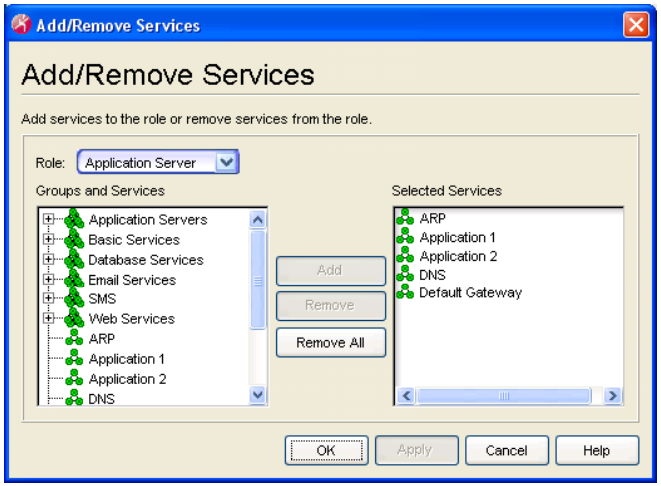
90% of all Networks

```
ip nbar port-map custom-01 tcp 3389
ip nbar port-map dns_tcp tcp 53
ip nbar port-map dns_udp udp 53
ip nbar port-map ssh tcp tcp 22
ip
ip
ip
!
!
cla
access-list 101 permit tcp any host 192.168.1.10 eq 80
access-list 101 permit tcp any host 192.168.1.10 eq 443
access-list 101 permit tcp any host 192.168.1.11 eq 21
access-list 101 deny ip any any
access-list 102 permit tcp host 192.168.1.10 any eq 80
access-list 102 permit tcp host 192.168.1.10 any eq 443
access-list 102 permit tcp host 192.168.1.11 any eq 21
access-list 102 permit tcp 192.168.1.0 0.0.0.255
access-list 101 permit tcp any host 192.168.1.2.1110 eq 80
access-list 101 permit tcp any host 192.168.1.10.2.11 eq 443
access-list 101 permit tcp any host 192.168.1.2.1311 eq 21
access-list 101 deny ip any any
access-list 102 permit tcp host 192.168.1.10.2.11 any eq 80
access-list 102 permit tcp host 192.168.1.101.11 any eq 443
access-list 102 permit tcp host 192.168.1.11 any eq 21
access-list 102 permit tcp 192.168.1.0-10 0.0.0.1255
_172.16.1.0 0.0.0.255 eq 22
access-list 102 deny ip any any
access-list 103 permit tcp host 192.168.2.13 any eq 21
access-list 103 permit tcp 172.16.1.0192.168.1.12 0.0.0.1
_172.16.1.0 0.0.0.255 eq 22 0.0.0.255 192.168.0.0
_0.0.255.255 eq 22
access-list 103 deny ip any any
access-list 104 permit tcp 172.16.1.0 0.0.0.255
_192.168.0.0 0.0.255.255 eq 22
access-list 104 deny ip any any
 class LowPriProto
  set dscp af12
```

Once for each switch = Hours to deploy!

Time consuming & Error Prone

Intelligent Networking



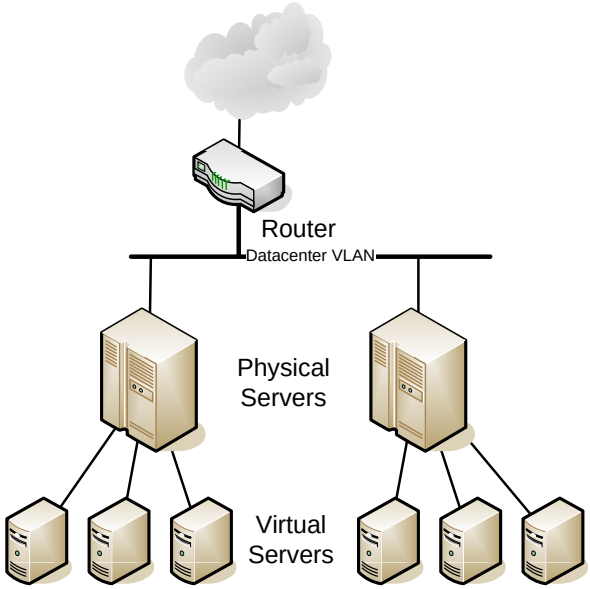
One change…Verified & Deployed

System wide within seconds!

Example - Traditional vs Intelligent

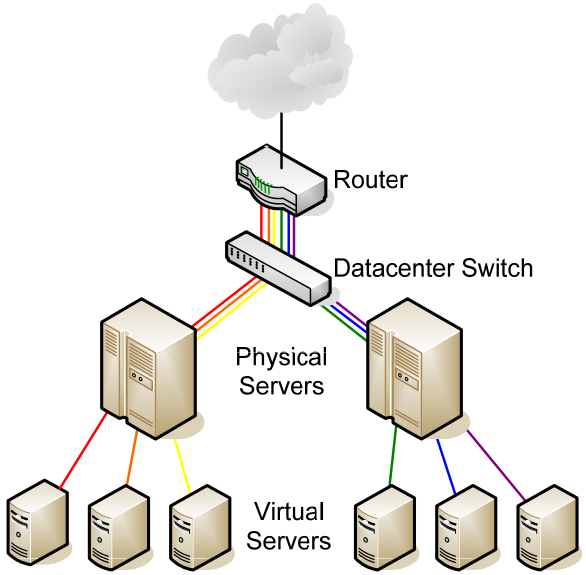
Traditional Networking

- Physical systems share a security domain
- 1/1 ratio virtual machine/NIC
- NICs on a single system in same VLAN
- ACLs/QoS handled at the router



Intelligent Networking

- Physical systems in multiple security domains
- Many/1 ratio of VMs per NIC
- NICs on a system in multiple VLANs
- ACLs/QoS assigned at access port

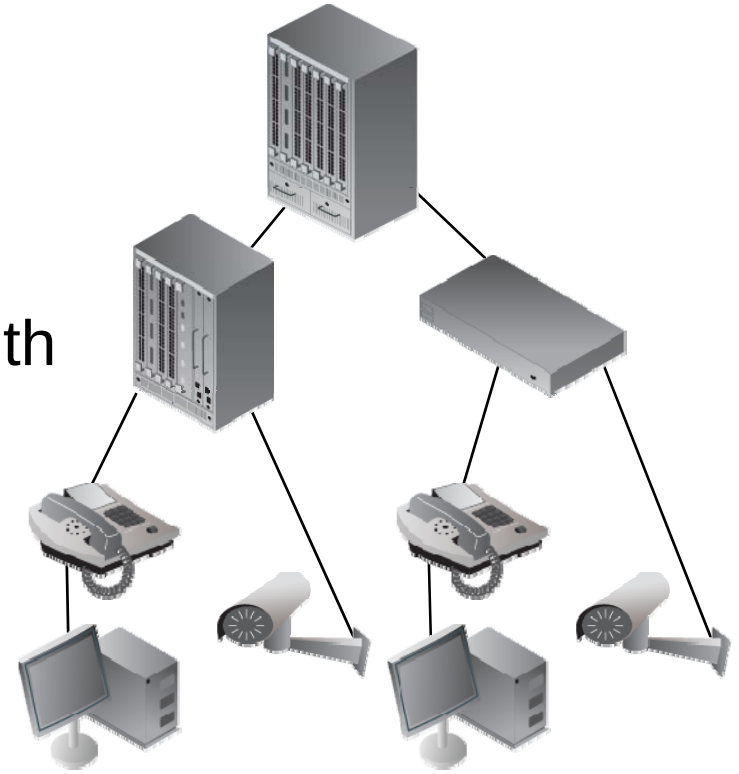


VoIP/Convergence Networking Challenges

- Performance
  - Adequate for VoIP?
  - Reliability of service
  - Quality of service
- Manageability
  - How to handle handset mobility
- Security
  - New security challenges

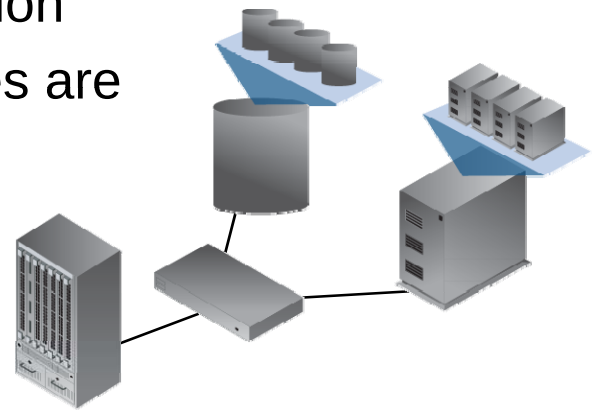
VoIP/Convergence Networking Solutions

- Performance – Intelligent bandwidth
  - Reliability on shared network
  - QoS on shared network
  - Allows more and better utilization of existing bandwidth
- Manageability – Intelligent bandwidth
  - Automated reprovisioning
- Security – Intelligent bandwidth
  - Automates “least privilege” with reprovisioning



Virtual Data Center Challenges/Solutions

- Challenge - Performance
  - Tough to maintain bandwidth, QoS and CoS for each virtual application to user “conversation”
  - Tougher to maintain while Virtual Machines are re-provisioned



- Solution – Intelligent bandwidth
  - VDC/Policy-enabled switches
  - Automatic provisioning of bandwidth, QoS and CoS by application

Virtual Data Center Challenges/Solutions

- Challenge – Manageability
  - Complex and frequent re-provisioning
  - Management of virtual and physical servers, storage and network infrastructure from one unified view
  - Capacity planning and utilization analysis
- Solution – Intelligent bandwidth
  - VDC-Network-enabled management
  - Configure once, network responds automatically
  - QoS/Network access policies automatically follow the VMs
  - Comprehensive network management, not node management
  - Location aware switches to speed finding and resolving issues

"*As Virtualization Matures, the 'Next Big Thing' Will Be Automation*"
Source: http://www.gartner.com/it/page.jsp?id=505040

Virtual Data Center Challenges/Solutions

- Challenge – Security
  - More critical and complex in virtualized environments
    - Disparate groups of users/applications sharing servers and storage
  - Need to control who and what has access and audit
  - Compliance and compliance reporting
- Solution – Intelligent bandwidth
  - VDC-enabled Security & Compliance Products
  - Ability to control access without burden of ACLs
  - Can track and report on access attempts and attacks

"Security is often unknowingly weakened in the organizations' rush to virtualize,"
Source: Neil MacDonald, VP and Fellow with Gartner, Inc.

In Summary

- Solve the real problem
  - Solving the real network problems requires more intelligent bandwidth, not just more bandwidth
- Save money
  - Avoid proprietary and single-vendor solutions
- Leapfrog your competition
  - Making the same choice as your competition won't put you ahead of them
  - The "safe" choice is just the "same" choice, not the "better" choice

Thank You

Additional questions?

Contact Barry Cioe at

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Backup Slides

Published abstract – delete from final version

Overcoming the Pitfalls of Traditional Networking – Solving VoIP & Virtualization Security Challenges with Intelligent Bandwidth

On one side of your network, there are real-time applications such as VoIP and collaboration tools that require premium network services, while on the other side, mission critical applications are continually moving around your virtualized data center. Traditional networks were not designed to handle these new dynamics while efficiently managing, securing and prioritizing these applications. In this session, we will discuss how "intelligent bandwidth" can eliminate the headaches of frequent re-provisioning and ongoing network management while maintaining security policies aligned with business compliance needs.

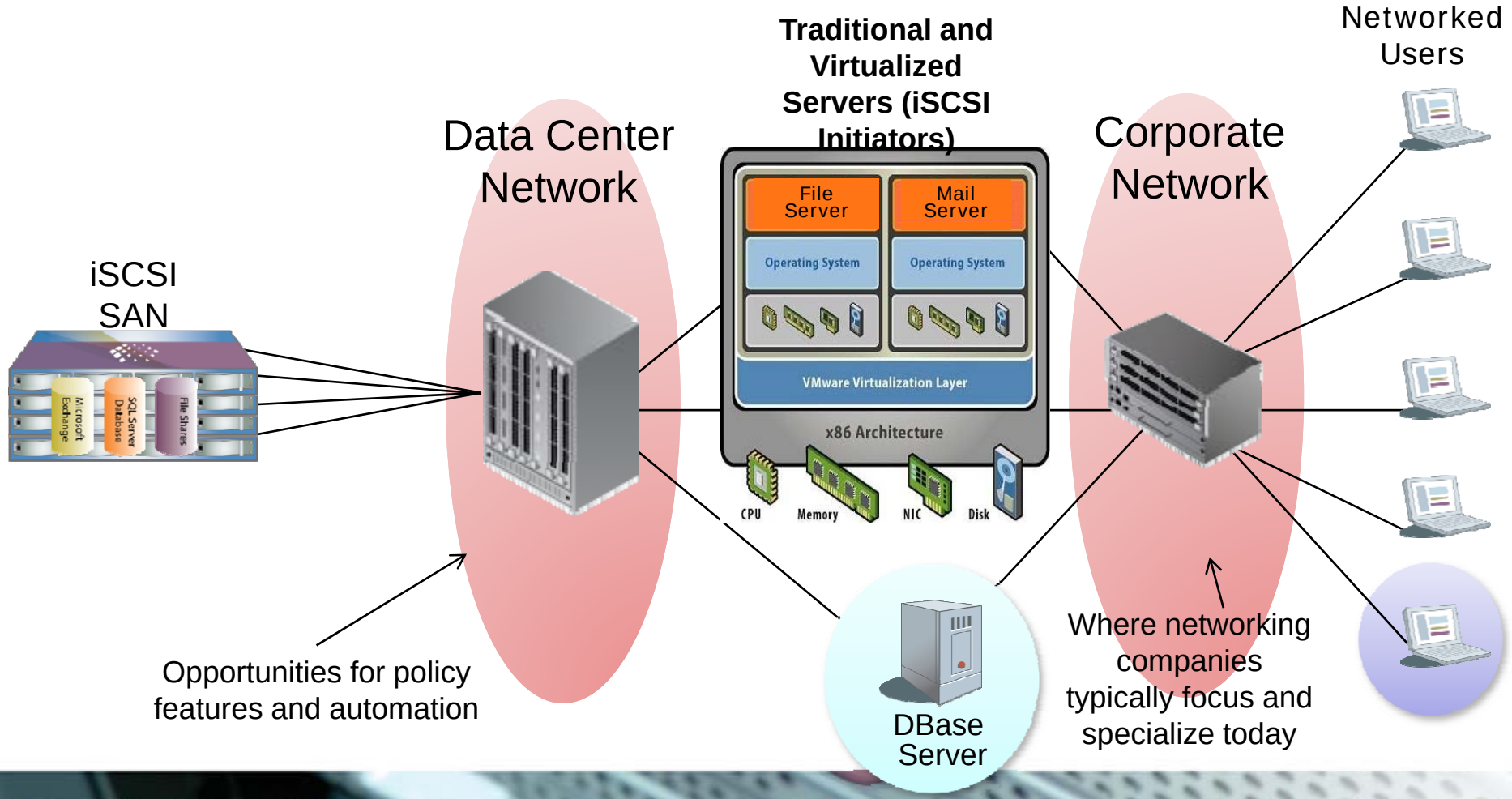
What The Analysts Say

- "Advanced Networking Technologies Are Key to High-Performance Data Centers"
- "As Virtualization Matures, the 'Next Big Thing' Will Be Automation"
  - Source: http://www.gartner.com/it/page.jsp?id=505040
- Key Research Findings
  - Data center architects must integrate servers, storage and networking into a single design to obtain optimum performance, cost and agility
  - Application architects must understand how to make the most of network-based services to lower cost and improve application performance
  - Low-power multi-core CPUs and virtualization … must be supplemented by advanced [networking] technologies
- "Companies in a rush to deploy virtualization technologies for server consolidation efforts could wind up overlooking many security issues and exposing themselves to risk."
  - Source: N. MacDonald, VP Gartner - Network World Survey, October 2007

Gartner

Data Center Virtualization

"Advanced networking technologies are key to high-performance data centers" - Gartner



When “Line Rate” Isn’t Really “Line Rate”

- Pitfall
  - All “Line Rate” isn’t created equal
- Solution – Intelligent bandwidth
  - Intelligent always better than traditional
    - Better utilization of available bandwidth
    - Ensures “proper” use of available bandwidth