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Driving Innovation Through the Information Infrastructure

SPRING 2011

Solving Infrastructure Complexities with the Flexibility of a Converged Network

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Abstract

- Data Center Transformation
  - Data centers of the future are available today
  - During this session we will explore flexible infrastructure technologies
  - The most successful organization will use technologies to lower cost and to meet service levels
  - This session is designed to help you mitigate risk in architecting a next generation data center

COMPANY OVERVIEW

PAYFORMANCE CORPORATION
Solutions for healthcare payment simplification

- Since 1985, Payformance has been an application service provider, now focused on the healthcare industry.
- Delivering healthcare payers and providers significant savings in time and money with our proprietary Web-based application; *PayspanHealth*.
- PayspanHealth enables electronic claim settlement and automating reconciliation, correlation, and explanations of payment information.
- With healthcare organizations striving to cut costs, improve efficiency and maintain competitiveness, Payformance is growing significantly.

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PAYFORMANCE CORPORATION

Solutions for healthcare payment simplification

Business Challenge

An IT infrastructure with separate networks and under-utilized servers and storage made it difficult to handle a 12-fold increase in customer data

Solution

Upgrade to a converged network with NetApp FCoE storage and QLogic CNAs to deliver multiprotocol support with traffic prioritization within a virtualized, service-oriented environment

Results

Consolidating LAN and SAN networks eliminated excessive cabling and expensive management issues and reduced costs while preserving previous investments. The resulting data center is faster, more responsive to customer needs, and supports a scalable virtualized infrastructure.

IT Department Profile

Desire to Build a Converged, Virtualized, Service Oriented Data Center

- Provide cost-effective processing of information technology solutions
- Pride ourselves on optimizing available resources to provide state-of-the art technology that enhances delivery, deployment, and operation
- Significant growth, increasing resource demands, along with a shrinking budget threatened our ability to deliver reliable compute, network, and storage infrastructure.
- The need to deliver resources in a timely manner, while simultaneously increasing resource utilization and cutting IT costs, became a primary concern.

The Driving Effort

- Today's businesses demand IT cost to be justified
  - Must have direct line of business justification
  - Need for multiple levels of cost accountability, performance and availability
- Simpler and scalable infrastructure is needed to support virtualization
- Virtualization is driving higher throughput requirements
- Transform information technology into a Service
- Cost savings, cost savings, cost savings…
  - Increased utilization and flexibility while lowering management cost
- Results – IT dept that operate as a P&L center

Identify Problems and Understand Options

Issues to resolve:

- Under utilized compute and storage resources
- Increasing demand for server resources and a limited budget
- Disparate networks for LAN and SAN traffic meant redundant networks and increased costs
- Physical servers require multiple Ethernet and Fibre Channel connections

Desired Criteria:

- Transform under utilized resources into shared pools
- Network must handle greater burden of both LAN/SAN
- Timely delivery resources/live migration/transparent agility

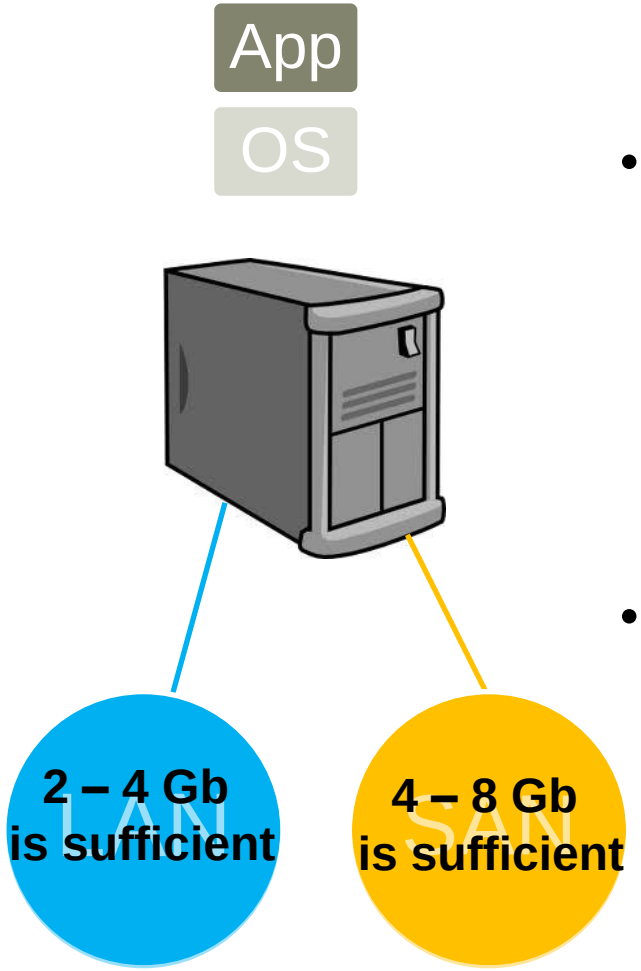
Transformation To Convergence

- Simplify Infrastructure & Increase Virtualization Densities
  - Increase server side virtualization
  - Provide for a dynamic and flexible IT infrastructure
  - Deliver service reliably and profitably
- Align IT with Business goals
  - Availability for users is #1 concern
  - Meet multiple SLA's while delivering IT as a service
- CAPEX and OPEX
  - A higher purchase price may lower overall costs through improved management and system efficiencies

  Examples: Tier 1 storage is not cost effective for all data

  CNA increases server efficiencies over NIC

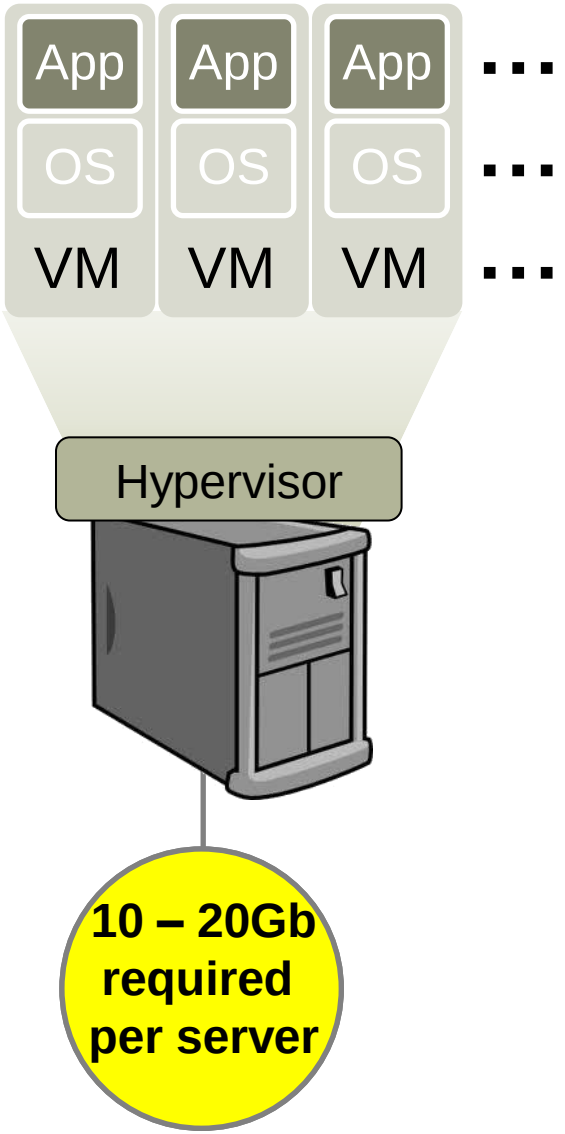
Challenge



- Single Physical Server Running Single OS and Application
- Multiple Ethernet NICs (2 – 6)
  - Depending on application requirements multiple Ethernet NICs are utilized for secure management, LAN connectivity, user access…
- Multiple Fibre Channel Adapters (2 – 4)
  - Storage access provided by FC adapters with redundancy for high availability and business continuance

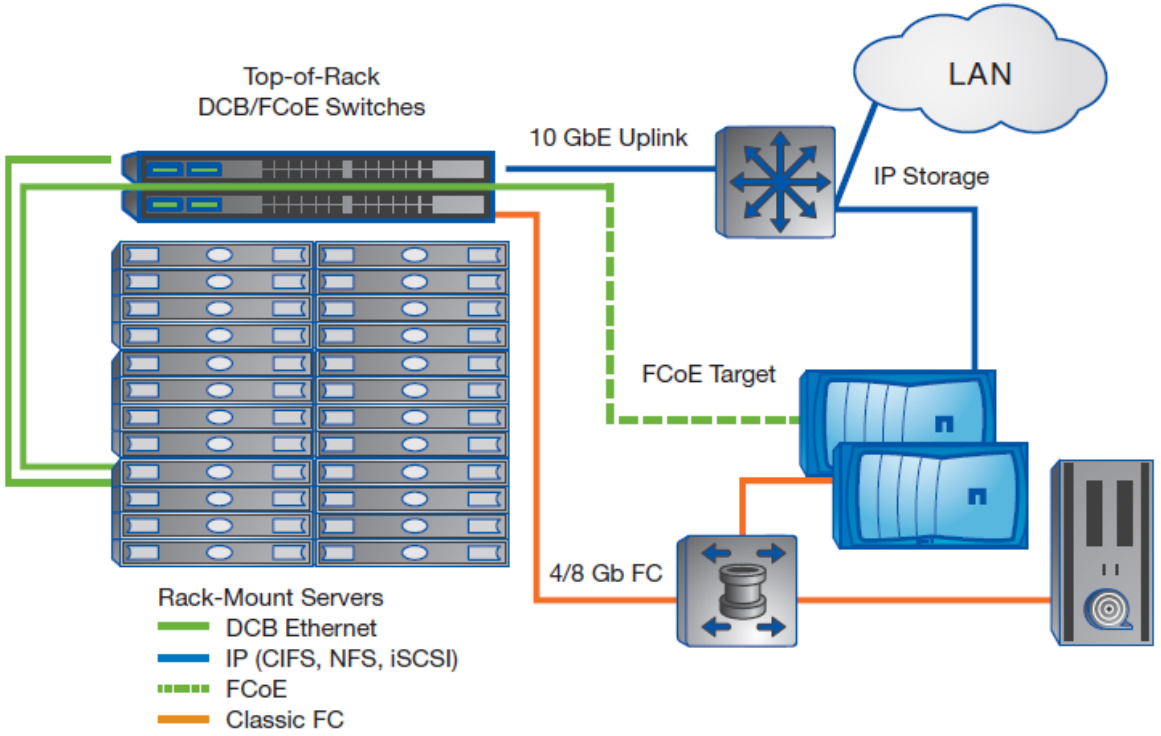
Meeting the Challenge

- Multiple VMs and OSs per Physical Server
  - Increases total Ethernet and Storage throughput requirements
  - VMs have high CPU utilization
- Multiple Ethernet NICs and Fibre Channel Adapters replaced with 10Gb CNAs
  - Storage and LAN access provided by CNA adapters with redundancy for high availability and business continuance



Technology Environment

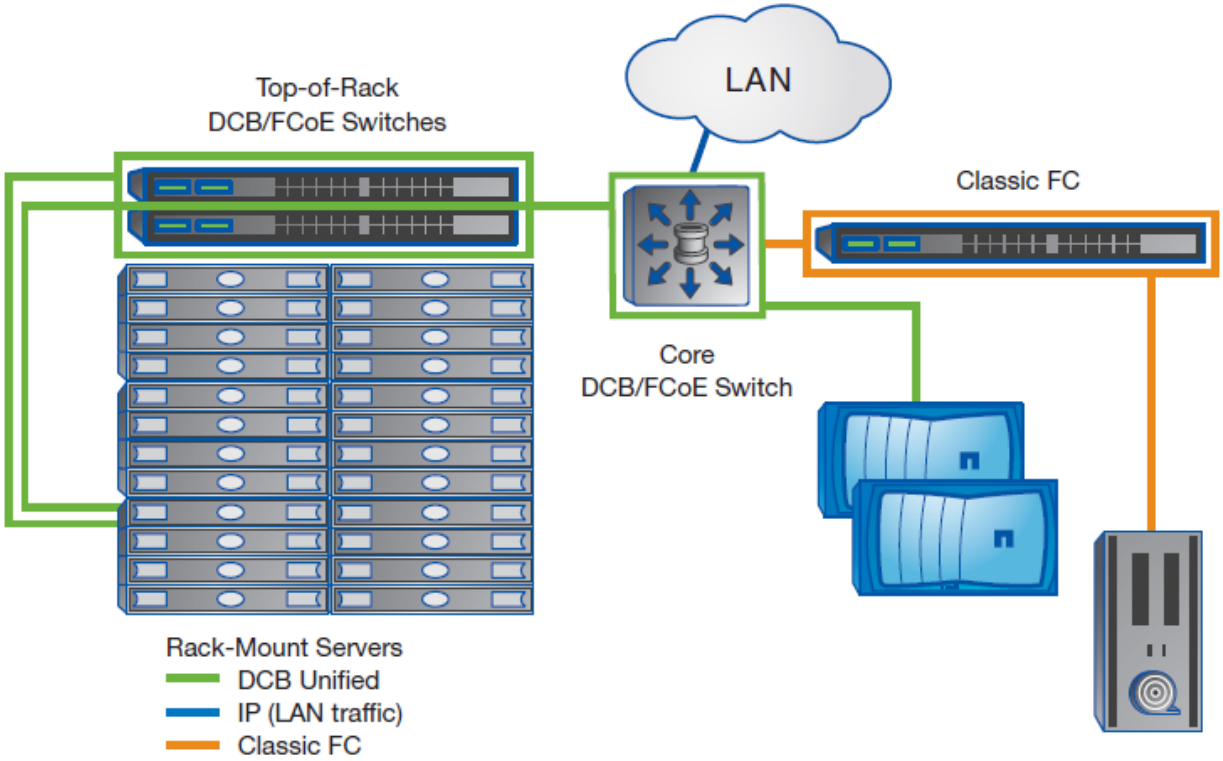
Highly under-utilized rack servers in a disparate SAN and LAN network made it difficult to effectively plan and deploy new resources causing a negative impact on operations and costs.



Before making the transition to DCB/FCoE

A Vision Becomes Reality

A consolidated, service-oriented network based on virtualization running over a converged network that enables a flexible network architecture.



After making the transition to DCB/FCoE

Best Practices

- Use vendor best practices
- Ensure infrastructure visibility to all teams
- Use purpose-built tools to monitor performance and check for bottlenecks.
- Build collaborative team environment
- Implement data de-duplication to increase disk utilization
- Use virtual servers for thin provisioning at the host level

Lessons Learned

- Aligning with the organizations goals.
- Understanding your environment challenges
- Adopt new technologies to improve performance and utilization of resources
- Establish baselines and monitor them
- Embrace change
- Make a plan and take action

Results and Benefits for Payformance

Business Benefits

- Converging networks optimized the value of our data center
  - Achieve high-performance storage access over 10 Gigabit Ethernet
  - Increased throughput from 200 MB to 1.5 GB
- Lower energy and cooling costs with less equipment
  - Saved 30% to 50% on network fabric costs
- Extended useful life of existing storage arrays
  - Increased storage efficiency by 70% through de-duplication
  - Eliminated need to purchase array/disks, saving $60,000
- Simplify management
  - Retain enterprise-proven FC drivers and management tools

Prepared For The Future

Flexibility

Get a Head Start Towards

Cloud Computing

- ✓ Prepares you for ***service-centric*** Data Centers that can be aggregated, tiered and easily provisioned
- ✓ *Flexibility* allows for rapid deployment of ***scalable*** resources
- ✓ Allows for synching of your virtual machines in the Cloud through ***storage mobility***
- ✓ Accelerates IT delivery by providing the ***performance*** virtual applications desire

Key Takeaways: Cloud Computing

Deliver Next Generation Data Center Capability

Support data center capabilities and services to meet the requirements of an evolving, next generation data center including:

- New levels of ***application performance*** while supporting unprecedented levels of *scalability*
- Extending ***virtualization capabilities*** from server to storage
- Support for ***data mobility*** at the server and/or storage for increased flexibility
- Advanced ***security*** features to isolate traffic at the application level
- QoS ensures ***bandwidth*** and ***priority*** ensuring infrastructure aligns with application requirements

Conclusion

- We are in the midst of a new beginning of development and transformation for IT
- Virtualization, consolidation of LAN and SAN traffic and application migration will continue to drive the need for increased I/O bandwidth
- I/O consolidation can help
  - Achieve reliability with maximum I/O efficiency
  - A reductions in capital and operating expenditures
- Data center computing is in the process of moving to the cloud and virtualization with I/O consolidation is leading the charge