


June 13th, 2007

Shared Services effort At XXb

XXa = Parent Company Business Unit a XXb = Company XX Business Unit b
OPS = Global Support Team NWT = XXb's Network Facing Support Team



Shared Services Overview

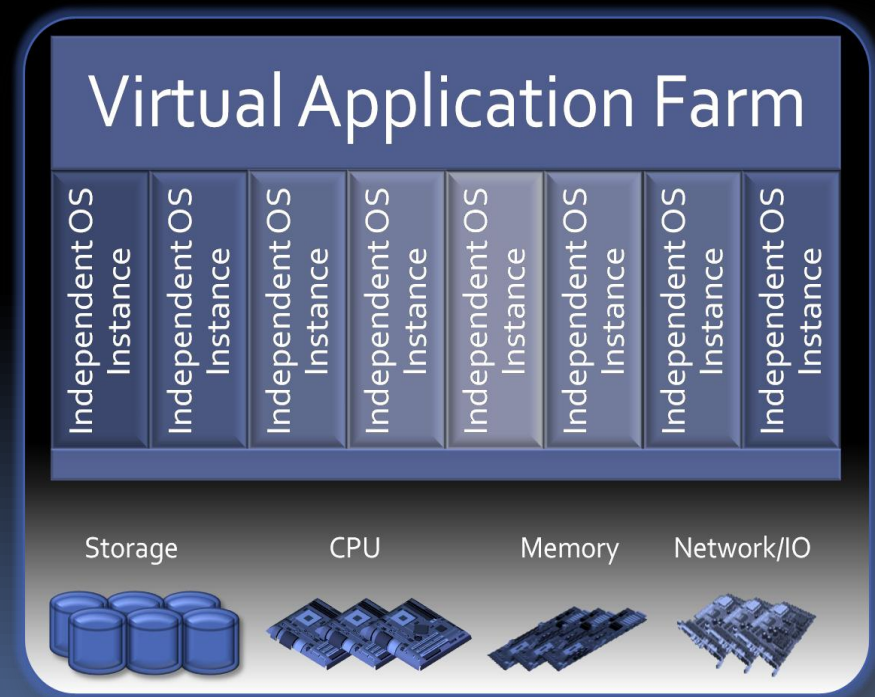
- Make up of Shared Services @ XXb
 - Virtualization
 - Farming
 - Process/Procedure/People
 - Technology of Shared Services By:
 - Vendor
 - Concepts
 - Experience Summary
 - Lessons Learned
 - Future Direction
- 

Make up of Shared Services

(virtualization)

Virtualization is a subset of Shared Services and the definition used at XXb is that of creation of logical OS zones/instances on a physical assets

- Virtual OS instance categorized by the sharing of storage, cpu, memory and I/O subsystems
- The only differentiation is in the manner of hosting of these virtual OS instances
 - Shared OS Stack
 - SUN Containers
 - HP OpenVMS
 - Independent OS Stack/Hypervisor
 - EMC VMWare, HP vPar, Xen
 - IBM IPar, SUN Ldom



Make up of Shared Services

(virtualization cont.)

- Reasons to Virtualization
 - Reduce Server Sprawl, Infrastructure Costs
 - Reduction in Physical Footprint
 - Optimization of Physical Server Utilization
 - Ease of Compute Provisioning
- Dangers of Virtualization
 - OS Sprawl and Mgmt Cost Associated
 - Unknown Licensing Practices by SW Vendors and Associated Costs
 - Non Existent & Immature Chargeback, Reporting Practices

Make up of Shared Services

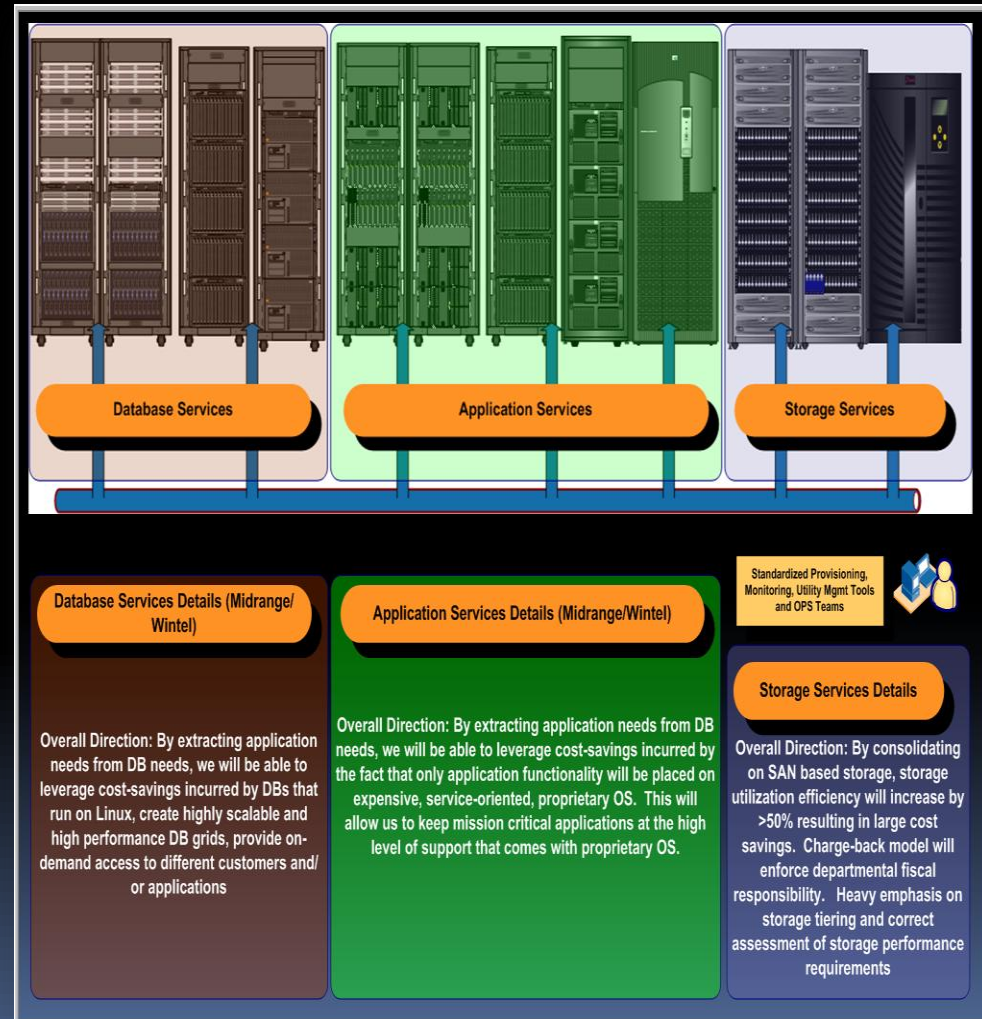
(reasons and evolution at XXb)

- Reasons and Evolution of Shared Services Effort
 - Cost Savings Effort Due to Bankruptcy
 - Standardization and Centralization of Support and Infrastructure Organizations
- Evolution
 - Identification of Low-Hanging Fruit
 - SOA Approach to HW Infrastructure Identified as Correct Approach
 - DB and Web Farming (Oracle, SQL, IIs, SharePoint, etc...)
 - VMWare (Linux, Windows 2003 virtual instances)

Make up of Shared Services

(soa concept for hw infrastructure)

- Farm Monolithic Functionalities into Single OS Images
 - DB Farms
 - Web Farms
- Virtualize OS for Applications
 - OS-Dependency
 - Smaller Footprint Once Farming Aspect Applied – More Value





Make up of Shared Services

(vendor choices on virtualization)

Shared OS Stack Dependency

- HP vPar
- SUN Containers
- HP OpenVMS
- EMC GSX VMWare
- MS Virtual Server

- *Bigger Savings Potential*
- *Application Owners Need to be More Disciplined*

Independent Host OS/Hypervisor

- HP VM
- SUN LDOMs
- EMC ESX VMWare
- Open Source Xen
- IBM LPar
- IBM Micro Partitioning

- *Licensing Cost Can eat into Savings*
- *Less Discipline Demand on Application Owners*

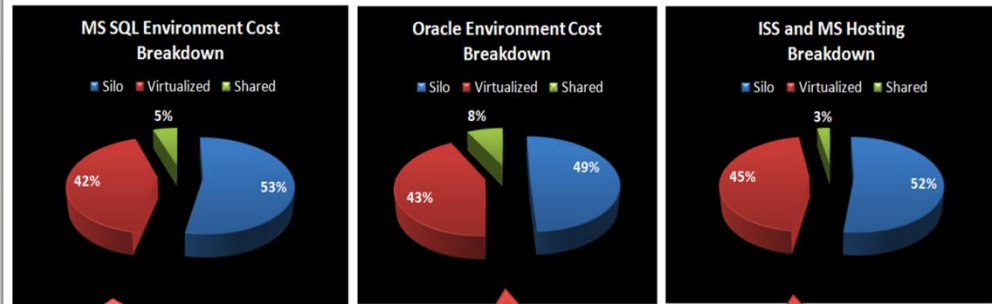
Virtualized/Farmed/Silo Cost Analysis

- Farmed/Virtualized and Silo Cost Analysis

- Left Example Depicts Cost Analysis of Farmed vs. Virtual vs. Silo Approach
- Analysis Critical to Decision-Making
- Virtualization Approach as a Blanket Approach is not Cost Effective
- Farmed and Virtualized Approached Needs to be Strategically Directed

Control	Quantity	MS SQL			Oracle			ISS Hosting		
		Silo	Virtualized High End	Shared	Silo	Virtualized High End	Shared	Silo	Virtualized High End	Shared
Cost High End Intel	\$25,000	144	14	14	34	4	4	100	10	10
Cost of Intel	\$7,000									
Cost of Midrange High End	\$80,000	1,008,000	350,000	98,000	1,020,000	320,000	320,000	700,000	250,000	70,000
Cost of Midrange (4 CPU)	\$30,000				183,600	57,600	57,600	0	0	0
Cost of MS Lic	\$500	72,000	72,000	7,000	1,360,000	1,360,000	160,000	50,000	50,000	5,000
Cost of MS SQL	\$1,500	1,680,000	1,680,000	163,333	396,667	396,667	46,667	2,500,000	2,500,000	100,000
Cost of Oracle DB/CPU	\$17,000	216,000	216,000	21,000	3,468,000	3,468,000	408,000	0	0	0
Cost of ISS Admin/2 Dept	\$50,000									
Cost of DB Admin/6 Server	\$70,000									
Cost of Unix Midrange OS/4 way	\$40,000									
		2,976,144	2,318,014	289,347	6,428,301	5,602,271	992,271	3,250,100	2,800,010	175,010

OPEX Cost Usually go Unnoticed



Virtualization Gains in Number of Systems, Power, Space. However, OS/Licensing/OPEX Remains the Same

Shared Environment Operating Framework More Mature and Easily Deployable

7+ Fold Cost Savings Over Virtualized Counterparts

XXb Current Examples

(Oracle Farms)

- Total of 55 Applications
- 12 Apps Waiting Placement
- ?? Apps from End of Serviceable Life Initiative
- Consuming 250 CPUs
- Intel Linux and HP-UX
- Cost Avoidance > \$19m

- Silo Solution Cost Estimate

# of Servers	Cores	Oracle DB/CPU	Oracle RAC/CPU	Server Cost
110	880	\$15,000	\$15,000	\$60,000
License Cost		HW Cost		
\$19,800,000		\$6,600,000		

- HP-UX and Intel-Linux Farm Cost ~ \$7m
- Based on Cost to Procure 110 Servers @ Standard License and HW Costs for 55 Applications (Midrange 4 CPU SUN)
- Farms are ~ 50% Filled
- ROI Will Double

XXb Current Example

(SQL Farms)

- Total of 122 Applications
- 9 Apps Waiting Placement
- ?? Apps from EOSL Initiative
- Consuming 35 Intel Servers
- Covering 4 Data Centers
- Cost Avoidance > \$2.5m
 - Silo Solution Cost Estimate

# of Servers	MS SQL Licensing	Windows Licensing	Server Cost
244	\$1,500	\$500	\$10,000
License Cost		HW Cost	
\$488,000		\$2,440,000	

- MS Intel SQL Farm Cost ~ \$450k
- Based on Cost to Procure 244 Servers @ Standard License and HW Costs for 122 Applications ({2} 2 CPU Intel Servers)
- Farms are ~ 50% Filled
- ROI Will Double

XXb Current Example

(VMWare Farms)

- Total of 68 Applications
- 289 Production Instances
- 98 Development Instances
- ?? Apps from End of Serviceable Life Initiative
- Consuming 60 Intel Servers
- Covering 4 Data Centers
- Cost Avoidance > \$3.5m
 - Silo Solution Cost Estimate

# of Servers	VMWare Licensing	Windows Licensing	Server Cost
389	\$0	\$500	\$12,000
License Cost		HW Cost	
\$194,500		\$4,668,000	

- VM Farm Cost ~ \$1.4m
- Based on Cost to Procure 389 Servers @ Standard License and HW Costs for 68 Applications (2 CPU Intel Servers)
- Farms are ~ 50% Filled
- ROI Will Double



XXb Lessons Learned and Next Steps

Lessons Learned

- Reporting
 - Critical in order to construct cost analysis
 - Cost analysis leads to application of correct technology solution to specific areas
- Chargeback
 - Ease of virtual images will lead to population explosion of virtualized assets
 - Chargeback Mechanism is critical to control spend
- Change Management
 - Critical to have feeds and process to evaluate infrastructure and strategic projects
 - Feedback from application owners and business executives needed during changes to current infrastructure standards
- Network Security
 - Address concerns with Network and Security earlier
 - Network and Security Standards Do Not Always Facilitate Shared Services (Virtualization and/or Farming Concepts)

Next Steps

- Process
 - Modify current processes to encompass flexible and dynamic change management
 - Drive operational mgmt to a more “hosted” approach due to virtualization and farming
 - Initiate Chargeback Program
- Technology
 - Continue drive to standardize on Solaris and Linux and App-Dependent OS targets
 - Continue Farming Concepts
 - Leverage ILM for SAN Use for Future Lower Storage Cost
 - Work Through Network/Security Issues with Virtualization and Farming Initiatives
 - Execute Thorough Capacity Planning Initiative