



Evaluating Virtualization Technologies and Rolling Out “Office in a Box” at XL Capital

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Who is XL Capital?

- The XL Capital group of companies is comprised of three main operating segments
 - Insurance
 - Reinsurance
 - Financial Products and Services
- Headquartered in Bermuda, XL Capital has 78 offices in 29 countries
- XL Capital Ltd, through its operating subsidiaries is a leading provider of insurance and reinsurance coverages and financial products to industrial, commercial and professional service firms, insurance companies, and other enterprises on a worldwide basis



XL Capital's Financial Data



In Millions of US Dollars

	2005	2004	2003	2002	2001	2000
TOTAL ASSETS	58,400	49,015	41,191	35,760	28,339	17,007
SHAREHOLDERS' EQUITY	8,500	7,739	6,937	6,570	5,437	5,574
REVENUES	11,300	10,028	8,002	6,568	4,086	2,737

Why We Looked at Virtualization?

- We first looked at virtualization technology for our Global Engineering lab located in Stamford, CT
- We needed to keep the infrastructural costs down, needed to ensure we used resources efficiently and needed to be more responsive so that projects got out of the lab and into production quicker
- Due to the fact that most of our servers and workstation are running Microsoft operating systems, our software strategy states that if Microsoft makes it then that's our standard, unless there is a competing product that is far superior than Microsoft's
- We had to do a bakeoff between Microsoft's Virtual Server and VMWare's GSX and ESX Servers

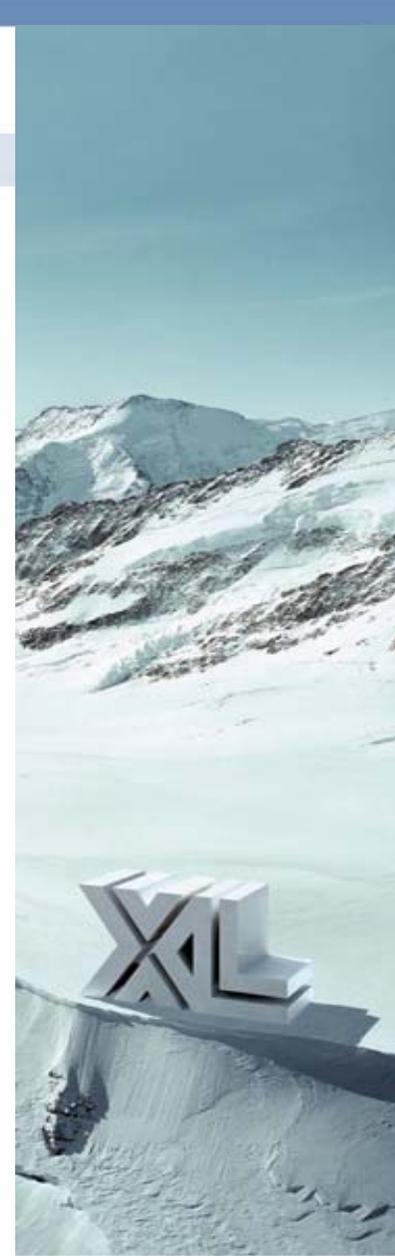


Test Results

- Microsoft Virtual Server and VMWare GSX Servers required a host operating system such as Windows
- All the virtual machines on the host server will go down if we needed to apply patches to the host Windows OS and required to reboot it
- Microsoft did not have any good monitoring and management tools such as VMWare's Virtual Center
- After seeing all our test results and seeing it in action in the engineering lab, our resident Senior Systems Engineer from Microsoft said that ESX server is the best virtualization software that he has seen
- Because of these and many other reason, we chose to go with VMWare ESX Server as our preferred virtualization software
- With virtualizing 75 servers on 3 physical HP DL580 servers, we have saved over \$500,000 in our Engineering lab.

VMWare Customer Service

- The commitment we saw from VMWare was extremely good
- We had VMWare Account Managers, Systems Engineers, Vice President of sales for North America and even Diane Greene, the President and co-founder of VMWare came down to meet with us to discuss our licensing needs and options
- We had some concerns with the support that we were getting and they went above and beyond to address everything to our satisfaction

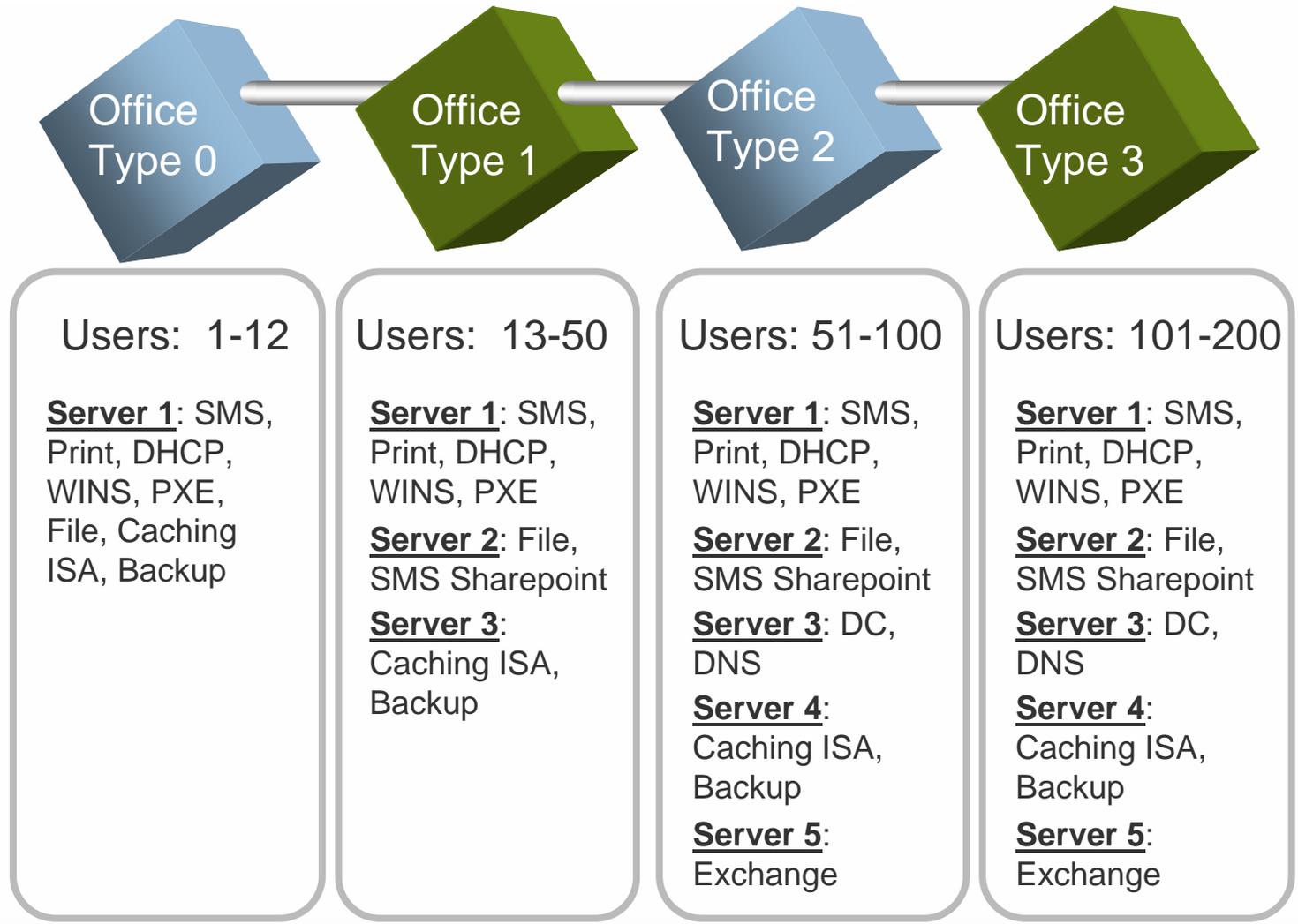


What Can We Virtualize Next?

- Because of the success that we got in our Engineering lab, we decided to start using virtualization technology in our production environment
- We were about to purchase \$1.5 Million worth of servers to support a Managed Desktop deployment
- Could we look at Virtualization as a solution for our branch offices?
- If the benefits outweigh the risks, should we consider deploying virtual servers to all our branch offices?



XL's Branch Office Configuration



Office in a Box - TCO

Hardware & Software Cost	Physical Server Architecture		Virtual Server Architecture	
	No. of Servers	Cost	No. of Servers	Cost
Office Type 0	35	\$215,250	35	\$215,250
Office Type 1	84	\$516,600	28	\$172,200
Office Type 2	30	\$240,000	6	\$90,000
Office Type 3	15	\$120,000	3	\$45,000
Virtual Server Software licenses	0	\$0	37	\$185,000
Total HW and SW Costs		\$1,091,850		\$707,450
Dollar Savings				\$384,400
% Savings				35%
Operational Costs for 72 Offices				
DR, Power, Space, Cooling, UPS, Cabling, Switch Ports, etc....		\$\$\$\$		Same or Less
% Savings				~100%

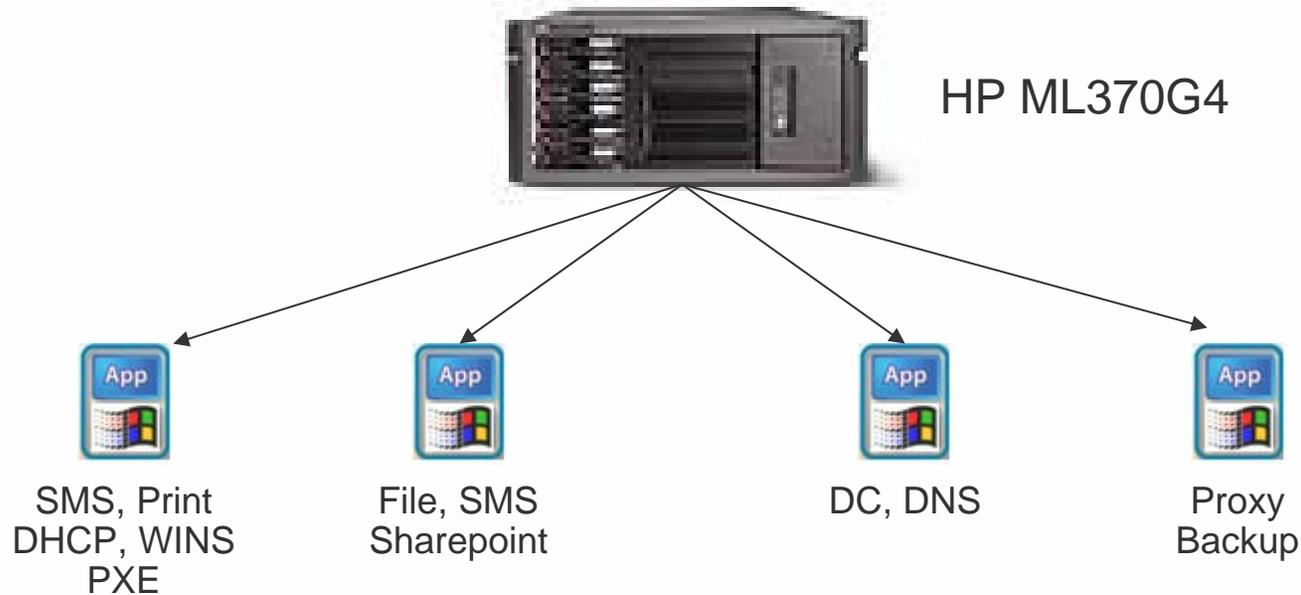
Pro's and Con's of using Virtualization for Branch Offices

Pro's	Con's
<ul style="list-style-type: none">■ Lower TCO by more than 50%■ Significantly reduce provisioning time■ Enable new DR capabilities■ Enable workload management / capacity on demand■ Improve utilization rates up to 60-80% for x86 servers■ Response times for change requests measured in minutes■ Simplified system management	<ul style="list-style-type: none">■ More eggs in one basket if hardware fails■ This is a cultural shift which requires a change in perspective

Virtualized Office in a Box

- We compared the pro' and con's and decided to virtualize servers in our branch offices and thought that it will be a big win and a significant reduction in cost if we can give them just one physical server and multiple virtual servers on that ONE physical box
- Today, we have successfully implemented or are in the process of finishing the deployment of Active Directory Domain Controller, File and Print Server, ISA Proxy Server, Microsoft SMS Server and even a Backup server on just one physical server for 70+ of our remote offices
- We have just one HP Proliant ML370 G4 server with two processors, 8GB of RAM and six 146GB hard drives in all our remote offices
- The total cost of ownership from an IT perspective for our remote offices dropped dramatically

Office in a Box



- Depending on the size of the office, we run up to four virtual servers on one physical server in our remote offices
- We run File level backups using BackupExec and VMDK backups using EsxRanger
- We keep templates of base operating systems on the local datastore

Disaster Recovery

- Our Disaster Recovery strategy fully utilize VMWare ESX architecture
- We contracted to Sungard for using their facility in a DR scenario
- We have a direct link to Sungard from our WAN and we have live active directory domain controllers in our DR facility running on VMWare ESX servers
- In case of a disaster we can utilize a Sungard facility to build all our needed servers on VMWare ESX and then restore data to them from tapes



What Can We Virtualize Next?

- XL is in the process of deploying a managed desktop to our user community
- With managed desktop, users including system administrators and application developers will only have user level rights to their local workstation
- Because of this, they will not be able to install and test anything on their workstations
- This definitely was not acceptable to both our systems administrators and application developers
- The only way we could let them have administrative rights was to give them a second machine for their tests that they will have full administrative rights on



VMWare ACE at XL

- We decided to use VMWare ACE to create a Managed Desktop Image that can be installed on our workstations of Systems Administrators and Application Developers
- By using ACE, we were able to provide our administrators a desktop that they had full administrative rights on
- By using ACE, we were able to create an image that had preinstalled development tools and applications for our users
- By using ACE, we saved money by not having to buy a second workstation for all our Systems Administrators and Application Developers



What Can We Virtualize Next?

- We have four major datacenters throughout the world
 - Stamford – 500+ Physical Servers
 - Bermuda – 150+ Physical Servers
 - London – 200+ Physical Servers
 - Zurich – 250+ Physical Servers
- At the high pace that we are growing at today, we are quickly running out of space, power and cooling at many of these datacenters
- Our datacenter administrators are having a hard time managing and maintaining these servers with the limited resources that they have



VMWare Capacity Planner at XL

- We had VMWare come in and configure Capacity Planner in our Stamford datacenter
- Capacity Planner collected data for 30 days on 200+ of the servers that we had in our datacenter
- At the end of the 30 days, VMWare gave us a report that showed us that on average, most of our servers were only being utilized at about 3% of their capacity
- The report gave us a lot of good information
 - What were good candidates to be virtualized
 - What should NOT be virtualized
 - What hardware should we virtualize onto
 - What servers can be put on what host



Server Consolidation in Stamford

- Based on the Capacity Planner Reports, we have started virtualizing servers in our Stamford datacenter
- We are using PlateSpin's PowerConvert for our Physical to Virtual conversions
- We recently bought another couple of hundred ESX licenses to support our conversions
- Based on the success of these conversions in Stamford, we bought a few hundred Capacity Planner licenses for our Bermuda, London and Zurich datacenters



VMWare at XL Capital

Lower Cost

**Faster
Deployments**

**More
Responsive**

**Rapid
Provisioning**

**Easier Disaster
Recovery**

More Efficient

**Improved
Supportability**

**Centralized
Management**



Summary

- With VMWare Capacity Planner, we were able to identify the servers that were prime candidates for virtualizing
- With VMWare ACE, users that require elevated rights will get a virtual desktop that they have administrative rights to on their managed desktop. This saved us money on not having to buy two workstations for Administrators
- With using VMWare ESX Server for virtualization, our total cost of ownership has dropped significantly and the total return on investment has increased dramatically
- With using VMWare Virtual Center, we were able to centrally manage all our virtual servers, including the servers in all our branch offices, from one central point

Questions?



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