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USE CASE

Storage Economics Engagement Customer Summary

INDUSTRY: Insurance
REGION: Americas
BUSINESS SIZE: Enterprise

TRANSFORM VIRTUALIZATION ECONOMICS RELIABLE TRUSTED INNOVATE INFO
TION GLOBAL CHANGE INTELLIGENT TECHNOLOGY SERVICES VALUE INSIGHT
PORTUNITY SOCIAL INFRASTRUCTURE INTEGRATE ANALYZE DISCOVER COMPET

## Executive Summary

**XYZ Inc. has asked HDS to help identify, measure, and eventually reduce the total cost of data ownership. A total cost of ownership (TCO) baseline assessment has been completed to help isolate specific problem cost areas and aid the implementation of new strategic plans for improvement. The current storage configuration employed by XYZ Inc. has 81TB and 19TB of raw / usable capacity respectively, and a 100% annual data growth rate.**

In reviewing the XYZ Inc. environment, Hitachi took many parameters into consideration. This analysis leverages actual XYZ Inc. numbers along with empirical industry data to calculate potential savings that XYZ Inc. can achieve with the proposed storage architecture refresh.

The HDS solution includes:

- Virtualization.
- Improving capacity utilization through Hitachi Dynamic Provisioning (HDP) thin provisioning.

XYZ Inc. can save a total of US$19,807,888.44 by updating their current storage architecture to the proposed Hitachi solution. The proposed solution will reduce cost/terabyte/year from the original US$170,500 down to US$3,655.10.

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## Key Financial Metrics

| Category | Key Financial Metrics |
|---|---|
| Investment | US$301,212 (total 3-year investment) |
| Estimated payback period | 0 months after implementation |
| Savings | US$19,807,888.44 (total 3-year savings)<br>$0 (Net present value) |
| Internal rate of return (IRR) | 0% |
| Return on investment (ROI) | 0%<br>(Savings/# of years/investment) |

## Company Information

| Company name | XYZ Inc. |
|---|---|
| Region | Americas |
| The country of company headquarters | **CONFIDENTIAL** |
| Company size (employees #) | **CONFIDENTIAL** |
| Company size (revenue $) | **CONFIDENTIAL** |
| Industry | Insurance |

## Business Information (before HDS engagement)

| | |
|---|---|
| Business overview | **CONFIDENTIAL** |
| Corporate vision | **CONFIDENTIAL** |
| Corporate goals | **Economical**<br>■ Capex reduction.<br>■ Opex reduction.<br>**Technical**<br>■ Manage 100% data growth. |
| Challenges | **Data growth %**<br>■ Underutilization of assets.<br>■ Labor issue.<br>■ Performance issues.<br>■ Migration disruption. |
| Cost sensitivities | ■ Storage area management.<br>■ Capex.<br>■ Migration.<br>■ Environmental is small interest, but not on budget. |

# Technical Information (before HDS engagement)

## Assumptions:

- Current lease is US$50,560 monthly for 36 months. May 2011 leaves 19 months in the lease.
- VMAX cost of storage is US$27.84 per usable GB.
- Current asset financial life is the length of the remaining lease; any new asset would have a financial life of 3 years.
- Annual compound growth rate is 7%.
- SRS reclaim of 19% takes server storage utilization from 62% to 81%.
- Replacement of VMAX further benefits from lower storage tiers.

XYZ Inc. overpaid on an EMC infrastructure. Rather early in that infrastructure's life cycle, approximately 1 year, the sales team made the client aware of the mistake. This SES study was the tool to communicate the mistake, as it actually forecast the point in time where the cost of the proposed HDS solution would make replacement of the EMC infrastructure viable.

## Key points established to date:

- Current Lease is US$50,560 monthly for 36 months. May 2011 leaves 19 months or $960K remaining in the lease.
- VMAX cost of storage is US$27.84 per usable GB.
- The Storage Reclamation Study (SRS) revealed that 19% of server storage can be reclaimed in the VMAX environment through execution of a virtualization and HDP strategy.
- Reclamation of this VMAX storage space has a value of US$422K in immediate space reclaim to XYZ Inc.
- Additional savings regarding environmental and migration still need to be quantified. What about VMAX replacement?

| Service Tier - Break Down | $ / Gig - Raw | Total Capacity | Tier Split of Allocated | |
|---|---|---|---|---|
| | | | Capacity | Percent |
| Tier 1 - SSD | $97.00 | 1,464 | 1,464 | 1.9% |
| Tier 2 - 15K 300 | $ 4.27 | 37,841 | 37,841 | 49.8% |
| Tier 3 - 15K 300 | $ 4.27 | 36,645 | 36,645 | 48.2% |
| Total | | 75,950 | 75,950 | 100.0% |

- Validate – are service Tier 2 and 3 the same support media?
- Does the IOP need for SSD justify the high cost?
- Tier 2 and 3 are high-performance disks; should a lower-cost tier be considered?

**Types of savings of interest:**

- People – only 2 admins for SAN (2nd to be hired); NAS is managed by Microsoft® Windows® team.
- Capital.
- Migration – interest.
- Environmental is small interest, but not on this budget.

DR – tape recovery; look into updating next year.

Data is permanently retained at this point.

They have a current TCO which we want to verify; their TCO is lease + implementation. Costs for usable are: VMAX, US$27.84; Centera, US$5.68, NAS (NS 480), US$7.69. NS 480 is all NAS access.

**VMAX**

- 81TB raw.
- 48TB – in LDevs, 31 of these TB are allocated to servers and 15.8 are not allocated.

**Projects:** VDI, which is planned to go on VMAX

Currently running a five-9s environment.

Potential workshop dates are April 8, 18, and 19.

**VMAX Growth** – I will use a growth rate of 100%, which is actually low for the last year.

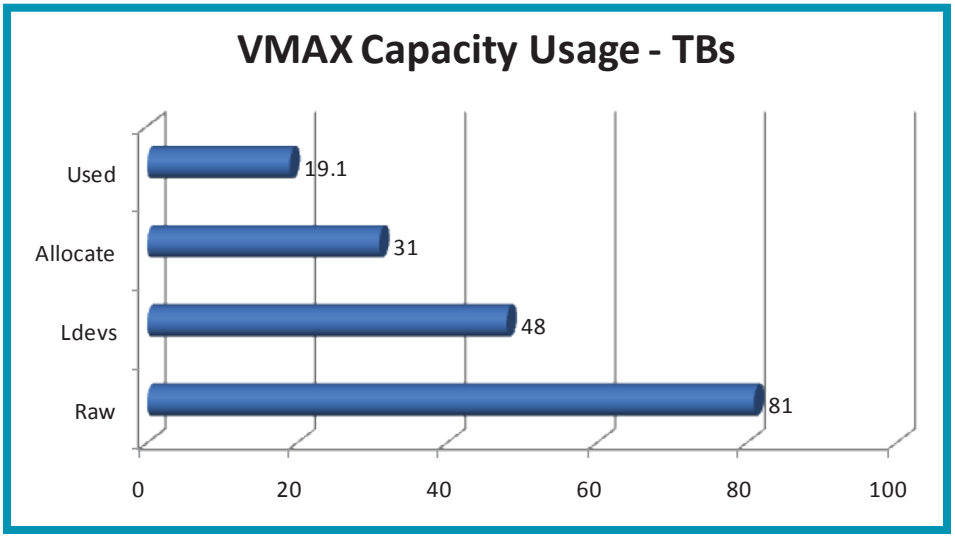
These figures reflect overall changes/ growth since early 2008.

Prior to May 2010, we were utilizing a DMX 2000 array.

GROWTH AFTER 2014

| | Available/free | Used |
|---|---|---|
| March 2008 | 3.4 TB | 12.9 TB |
| June 2008 | 3.1 | 13.2 |
| Dec 2008 | 2.1 | 14.2 |
| Jan 2009 | 1.4 | 14.9 |
| Jun 2009 | 1.7 | 14.6 |
| Dec 2009 | 2.1 | 15.2 |
| March 2010 | 1.5 | 14.8 |
| March 2011 | 19.5 | 31.5 |

Storage Array View



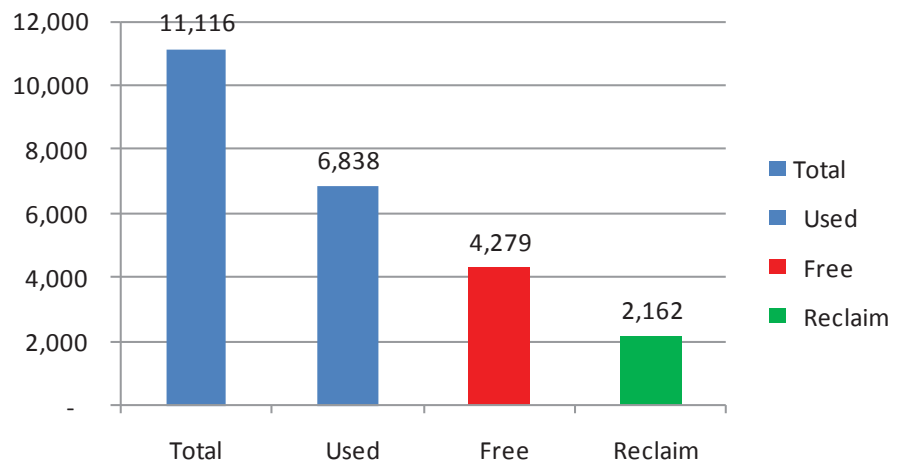

- XYZ Inc.'s array view of the storage starts at 81TB of raw storage and drops to 31TB of storage allocated to servers. If 62% utilization is applied, we have 19.1TB used.
- Storage TCDO is 4.2X (81/19.1) from physical capacity down to the used amount in the server, without factoring in external copies.
- So if 19% reclaim is applied to the allocation of 31TB, 6TB are reclaimed.
- And if physical storage costs US$27.84 per usable GB, the true cost of data stored currently is US$70 per GB (US$70K per TB).
- As one moves further up the storage stack, getting closer to the actual data, storage becomes more valuable. So a focus on host waste reduction creates the greatest value to XYZ Inc.
- Note: Assumes all Allocate storage makes it into file entities.

## Solution and Services Information (our products and solutions deployed)

**Solution and costs:**

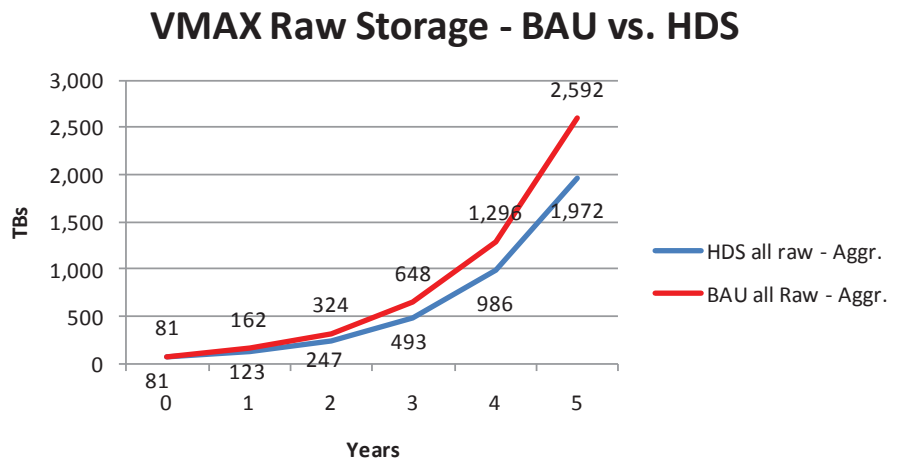
- AMS, 50K.
- Virtualize, 172K.
- Storage, 155K.

Storage Reclamation Study (SRS)




| Space | GBs | % |
|---|---|---|
| Total | 11,116 | 100% |
| Used | 6,838 | 62% |
| Free | 4,279 | 38% |
| Reclaim | 2,162 | 19% |

- SRS study was executed on 11.1TB and determined that 2.2TB could be reclaimed from this sample set.
- Application of this 19% across the environment will result in significantly more space savings.
- When XYZ Inc. regains 1GB of host storage waste, they reduce their future purchase of physical storage capacity by 4.2GB.
- A greater challenge, can XYZ Inc. reclaim their existing host storage waste, reuse that waste, and eliminate those related future purchases altogether.
  - Given the current rate of 4.2X, every GB of host storage waste XYZ Inc. retrieves and reuses eliminates a purchase of 4.2GB physical capacity, in this case saving them 4.2X or US$70.
  - Adding 19% utilization, XYZ Inc. would retrieve 6TB of today's existing host storage waste, a realistic expectation given the detail SRS study and HDP reclamation.
  - At the current rate of US$70 x the host 6,000GB, XYZ Inc. would save US$420,000 in future purchases.
  - As utilization of the environment improves through reclamation, the 4.2X ratio improves to 3.2X on reclamation of the 6th TB.
- The 100% annual growth rate grows the BAU storage environment by over 800% in 3 years to 648TB in 2013, requiring a purchase of 567TB. Note BAU ratio of data to storage is 4.2X and will continue requiring over 2PB of storage in 5 years.
- The HDS solution requires no immediate storage (approx. 4 months). Then once storage buy resumes, the ratio of data to storage is only 3.2X, creating a much less aggressive storage growth curve and ongoing future saves.
- Aggregate saves over 3 years are 155 raw TB worth US$2.5M.



## Resulting Benefits

- A strong focus on server waste reduction would yield US$420K savings through storage reclamation at today's host storage rate. Thin provisioning would yield a total of US$2.5M over 3 years.
- Additional tiering at this point could offer significant gains and can be determined with additional understanding of the current storage drivers.
- Other considerations:
  - Power, cooling, and space – approximately 19% data density increase for immediate savings, with lower growth over time yielding significantly more cost reductions.
  - Cost of array migrations – US$275K in initial migration savings.

### Storage options to consider:

- Hitachi Adaptable Modular Storage (AMS 2000) – satisfies VDI storage requirement.

OR

- Hitachi virtual Storage Platform (VSP) – satisfies VDI storage requirement, but also provides strategic capability to:
  - Virtualize the VMAX for reclamation saves.
  - Allow nondisruptive replacement of VMAX on your timeline.

### Costs/savings – virtualization/ reclamation step

- Remaining cost of VMAX in May 2011 with 19 months remaining.

#### Option 1

- Virtualize existing VMAX to obtain additional space savings.

#### Results

- Thin provisioning reclamation saves US$422,000 in next purchases, exceeds 36-month solution cost of US$156,000 by $266,000, exceeds comparable 19-month solution cost of US$83,000 by US$339,000.
- US$266,000 saves net to lease are $695,000.

#### VDI effect

- Replacement of the AMS2000 $46K in the VDI solution with the VSP $156K adds $110K, but enables execution of the $422K space savings.

| May 2011 | Totals |
|---|---|
| Remaining Payments | 19 |
| Remaining Lease | $ (960,640) |

| Virtualize/Thin | |
|---|---|
| Savings | $ 422,000 |
| HDP (TP reclaim) | $ 422,000 |
| HDS Virtual. Cost | $ (156,492) |
| Net HDS Cost/ Save | $ 265,508 |
| Lease less Saves | **$ (695,132)** |

## Costs/savings – VMAX replacement step

### Option 2

- Replace existing VMAX (83% of total lease) to obtain additional cost savings and optimize storage tiers.

### Solution Cost Results

- HDS storage for VSP over 36 months is US$145,000 for a solution total of US$301,000. Cost of total HDS solution to VMAX saves US$500,000. Comparing over 19 months, the total solution cost is US$159,000.

### Savings results

- Eliminates bin file changes, while substantially reducing migration costs and environmental costs. Further increases the US$500,000 by another US$302,000
- The offset of replacing the VDI AMS would reduce HDS cost by another US$46,000 based on a 36-month lease.

| May 2011 | Totals |
|---|---|
| Remaining Payments | 19 |
| Remaining Lease | $ (801,281) |

| HDS Costs | |
|---|---|
| Virtualization | $ (156,492) |
| Storage | $ (144,720) |
| Total HDS Cost | $ (301,212) |
| Net to EMC VMAX | $ 500,069 |

| Savings to Consider | |
|---|---|
| HDP (Reclaim) | $ 27,497 |
| Migration | $ 275,000 |
| Bin Changes | $ - |
| Power/Space | $ - |
| Total Savings | $ 302,497 |

| | 19 Months | Monthly | 36 Months |
|---|---|---|---|
| Total EMC Lease | $ 960,640 | $ 50,560 | $ 1,820,160 |
| **EMC Lease VMAX** | **$ 797,331** | **$ 41,965** | **$ 1,510,733** |
| | | | |
| VSP Virtualization | $ 82,593 | $ 4,347 | $ 156,492 |
| VSP Storage | $ 76,380 | $ 4,020 | $ 144,720 |
| **Total VSP Cost** | **$ 158,973** | **$ 8,367** | **$ 301,212** |
| **Net Savings** | **$ 638,358** | **$ 33,598** | **$ 1,209,521** |
| **% Savings** | **66%** | **66%** | **66%** |

## Lease points:

- Savings are significant at 66% without factoring in thin provisioning and migration savings.
- A 2nd lease option with a 6-month deferral and 30 payments is also available at US$10,182 per month.

## Key considerations:

- Dollars are not apples-to-apples comparisons. The EMC lease costs are for the remaining duration of 19 months and the HDS acquisition costs are for the next 36 months, which creates a savings scenario considerably greater than depicted in the prior slides.
- A transformational virtualization strategy enables:
  - Virtualize the VMAX for reclamation saves.
  - Non-disruptive replacement of VMAX on your timeline.
- XYZ Inc. will go through another migration in the next 18 months; realization of costs to conduct that migration will begin in approximately 12 months.
- Thin provisioning savings will be realized in place of acquiring more storage.
- Only initial savings are stated over the EMC lease life; future savings from environment growth have not been accrued at this point.

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