

Show Me the Money!

Taking the Mystery Out of Quantifying ROIT

John Dodge Hayes

Avnet Enterprise Solutions



Avnet Enterprise Solutions: Technical Breadth and Depth



- \$333 million IT infrastructure architect
- 16+ years experience delivering complex data center and network infrastructure solutions.



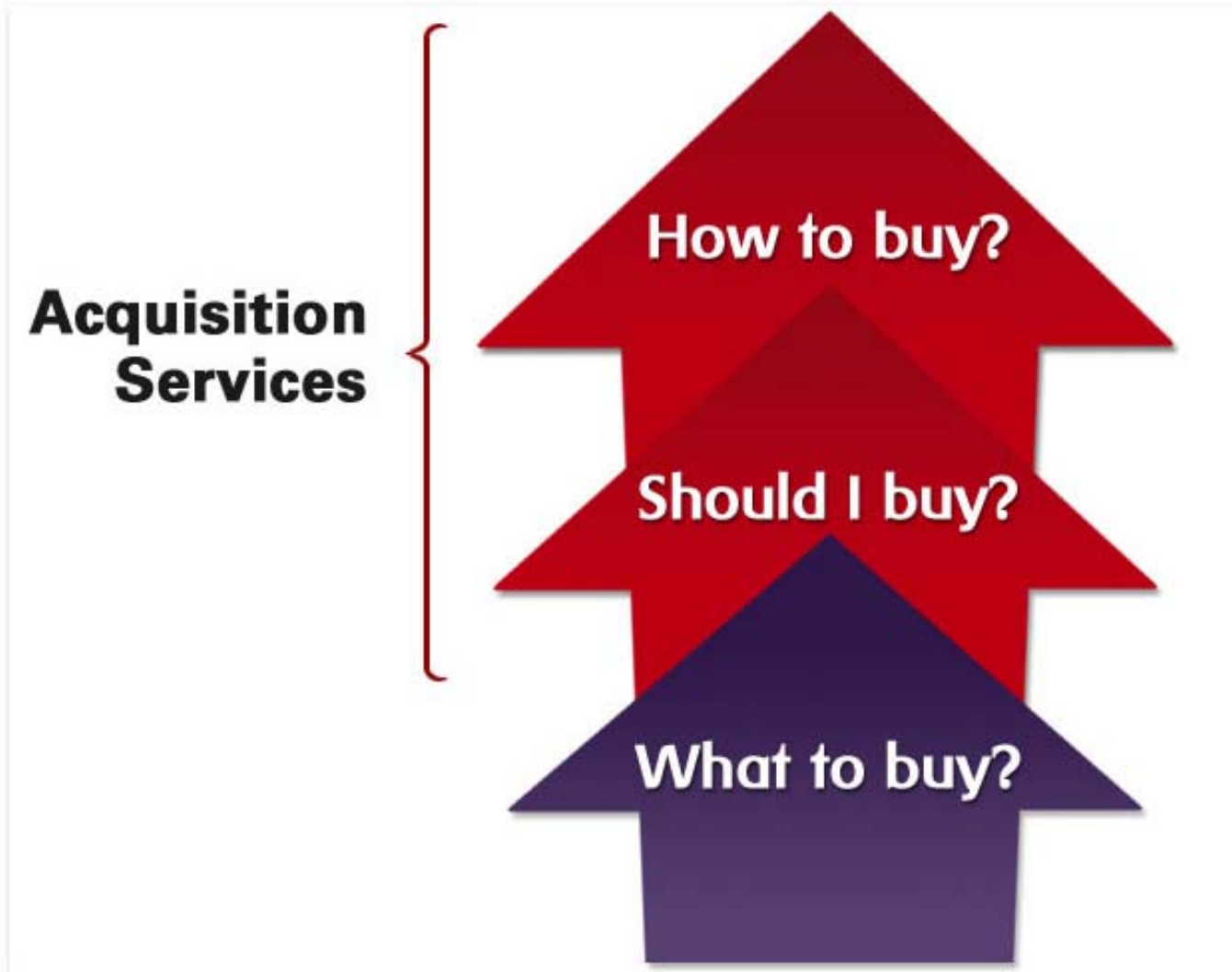
ORACLE™



- hp National Enterprise Storage Partner of the Year.
- Ranked 85th on VARBusiness 500
- Proven Methodology
 - Account Management
 - Professional Services
 - Project Management
 - Methodology
 - Acquisition Services



Considerations for Acquiring Technology



Should I Buy?

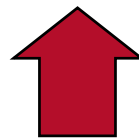
ROI Assessments

- **Business Value Assessment (ITCentrix)**
 - Modeled ROI
 - Historical Industry Data
 - Assumptions

- **IT Financial Assessment Methodology (ITFAM)**
 - Based on Intermediate Financial Management 5th Edition (Brigham-Gapenski)
 - Proven financial framework extended to include the “Dynamics of IT Assets”
 - Methodology for gathering your actual financial data

ITFAM Step 1: Determine Current Expenses

	YR1
Hardware Maintenance	\$\$\$
Software Maintenance	\$\$\$
Depreciation	\$\$\$
Lease Payments	\$\$\$
Support	\$\$\$
Facilities Costs	\$\$\$
Status Quo	\$\$\$



Current Costs

ITFAM Step 2: Determine TCO

	YR1	YR2	YR3	TOTAL
Hardware Maintenance	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Software Maintenance	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Depreciation	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Lease Payments	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Support	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Facilities Costs	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Status Quo	\$\$\$	\$\$\$	\$\$\$	\$\$\$



Total Cost of Ownership

ITFAM Step 3: Compare Alternatives to get ROI

	Invest	YR1	YR2	YR3	TOTAL
Hardware Maintenance		\$\$\$	\$\$\$	\$\$\$	\$\$\$
Software Maintenance		\$\$\$	\$\$\$	\$\$\$	\$\$\$
Depreciation		\$\$\$	\$\$\$	\$\$\$	\$\$\$
Lease Payments		\$\$\$	\$\$\$	\$\$\$	\$\$\$
Support		\$\$\$	\$\$\$	\$\$\$	\$\$\$
Facilities Costs		\$\$\$	\$\$\$	\$\$\$	\$\$\$
Status Quo		\$\$\$	\$\$\$	\$\$\$	\$\$\$
Less: Proposed Solution	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Net Cash Flow	(\$\$\$)	\$\$\$	\$\$\$	\$\$\$	N/A

ROI = Internal Rate of Return (IRR)
of Net Cash Flows

Example - Step 1: Determine Current Expenses

	YR1
Server H/W Maint.	\$269,000
Server S/W Maint.	\$30,600
Depreciation	\$0
Lease Payments	\$0
Support	N/A
Facilities Costs	\$43,836
Status Quo	\$343,436



Current Annual Costs

Example - Step 2a: Determine TCO

	YR1	YR2	YR3	TOTAL
Depreciation	\$0	\$0	\$0	\$0
Cash Costs	\$343,436	\$343,436	\$343,436	\$1,030,308
Subtotal:	\$343,436	\$343,436	\$343,436	\$1,030,308
Capital Improvements:	\$0	\$0	\$0	\$0
Total Existing	\$343,436	\$343,436	\$343,436	\$1,030,308


TCO

Example - Step 2b: Expenses for Alternative

	YR1
Server H/W Maint.	\$0
Server S/W Maint.	\$0
Depreciation	\$118,923
Trade-in Value	(\$200,000)
Support	N/A
Facilities Costs	\$14,031
Status Quo	(\$67,046)



Current Annual Costs

Example - Step 2b: Alternative TCO

	YR1	YR2	YR3	TOTAL
Depreciation	\$118,923	\$118,923	\$118,923	\$356,769
Cash Costs	(\$185,969)	\$157,696	\$157,696	\$129,423
Subtotal:	(\$67,046)	\$276,619	\$276,619	\$486,192
Total	(\$67,046)	\$276,619	\$276,619	\$486,192

TCO

Example - Step 3: Compare (4) HP V2500 to (2) HP rp8400

IT Budgetary View

	Invest	YR1	YR2	YR3	TOTAL
Current Environment					
(4) HP V2500 Servers					
Depreciation		\$0	\$0	\$0	\$0
Maintenance, Power, Floorspace		\$343,436	\$343,436	\$343,436	\$1,030,308
Subtotal:		\$343,436	\$343,436	\$343,436	\$1,030,308
Less: Proposed Solution					
(2) HP rp8400 Servers					
Investment	\$594,613				
Trade-in		(\$200,000)	\$0	\$0	(\$200,000)
Depreciation		\$118,923	\$118,923	\$118,923	\$356,769
Maintenance, Power, Floorspace		\$14,031	\$157,696	\$157,696	\$329,423
Subtotal:		(\$67,046)	\$276,619	\$276,619	\$486,192
Net IT Benefit		\$410,482	\$66,817	\$66,817	\$544,116

**Frees up \$544,116
in IT Budget over 3 years**

Example: Server Consolidation of (4) HP V2500 to (2) HP rp8400

ROI (Cash)

	Invest	YR1	YR2	YR3	TOTAL
Current Environment					
(4) HP V2500 Servers					
Depreciation		\$0	\$0	\$0	\$0
Maintenance, Power, Floorspace		\$343,436	\$343,436	\$343,436	\$1,030,308
Subtotal:		\$343,436	\$343,436	\$343,436	\$1,030,308
Less: Proposed Solution					
(2) HP rp8400 Servers					
Cash Investment	\$594,613				
Cash from Trade-in		(\$200,000)	\$0	\$0	(\$200,000)
Tax Savings from Depreciation		(\$29,731)	(\$29,731)	(\$29,731)	(\$89,193)
Maintenance, Power, Floorspace		\$14,031	\$157,696	\$157,696	\$329,423
Subtotal:		(\$215,700)	\$127,965	\$127,965	\$40,230
Net Cash Flow	(\$594,613)	\$559,136	\$215,471	\$215,471	See NPV

NPV = \$205,138

Payback = 14 months

ROI = 39%

Compare to 12% "Hurdle Rate"

Example: Server Consolidation of (4) HP V2500 to (2) HP rp8400

ROI (Capital Lease)

	YR1	YR2	YR3	TOTAL
Current Environment				
(4) HP V2500 Servers				
Depreciation	\$0	\$0	\$0	\$0
Maintenance, Power, Floorspace	\$343,436	\$343,436	\$343,436	\$1,030,308
Subtotal:	\$343,436	\$343,436	\$343,436	\$1,030,308
Less: Proposed Solution				
(2) HP rp8400 Servers				
Cash from Trade-in	(\$200,000)			
Tax Savings from Depreciation	(\$29,731)	(\$29,731)	(\$29,731)	(\$89,193)
Lease Payment (9% IRR)	\$225,953	\$225,953	\$225,953	\$677,859
Maintenance, Power, Floorspace	\$14,031	\$157,696	\$157,696	\$329,423
Subtotal:	\$10,253	\$353,918	\$353,918	\$718,089
Net Cash Flow	\$333,183	(\$10,482)	(\$10,482)	See NPV

Payback = 0 months

NPV = \$251,488

Consolidation Impact Report

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Executive Overview

A total cost of ownership analysis is a powerful tool used to identify real costs, benefits and potential savings derived from replacing older systems with new ones that offer significant cost, availability and scalability advantages. This Consolidation Impact Report includes a TCO/ROI analysis using Avnet Enterprise Solutions IT Financial Assessment Methodology (TFAM) and compares the costs associated with Company Name's existing Unix environment and a proposed upgrade to new HP Servers and an iSCSI Storage Area Network.

According to the cost analysis of the existing costs, the implementation of a clustered pair of HP RP740S systems and a iSCSI Storage Area Network would have a payback period 24.8 months. In addition to the reduction in operational costs, this proposal will also:

1. Reduced management overhead as a result of consolidating to one Unix Operating environment.
2. Allow better database loading by enabling Informix XPS to take advantage of a clustered environment.
3. Improve the current back-up and recovery processes and completion times by implementing a new tape library and Storage Area Network.
4. Enable future data replication functionality to the RP740 at the warehouse thereby improving business continuity.
5. Enable future data consolidation by moving Intel based systems into the SAN. Data from the Compaq DL380i can be moved into the SAN.

The table below represents the potential savings Company Name can expect based on information provided. Please note the assumptions made in Appendix A.

Environment	3-Year Assessed TCO	Reduction in Assessed TCO	% Saving
Current	\$738,057		
Proposed	\$554,690	\$183,367	24.8%

Company Name's Current Environment

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Current Environment

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Company Name's Proposed Environment

Production System

The proposed Unix production environment for Company Name is shown in the diagram as the left cluster. (2) HP RP740S Series each with (2) 650MHz PA8000 processors and 9GB of physical memory. These systems can scale to 8 processors per system, each running at 875 MHz for future expansion. Physical memory can expand to 32GB I/O performance.

An HP iSCSI Storage Area Network will provide data storage for these systems. Proposed at 854GB, the iSCSI will be configured with 24, 36GB 15,000 RPM disk drives to achieve a balance between high data rates necessary for database applications and a very good cost/owner ratio. This storage system can grow literally to 1.7TB by merely adding additional disk drives. 100GB, 36GB, 7.2GB and 144GB disks are supported in the iSCSI. For high availability, every component in the data stream is totally redundant. Each system is a dual 2GB fibre channel Host Bus Adaptors (HBAs) connected to redundant storage controllers by a pair of redundant fibre optic ports/wires.

By implementing a clustered server configuration with SAN connected storage the Informix XPS database will be able to simultaneously take advantage of both HP-UX systems allowing the database to take advantage of load balancing which will improve performance during periods of high database transactions. These systems are covered by a 24-hour 7 day, 4 hour response support agreement for three years.

Development System

Included in this proposal is an HP RP240S system for application development and testing. This system is configured with (2) 650MHz PA8000 and 2GB of physical memory. It is connected to the SAN by a pair of 2GB fibre channel Host Bus Adaptors. This system is covered by a 8 hour 5 day, next day support agreement for three years.

Veritas NetBackup Master Server

Significant improvement will be made to the current Veritas backup environment by using the RP240S development system as the Veritas NetBackup Master Server and moving from a LAN based backup. This will significantly improve the backup and restore operations since the backup data would be moving across the SAN at speeds in excess of 10 times that of the LAN. Also available is the ability to do cloning and Snapshot copies of storage volumes for ease of quicker back up and restores. This proposal includes a StorageTEK L180 SuperDLT Library, which increases on-line capacity exponentially, and performance by a factor of five.

Included in this proposal is AES services for the implementation and start-up of the new SAN, which includes setup and configuration of the fibre channel network, setting up the respective LUNs and configuring the RAID sets to Company Name's requirements, as well as the Veritas implementation services.

OpenView Workstation

Included in this proposal is a B2600 workstation replacement for the C110 Workstation used to monitor the OpenView environment. The B2600 is configured with a 500MHz PA8000 and 512MB of physical memory. The system is connected to the SAN with a single 2GB Fibre Channel Adapter. This system is covered by an 8 hour 5 day, next day support agreement for three years.

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Proposed Environment

Consolidation Impact Report (cont'd)



IT Financial Assessment Methodology

III. NET CASH FLOW AT THE TIME THE INVESTMENT IS MADE

	USD
1 Cost of new equipment	\$ -
2 Market value of old equipment	\$ -
3 Tax savings due to loss of old equipment	\$ -
4 Increase in net working capital	\$ -
5 Total re-investment	\$ -

IV. OPERATING IN FLOW OVER THE PROJECT'S LIFE

Year:	0	1	2	3	4	5
6 After-tax decrease in costs (operating costs)	\$	185,822	\$	185,822	\$	185,822
7 Depreciation on new machine	\$	36,364	\$	36,364	\$	36,364
8 Depreciation on old machine	\$	-	\$	-	\$	-
9 Change in depreciation	\$	36,364	\$	36,364	\$	36,364
10 Tax savings from depreciation	\$	21,418	\$	21,418	\$	21,418
11 Net operating cash flow (6-10)	\$	207,246	\$	207,246	\$	207,246

V. TERMINAL-YEAR CASH FLOWS

12 Estimated salvage value of new machine	\$	-
13 Tax on salvage value	\$	-
14 Recovery of net working capital	\$	-
15 Total terminal cash flow	\$	-

VI. NET CASH FLOW

Change in capital required	\$	(180,000)	\$	(180,000)	\$	(180,000)
16 Net cash flow	\$	-	\$	47,224	\$	47,224
					\$	141,872

VII. RESULTS (Using 12% hurdle Rate)

Payback Period	0.0 mos.
ROI	N/A
MIRR	N/A
NPV	\$101,271

Notes: Some of the figures may not be applicable to your project if not then you do not need to input any figures for these areas.

Refer to the tax department for the corporate tax rate.

Net working capital is calculated by: Currents - (currents + current liabilities) - change in net working capital.

Sometimes when purchasing a new piece of equipment you may incur additional costs such as shipping, installation, minus the additional income in AP&D account.

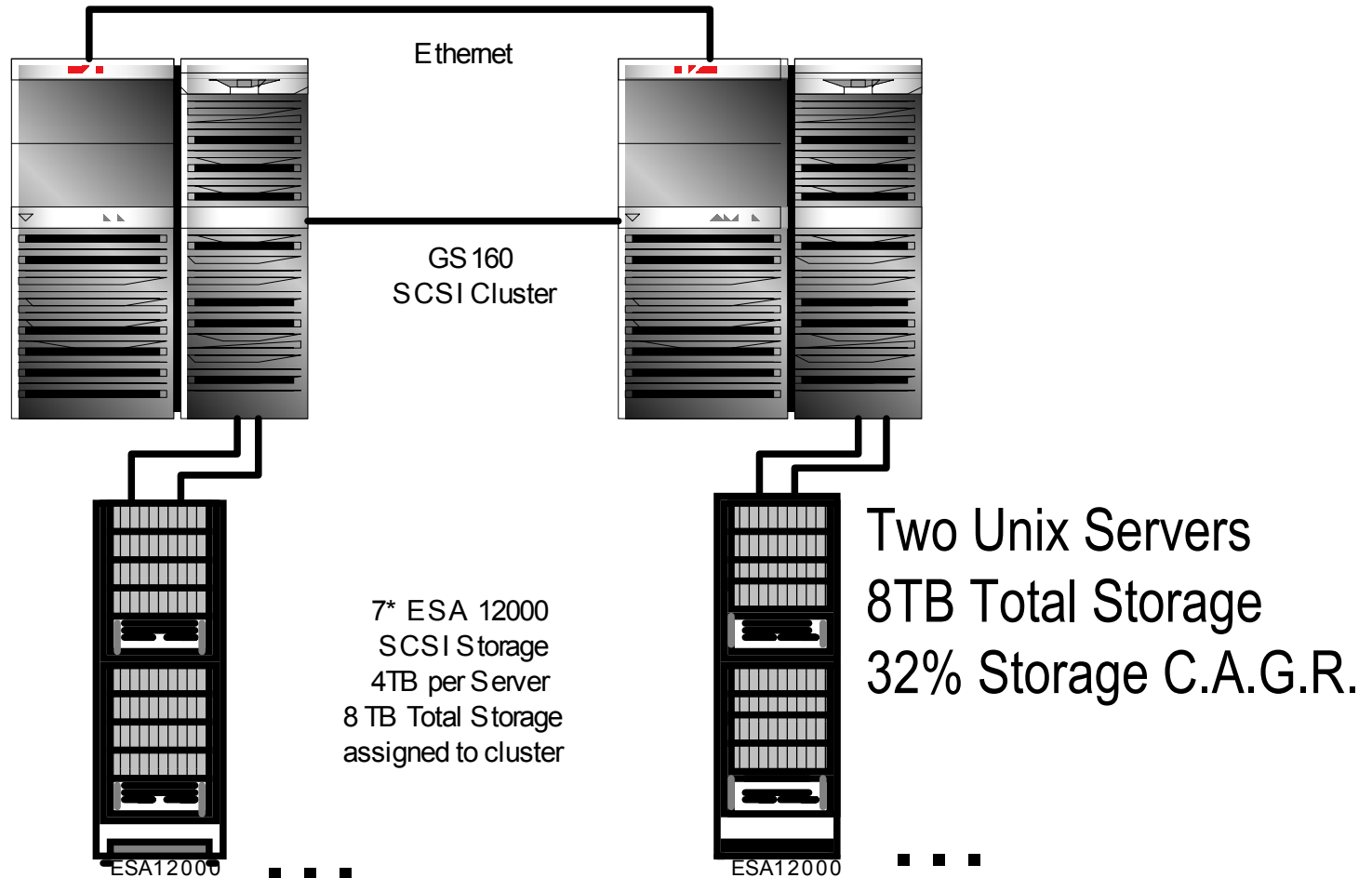
The difference between the increase in current assets or current liabilities is the change in net working capital. There may be some discounts that are not applicable.

Payback period is calculated by taking adding your net cash flows until the year before full recovery of your initial investment then in the year of full recovery, take the difference.

Source: "Intermediate Financial Management" 3rd edition, Brigham and Copeland, 1998

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Case Study: Storage Consolidation



Case Study - Step 1: Determine Current Expenses

	YR1
GS140 H/W & S/W Maint.	\$147,600
Storage H/W Maint.	\$93,792
Depreciation	\$0
Lease Payments	\$0
Support	\$150,000
Facilities Costs	\$42,736
Status Quo	\$434,128

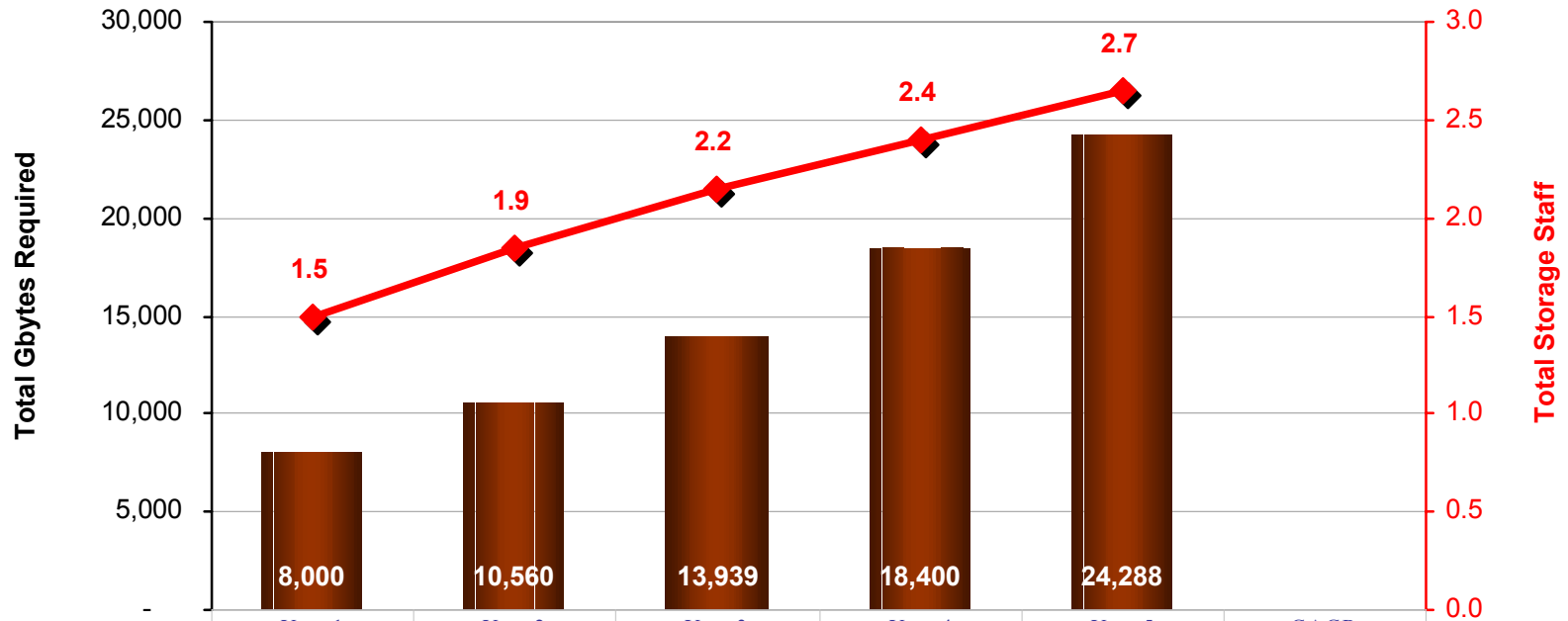


Current Year Costs

Storage/Staff Growth without Virtualization

Five-Year Capacity Projections of Base Case for Customer

Platform: Unix Workload Type: Industry Unix Mix



	Year 1	Year 2	Year 3	Year 4	Year 5	CAGR
GB Managed/Person	5,333	5,708	6,483	7,667	9,165	14.5%
Total Gbytes Required	8,000	10,560	13,939	18,400	24,288	32.0%
Total Storage Staff	1.5	1.9	2.2	2.4	2.7	15.3%

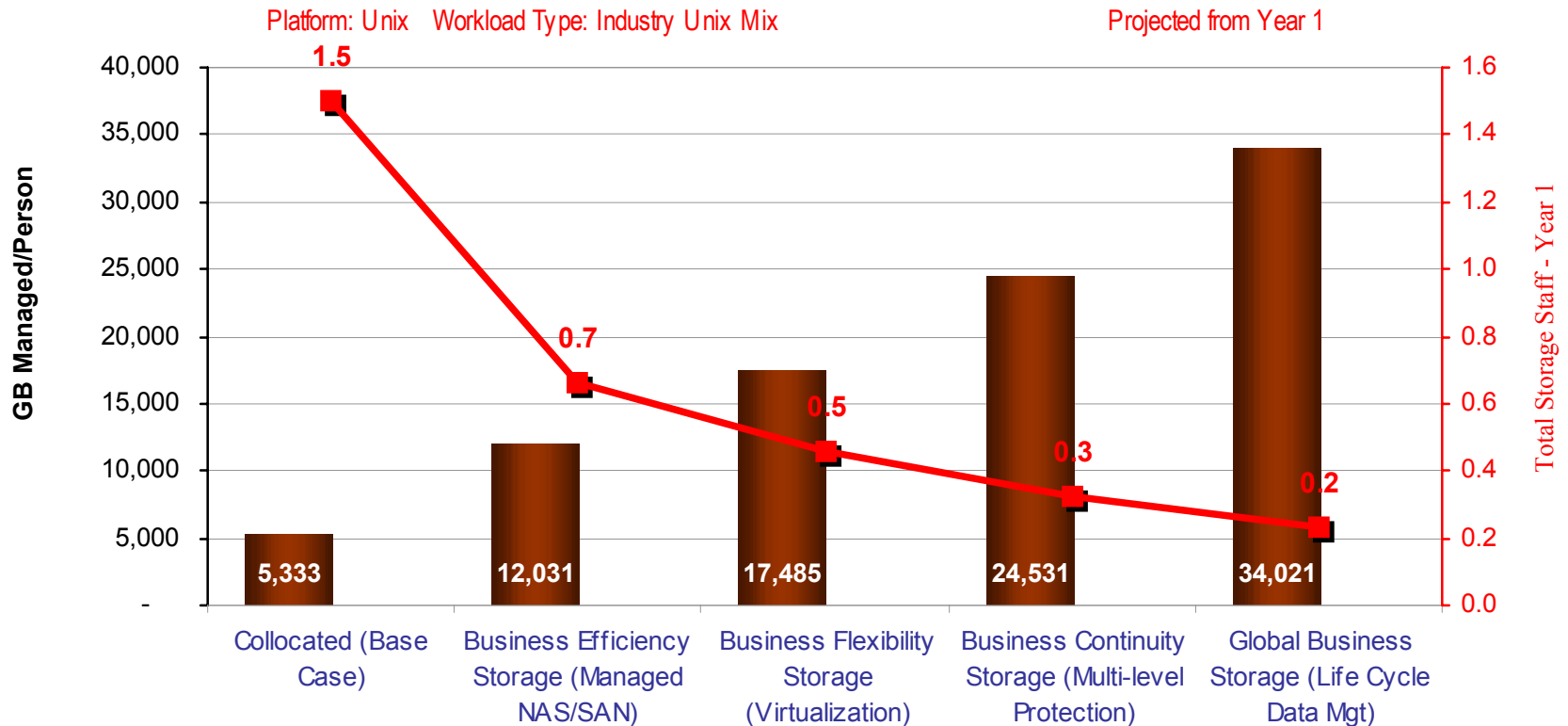
Case Study - Step 2a: Determine TCO

	YR1	YR2	YR3	TOTAL
Depreciation	\$0	\$0	\$0	\$0
Administration	\$150,000	\$190,000	\$220,000	\$560,000
Cash Costs	\$284,128	\$284,128	\$284,128	\$852,384
Subtotal:	\$434,128	\$474,128	\$504,128	\$1,412,384
Growth:	\$0	\$10,143	\$19,373	\$29,516
Total Existing	\$434,128	\$484,271	\$523,501	\$1,441,900

TCO

Staff Efficiencies of Virtualization

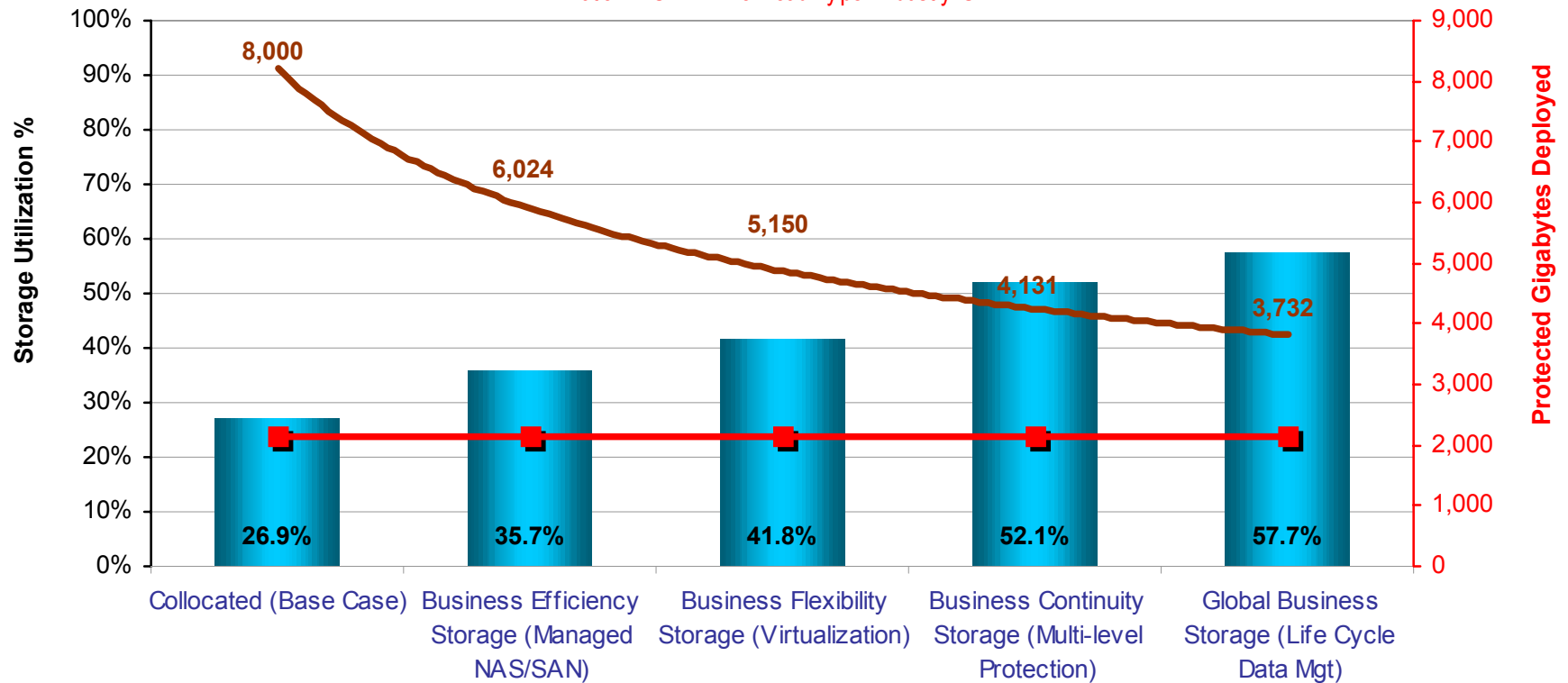
Staff Efficiencies of StorageWorks Solution for Customer



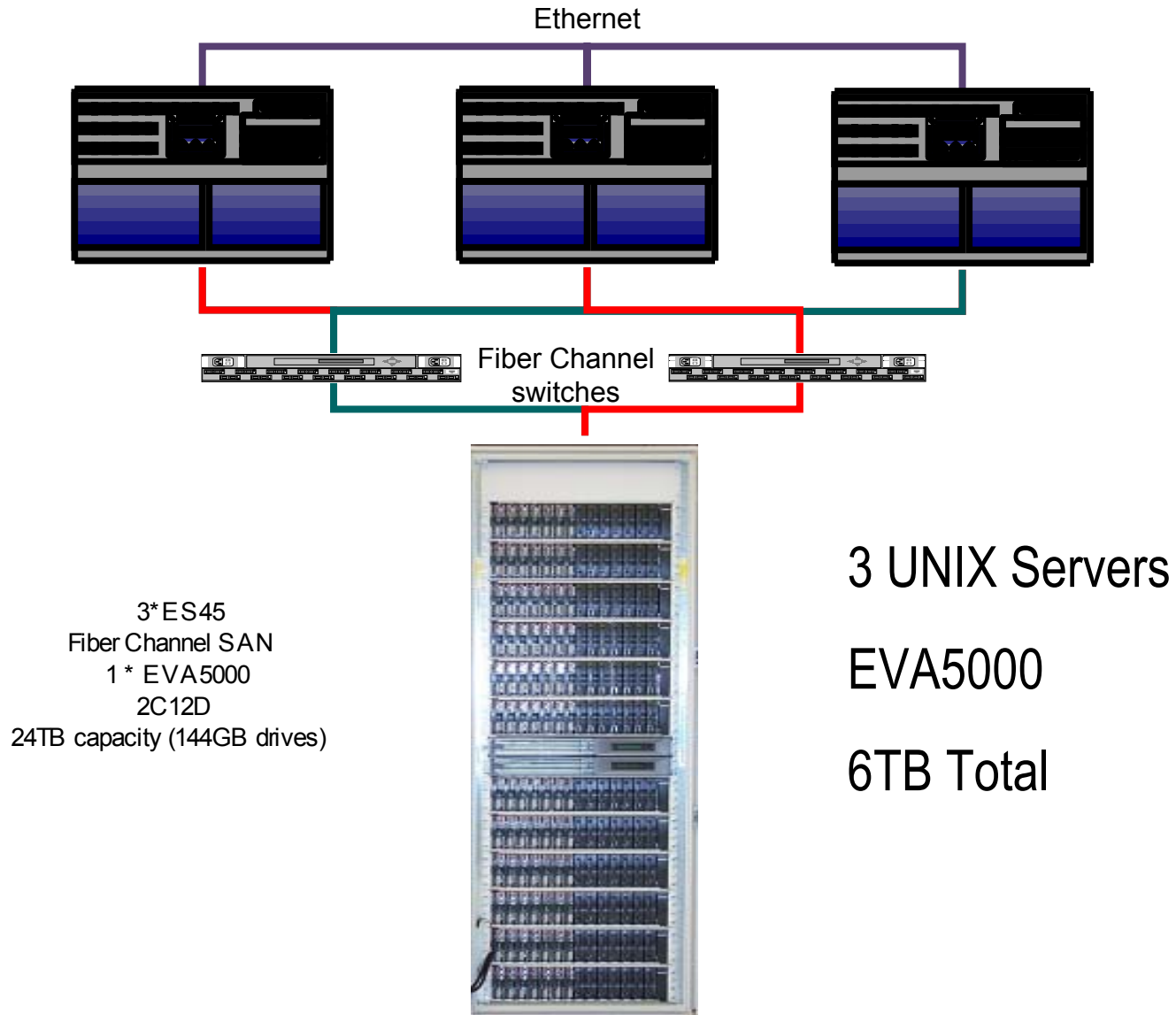
Utilization Metrics of Virtualization

Utilization Metrics of StorageWorks Solution for Customer

Platform: Unix Workload Type: Industry Unix Mix



New Consolidated Environment



Case Study - Step 2b: TCO of Proposed Solution

	YR1	YR2	YR3	TOTAL
Depreciation	\$137,946	\$137,946	\$137,946	\$413,838
Administration	\$50,000	\$57,650	\$66,470	\$174,120
Cash Costs	(\$195,558)	\$79,258	\$79,258	(\$37,042)
Subtotal:	(\$7,612)	\$274,854	\$283,674	\$550,916
Growth:	\$0	\$8,114	\$14,707	\$22,821
Total	(\$7,612)	\$282,968	\$298,381	\$573,737



TCO

Case Study - Step 3: Compare Alternatives

IT Budgetary View

	Invest	YR1	YR2	YR3	TOTAL
Current Environment					
(2) GS140/8TB ESA 12K Storage					
Depreciation		\$0	\$0	\$0	\$0
Cash Expenses		\$434,128	\$474,128	\$504,128	\$1,412,384
Growth		\$0	\$10,143	\$19,373	\$29,516
Subtotal:		\$434,128	\$484,271	\$523,501	\$1,441,900
Less: Proposed Solution					
(3) ES45/6TB EVA5000 SAN					
Investment	\$689,731				
Trade-in		(\$250,000)	\$0	\$0	(\$250,000)
Depreciation		\$137,946	\$137,946	\$137,946	\$413,838
Cash Expenses		\$104,442	\$136,908	\$145,728	\$387,078
Growth		\$0	\$8,114	\$14,707	\$22,821
Subtotal:		(\$7,612)	\$282,968	\$298,381	\$573,737
Net IT Benefit		\$441,740	\$201,303	\$225,120	\$868,163

**Frees up \$868,163
in IT Budget over 3 years**

Case Study - Step 3: The ROI Calculation

ROI (Cash)

	Invest	YR1	YR2	YR3	TOTAL
Current Environment					
(2) GS140/8TB ESA 12K Storage					
Depreciation		\$0	\$0	\$0	\$0
Cash Expenses		\$434,128	\$474,128	\$504,128	\$1,412,384
Growth Investments		\$50,715	\$46,151	\$0	\$96,866
Subtotal:		\$484,843	\$520,279	\$504,128	\$1,509,250
Less: Proposed Solution					
(3) ES45/6TB EVA5000 SAN					
Cash Investment	\$689,731				
Cash from Trade-in		(\$250,000)	\$0	\$0	(\$250,000)
Tax Savings from Depreciation		(\$34,487)	(\$33,979)	(\$33,320)	(\$101,786)
Cash Expenses		\$104,442	\$136,908	\$145,728	\$387,078
Growth Investments		\$40,572	\$32,965	\$0	\$73,537
Subtotal:		(\$139,473)	\$135,894	\$112,408	\$108,829
Net Cash Flow	(\$689,731)	\$624,316	\$384,385	\$391,720	See NPV

NPV = \$ 404,412

Payback = 17 months

ROI = 52%

Case Study - Step 3: Compare the "How to Buy"

ROI (Capital Lease)

	YR1	YR2	YR3	TOTAL
Current Environment				
(2) GS140/8TB ESA 12K Storage				
Depreciation	\$0	\$0	\$0	\$0
Cash Expenses	\$434,128	\$474,128	\$504,128	\$1,412,384
Growth Investments	\$50,715	\$46,151	\$0	\$96,866
Subtotal:	\$484,843	\$520,279	\$504,128	\$1,509,250
Less: Proposed Solution				
(3) ES45/6TB EVA5000 SAN				
Cash from Trade-in	(\$250,000)	\$0	\$0	(\$250,000)
Tax Savings from Depreciation	(\$34,487)	(\$33,979)	(\$33,320)	(\$101,786)
Lease Payment (9% IRR)	\$262,098	\$262,098	\$262,098	\$786,294
Cash Expenses	\$104,442	\$136,908	\$145,728	\$387,078
Growth Investments	\$40,572	\$32,965	\$0	\$73,537
Subtotal:	\$122,625	\$397,992	\$374,506	\$895,123
Net Cash Flow	\$362,218	\$122,287	\$129,622	See NPV

Payback = 0 months

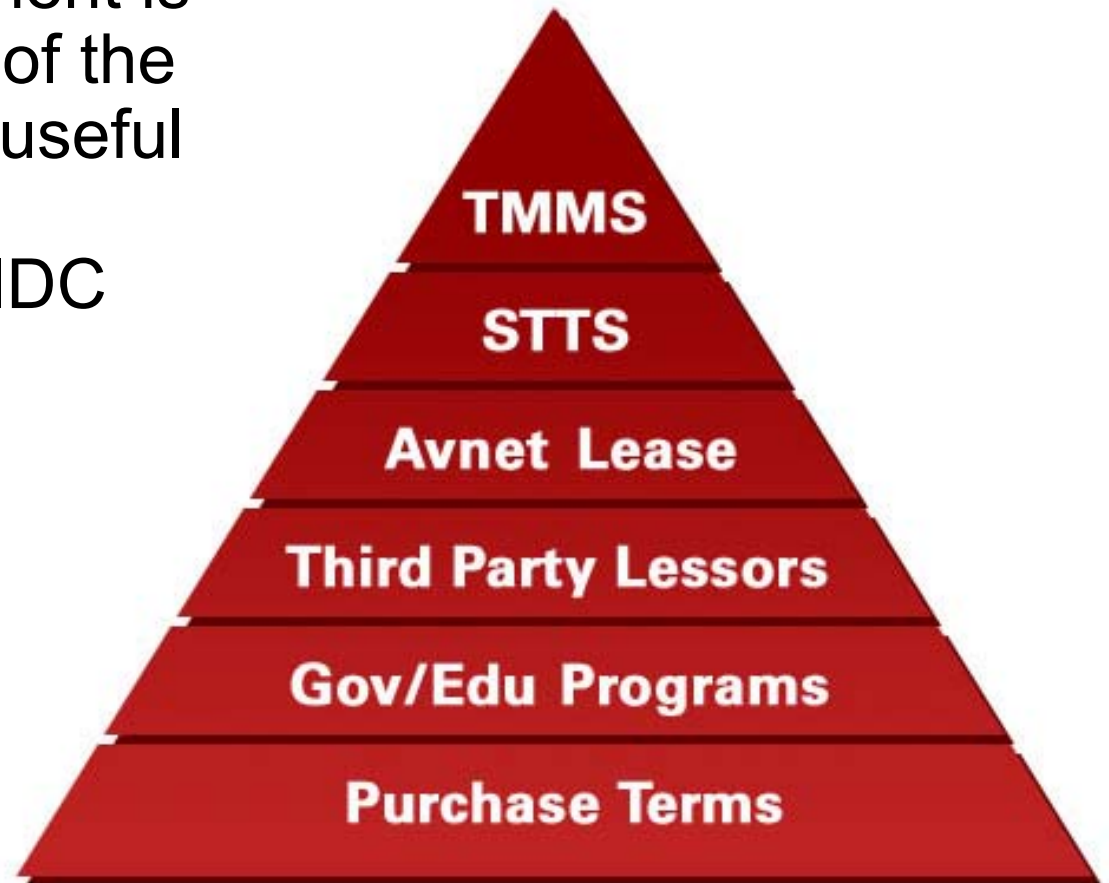
NPV = \$458,177

How to Buy?

Acquisition Vehicles

“Key to efficient technology financial management is to match the term of the financing with the useful life of the asset”

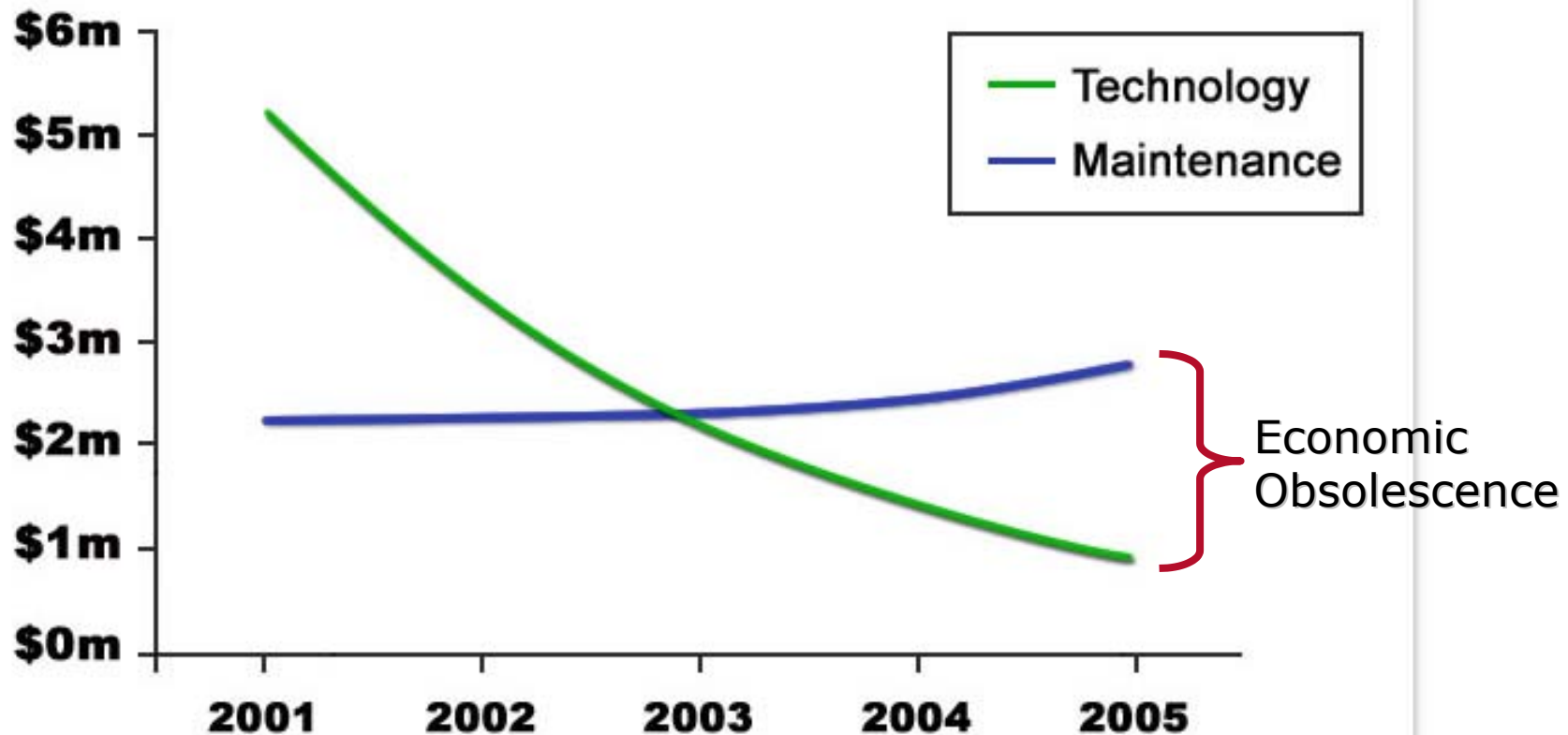
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Why are lifecycles short?

Economic Obsolescence

Driven by Maintenance Costs

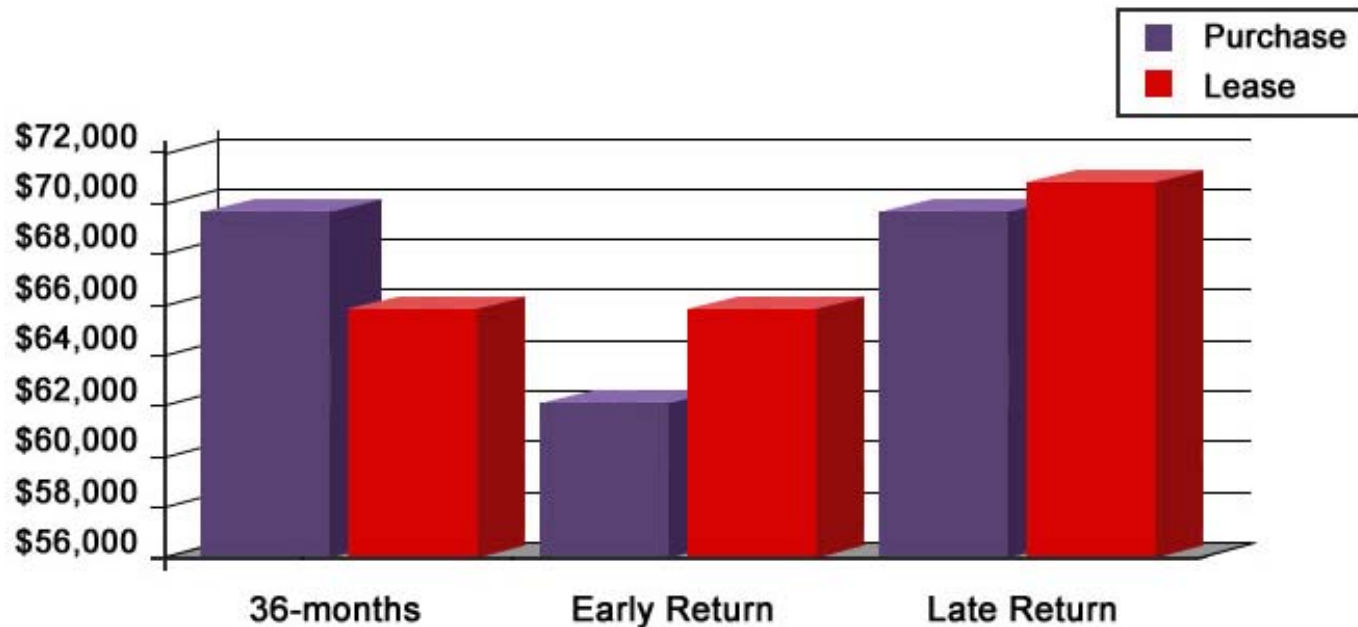


Traditional Finance: Highly sensitive to timings

Economic Obsolescence Driven by Maintenance Costs

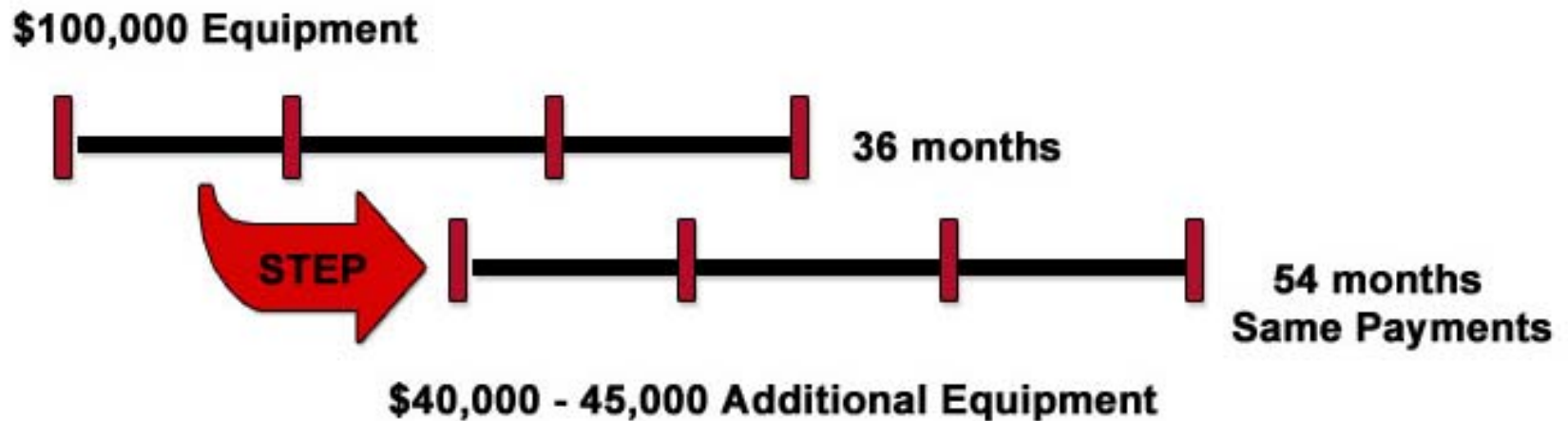
True* Cost of
Purchase -vs-
Lease of a \$100,000
asset assuming
equipment is:

- 1) returned exactly
on time
- 2) returned a year
early
- 3) returned three
months late

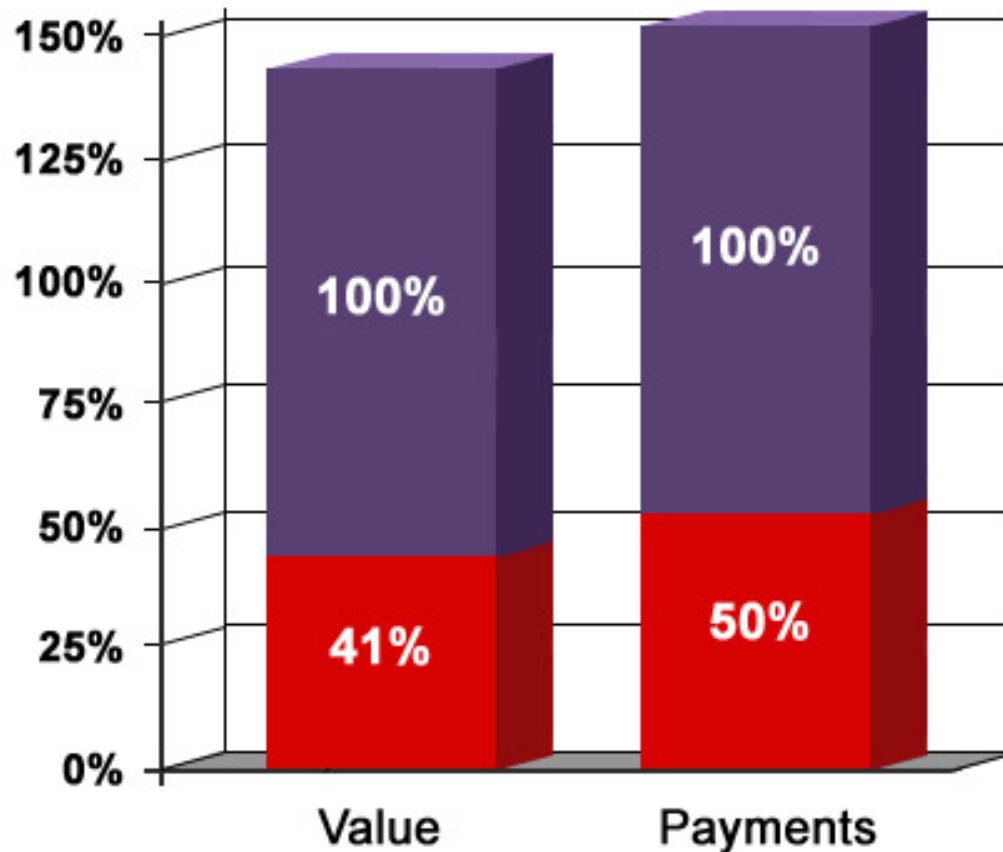


*Comparison is of Present Value of After-tax cash flows, considering all tax benefits and disposition of equipment. The 36-month lease is at an effective interest rate of 0% (0.02780). Early termination assumes a 3% discount on remaining payments. Late return assumes payment continues at original level for three months.

How Leasing Handles Tech Refresh: The Step Lease



How Leasing Handles Tech Refresh: The Step Lease (cont'd)



TMMS[®]: An Alternative for Short Lifecycle Environments



- All features of standard “Operating Lease” PLUS:
- Technology Project Financing
 - Includes financing of initial equipment plus exchange funds to support “migration” of the environment over a longer (typically five year) term
 - Fixed or declining payments over the term
 - Cancelable after first 12 months
- Dynamic Asset Valuation
- Includes services to effectively support rapidly changing environments

Service Challenges

- How do you keep track of the assets?
- How do you ensure you have service coverage? The right coverage? That you're not paying to service assets you no longer have?
- How to you plan for frequent migrations?
- When is the right time to acquire additional capacity?
- How do you keep track of new product introductions? Manufacturer initiatives and programs?
- How do you dispose of assets?

The Services Included



TMMS Example: Monthly Payment

TMMS Net Contract Value \$900,250

Months	1-12	13-24	25-36	37-48	49-60
5 yrs, 2 yr Exchange	\$24,597	\$24,597	\$24,597	\$24,597	\$24,597



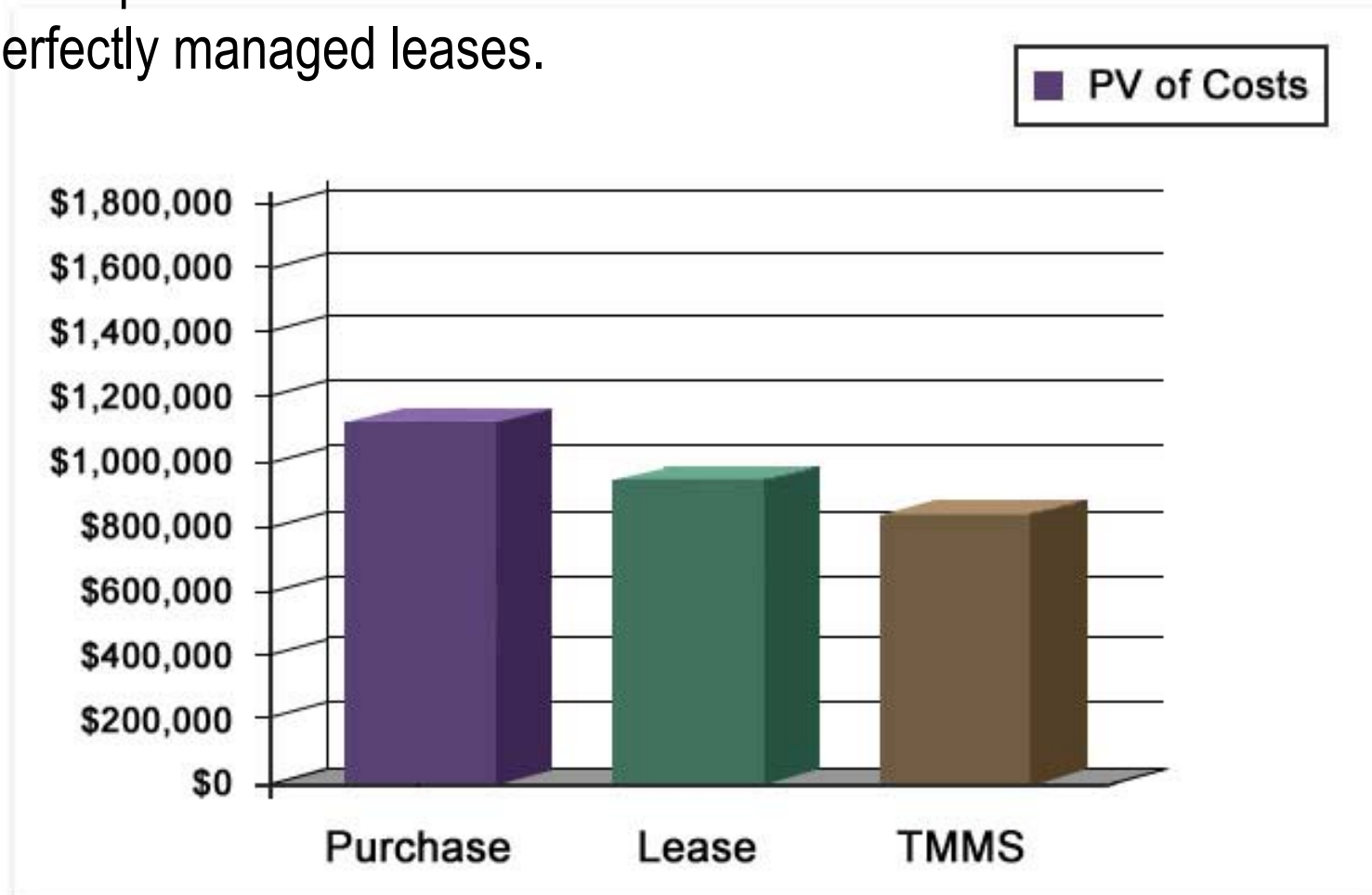
\$447,089
Exchange Value



\$248,162
Exchange Value

Comparison: Purchase to Lease to TMMS

For this customer, TMMS was a **22%** better value than a series of purchases and **12%** better value than a series of perfectly managed leases.



Conclusion: Best Practices

- Consider ROI Assessments to answer “Should I Buy?”
- Align the “Useful Life” of your IT Assets with the appropriate Financial Vehicle
- Leverage an ROI Methodology (i.e. AES ITFAM) to uncover money-saving best practices in your environment