A. Endpoint Lifecycle Optimization Analysis - End-User Computing

What is my industry sector, for calculating IT spend, Total Cost of Ownership for endpoints, and Cost Reductions?

Stock Exchg Ticker Symbol:	EW	Adjustable Fields in YELLOW
SIC Code:	3842	
SIC Description:	ORTHOPEDIC, PROSTHETIC & SURGICAL APPLIANCES & SUPPLIES	
Company Name:	(Removed)	
Financial Period:	2018-FY	

V7

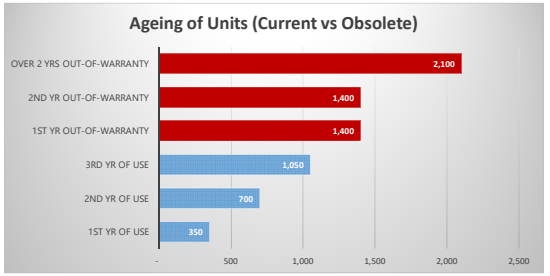
B. Initial Endpoint Footprint Estimates

Adjustable Fields in YELLOW

How old are my endpoints, if I havent been actively managing to the optimum cycle?

Employees	12,800	**From public data sources**
Endpoint estimates used for model calculations	7,000	**Estimate of employees with end-point devices (US)**
Estimate of ACTUAL refresh cycle in YRS	6.0	This should reflect history, and not just policy.

Endpoints by Age / years in service (% are ADJUSTABLE)			Estimation of units by year (based on %'s)
Even Distribution %	Adjusted %	Calculated Footprint	
16.7%	5.0%	350	In first year of life
16.7%	10.0%	700	In second year of life
16.7%	15.0%	1,050	In third year of life
16.7%	20.0%	1,400	In first year out of warranty
16.7%	20.0%	1,400	In second year out of warranty
16.7%	30.0%	2,100	In 3rd and later years out of warranty
100.0%	100.0%	7,000	Total fleet

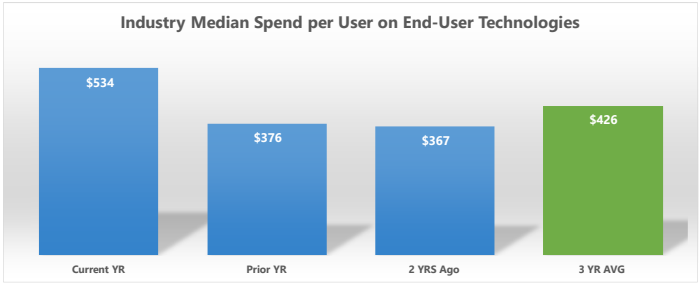


C. Initial End-User Computing CAPEX and DEVICE Spend Estimates

How much does a company my size and in my industry spend on IT and Endpoints? And how has it changed?

Gross Revenue -- Current reported year--dollars	$ 3,722,800,000	FY-2018
Estimated Annual IT Spend$	$ 122,852,400	**Applying IT ratios to company REVENUE$**
Estimated Annual IT CAPEX Spend$	$ 17,690,746	**Applying IT CAPEX ratio to Overall IT Spend**
Estimated IT CAPEX$ used for END-USER IT assets	$ 10,419,849	CAPEX: End-User Devices/Printers (all employees)
Median Spend per User for Endpoint devices:	$ 534	DEVICE Spend: Per user, Annual, Industry-Specific
Estimated IT spend$ used for END-USER endpoints	$ 3,738,000	Applied to estimated US employees w/endpoints

Median Spend per User for Endpoint devices:	$ 534	DEVICE Spend: Per user, Annual, Industry-Specific
Median Spend Previous Year	$ 376	
Median Spend 2 years ago	$ 367	
3 YR average of Median Spend	$ 426	*** INCREASED SPENDING***

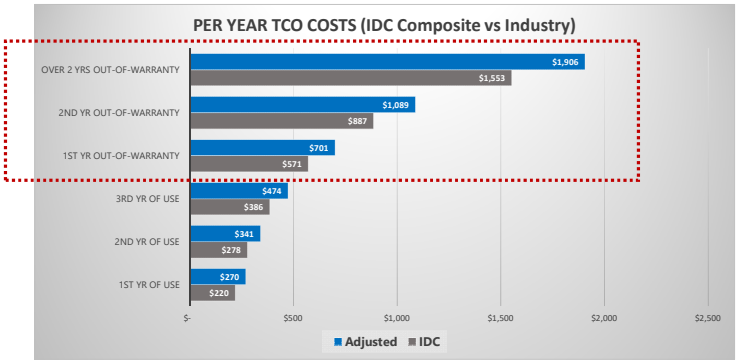


D. Calculation of Industry-Specific Lifecycle Costs (TCO)

How much does a company my size and in my industry spend on operating endpoints as they age?

Using IDC composite TCO curve as baseline and adjusting up/down for Industry-specific spend pattern.

IDC (All Industries) Baseline TCO	Industry Adjustment Factor	Industry Adjusted Yearly TCO	
$ 220	122.7%	$ 270.03	In first year of life
$ 278	122.7%	$ 341.22	In second year of life
$ 386	122.7%	$ 473.78	In third year of life
$ 571	122.7%	$ 700.85	In first year out of warranty
$ 887	122.7%	$ 1,088.71	In second year out of warranty
$ 1,553	122.7%	$ 1,906.17	In 3rd and later years out of warranty
$ 3,895		**$ 4,781**	6 year Totals (TCO only -- excludes first acqusition)
$ 649		**$ 797**	Yearly Average per Endpoint per Year

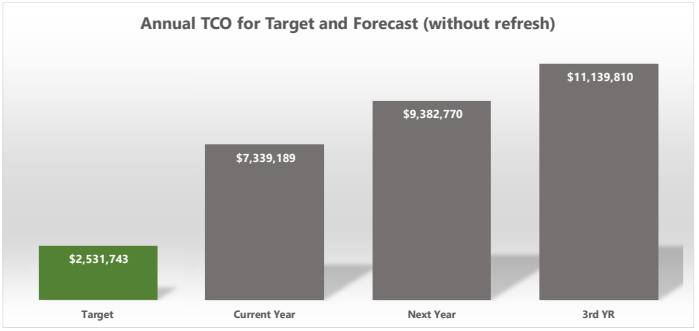


E. Calculation of Current and Near-Forecast Cost Loads

With my mix of endpoint ages, how much will I spend on operating the endpoints -- If I do NOTHING for 3+ years?

Applying the above Industry-calibrated TCO cost per year, to estimated endpoints--by age; then 2 years without refresh.

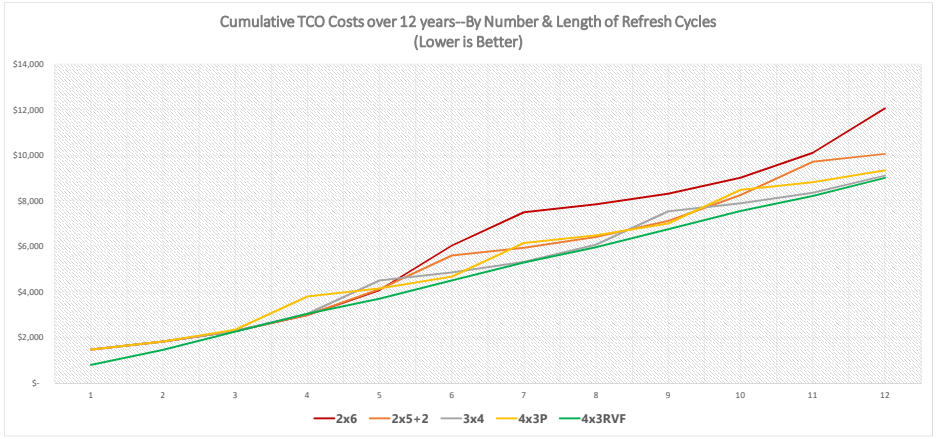
Current Year	Next Year	Following Year	
$ 94,511			In first year of life
$ 238,854	$ 119,427	$ -	In second year of life
$ 497,470	$ 331,647	$ 165,823	In third year of life
$ 981,193	$ 735,895	$ 490,597	In first year out of warranty
$ 1,524,201	$ 1,524,201	$ 1,143,150	In second year out of warranty
$ 4,002,960	$ 6,671,600	$ 9,340,240	In 3rd and later years out of warranty
$ 7,339,189	**$ 9,382,770**	**$ 11,139,810**	Total **Annual** TCO costs (Aggregate)
$ 6,508,354	$ 8,931,696	$ 10,973,987	Amount of this cost due to obsolete/aged devices* ***Displacable**
88.7%	95.2%	98.5%	Percent of cost due to obsolete/aged devices
$ 1,048	$ 1,340	$ 1,591	Yearly Average per Endpoint (for existing footprint) ***Estimated**
$ 362	$ 362	$ 362	CF: Yearly Average per current technology device* ***Target**
$ 2,531,743	**$ 2,531,743**	**$ 2,531,743**	Yearly Cost Structure (TCO) staying current. ***Target**



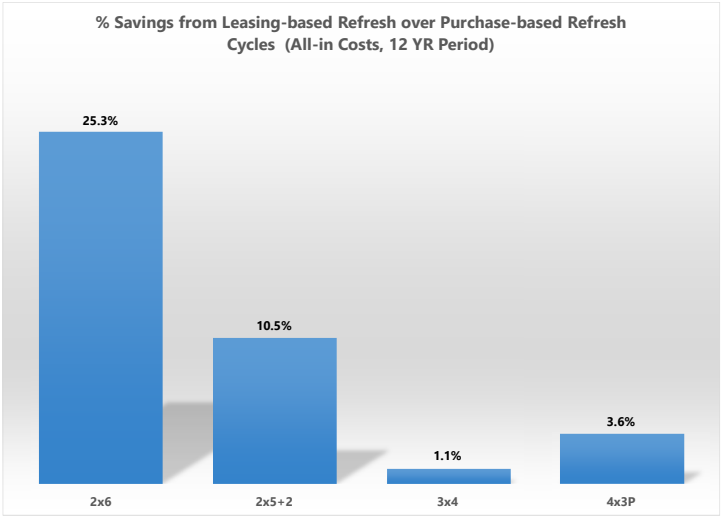
F. Refresh Analysis Parameters and Results (Includes TCO and Refresh Product & Labor Costs

Given sample costs, what is the best refresh cycle and best financing method for the long-haul?

Endpoint unit cost (configured kit):	$1,000	Final negotiated purchase/invoice price for full kit
Migration labor cost or fee:	$200	System setup; environment transfer; network connect
Data wipe at device end-of-life (or shipping, if returned)	$50	Data erasure and documentation for compliance
Sample RV-Finance Rate Factor:	0.026861883	Monthly factor for time-based finance PMTs (36mo)



2x6 - Two 6-year refresh cycles	**4x3P** - Four 3-year cycles using **PURCHASE**
2x5+2 - Two 5-year cycles, plus 1st 2 years of next	**4x3RVF** - Four 3-year cycles using **Residual-Value-based Finance**
3x4 - Three 4-year cycles	



G. Improvement Initiative: Migration to Optimal Refresh -- TCO Savings Estimation

If I move to an optimum 3-YR refresh cycle today, how will the age-mix of endpoints and the TCO of those change?

To get to the optimum cost structure, the existing refresh pattern has to transform into a 3-year one. Since the installed base is not typically uniform, this means that UNIT REPLACEMENTS will sometimes be for different age tranches. The 'flat rate' of replacements -- to even future cost loads out -- is applied to the oldest units first. We use a 12-month period, since implemention rarely fails on YR-boundaries.

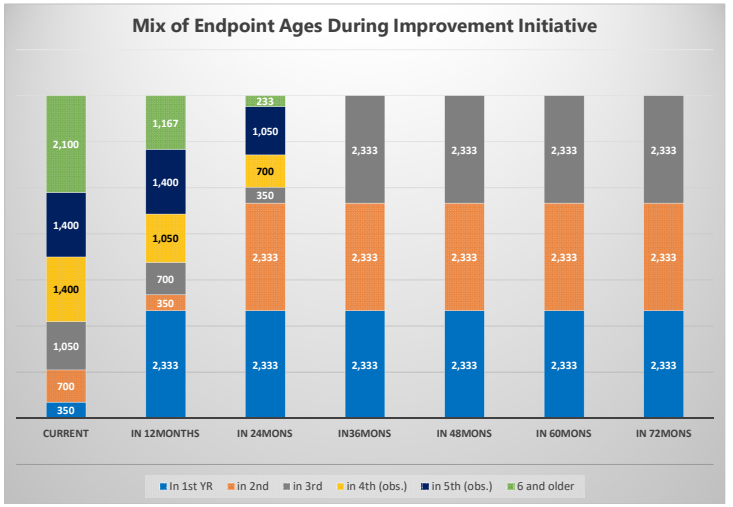
Yearly Refresh cycle (years)		3	Target
Yearly Refresh cycle (units)		2,333	Target

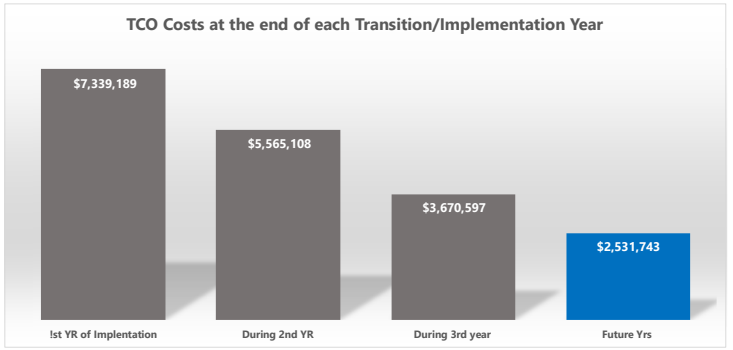
Current Units by Age	TCO cost per unit by age	Costs absorbed this year	During the 1st year of implementation
350	$ 270.03	$ 94,511	In first year of life
700	$ 341.22	$ 238,854	In second year of life
1,050	$ 473.78	$ 497,470	In third year of life
1,400	$ 700.85	$ 981,193	In first year out of warranty
1,400	$ 1,088.71	$ 1,524,201	In second year out of warranty
2,100	$ 1,906.17	$ 4,002,960	In 3rd and later years out of warranty
7,000	**Totals**	**$ 7,339,189**	

During the 2nd Year of Improvement Initiative			
Units by Age at YR-start	TCO cost per unit by age	Costs absorbed this year	
2,333	$ 270.03	$ 630,072	In first year of life
350	$ 341.22	$ 119,427	In second year of life
700	$ 473.78	$ 331,647	In third year of life
1,050	$ 700.85	$ 735,895	In first year out of warranty
1,400	$ 1,088.71	$ 1,524,201	In second year out of warranty
1,167	$ 1,906.17	$ 2,223,867	In 3rd and later years out of warranty
7,000	**Totals**	**$ 5,565,108**	

During 3rd Year of Improvement Initiatives			
Units by Age	TCO cost per unit by age	Costs absorbed this year	
2,333	$ 270.03	$ 630,072	In first year of life
2,333	$ 341.22	$ 796,181	In second year of life
350	$ 473.78	$ 165,823	In third year of life
700	$ 700.85	$ 490,597	In first year out of warranty
1,050	$ 1,088.71	$ 1,143,150	In second year out of warranty
233	$ 1,906.17	$ 444,773	In 3rd and later years out of warranty
7,000	**Totals**	**$ 3,670,597**	

After 3rd / Final Year of The Improvement Initiative			This Year should repeat as the baseline forward.
Units by Age	TCO cost per unit by age	Costs absorbed this year	
2,333	$ 270.03	$ 630,072	In first year of life
2,333	$ 341.22	$ 796,181	In second year of life
2,333	$ 473.78	$ 1,105,489	In third year of life
7,000	**Totals**	**$ 2,531,743**	This should be the cost structure before OTHER CHANGES





H. Improvement Initiative: Migration to Optimal Refresh -- NET TCO Savings Estimation

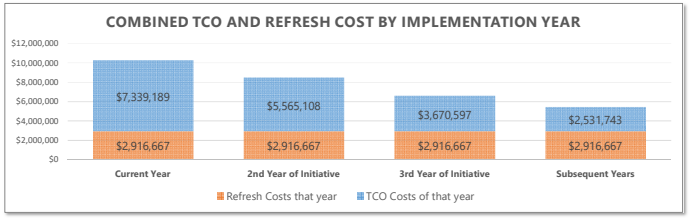
Once I factor in acquisition/migration costs, what will the potential NET cost savings look like?

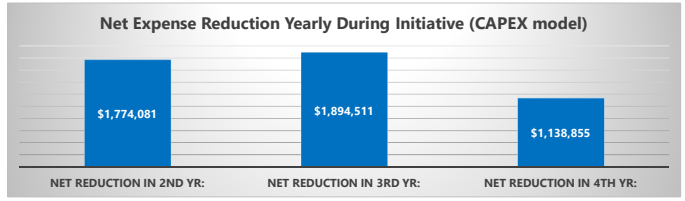
To estimate NET possible cost savings/avoidance, we have to factor in the cost of migration -- both product and labor.
We will first calculate a CAPEX model, then reduce the costs of that through residual-value-based financial structures.

Applying the unit costs given above:			
Units refreshed per YR	Product Purchase/CAPEX Cost	Migration Labor Costs	**Total Migration Costs per year for refresh**
2,333	$1,000	$250	**$2,916,667**

Period	TCO Costs of that year	Refresh Costs that year	Total Costs for the Year (CAPEX model)
Current Year	$7,339,189	$2,916,667	$10,255,856
2nd Year of Initiative	$5,565,108	$2,916,667	$8,481,775
3rd Year of Initiative	$3,670,597	$2,916,667	$6,587,264
Subsequent Years	$2,531,743	$2,916,667	$5,448,409

Estimating Yearly Savings during Improvement Initiative	
Net reduction in 2nd YR:	$1,774,081
Net reduction in 3rd YR:	$1,894,511
Net reduction in 4th YR:	$1,138,855
Net reduction TOTAL:	$4,807,447





I. Improvement Initiative: Smooth Cash Flow and Harvest Incremental Savings

HTF Lease-Line Facility

What additional savings and cash flow benefits could we get from using residual-based-financial structures?

CAPEX CAPEX is an uneven cash-flow mechanism, is less predictable than OPEX (since it has to be 'fought for' each budget cycle), and is fiscally inefficient.
As an upfront use of CASH, it cannot take avantage of the time cost of money (PV), and as a purchase, it cannot leverage residual-value-based finance.

An ENDPOINT refresh cycle of 3 years faciliates operating lease treatment (under FASB), and harvests residual value economics (under FASB, IASB, GASB).

Using the unit costs and residual-value rate factors from above, we calculate/display the impact of this below.

Yearly units to refresh:	2,333	194.44	:Monthly Units to refresh (fractional for cash flow calcs)
Unit purchase cost:	$1,000	$1,000	:Monthly CAPEX cost per incoming unit (for smoothing)
		$ 194,444	:Monthly CAPEX hit per month (units X cost)

Residual-Value Rate factor:	0.026862		
Monthly finance PMT/unit:	$26.86	**$ 5,223**	:Monthly PMT expense for first month
		$ 5,223	:Incremental PMT each month through 36th month
		$ 188,033	:Monthly PMT expense for future years (repeats)

Cash Flow savings/benefits calculations:		
Over the first 3 years, RV Finance **reduces CASH requirements** -- while still getting all the assets -- by:	$3,521,386	This is cash that could be used for more strategic investments, or invested in interest-bearing securities.
When the steady-state 3-year cycle is attained, RV Finance **savings over CAPEX** (every YR) are:	$76,935	RV finance payments are this much lower than CAPEX for **each year used** (due to rollover--no 'balloon note')

CREDIT Often, Bank credit lines are opened for improvement initiatives of this type. A certain credit limit is established, and customer 'draws down' amounts from this limit. Interest charges acrue upon the draw-downs, and non-usage fees are assessed on the unused balance.
These Credit Lines are common, and are used to 'feed' the CAPEX/CASH approach discussed above. So any savings we can find in this analysis of CREDIT lines will be INCREMENTAL to the savings from using RV Finance documented above.

For this comparison, we use an interest rate of **2%** on the used portion, and **0.5% non-usage** fees on average unused balance per quarter.
We compare this to the **HTF LEASELINE facility**.

HTF Lease-Line Facility

- No commitment/non-usage fees
- One-time credit approval annually; Forecasts set up and reviewed as needed
- Quarter-based, consolidated billing structure
- New assets are joined to the leaseline as they are received/accepted by customer.
- Billing for those assets do not begin until the quarter boundary—with no back or interim rent charges.
- The 'free' gap between receipt of equipment and the delayed start of lease invoices amounts to 'float'—almost of an entire quarter.
- Consolidated billing reduces the ad hoc, event-driven billing of individual vendor invoices.
- Smooths expense lines and increases predictability of spend.
- Process is streamlined and almost runs by itself
- Lease rate can be locked in by product type or overall program.
- Multiple types of equipment from multiple OEMs
- Absolutely essential for rapid-turnover, short-lived technology assets.

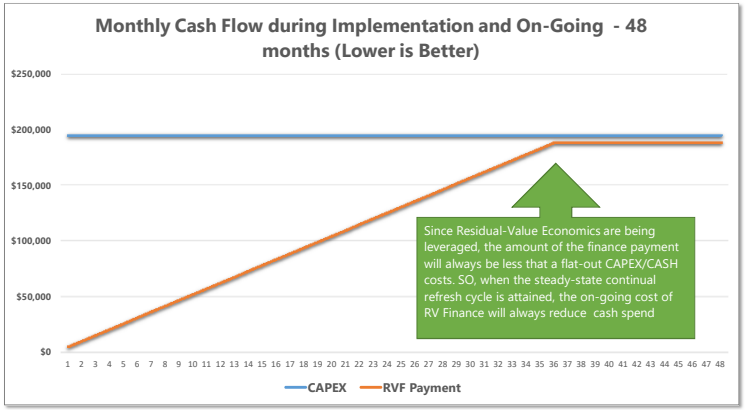
Credit Line Description
Initial Credit Line amount
$7,000,000
Monthly Units to refresh (fractional for cash flow calcs)
194.44
Unit Cost (drawdown) per unit
$1,000
Commitment fee on non-used BALANCE (quarterly)
0.125%
Simple Interest rate on Cumulative Drawdowns (QRTLY)
0.50%

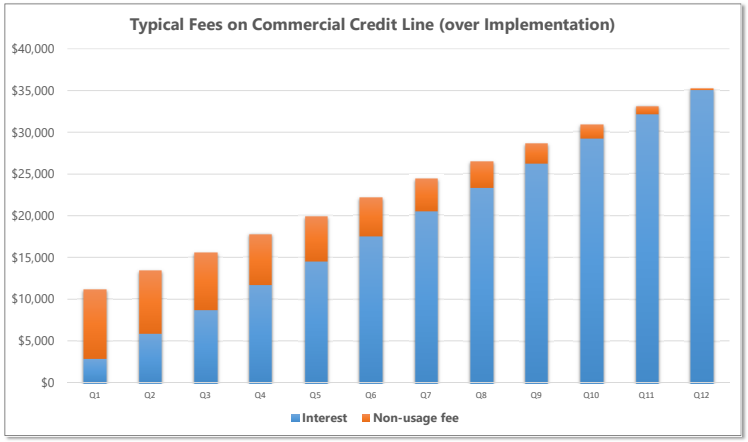
HTF Lease-Line Facility

Fees Avoided:	Commitment/Non-Usage:	$51,042
	Interest:	$227,500
	Total Cost Savings:	**$278,542**

SUMMARY: Steady-state Refresh , CASH Spend Reduction/Avoidance, per EACH 3 YR Refresh Cycle

	Yearly RVF savings (x3)	$230,806	(From CAPEX discussion above)
	Credit fees avoided:	$278,542	
	Net 'hard' cash savings:	$509,347	Hard cash only savings' -- no TCO or labor savings.
Extra endpoint units that could be acquired from these savings:		**509**	





HTF Lease-Line Facility

Benefits

- Preserve Cash
- Avoid investments in depreciating assets
- Minimize paperwork
- Flatten choppy installation periods
- Transparent & predictable economics
- Predictable & planned refresh cycle
- Simple process for multi-vendor
- Predictable pricing
- No hidden costs or T&C surprises
- OPEX or CAPEX
- Asset Mgmt. tool to control TCO

Lifecycle Asset Management

J. Improvement Initiative: Evaluating Time-Value-of-Money Factors

What do these cash flow advantages look like, in the time-value-of-money framework?

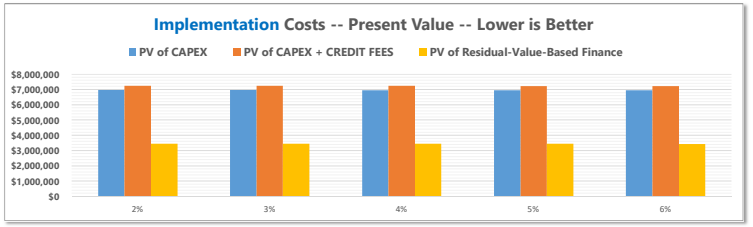
Here we evaluate the Present Value (PV) of the cash flows of the CAPEX, CREDIT, and RV Finance scenarios, under difference Rate assumptions.

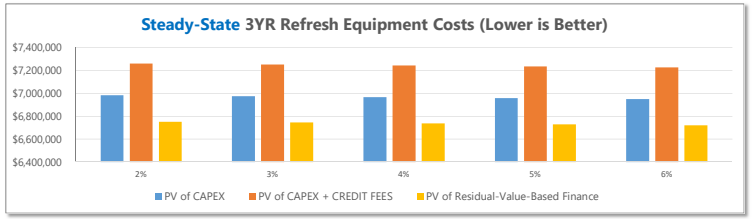
NET PRESENT VALUE (NPV) of CASH Streams **during 36 month Improvement Initiative** [Lower PV COST is Better]

Discount Rate	PV of CAPEX	PV of CAPEX + CREDIT FEES	PV of Residual-Value-Based Finance
2%	$6,983,023	$7,260,721	$3,467,367
3%	$6,974,566	$7,251,844	$3,461,767
4%	$6,966,130	$7,242,989	$3,456,181
5%	$6,957,715	$7,234,155	$3,450,610
6%	$6,949,321	$7,225,344	$3,445,054

NET PRESENT VALUE (NPV) of CASH Streams **AFTER IMPLEMENTATION -- STEADY STATE REFRESH** [Lower PV COST is Better]

Discount Rate	PV of CAPEX	PV of CAPEX + CREDIT FEES	PV of Residual-Value-Based Finance
2%	$6,983,023	$7,260,721	$6,752,778
3%	$6,974,566	$7,251,844	$6,744,599
4%	$6,966,130	$7,242,989	$6,736,442
5%	$6,957,715	$7,234,155	$6,728,304
6%	$6,949,321	$7,225,344	$6,720,186





K. Improvement Initiative: Unit Breakdown of TCO and Refresh Costs, with Cost analysis of slower refresh/returns

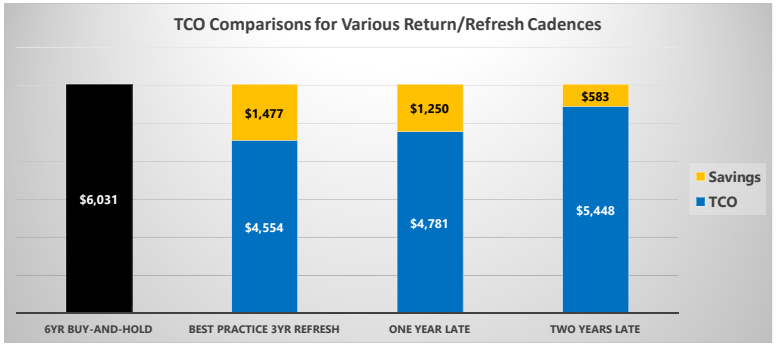
How does the optimal refresh compare to (1) a Do-Nothing-for-6-Years cycle, and Slower Return scenarios?

If my Asset Management Team cannot return 100% of the endpoint on time, what does that do to the economics?

Here we layout the TCO costs merged with the Refresh Costs.
We use the parameters given above for unit costs, migration labor (internal or outsourced), data wipe service (internal or outsourced), and finance PMTS.
We compare a 6YR buy-and-hold lifecycle cost to (A) Best practice 3YR refresh; (B) Returning/refreshing ONE YEAR LATE; and (C) being TWO YEARS LATE.
Scenarios A, B, and C exploit residual-value-based finance to lower the actual equipment costs.

DO NOTHING (6 YR Refresh)		(A) Best Practice: 3 YR REFRESH using RV finance	
Start of Year 1	$1,000	$0	Initial Cash Spend
Migration Expense (new unit)	$200	$200	Migration Expense (new unit)
Year 1 Support costs	$270	$270	Year 1 Support costs
		$322	Payments to HTF
Year 2 Support costs	$341	$341	Year 2 Support costs
		$322	Payments to HTF
Year 3 Support costs	$474	$474	Year 3 Support costs
		$322	Payments to HTF
Start of Year 4		$250	Migration Expense (new unit)
Year 4 Support costs	$701	$270	Year 1 Support costs
		$322	Payments to HTF
Start of Year 5			
Year 5 Support costs	$1,089	$341	Year 2 Support costs
		$322	Payments to HTF
Start of Year 6			
Year 6 Support costs	$1,906	$474	Year 3 Support costs
Data Wipe cost	$50	$322	Payments to HTF
TOTALS:	$6,031	$4,554	
% Savings over 6YR CASH:		$1,477	
$ Savings over 6YR CASH:		24.5%	

(B) Return/Refresh 1YR Late		(C) Return/Refresh 2YRS Late	
$0	Initial Cash Spend	$0	Initial Cash Spend
$200	Migration Expense (new unit)	$200	Migration Expense (new unit)
$270	Year 1 Support costs	$270	Year 1 Support costs
$322	Payments to HTF	$322	Payments to HTF
$341	Year 2 Support costs	$341	Year 2 Support costs
$322	Payments to HTF	$322	Payments to HTF
$474	Year 3 Support costs	$474	Year 3 Support costs
$322	Payments to HTF	$322	Payments to HTF
(Missed Targeted Return/Refresh Date)		(1st Missed Targeted Return/Refresh Date)	
$701	Year 4 Support costs	$701	Year 4 Support costs
$322	Payments to HTF	$322	Payments to HTF
$250	Migration Expense (new unit)	(2nd Missed Targeted Return/Refresh Date*)	
$270	Year 1 Support costs	$1,089	Year 5 Support costs
$322	Payments to HTF	$242	Payments to HTF
		$250	Migration Expense (new unit)
$341	Year 2 Support costs	$270	Year 1 Support costs
$322	Payments to HTF	$322	Payments to HTF
$4,781		$5,448	
$1,250		$583	
20.7%		9.7%	



Even with an additional year or two of finance/lease payments, the aggregate TCO savings are still net positive.
This is due to the high cost of support for years 5 and 6+ on endpoint devices -- compared to finance PMTS.
TCO reductions in years 4, 5, and 6 are a mix of REPAIR PARTS (out of warranty) and LABOR (internal, outsourced, or a mix of the two).
Labor resources -- if not outsourced -- are easy to quantify, but sometimes difficult to harvest/displace (see below).

*In cases where the endpoint asset is very close to end-of-life, lease contracts often adjust the PMTs to reflect decline in value.
The model above factors the payment down by 25%.

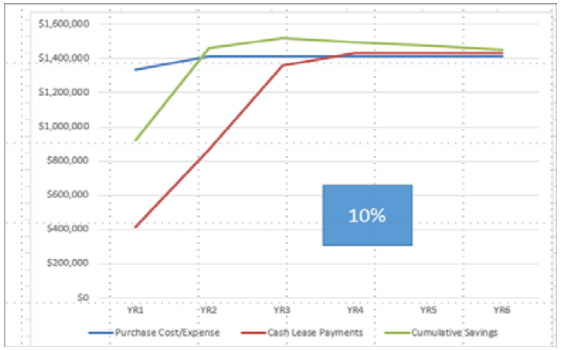
L. Financial Flexibility and Risk of Out-of-Cycle Refresh needs

How does residual-value-based finance compare to cash purchase in cases of earlier-than-planned refresh situations?

Cumlative Savings	$917,333	$1,462,123	$1,515,739	$1,494,182	$1,472,626	$1,451,069
Incremental Savings	$917,333	$544,789	$53,616	-$21,557	-$21,557	-$21,557

	YR1	YR2	YR3	YR4	YR5	YR6
Purchase Cost/Expense	$1,333,333	$1,410,362	$1,410,362	$1,410,362	$1,410,362	$1,410,362
Cash Lease Payments	$416,000	$865,573	$1,356,746	$1,431,919	$1,431,919	$1,431,919
Cumulative Savings	$917,333	$1,462,123	$1,515,739	$1,494,182	$1,472,626	$1,451,069

table/chart of unexpected refresh consequences



M. Calculating Estimates for the Labor Component of TCO costs/savings

What are the component costs in the Total Cost of Ownership figures? How are TCO savings harvested?

Since much of the TCO savings that can be achieved comes in the form of TECH SUPPORT services, finding these may not be simple.

- We then bring in data from the Helpdesk Institute on costs for help desk and technical support.

HelpDesk call cost data goes here; Labor reclamation issues

Metric Type	Service Desk Cost Metrics	North American Statistics		
		Average	Min	Max
Cost	Cost per Ticket	$15.56	$2.93	$49.69
	Cost per Minute of Handle Time	$1.60	$0.76	$2.50

Metric Type	Desktop Support KPIs	North American Statistics		
		Average	Min	Max
Cost	Cost per Ticket	$109.15	$21.06	$258.60
	Cost per Incident	$73.62	$22.82	$181.45
	Cost per Service Request	$173.49	$18.51	$404.04

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