

Closed Loop Lifecycle Planning[©]

Technology Refresh Cycles for Client Computing In the Context of a Tightening Economy

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Executive overview

Establishing a client technology refresh plan is going to almost always be a challenge. The number of decisions a business needs to make is not only about which access device, but about the entire range of access devices available to implement.

In the text *Closed Loop Lifecycle Planning*©- *A Complete Guide to Managing Your PC Fleet*, there was much discussion about the implications from the decisions- the unconscious decisions that businesses make. Nowhere do the unconscious decisions become visible as in the client technology refresh cycle.

By selecting a technology or a timeframe for technology that exists in your installed base, there is a preclusion of other alternatives. Frequently the client technology refresh is tactical and not intended to establish a strategic direction. However, for many businesses, the refresh set of economics becomes a strong factor in whether certain technologies can be adopted by creating another set of entrance and exit costs.

There is much to be considered in this new set of client technology refreshes as described in a magazine article – the Perfect Storm. Without going into length on any one item the list of decisions that businesses need to consider (or consciously decide not to consider) is sizeable. The list includes:

- New form factors for desktops and notebooks
- Thin client and virtualization (Citrix, VM, VDI, as examples)
- Blades (server, PC, and workstation)
- New operating system
- Home offices (formal and informal)
- Personally owned PC's
- Smart phones and PDA's
- Intelligent manageability in the chipset
- New management tools
- New product and software features
- New service delivery strategies

The list could go on, but the point is made that the sheer number of decisions is considerably more complicated than whether desktops and notebooks are like for like.

Yet, despite this, there remains a hesitancy to draw the client technology refresh into a more strategic economic approach. The reasoning could be due in no small part to the set of politics, culture, and emotion that surrounds such decisions.

It has been interesting to note that even the dialog about how long to keep and retain devices in an installed base can generate the same emotions as the other business decisions.

The economy

The economy today is tight, and regardless of one's personal beliefs, the economy is now a weighted factor in determining client technology refresh strategies. However, this is nothing new, and in truth, the economy has always been a factor in the determination of the refresh cycle.

The economy today, given the seriousness, is now potentially the rationale to justify the slow down of a technology refresh cycle or the rationale to avoid change.

It may seem counter intuitive to invest in a technology refresh during a downturn; however, the implications of not refreshing a PC fleet are as important as the conscious decision not to refresh. In lifecycle management, there are few right or wrong approaches, only conscious and unconscious decisions according to my *Closed Loop Lifecycle Planning*© research.

Historically speaking, it may be just the opposite. If change is going to occur either in technology alternatives or in governance, it typically takes a catalyst to initiate change - specifically a compelling event. Compelling events can come in many shapes and sizes ranging from:

- Mergers and acquisitions
- A tight economy
- Audits
- Regulations

During a tight economy, the timing may be perfect to adopt change - there would likely be more receptivity to accept creative ideas, particularly if there are positive economic consequences.

The myths

There are myths surrounding the technology refresh cycle from client computing that is a challenge to break. Myths are exactly that - beliefs not necessarily based upon facts. The following is a short listing of myths that one would logically envision as a part of the client technology refresh dialog. In this white paper, it is anticipated that all of these myths are somehow known to the business.

Here is a list of myths surrounding the overall technology refresh cycle:

1. Extending the useful life is optimal
2. Extending beyond 3 years and 4 years costs less
3. Exactly what I would expect a PC OEM to say
4. There is no difference between devices from year to year
5. The consultants said I could
6. PC's are a commodity, who cares
7. My CXX thinks it is a good idea, so
8. We have always done it this way
9. Planning is overrated
10. It is all about spending capital dollars, not expense dollars

Here is a list of myths regarding sustainability in client computing:

1. Sustainability costs more and comes at a premium
2. Sustainability is not real, it is ethereal, a concept
3. Start up and entry costs are too high
4. Savings are indirect
5. Savings are power consumption only
6. Benefits do not accrue to IT
7. Sustainability cannot be effectively measured and reported
8. Sustainability is hyped too much to be true
9. Every OEM has a story to tell
10. Costs just show up somewhere else

Finally, here are the conclusions regarding some of the myths described above:

1. Sustainability is not going to go away
2. There will be more and more regulations
3. No reason to ignore
4. It will become more compelling
5. Become a part of all RFP and RFI processes
6. Criteria for winning and competing
7. Leverages innovation
8. Practice levels become more relevant
9. Product lifecycle shorter
10. Everyone will have an opinion and message

Note: While sustainability is mentioned predominantly in this white paper, it is as much illustrative as anything. Sustainability is about the economics as well as the culture.

Sustainability - the gap

The point to be made about sustainability (forgetting all of the salient points about the environment for a moment) is that green represents the “tie breaker” of sorts in a client technology refresh cycle.

If the overall set of economics is close, the impact savings from sustainability should be compelling. Another comment is that the older the installed base, the greater the impact on sustainability. Therefore, sustainability in terms of power consumption, noise, heat and footprint can ultimately be the determining factors if all of the true costs of a refresh were examined.

Acquisition price

Acquisition price - for many businesses this is the beginning and the end of the discussion about technology refresh.

Even though the TCO tools in the industry have espoused since the 1990's that products (including both hardware and software) represents less than 20% of the overall cost, there remains a constant and in many cases fervent belief that it is all about acquisition costs.

Do not misunderstand- acquisition cost is important, it is real, and it is significant. However, acquisition price has very little to do with cost. Cost is a recurring IT expenditure in support of client computing. Acquisition is a cost avoidance approach which states that one will spend less on something that they will buy.

Cost reduction is recurring and cost avoidance is a one time only event. The two initiatives – price and costs are frequently at odds since different organizations and different criteria are often at play in an enterprise. As a result, costs are not necessarily optimized.

Closed Loop Lifecycle Planning© model

The *Closed Loop Lifecycle Planning*© model is based upon the bill of materials to support the client environment. This bill of material includes:

- Hardware
- Software
- User segmentation
- Staging and integration
- Moves, adds, and changes
- Warranty and maintenance
- Help desk
- Asset management
- Project management
- Management tools
- Disposition
- Technology refresh
- Total cost of ownership/cost of change
- Service delivery strategies

The key in examining the client technology refresh strategy is to look at the support required to sustain a strategy and roll up to the true cost to support the decisions. Taking an approach which is not holistic and rolls up to a subset of an enterprise may be sub-optimizing the overall set of economics.

Key lifecycle elements that influence refresh cycles

Of the listing of the bill of materials to support client computing, many, if not most, will have a direct or indirect impact influenced by the technology refresh cycle. Other impact will be more subjective or subtle.

For example, for years it was widely thought and assumed that older hardware, such as desktops, would result in more help desk calls. This was perceived to be a result of older technology simply requiring more support as it became older. However, the dynamic is that many businesses (perhaps most) do not track help desk calls to the level of detail including the age of the device.

What is known is that older technology (desktops and notebooks) have certain aspects which do impact recurring IT costs, which are very clear, unambiguous, and are easily addressed in terms of strategy. These aspects are addressed in the following section- "Establishing the criteria".

It should be noted- *Closed Loop Lifecycle Planning*© is very clear to point out that in lifecycle management - there is no right or wrong answers, only conscious and unconscious decisions.

Establishing a client technology refresh strategy should include a broad range of elements that gets to the core of the issue - precisely what is the best set of economics.

Establishing the criteria

The criteria for an optimal client technology refresh cycle should be based upon a solid set of criteria that, to the degree possible, is based upon easily definable information. Being able to take out a level of the emotional argument regarding what is better or best is to be avoided.

It is not assured that the best set of economics will be implemented - the approach is simply that the best set of economics is known and understood.

The case study below approaches the proposition that the client technology refresh is imminent and that there are certain decisions to be made. The objective is to provide a framework on the process that could be leveraged. This is not to suggest that it is an all encompassing approach.

With many businesses, there is a detailed drill down process that is leveraged to ascertain the optimal technology refresh approach. This white paper is targeted to provide a framework for consideration.

Case Study

For this client technology case study the following are the assumptions made that are an integral part of the approach:

- Price of desktops \$500 per device
- Price of notebooks \$1,000 per device
- Existing technology refresh cycle 5 years, or 20% annually
- Product mix is 50-50 desktops to notebooks
- Installed base 20,000 devices
- 10,000 desktops
- 10,000 notebooks
- Extended desktops \$5,000,000 (10,000 X \$500)
- Extended notebooks \$10,000,000 (10,000 X \$1,000)
- Total value at acquisition price of installed base \$15,000,000
- Present refresh rate is 4,000 devices annually

The lifecycle elements now come into play. Without going into a deep drill down in all areas, this white paper focuses on those that have more immediate and quantifiable implications, however, this is by no means exclusive to other considerations.

The areas of impact include:

- Residual value
- Power management / consumption
- Vista/ operating system configuration
- Cascading devices
- Big Bang Refresh

Residual Value

As many of the elements described in this white paper become reality, there will be an impact on other aspects. The best example of this may be in the residual value of older PC's.

In today's environment, desktops and notebooks have residual value which is predicated on configuration, condition, and age of the devices. As devices age, the residual value, or resale value, lessens. There has traditionally been a secondary market for used equipment.

Given new operating systems, new chip sets, power consumption and environmental regulations there may be a dynamic that could impact the residual value of used equipment. Used equipment becomes less desirable if there are more circumstances that need to be considered when leveraging this technology.

Whether it is traditional sparing and availability, which has been overcome in the past, the new approaches may increase disposal costs and power costs. In addition, there may be incremental resources required if newer operating systems or applications are to be run.

With that as a back drop and with market driven pricing occurring, residual values may decline.

If it is assumed that the residual value of a desktop is 10% (an arbitrary figure) and a notebook residual value is 15% (again an arbitrary figure), using our case study acquisition pricing as the example, the residual value could be desktop = \$50 and a notebook = \$100. Assume this is a year 4 figure; the values decline in year 5 appreciably.

If the residual value is 50% less, then in terms of the business case, the residual is roughly equivalent to the shipping and handling costs. Then the dilemma becomes how not to have disposal become a net expense, not a generator of cost avoidance.

The dynamic of changes in residual values may be more pronounced than before given the impact of innovation. The economy plays a key role in the end of life impact that residual value will play.

Power management / consumption

In our case study, the assumption is made that desktops and notebooks may have a 3 year depreciated or expensed life, but in reality the devices are retained in the installed base for 4 to 5 years. In a tight economy this becomes even more of an impetus.

Power consumption and power management have long been "buzz words" in the industry and associated with "green" initiatives. For a long time, "green", as a client computing initiative, was considered by some to be "boutique" not main stream. This has now changed.

Regulations such as ENERGY STAR®, EPEAT™, and other requirements have changed this perspective.

In a practice sense what this means is that older desktops and notebooks consume more power, and in many cases by a significant order of magnitude. It is not because manufacturers were less conscious of power consumption; it is simply a part of the innovation curve in all industries.

When a new desktop is compared to a 4 or 5 year old desktop, the power consumption differential likely exceeds 40%. This is using an ENERGY STAR® calculator. In whole terms the expressed kilowatts are 28 to 73 meaning a change of 38% without factoring in specific aging of the devices.

From an overall power management perspective there is now integration with Windows Vista® Power Management, HP Power Management, and third party power management software (such as Verdiem), which further improves consumption as much as \$20 to \$60 per device. What this implies is that given the ever declining acquisition pricing on access devices, the impact of power consumption is significant in terms of the economics.

Previous economic thinking is that by retaining older devices, because there is no capital outlay, the expenses are less. The energy becomes one of several “tie breakers” in determining the best set of economics for a refresh. The energy consumption alone should be enough to re-consider the economics. Then, when combined with other aspects of the refresh topics, the issues and savings may become compelling.

Later in 2009 there will be even more regulations, newer updates to ENERGY STAR® , and innovations.

A lot has been stated about innovations and regrettably to some degree the term has been overused. However, innovation is a direct result of investing in research and development. HP, as one example, continues to invest in R&D at extraordinary levels (\$3.6B). This is provided to demonstrate that in tight economic times, innovation investment does not cease, nor should adoption of innovation.

Vista/ Operating System Configuration

Microsoft Vista® operating system will also drive technology refresh. Regardless of the potential timing that a business will migrate to Vista or any new operating system, this is what we know - any new operating systems and applications will likely require more disk and memory from existing installed base configurations.

Based upon experience from field work, the current thinking seems to be 2 GB and greater than 100MB is the present minimal configurations. As a hedge on residual values and the potential to extend useful life of the assets, businesses should consider “over configuring” devices so that overall performance is not impacted if the life is extended.

Regardless of that impact, the overall thinking is that the configuration of the devices will increase as the components and peripherals become increasingly dependent on application performance.

Cascading Devices

Closed Loop Lifecycle Planning© concludes that not all businesses can effectively cascade devices. Cascading is defined as the re-deployment of installed technologies for client computing.

Businesses re-deploy desktops and notebooks when there is a belief that there remains a useful life for the devices. However, more and more businesses are cascading devices, not because of the potential useful life, but as an alternative to avoid capital outlay for new PC's. Again, there is no right or wrong answer.

If the rationale is that cascading costs less than a net new device, the logic should be challenged if for no other reason than to validate the local set of economics.

The challenge for businesses in a tight economy is to balance costs and pricing. In the configuration management discussion above, the consideration was made to potentially “over configure” devices for the potential extension of the useful life of the assets.

However, to a high degree, this strategy increases the unit acquisition pricing in the short term. The trade off is required in order to provide a reasonable end user experience in the longer term for the installed base of users. Otherwise, there will likely be demand for “touching” the device and adding disk and memory.

As you can see from this discussion, the cascading of desktops and notebooks has implications that are not as obvious as might be thought.

Cascading Desktops

The desktops are frequently cascaded. In a cascade scenario, a net new device is introduced into the environment. The replaced device is de-installed; data migrated, and then moved to a secured area.

The desktop is typically stored for a brief period and then the device is re-deployed, which then creates a second, de-installed, data migration, and movement to the secured area. The conclusion from *Closed Loop Lifecycle Planning*© is that for each transaction there are at least two incremental cascades. At the end of the process, the oldest possible device is readied for disposal, which would have nominal residual value.

Each “touch” of a desktop is 90 minutes to 2 hours depending upon logistics, travel, resource availability, and so on. The end user is typically present and there is a level of downtime associated.

At typical rates, the quantification is a “touch” for cascading approaches \$125 to \$200 per incident. If as seen in the assumptions, a desktop is valued at \$500, the cost to cascade exceeds annual depreciation. If the criterion is cost, not acquisition price, the cascading is a difficult position to support.

The exception to this approach is if the desktop is in the 18 month useful life where the warranty and residual is high, and the likelihood is that another year is realizable.

Cascading Notebooks

Despite the obvious difference between desktops and notebooks, many organizations have not separated the financial logic. The useful life of desktops and notebooks are simply not the same.

Cascading notebooks presents both a business set of issues and a unique set of emotional issues.

The business issues are determining how to cleanse and protect information as these devices are required to be cleansed timely and because they are mobile, more easily exposed. Protection with encryption, dual level authentication, and Computrace-like tracking are typically desirable.

The emotional impact of cascading notebooks is often overlooked, but clearly is becoming as important (*Closed Loop Lifecycle Planning*© would suggest more important) as the business rationale.

With the technology refresh cycle introducing new form factors, designs, battery life, and new relevant features, cascading notebooks may not be desirable. The example provided is a new employee. Does a new employee to a firm want to be assigned a used, 2 to 3 year old notebook? The answer is no (whether spoken or unspoken).

With the prevalence of home computing, employees expect at least a device comparable to the home PC experience, and typically a 3 year old notebook does not exceed that expectation. While this may not be true in all businesses, and in all circumstances, it does occur with enough frequency to be a serious consideration.

Big Bang Refresh

In research performed in writing *Closed Loop Lifecycle Planning*© and in the many drill downs conducted, it was concluded that businesses that defer technology refreshes on client devices and have a cycle that extends to 5 years will more than likely be faced with a Big Bang Refresh.

Closed Loop Lifecycle Planning© defines the Big Bang as a refresh that is required to address at least 70% of the installed base. In many situations there would be a compelling event or alignment that may drive a refresh, however, increasingly, it is not a merger or acquisition, neither new application nor technology that will drive change - it is cost or price/performance. Performance includes advances in the technologies itself.

Performance includes traditional speeds and feeds in terms of chipsets, but also the new features that access devices and the related technologies bring as a by product of the new innovations.

If it is assumed that the 5 year refresh plan is adopted in our case study, and if it is assumed that there is a new application, operating system, or power innovation that makes it desirable for a new desktop or notebook, the installed base would require either an upgrade or a new device. Upgrades are typically not desirable, particularly for older devices, so the alternative is to refresh all of the older devices greater than 24 months (perhaps more).

To touch an existing desktop or notebook, regardless of who performs the work the cost is typically not the best set of economics. The labor and materials likely exceed at least one year's depreciation (assumed to be 3 years).

A Big Bang Refresh is more disruptive and costly than a phased, shorter term refresh. For a Big Bang Refresh the program office and planning is critical. In the phased approach it is more of a steady stream, business as usual focus.

In our case study let's explore desktops and notebooks.

Desktop Big Bang Refresh

The program office must coordinate scheduling, order product and stage large numbers of desktops. For many businesses, this is considered a project and is out tasked or out sourced, if for no other reason than space and staging areas.

In our case study, 70% of the desktops would need to be replaced or 7,000 desktops. This suggests that in a compressed timeframe to complete a project, all 7,000 devices need to be ordered, accounted for, deployed, disposed (existing devices), etc.

The key dependency on the Big Bang Refresh is a solid handle on the asset management practice levels. The workflow would need to be documented and the software licensing appropriately harvested. This creates a one time only situation from a costing perspective.

Another given is that if a business commits to a Big Bang Refresh, then the planning cycle is for continual Big Bang Refreshes unless the policy or governance model changes. In other words, Big Bang is a strategic decision.

The program management office and related practices likely add an incremental \$125,000 or greater to the cost of the desktops).

Notebook Big Bang

The Big Bang for notebooks is becoming a bit more common place in the industry. The rationale for this is the leapfrogging of the technology, price, price performance, and applications. The consumer demand coupled with longer battery life and innovation is driving this segment of the market place.

More and more businesses are seeking more of a role for end users to deploy notebook technologies, and this trend will continue aided by the robust, mature management tools.

Because of this trend, the planning for notebooks may not require as much onsite labor as desktops in terms of resources for deployment; however, the planning is just as important. Because of the risk associated with mobility products, security in processes becomes extraordinarily important.

There would likely be a similar program office requirement for the notebooks, adding to the overall costs. The one time only reporting and logistics could be a spike for the infrastructure.

Conclusion: For desktops and notebooks the Big Bang in our case study carries a premium of a program office and is more disruptive than the business as usual phased model. In addition, the Big Bang has a cash flow which suggests that if the payment stream was present valued; the scenario would be less favorable to the overall set of economics.

For more information

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