Rationalize Your I&O Assets by Cost and Business Value: The Three Rs Approach

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VIEW SUMMARY

For simpler, cost-effective, and more agile infrastructure and operations, take the three Rs (repurpose, refresh, retire) approach — that is, plan for retiring and repurposing the infrastructure and service assets in parallel with planning for refreshing and replacing them.

Overview

Key Challenges

Infrastructure and operations (I&O) organizations are constantly getting their hands tied, due to budgetary constraints, when it comes to refreshing their I&O and data centers.

Tightly coupled and backward-integrated systems are making the lives of I&O teams very difficult in terms of finding a way to replace the inefficient legacy systems with more cost-effective, agile, flexible and high-performance, newer technology and service options.

Gartner ITScore for I&O data shows that more than 90% of I&O teams are below Level 3 overall. Approximately 50% are self-assessing their maturity in the tools attribute in the technology dimension at below Level 3. These findings show that I&O teams are lacking the people and process management maturity to be able to leverage the latest innovations in I&O tools and technologies.

Recommendations

I&O leaders must build a strategic road map toward I&O architecture, based on business needs and priorities. Holistic, life-cycle-based planning is needed, while refreshing the I&O with new technology options. Follow the three Rs approach outlined in this research.

Plan for selecting the "golden handshake" candidates — that is, identification and evaluation of IT service assets that are ripe for retirement. Toward this end, you can leverage Gartner's IT Market Clocks for various technologies.

Build a repurposing plan, along with recycling (if necessary) and a viable alternative, for the service assets that are selected for retirement.

Coordinate all your refresh/replace plans with the retirement and repurposing plans.

Analysis

IT infrastructure and service assets are seldom retired across several I&O organizations. They are never sent off, graciously or otherwise. There are instances in which 65% of data center power is consumed by servers running at 12% utilization, due to their far higher need for power and cooling than relatively modern machines. In such instances, retiring and replacing a server may make economic as well as technical sense, given the running and maintenance costs.

On the contrary, many organizations are spending millions of dollars on integration projects, integrating the high-performance I&O assets of today into the legacies of yesterday (see "IT Metrics: IT Cost Optimization: Vertical Industry Perspectives"). Major IT service management (ITSM) best-practice guidance, such as ITIL and COBIT, emphasizes the value of a life-cycle-based approach (see Note 1) to manage all IT service assets (see the Recommended Reading section for further guidance). Legacy integrations may use a lot of computing and memory capacities as buffers for synchronization, to keep pace with the older systems. This may slow down the new assets. Performancewise, legacies are already slower than latest alternatives available in the market (see Note 2). In effect:

Maintaining backward integration may prevent you from fully realizing the value that the new assets could provide.

You're only as fast as your slowest moving part — in this case, your most decrepit legacy system.

The challenges of maintaining and running legacies in parallel with newer systems are discussed in this research, along with a solution approach based on cost and value-based rationalization of IT infrastructure and service assets, using the three Rs. The three Rs approach is grounded in an

EVIDENCE

[1] For example, fabric-based offerings; cloud-based offerings with infrastructure as a service (IaaS), software as a service (SaaS),platform as a service (PaaS); or, more specifically, the extreme low-energy servers with highly efficient form factors and innovative cooling mechanisms. More-efficient machines with higher compute and storage capacities in denser forms are increasingly becoming available at decent price points from multiple vendors, like HP, Dell and Hitachi (see "Magic Quadrant for Blade Servers").

[2] For example, popular ERP solutions, such as SAP in its R/3 versions, offered thousands of reports that could be customized, with much effort and many resources. Suppose an enterprise invoked and customized even 20% of the reports available; did it routinely track and monitor what decision value the reports support, and how effectively? Many of the reporting modules, while often quite demanding in terms of I&O resources for huge data integration and processing functionalities, do not have any value or effectiveness tracking metrics and monitoring mechanisms and processes. As a result, I&O has no visibility into the outcomes that are supported by these modules, along with the integration pieces that are getting older by the day.

[3] 12.2% at Level 1 and 42.5% at Level 2, N = 362, until April 2012

NOTE 1
UTILITY AND WARRANTY

For service assets that have already lived their useful lives (in terms of utility and warranty fitness for use) and have been well-depreciated, passing their break-even points many years back, a detailed analysis should be done to see whether it really makes any practical, business-value-based sense to keep spending hard-earned business dollars on maintaining the older systems and continuing to integrate them into newer systems.

The asset retirement plan and logical workflow must be invoked in parallel with technology refresh cycles, as a part of your I&O governance mechanisms. This will ensure that the older systems will not continue to run in parallel, despite the introduction of the newer systems, simply because people don't want to change their behaviors. For the newer systems to be successful, it is essential that the older systems be retired and repurposed. Otherwise, the value/savings/efficiency improvements of the newer systems will continue to subsidize the inefficiencies of the older ones.

When considering the costs of integrated legacies, along with the code development, maintenance and change-related costs (which you continue to pay your system integrators and service providers), these can often outweigh the value of the integration, especially when the "legacy comfort factors" are discounted. Many I&O environments still show a peaceful coexistence of well-depreciated, underperforming assets with expensive, high-performance assets (peaceful primarily because, generally, no questions are asked about why the old systems are still

asset management best practice: Make sure you plan for retirement of an asset when you procure it, and make sure you actually implement the asset's retirement phase as planned.

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The Challenges of Legacy Management

Too Many Interdependencies Between I&O Assets Lead to a Bulky Organization That Cannot Leverage Newer, Efficient Technologies

In several cases, tightly integrated and interdependent systems — be they hardware, software, applications or network — have made I&O environments so bulky that these elephants can hardly move, let alone dance to the tunes of changing market conditions and resultant fluctuations in IT service demand patterns. This impacts organizational agility in a big, bad way. The opportunities lost due to this lack of agility become even more obvious when the newer technology innovations have the potential to reduce your power, cooling and real estate bills to a significant extent. Entry barriers to highly innovative technologies and service offerings are being lowered day by day.[1]

However, due to very tightly coupled, entwined legacies, it's anything but easy for I&O teams to retire and replace the inefficient guzzlers with much more cost-efficient systems. The situation gets even worse when the new infrastructure components are brought in without retiring/repurposing the old ones from the key production environment, as the efficiencies average out and the new systems are looked down on as failing to deliver on the promise of cost savings.

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Too Many Integration Modules, by Themselves, Can Be a Potential Source of Suboptimal Performance and Unjustifiable Costs

A hidden source of underperformance of I&O can be far too many system integration projects, many of which are integrating new systems with old legacies:

- In reality, integrations without long-term planning and repercussion analysis can result in the latest systems actually subsidizing older ones or compromising on the efficiencies achievable.
- Although these modules are meant for integration, they themselves often exist in an isolated manner (e.g., multiple point-to-point integrations), making it difficult to assess the overall loads and costs of running and maintaining these modules.

With respect to integration modules, available monitoring tools can be deployed to check usage of compute time and resources. If too much compute power is being used by the interfacing code, rather than the main applications' compute code, that may indicate inefficient interfacing modules.

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Other Hidden Costs Due to Maintaining Low-Performing or Nonperforming Service Assets

Also to be considered are the yet-to-be-identified nonperforming assets, such as thousands of report generation modules, the outcomes of which are not traced in terms of effectiveness or business value.[2] Nonperforming, underutilized IT assets have created such complexity and clutter that analysis of a root cause or identification of a solution to an apparently simple problem is like searching for a needle in a haystack. The configuration management databases (CMDBs) show thousands of configuration items (CIs), often with very low visibility of what each one is contributing, to the organizational business goals and the ensuing IT service goals. Only a rationalization drive (e.g., supported by discovery, dependency mapping and log analysis tools, to identity the least-utilized servers) can potentially free up many I&O assets and capabilities, which are locked in running various non-value-added applications and services, and their subsequent delivery and maintenance processes.

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What Can Be Done About It?

First, an asset retirement plan needs to be established for the I&O, be it hardware, software, information or any other asset. As per financial measurements, anything that qualifies as an asset should have some quantifiable indicators of value — in this case, the value being an IT infrastructure/service asset's ability to contribute to business value, given its utility and warranty expectations. For example, for infrastructure components, the following factors should be considered:

- Which logical servers or virtualized environment does a machine host or is a part of, and what services supporting which business processes run on them, and how much of the company's critical financial outcomes (such as receivables, profitability, market share) are dependent of them.
- Depending on the asset's expected life span, and the time already passed since its acquisition, make a comparison between the depreciated costs plus running costs versus the indicative business value that it supports (this can be averaged for assets with similar/replaceable utilities and warranties).
- Cost of replacement versus potential savings in operating expense (opex) due to

running). Server consolidation initiatives should factor in these considerations.

NOTE 2
WHY KEEP THE OLDER SYSTEMS?

If the root causes for this tendency are analyzed deep enough, it may often be found that the old tools, systems and technologies are kept just because they have been there for many years and the I&O teams as well as the users have grown so habituated with them that, despite the high running costs, no one wants to come out of their comfort zone and retire them and refresh the I&O with more efficient options. As a result of this, coupled with other factors such as ineffective ITSM policies, practices and governance models, Gartner's maturity model ITScore for I&O shows more than 50% organizations below Level 3 when it comes to the efficiency attribute in the technology dimension[3] (Level 3 is the starting point of maturity, per Gartner). When it comes to the tools attribute in technology, the situation is even more grim, with a whopping 57.3% of I&O organizations assessing themselves only at Level 1.

replacement.

Second, when you build the technology refresh plan and road map, along with the retirement plans for older assets, also create a repurposing plan. For example, a highly futuristic I&O organization of a government in the Asia/Pacific region planned to distribute the older machines to various schools in less advantaged areas that had no computing facilities at all. This plan was made in conjunction with the organization's corporate social responsibility (CSR) team, as part of a CSR activity to support schools in less privileged countries in the same region. Although these machines proved to be very slow for the data-processing-intensive government applications, the simple applications run by school children, especially for simple drafting, programming, etc., were handled very well by these old machines.

For effective execution, repurposing plans should also factor in licensing and support considerations. For example, while donating machines, an organization needs to wipe all software, because the licenses are nontransferable. Communication with vendors, in terms of ongoing maintenance and support, should be planned.

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The Three Rs Approach to Building an IT Service Assets Plan

Step 1: Align All Technology Refresh Plans to the Overall Strategic Road Map, Targeting a Scalable and Flexible I&O Architecture, Based on Business Needs and Priorities

Holistic, life-cycle-based planning is needed while refreshing I&O with new technology options. Follow the three Rs approach outlined in this research. Design a new strategic architecture using the new, low-energy servers and more agile and efficient storage and networking, carefully analyzing the need for integration modules. Then your road map implements the rearchitecting strategy over time by repurposing, refreshing and retiring. Without a strategic architecture in mind, the new infrastructure may become just as chaotic as the old one.

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Step 2: Select the Golden Handshake Candidates (the IT Service Assets That Are Ripe for Retirement)

You can leverage Gartner's IT Market Clocks for various technologies toward this end:

First, identify the costs of the legacies, including the running costs (compared with the new-generation systems, in terms of maintenance and integration costs, etc.). Consider energy efficiency, space consumption and cooling needs if it's a hardware asset. Consider performance versus resource consumption patterns (from logs), compared with newer versions, if it's a software asset. Analyze the useful life of the asset (warranty) and apply the depreciation logic, not just as a pure mathematical formula, but also factoring the utilities and warranties offered, promised or proven by the newer systems. A simple analogy of this logic might be when a more fuel-efficient car model hits the market, you evaluate the resale value available for your current car.

Second, do a value at risk (VaR) calculation (see "Use Value at Risk to Define Business Impact Metrics for IT Services") on the legacy systems or assets that have very high maintenance and running costs and significantly low performance, compared with the currently available replacement alternatives. Setting a threshold on what's considered very high in your organization's context will depend primarily on:

- Your organizational IT budgets and strategic priorities (e.g., cost reduction, growth etc.).
- The IT dependence of the sector/industry in which your organization operates (e.g., organized retail, supply chain, logistics, banking and insurance, and other highly regulated sectors, such as pharma and healthcare), typically big IT-service-consuming industries.
- Spend patterns and IT orientation (e.g., whether your organization is an innovator, early adopter of new technologies or rather conservative in its approach).
- Contractual costs (outlying maintenance and/or license contracts for legacy assets, etc.). Legacy asset maintenance is often not cost-effective, since these assets are no longer aligned with the overall IT purchasing strategy.

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Step 3: Build a Repurposing Plan for the Selected Service Assets

Any asset retirement plan has to be supported with a repurposing plan:

This can be done in an integrated manner, such as talking to various business functions to gather ideas on where these legacies can still run, without impacting the production environment adversely — in terms of existing running and maintenance costs versus technology refresh costs and value.

The repurposing plan may also be linked to organizational green and CSR initiatives.

For organizations that already have some green and sustainable policies established, the repurposing may also mean triggering a recycling process to handle hard/soft electronic junk. There are highly viable parallel industries with ancillary value chains supporting recycling (for example, of semiconductor materials).

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Step 4: Coordinate All Your Refresh/Replacement Plans With the Retirement and Repurposing Plans

This will ensure that, beyond the hand-holding and hand-over phases, the legacy assets due for retirement will not continue to run in the production environment:

- Do a value versus costs analysis, in terms of the business value that's at risk if the retired asset is not there or is replaced, versus the cost of maintaining the asset. If the costs are significantly higher than the VaR, then there is a case for consideration of retiring this asset and refreshing it with one of the latest alternative.
- When the cost of procuring and implementing the alternative is considered, also factor in:
  - The running costs of the newer systems, compared with the previous one, and also the depreciated costs of procuring the system, typically with an 18- to 24-month planning horizon
  - The VaR that was being supported by the older system and is now planned to be supported by the newer system

Summarily, the utility can be measured in terms of business value of an IT service asset, using the VaR. The warranty of new assets can be measured in terms of their projected useful life and technology predictions from market and best practices.

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Benefits of the Three Rs Approach

Having a holistic plan to repurpose, refresh and retire has corollary benefits, in addition to cleaning up your I&O environment:

- It actually expands the warranty (fitness of use, as depicted in ITIL) and useful life of your legacy assets by repurposing them for functions where they can still be useful, rather than being seen as slow and low performers in a high-performance demanding environment.
- It makes your service asset life cycle management practices and related decisions more robust. With this approach, the total cost of ownership (TCO)-based analysis and life cycle decisions are justified with detailed analysis of risks versus business value, rather than only on technology refresh cost considerations. Typically, calculations based on discounted cash flow models are attractive because they are relatively more simple and easier to use than a holistic and exhaustive approach. However, with IT asset management practices having many expensive decisions involved, a holistic analysis is much more prudent for practical effectiveness than are considerations regarding the ease of analysis. For example, many of the underlying assumptions of traditional financial formulas are often overlooked when these formula are applied. But these assumptions do not hold true anymore for several technology-related disruptive innovations. Thus, applying the formulas without considering the assumptions may lead to wrong decisions potentially resulting in expensive mistakes.
- Having a formal, parallel three Rs approach can potentially make your I&O team agile enough to be able to leverage new technologies faster than your competitors. In the long run, this capability may prove to be a key differentiator, and of significant strategic value to the overall organization.

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Bottom Line

Managing tightly coupled, interdependent legacies and their integration modules poses so many day-to-day firefighting challenges for I&O teams that they are left with very little space to maneuver the IT service assets and deliver IT services in a more agile, business-driven and cost-efficient manner. A reasonable approach toward cleaner and more agile I&O is to plan for retiring and repurposing the service assets, before planning for refreshing and replacing them. This rationalization should factor in the costs versus the VaR calculations.

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