



white paper

Five Things Your IT Resources Should be Telling You – and Aren't

Getting the Information You Need to Align Business Needs With IT Resources in a
Virtualized, Consolidated World

insight

“IT execs can’t continue to ‘fly blind’, over-allocate resources, or sustain manual Excel spreadsheets and best guesses in the allocation of their resources. CIOs must be able to make informed decisions from a position of strength, and that strength must come from solid management of the resources under their control.”¹

1 Forrester Consulting. *Preparing for the New IT Ecosystem.* November 2007.

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Executive Overview

As organizations deploy virtualization technologies and share resources among applications, manual approaches for tracking the use of these resources are growing more unwieldy and time-consuming. And in a world where IT must continue to find ways to deliver more while cutting costs, traditional methods to compensate for a lack of information – such as over-provisioning or reactive provisioning – simply aren't acceptable business practices.

The importance of gaining a complete picture of resource utilization is only growing stronger. Whether the long-term goal is creating a Real-Time Infrastructure (RTI) or becoming a service-driven IT organization or both, documenting and quantifying the connection between business processes and the IT resources they consume is critical. After all, how can business/IT alignment happen without an understanding of how resources are used by applications, processes, and services?

According to a recent Forrester Consulting study commissioned by Unisys, IT organizations lack visibility into resource consumption by application or business process. This shortcoming prevents them from making a stronger connection between IT and the business and moving toward a services-led ecosystem. Even those organizations that report having a more mature relationship with the business (as value partners rather than cost center or trusted utility) still struggle to gather the needed data via manual or homegrown systems.

IT executives need data to make informed decisions and take proactive measures to ensure business demands are met. Sophisticated resource monitoring technologies are required to help IT closely connect infrastructure to the business and grow to become a services-led IT organization in the future. This whitepaper describes the types of information IT managers should expect to gain from leading-edge IT resource governance tools.

Intended to help executives thoroughly examine the business value of unified communication modalities and collaboration solutions, this paper:

- Introduces unified communication and collaboration concepts
- Considers possible implications of the new technologies
- Helps shape a balanced point of view
- Provides some recommendations regarding both the technology investment and relevant implementation models

Introduction

As servers running Microsoft® Windows® and Linux® become more powerful and pervasive – taking on workloads that were once the sole territory of mainframes – the bar has been raised for how these resources are managed. The not-so-secret secret about the one-application-per-server model, which spurred the growth of Windows and Linux servers, is the incredibly poor utilization numbers achieved under this approach. According to industry statistics, the average utilization for Windows and Linux servers hovers between 10 percent and 20 percent. In light of the pressure to do more with less, such low utilization levels are not acceptable.

The Move to a Shared Infrastructure

IT organizations are seeking to maximize resources and drive server utilization numbers to mainframe levels. Key to achieving these goals is creating a shared infrastructure, which can be done using a combination of proven and emerging technologies, including:

- **Consolidation.** The one-app-per-server approach hosted on department-owned servers is giving way to consolidation of these many, disparate platforms onto fewer, shared systems under the central control of IT and housed in the data center. This approach puts IT in control of future server expenditures, provides the ability to standardize on fewer operating systems and hardware vendors, and reduces power and floor space consumption.
- **Resource sharing.** After consolidation comes the ability to have multiple applications share a common resource, such as a Microsoft SQL Server database. Doing so further improves utilization and reduces licensing costs.

- **Virtualization.** This technology is another strong catalyst to a shared infrastructure. When multiple virtual servers share system resources and software, utilization is further improved. What's more, deployment of virtual servers is much faster than physical systems, eliminating the time associated with procurement, set up, cabling, configuration, testing, and so on.
- **Dynamic server provisioning.** While not nearly as routine as virtualization, dynamic server provisioning is poised to be “the next big thing” in shared infrastructure. Because it provides the ability to meet service levels by moving workloads from one platform to another – day-by-day or even minute-by-minute – dynamic server provisioning offers IT the ability to align resources with business demands in real time.

Sharing is Harder Than it Should Be

Although focusing on a shared infrastructure makes good business and technical sense, it isn't without challenges. This is especially the case in the area of resource management and making the critical connection between business processes and IT resource consumption.

This issue was confirmed in a Forrester Consulting study, which was commissioned by Unisys. (*Preparing for the New IT Ecosystem: Building the Foundation through Improved IT Resource Visibility*²) Forrester interviewed 20 large enterprises about the level of visibility they have into the capacity and use of IT implemented technology across networks, servers, and storage. They also sought to learn more about the consequences of inadequate visibility into resource consumption. More than half of the participants reported having little to no visibility into the link between business processes and IT resource consumption. Even those with some degree of visibility characterized it as limited and developed through considerable manual effort.

² *Preparing for the New IT Ecosystem* can be downloaded from www.unisys.com.

So while today few would refute the mission-critical abilities of commodity platform environments, their single-user/single-application heritage means these operating environments are short on the tools and instrumentation needed to see precisely how a shared resource is being used. This, in turn, makes linking business processes to IT a nearly impossible task. Unlike mainframe platforms, there's little visibility into how individual applications and processes consume processor, memory, and I/O resources.

This lack of visibility also presents challenges in quickly diagnosing problems and locating the culprits. Moreover, fairly allocating resource consumption to the applications on the shared server can be a challenge – one that's made even harder with dynamic server provisioning where workloads shift from one platform (and cost basis) to another.

There are cultural issues to be addressed, as well. In a consolidated, virtualized, shared infrastructure, departments within the organization no longer “own” the server upon which their application runs. This means not only a change in mindset, but also a change in budgeting, because charges will come in the form of usage, not simply a one-time capital expense.

In short, when Windows and Linux resources are shared, answering the following questions is no small task:

- How much CPU is “Application A” using?
- Why are we suddenly out of memory – and which application is the culprit?
- What's the cost of running this application on server X versus server Y?
- Why are you charging my department all this money for our application? When we owned the server it was a lot less expensive.

Sharing Has to Work – Visibility is the Key

Despite the challenges, a move to shared resources must be made to work because it is the surest road to improving service while reducing cost. And, of course, the situation will only get more complex as IT continues to move to lower-cost commodity platforms and operating environments while also embracing new technologies, such as virtualization and dynamic server provisioning.

At the same time, IT wants to align with the business and take the role of value partner, rather than cost center or utility. To achieve this position, IT must “demonstrate trusted stewardship of the resources under [its] control...at the most basic level, IT must have visibility into how its resources are being consumed and must be able to forecast, with some level of certainty, future requirements.”³

Clearly, new and better tools for capturing resource utilization data are needed so that IT and its business partners can work together to proactively plan for future needs and collaborate on addressing business priorities.

“The lack of visibility into resource consumption affects not only day-to-day operations – it affects the bottom line.”⁴

³ Forrester Consulting, “Preparing for the New IT Ecosystem.” November 2007.

⁴ Ibid.

Five Things Your IT Resources Should Be Telling You – and Aren't

What *should* your IT resources be telling you? The short answer is: “A lot more than they probably are.”

Many people see chargeback and billing as the primary purpose for monitoring resource use. And while resource allocation can be a sensitive subject, it remains an important consideration (see the sidebar on page 8 for more on this topic).

But there's much more value to be gained when resources are properly monitored and fully evaluated. The following list highlights five things IT organizations can learn from better information about how shared resources are used.

1. A total picture of resources consumed per application that reveals new opportunities to align business and IT

Today's applications aren't the monolithic systems of years past. With multiple tiers for the user interface, application, and data, it's important to “total up” the resources associated with a particular business process. What's more, the various tiers are likely hosted on disparate environments and sharing processes, such as databases, with other applications. All these factors must be considered when a comprehensive view of resource utilization is developed.

As IT organizations move to a services-driven ecosystem, it's critical that a close connection be formed and maintained between business priorities and their supporting infrastructure. Your IT resources should be helping you:

- See the actual allocation of server, network, and storage resource
- Gain the needed insight to ensure business alignment
- Make adjustments, when necessary

2. IT resource consumption trends

While commodity Windows and Linux platforms are relatively inexpensive and readily available, IT organizations have learned that deployment of new servers to meet business demands is no small task. That's why a proactive approach to planning for near- and long-term requirements is important. And, your IT resources should be able to help you do that by providing information to assist with capacity planning, such as revealing areas where use is growing – or waning. Capturing and trending resource use by servers and applications takes the guess work out of planning and provides a sound foundation for business-driven IT spending decisions.

3. Insight that can lead to elimination of inefficiencies

When resources are tracked to a level that shows consumption of CPU, memory, and I/O on a per application or per process basis, IT's ability to manage the overall environment is greatly improved. Your resource utilization data should be helping you identify the source of bottlenecks, pinpoint resource hogs, monitor growing demands, and more. With better visibility into the source of inefficiencies, IT administrators are better positioned to attack these problem areas and improve service – while reducing costs.

4. Information to help build a service catalog

Many IT organizations are formalizing the services they provide to the business by creating a service catalog. Like any catalog, an IT service catalog provides a laundry list of items that the consumer can “order” to fulfill a need. It typically covers a very broad spectrum of deliverables, from provisioning desktop equipment and system access for new employees to deploying servers to support a new application. By defining services in a formal catalog, IT is able to automate delivery and thereby improve flexibility and responsiveness.

Demonstrating Business Value Before Implementing Chargeback

Charging back for IT resource consumption is a hot button issue for many organizations. Departments and business units are wary about how IT chooses to account and bill for services delivered. There are several models for chargeback, including:

- **Fixed asset cost model:** the cost of running an individual physical server with single application is allocated to a single department/business unit “owner”
 - Does not support today’s virtualized, consolidated environments
- **Flat rate periodic cost model:** overall IT costs are totaled and allocated evenly across all departments/business units irrespective of actual resource consumption
 - Very easy to implement but grossly inequitable
- **Variable periodic cost model:** allocates total costs based on complicated algorithms that use department/business unit profiles, such as revenue, budget, and number of employees
 - Onerous to implement and requires quarterly updating
- **Actual usage cost model:** costs are allocated based on actual resource consumption metrics across physical and virtualized shared resources
 - Equitable and easy to implement

But only the actual usage cost model offers the potential to add business value in other areas, such as:

- Providing closer alignment of services delivered to business priorities
- Enabling proactive capacity management
- Facilitating faster problem diagnosis

Once the business value of IT resource data has been proven and a track record of accuracy established, then IT can introduce the use of this data for chargeback purposes.

A key element in each entry in the service catalog is cost, which can be difficult to quantify when resources are shared. It’s important to have visibility into the actual value of service delivery, including up-front, fixed and ongoing administration and maintenance costs. Developing a solid understanding of underlying costs also helps IT evaluate various approaches to charging for shared services, such as anti-virus software and routine backup.

5. Identify the cost implications of re-platforming

As IT infrastructures move towards a pool of shared resources, *where* a virtual server is hosted is no longer a factor in providing a service to the business. With the advent of virtual machine technologies, such as VMware® Dynamic Resource Scheduler (DRS) and VMotion™, as well as new, dynamic server re-purposing technologies, a virtual server can be automatically moved – without operator intervention – to maximize utilization and ensure resources are aligned with business priorities.

The flexibility is tremendous. For example, “Application A” may be hosted on an older x86 processor system during the development and test phases of deployment. It is then put into production in a virtual machine and shares the resources of an eight dual-core processor server. But because it’s primarily used during the work day, Application A is moved to a smaller server in the overnight hours, freeing up resources for nightly batch processing.

Dynamic provisioning presents a new challenge for resource tracking. As the underlying platform changes, IT must track and account for these changes, gathering resource data along the way, and developing an accurate picture of consumption across different server platforms with different cost bases.

Gaining Visibility Into IT Resource Utilization

So, how can you get your IT resources to tell you more? By deploying tools that are designed to gather data in a consolidated, shared resource/virtualized environment – *and* help you effectively analyze and use that data in many ways.

However, not all tools are created equal. In fact, few have the ability to keep administration and management simple while providing powerful, sophisticated analysis. Table 1 provides a check list of capabilities to look for when evaluating software.

Table 1

IT Resource Tracking Software: Evaluation Criteria

Attribute	Business and IT Value Provided
Granularity	<p>Shared infrastructures are complex environments. As such, resource utilization must be captured and consolidated across a variety of levels. Look for a tool that can handle the following profiles:</p> <ul style="list-style-type: none"> • Multi-level, distributed solutions, including GUI, application, and data tiers, so that the total resources consumed include every aspect of the service delivered • Shared resources, such as operating systems, databases, and server platforms, with the ability to identify and allocate the processes associated with an application running in a consolidated mix back to the individual application • Heterogeneous operating environments, including Microsoft Windows and Linux
Data collection method	<p>The tool should support monitoring both physical and virtual systems, including the ability to:</p> <ul style="list-style-type: none"> • Use information collected by existing infrastructure, such as VMware Virtual Center • Deploy agents to monitor individual processes at any level and as dictated by business and IT requirements • Automatically recognize new servers and begin collecting data immediately without special configuration steps • Provide a consistent, easy-to-use data collection strategy that works across the range of supported managed servers, in the same way, irrespective of the data source
Easy-to-use monitoring	<p>System administrators have a lot on their plates and little time to develop a detailed understanding of the actual workloads running across a shared infrastructure environment. Yet resource data can be invaluable in proactively identifying potential problems.</p> <p>The tool should show the entire workload – applications, databases, processes, and so on – in a single, consolidated, generic view that visually highlights patterns and provides at-a-glance status cues – allowing operations personnel to easily pick up on issues.</p>

(continued)

Table 1

IT Resource Tracking Software: Evaluation Criteria (cont.)

Attribute	Business and IT Value Provided
Data normalization	The tool should provide the ability to apply a normalization factor that accounts for different hardware architectures. This is particularly important in environments where workloads can dynamically move from a server platform with one processor, I/O, and memory profile to another with a very different cost basis.
Single, shared repository	Many tools leave it up to the administrator to manually collect and merge data from various log and usage files – or charge service fees to write scripts to automate that process. Look for a tool that automatically gathers and stores data in one place to support easy, real-time information access.
Powerful, flexible data analysis	<p>All the data in the world is of little value if it cannot be used. Look for a tool with robust graphical visualization and data analytics capabilities that allow your IT resources to tell you everything they can. For example, the tool should be able to graphically:</p> <ul style="list-style-type: none">• Depict resource usage over a fixed period of time• Identify workload patterns and anomalies• Discover and correlate usage patterns with business objectives• Provide high-density data displays that help you understand complex datasets at a glance• Detect and leverage specific patterns• Provide effective data interaction display and navigation for standard and ad-hoc analysis
Export capabilities	There are many independent resource billing and chargeback programs on the market. Be sure to select a resource tracking tool with data export capabilities so that when you are ready to use the information you're gathering to charge for IT utilization, you can take advantage of these specialized software packages.

Conclusion

With a goal to closely align IT and the business, the ability to monitor resource utilization at a business process level becomes essential. However, as the Forrester study found, IT organizations are sorely lacking capabilities in this critical area. Many of the companies surveyed reported that “they managed their IT resources primarily in a reactive mode (e.g. by adding a server when customer complaints spiked), and their budget forecasting was based primarily on subjective estimates and gut feel.”⁵

Even more striking is the fact that those same organizations “expressed the most displeasure at their inability to communicate with the business” and “were constantly pressured to prove [IT’s] value within the organization and frequently asked to justify the cost of IT.”⁶

Does better insight into resource utilization make a difference? The Forrester study indicates that it does. Of the IT teams that described themselves as “value partners” within their organization, six of seven said they had medium- to high-level visibility into IT resource consumption. And although they used manual or homegrown solutions, they enjoyed some level of monitoring and forecasting – and spent less time justifying IT expenditures to others.

Gaining insight into resource utilization is more than a financial and cost allocation imperative – it’s the only way organizations can accurately and fairly align IT capacity to business priorities. Now is the time to put tracking solutions in place so you can listen to what your IT resources have to tell you.

“Most IT managers want to improve their relationships with the business, and providing a higher level of visibility into consumption of IT resources – where and how they are used – can contribute to this improved strategic relationship.”⁷

About Unisys uChargeback™ IT Resource Tracking Software

Unisys uChargeback™ provides visibility and insight into the IT costs associated with business processes across virtualized, heterogeneous environments. uChargeback unifies and simplifies data collection and analysis – and does so seamlessly to minimize the workload on operations personnel.

Unisys uChargeback helps organizations better govern their IT resources by:

- Improving visibility into IT usage and cost
- Creating a stronger correlation between the resources consumed by business functions and the IT budget
- Enhancing the ability to right size IT resources to meet demand and eliminating the need for “just-in-case” capacity
- Reducing costs by exposing poor resource utilization
- Facilitating pricing of IT services based on actual usage

Key features include:

- Data collection across physical and virtual environments, from both Microsoft Windows and Linux operating environments – all within a single toolset
- Automated unification of distributed application data to present a complete picture of the resources consumed – across tiers, operating systems, and even shared resources
- The ability to normalize costs across diverse server platforms with varying cost bases and processing power
- Simple, non-intrusive managed data collection
- Flexible, efficient, and scalable data management
- Powerful, flexible data analysis and visualization

⁵ Forrester Consulting. “Preparing for the New IT Ecosystem.” November 2007.

⁶ Ibid.

⁷ Ibid.

For more information, contact your Unisys representative.

Or call Unisys today at:

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