ALLOCATING DATA CENTER COSTS

By Gary Leight
Project Resources, Inc.

Once upon a time data processing was a function of a company's accounting department. Computers were fancy tools for bookkeeping, and little more. And the cost of running these machines was considered, quite rightly, to be part of the accounting budget.

As the value of computers became better understood, their use soon spread to other areas of the company. And the expenses of data processing spread as well. Allocating costs was simple in those days. Logs were kept by hand, and the total DP bill was divided by the number of hours of use, measured by a wall clock. Each user was charged a prorated share. This was the first data processing chargeback system.

With the advent of multiprogramming, things became more complicated. With jobs running concurrently, usage logs could no longer be kept by hand. More sophisticated methods had to be developed, so that the computer could monitor and record its own use. The modern chargeback system was born.

A company can view data processing costs as charges against the individual user departments, or as part of its total overhead. However, to coin a business adage, if you get enough overhead, the sky usually falls. By allocating DP costs to the user, the corporate management gains some measure of control over data processing expenditures. As information processing becomes a part of most corporate functions, failure to include the costs of processing in user departments' profit and loss statements can be a financial distortion. Management risks coming to wrong conclusions based on false cost levels if an operation uses central DP services not contained in its total budget. An effective cost allocation system should prevent this.

In addition to keeping management informed of the resources being used, a chargeback system serves to discourage unnecessary usage. If users are made to think of resources in terms of money, they are far less likely to be wasteful. Of course this principle applies to telephone calls and paper clips as well as to computer usage. The question is simply, which resource costs does management wish to bring to the user's attention? No businessman wants to quibble about paper clips at the risk of alienating the workforce, but on the other hand, there are obvious financial advantages to resource conservatism. It's likely we can all agree that DP time is sufficiently expensive to be kept track of.

The basic tenets of economics can be applied to managing the demand for resource use. By placing a high price on one resource relative to another (for example, prime-shift versus nighttime processing), the organization can alter user demand for a particular resource, and create a better balance in the use of available capacity. Consider how effectively the phone company encourages usage after business hours by offering discount rates. At times it may be best for the organization to discontinue the availability of a certain resource, but generally a high enough price will lead users to discover alternatives.

DP costs can be allocated to achieve either full or partial recovery. In a full-recovery approach, the object is to zero out the cost of the DP center, so that every dollar of expense is assigned to DP users. The easiest way to achieve this is to identify the services, units of work, resources, and other items for which a charge is to be made, and to treat them as a product line. Rates for each resource or service are determined by dividing estimated total cost by estimated use. In theory, this method of rate setting results in full recovery of costs. In practice, however, neither the budget forecast

of costs nor the estimate of resource use will ever be exact. The company can either make an after the fact adjustment, or absorb the amount unallocated into the corporate overhead. The more care taken with the budget forecasts, the less variation there will be from a perfect zero balance.

In a partial-recovery approach certain services and resources are charged out and others are treated as overhead. Decisions on which resources to charge for will vary with different management philosophies.

Since the objective is cost recovery, the budget or expenditure plan for the year must be prepared so that anticipated costs are identified in advance.The DP department can prepare a single budget covering all functions, but the chargeback scheme can be more easily developed if a separate budget is prepared for each functional area. One of the advantages to a successful chargeback system is that it is self-perpetuating. The data it generates serves to correct mistakes in the previous budget assessment, thus guaranteeing more accurate budgets in the future.

If a chargeback system is based on charging for use of resources at a unit rate, achieving dollar target objectives depends on accurately predicting use. Either of two bases, anticipated actual use or maximum possible use, can be employed to estimate use levels.

The philosophy of setting rates based on anticipated actual use is to have each resource fully recover its costs on the basis of whatever use is made. This means that significant shifts in use require rate adjustments to avoid recovering too much or too little. This approach makes users' costs sensitive to resource utilization by other users. This, in turn, makes users sensitive in general. For example, implementing a major new system will reduce unit rates, and therefore, current users' costs, since utilization increases while costs to be recovered remain relatively fixed. However, if a user drops out, those remaining must each shoulder a greater portion of the total cost.

When setting rates on the basis of maximum possible use, the cost of excess capacity is absorbed internally. Although use levels change, rates remain the same since they are based on the theoretical maximum achievable use level for each resource measured. This stability of rates is generally preferred by users over the previous method. If the organization does not object to unallocated costs for excess capacity, this method is the better of the two.

In describing various cost allocation systems, much space is usually given to the selection of which resources to measure. The answer to this is relatively simple. Measure everything that it is cost-efficient to measure and that can provide better understanding and control of the utilization of the overall system. Provided that the information is presented in a suitable fashion, complete information makes the entire realm of DP usage easier to visualize and to manage.

A comprehensive cost allocation and chargeback system for the HP3000 should at a minimum measure:

```
Batch and session usage
Daily, weekly and monthly disc space usage
Prime and non-prime time usage
Port connect time
Batch wall time
CPU seconds
Special paper or form usage
Line printer usage
```

Detail and summary reports should be available by job, user, account, application, department, port, printer, and time period. An effective cost allocation system should provide management with precise and complete auditing and accounting data.

A more sophisticated chargeback system would also allow sliding cost schedules for different jobs and sessions. An infinite number of these time/price schedules could be made available to the various corporate departments. By allocating percentages of job/session costs among user departments, the system could gain accuracy without enforcing a complex set of account structure requirements. The ability to roll up usage statistics and chargeback costs to a particular application would add a further degree of sophistication.

The efficient chargeback system is a tool designed by programmers for the benifit of management. But it is important in implementing a chargeback system, to keep the

psychology of the user in mind. The phrase "user friendly" is grossly overworked in software descriptions What is called for here is a system which appears to be "user friendly" but is in fact "user intimidating". Cost allocation reports to the user only serve to curb waste to the extent that they instill a sense of guilt. Thus, informing a non-technical user that he has spent 1.46 CPU hours is less effective than billing him for $262.80 admittedly fictional dollars.

Cost allocation and chargeback software is a practical business investment, and as such will pay for itself. The ideal system provides your organization with accurate and comprehensive data for job accounting, performance evaluation, billing and auditing. It makes session and batch analysis available to monitor productivity, system utilization, and performance. It enables the data center to identify service, turnaround, and cost information for all user areas. It helps the user to increase their own efficiency, and it informs management of how the data center budget is being spent.

CONCLUSION

To understand what modern chargeback software can do for your company, simply think of all data processing activities as a large business lunch. As the various departments and users bicker over who had the cottage cheese salad, the chargeback system is the exasperated waiter who patiently writes up seperate checks.

Gary Leight, President of Project Resources

Gary Leight is responsible for the Business Management functions of Project Resources, Inc. During his four years with the company, he has been responsible for:

Expanding the company from three to over a twenty data processing professionals

Broadening the companies product/services offering to include OCS, The Operations Control System; PBS, The Professional's Billing System and The Guardian Access Control System, in addition to time- sharing, consulting, programming, design and training.

For two years, Mr. Leight was the Western Regional Sales Manager for BTI Computer Systems.

For three years, Mr. Leight was a Commercial Sales Representative for Hewlett-Packard Company where he was responsible for penetrating 5 major corporate accounts and selling over 25 HP3000/2000/1000 computer systems.

For two years as a Systems Engineer with Hewlett-Packard, Mr. Leight was responsible for the sales and installation support of computer sys- tems in the Los Angeles area.

As a Programmer/Analyst for Raytheon Company in Wayland, Massachusetts, Mr. Leight participated in the design and development of a missile tracking and control system.

Mr. Leight has a BSEE and an MSEE from Rensselaer Polytechnic Institute in New York and an MBA from Santa Clara University. He has also attended over 1000 hours of training courses given by a wide range of technical, sales and management training organizations.
