An overview of independent, third-party computer maintenance

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ABSTRACT

Describing the major reasons for its growth and providing a brief history, this paper gives a synoptic view of a new computer sub-industry: independent, third-party computer maintenance and field support services. It details the major modes of delivery of maintenance and field support services now available to users and compares them to one another. The organization and the technical services provided by independent, third-party contracting firms are described. Particular attention is paid to the special needs of mixed-vendor computer system users.

BACKGROUND

In the early days of the computer industry, user needs for system maintenance and field service support was not a matter of particular emphasis. The few large manufacturers each took pride in the service reliability of their products, and it was this aspect, and not the need for maintenance and field service, which was stressed. In addition, virtually all early systems were supplied by a single vendor. The vendor-manufacturer provided maintenance and field support services through his own service organization, which, in most cases, was adequately distributed geographically. The end-user, then, had a convenient single source to meet his maintenance and field support needs.

This basic situation began to change with the advent of plug-compatible equipment and the resulting proliferation of mixed-vendor systems. User requirements became more complex. And no longer could the end-user rely upon a single source to meet these requirements for all elements in his system. At first, his only course of action was to contract with the service organizations of each manufacturer whose equipment he used.

Compounding the situation was the entering into the field of numerous small manufacturers. While offering excellent products, many could not establish and maintain the extensive service networks needed to serve users dispersed nationwide or even worldwide. In order for these smaller manufacturers to market their products over larger geographic areas, they, too, needed a way of providing maintenance and field support services to their customers. If these manufacturers found it economically unfeasible to establish their own service networks, they had to find an alternative, as well.

These developments led to the formation of several “third party” organizations, independent of equipment manufacturers, whose business was providing maintenance and field support services for computer and computer peripheral equipment. At first, these organizations limited themselves to maintaining only the more commonly used equipment. Within a relatively short time, however, the need to provide services for mixed-vendor systems involving many smaller manufacturers’ products became evident. Not only do these “third-party” organizations offer users a single source of maintenance, they also offer small manufacturers a nationwide network which can, under contract with these manufacturers, provide services to their customers.

GOVERNMENT USERS

The U.S. Government has been one of the major factors contributing to the rapid growth of “third-party” maintenance as a sub-industry within the computer field. A multi-million-dollar contract for third-party maintenance of the U.S. Marine Corps systems in 1971 was one of the earliest and largest of its type.

Later, a government agency audit of this pioneer “third-party” maintenance contract found significant benefits from this kind of arrangement. In addition, a formal Office of Management and Budget policy encouraging the contracting of these and other services to the private sector.

Today, the U.S. Government remains one of the largest users of independent, “third-party” maintenance and field support services.

ALTERNATIVES FOR MEETING MAINTENANCE AND FIELD SUPPORT SERVICE NEEDS

In order to minimize system downtime and to obtain maximum service life, most data processing managers today are alert to the need for maintenance and field service
support. This need can be met in four different ways:

1. By the user's own "in-house" service organization
2. Under separate contracts with manufacturer's service organizations
3. Under contract with a single "third-party" source
4. Through a combination of two or all of these

User "In-house" service organizations

In theory, it is possible for a large user organization to establish its own "in-house" service organization to maintain and repair its computer and computer peripheral equipment. In actual practice, however, this rarely is done, largely for economic reasons. In order to justify a full-time service force, an organization must have extensive equipment to be maintained and serviced. And, this equipment must be located either entirely or largely in a close geographic area. For when equipment is scattered over wide areas, the advantages of an in-house service organization are negated by time and distance.

One user with ample computer equipment to justify an "in-house service organization and enough equipment "clustered" in tight geographic areas to establish several regional "in-house" service offices, is the U.S. Government, which, as I have mentioned, has found other alternatives preferable.

In general, then, except for routine, day-to-day maintenance which all user organizations perform to some degree, "in-house" user maintenance has been found not to be a viable means of meeting most users' requirements.

Manufacturer service organizations

Before discussing manufacturer service organizations as an alternative source for maintenance and field support, it is important to understand what is meant by the term "manufacturer," and more specifically, "OEM" or original equipment manufacturer, as used in this paper.

In most cases, both "manufacturer" and "OEM" refer to a company which manufactures and sells computer and/or computer peripheral equipment. Sometimes, however, the term "manufacturer" can also apply to companies which might more properly be called "sales agents." These firms sell computer systems, with only some of the components, or even none at all, actually manufactured by that firm. Some of these firms have their own service organizations; others do not. These latter must arrange for maintenance and field support services for the systems they sell, either through a series of contracts with the actual equipment manufacturers or through a contract with a "third-party" maintenance firm which in this situation would in reality be a "fourth party."

For purposes of this discussion, we shall define "manufacturer service organizations" as those organizations established and operated by actual equipment manufacturers for the sole purpose of providing needed maintenance and field support for the products sold by that manufacturer.

Manufacturer service organizations offer essentially all maintenance and field support services a user would need for any and all equipment produced by that manufacturer. This includes routine maintenance at the user's site, both on-site and manufacturer repair capability, replacement parts capability, national technical support, and, installation system design and system modification capability.

The larger manufacturer service organizations have built up many years of experience; many of their customers have dealt with the same service engineers over long periods of time and most have geographically well-distributed field service offices.

These service organizations are set up in a pyramidal form: the base consisting of a large number of geographically distributed field service offices, each staffed by one or more service engineers. If a supply of the most commonly needed replacement parts is not provided at the user site, it frequently is provided at this level. Above this base is a smaller number of regional offices, each primarily staffed by administrative personnel and a small number of technical experts, available on demand to local users. At the top level is the home office of the manufacturer service organization. Usually it is here that in-house repair services are available along with national technical support, major replacement parts supply, and systems design and modification services.

Users commonly expect the highest degree of technical expertise from manufacturer service organizations along with excellent response time and reasonable cost. A manufacturer service organization is not commonly expected to provide mixed-vendor equipment capability and, in general, it does not.

Independent, third-party maintenance organizations

"Third-party" maintenance contractors differ from manufacturer service organizations in two significant ways. First, they are independent of manufacturers in the sense that they are not adjuncts to an operation whose primary purpose is product manufacture and/or sales. Second, most offer mixed-vendor equipment capability.

In terms of a table of organization, most "third-party" maintenance contracting firms are set up in a manner similar to the manufacturer organization: a nationwide network of local field service offices staffed by customer engineers, supported by regional office and national headquarters technical and support personnel. A parts supply and distribution system exists that meets customer needs at all levels of the organization, along with a shop repair system.

The independent maintenance contractor performs a variety of services for his user-customers under contract. These services may include preventive maintenance, or planned maintenance services performed at specific time intervals based on engineering failure estimates (changing filters, for example); predictability maintenance, consisting of services
beyond the normal preventive maintenance, provided for equipment that has shown an increasing rate of non-catastrophic failure suggestive of a worsening performance trend; and remedial maintenance or services required to restore failed equipment to operation.

Other services, broadly defined as field support services, include equipment installation, spare parts support, technical documentation, training for user personnel, and maintenance management services.

The independent contractor is expected to offer the same high quality service, prompt response time, national technical assistance, and reasonable cost that are expected of manufacturer service organizations. But in order to develop customers for his services, the independent contractor must offer customers some advantage over the alternatives. In some cases the deciding factor is cost. In others it may be more frequent or perhaps better quality service under certain circumstances; in still others, it may be a matter of response time.

Most often cited, however, is single-source capability for mixed-vendor systems, the one advantage manufacturer service organizations cannot offer. It is the independent contractor's mixed-vendor capability, too, which permits tailoring of services to each user's specific equipment and requirements.

HOW DOES THE INDEPENDENT CONTRACTOR PROVIDE SERVICES?

Most services are provided at the user's site by a customer engineer dispatched from a nearby field service office. Normally a customer engineer is assigned to each customer on a permanent basis. The customer engineer is trained and qualified to perform scheduled maintenance and also render the more routine types of field service support.

Whenever possible, arrangements are made for user-site storage of the most commonly needed replacement parts. The "independent" contractor also arranges to have other parts available at the user site when necessary, within an agreed period of time determined largely by the user's system needs. A period of 6 to 24 hours is typical.

Because the user's primary requirement is a properly operating system, many independent maintenance contractors offer temporary or permanent replacement parts in exchange for malfunctioning parts which are then brought to the contractor's service center for repair, overhaul, or sent back to the equipment manufacturer.

The local customer engineer is empowered to call in additional support whenever required from the various levels of his own organization or in rare circumstances from the manufacturer of the affected equipment.

Independent contractors, as do manufacturer service organizations, offer these services in a variety of combinations tailored to each user's needs. There are, however, two basic types of arrangements: the first provides for preventive predictability, and remedial maintenance services for a prime period of time, usually a normal work day; the second provides for preventive, predictability, and remedial maintenance on a 24-hour-per-day, seven-days-per-week basis. Most users for whom any downtime poses a critical problem prefer the latter basis, which is, of course, somewhat more costly.

INDEPENDENT CONTRACTOR OR MANUFACTURER SERVICE: WHICH IS MORE EFFECTIVE?

It is impossible to give a definitive answer to this question that would apply in all cases. It must be answered on an individual basis by each system manager based on the nature of his system and its specific maintenance and field support needs, his previous experience with any of the alternative sources, and, most important, his determination of which alternative could best fulfill his anticipated requirements.

In all fairness, it should be pointed out that a majority of both government and private-sector computer systems have been and continue to be maintained under contract with manufacturer service organizations. Most (but not all) single-vendor systems are maintained under this type of arrangement. And many mixed-vendor systems are still maintained in this way.

No doubt this is due in part to the fact that independent contractor maintenance is still in its infancy, relatively speaking, and that manufacturers often include maintenance services at attractive rates as part of their lease or rental plans. There are but a few independent contractors offering full mixed-vendor system capability on a nationwide or worldwide basis. But the independent contracting sub-industry is growing rapidly. Some projections estimate the market for maintenance and field support services to exceed $1.3 billion annually by 1980. The same projection estimates that nearly 25 percent of this market may belong to independent contractors by that time.

In deciding how to best meet his maintenance and field support requirements, the system manager must first determine what those requirements are. Does he, for instance, require "around-the-clock" support capability? What is the maximum response time he can allow? What frequency of programmed maintenance does he desire? And so on.

After eliminating from consideration those alternatives which cannot meet his requirements, the determination should be based on other factors including estimations of quality of service, convenience, and cost.

Again, assessments of quality of service and cost will be highly specific to the system or user and, in part, based on a series of trade-offs between the two. The one generalization that can and does apply in all cases involving mixed-vendor systems is that independent contractor maintenance is more convenient. Independent contractor maintenance, implies a single contract to administer, a single programmed maintenance schedule, a single source to deal with for virtually all maintenance and field support needs, as opposed to multiple sources, and multiple schedules.

While this is not always the deciding factor, it is a very important one for many system managers with large and
complex systems. It is becoming increasingly common to find a system involving products of six or eight different manufacturers and located at dozens of sites throughout the country. It can readily be seen that providing adequate maintenance and field support service for this kind of system under several contracts with different manufacturer service organizations could prove to be extremely time-consuming and costly from both administrative and logistical points of view.

A COMBINATION: THE FOURTH ALTERNATIVE

There are circumstances under which a system manager might obtain maintenance and field support services from both independent contractors and manufacturer service organizations. This situation arises when a user prefers to use a single-source independent contractor, but cannot find one capable of meeting all his needs. Typically, some equipment is located in an area not served by an independent contractor or the contractor is unable or unwilling to service certain items of equipment in the system. Because of the costs involved in personnel training, parts acquisition, and documentation, no independent maintenance contractor offers full capability for maintenance and field service support for even a majority of computer or computer peripheral equipment in use. More and more, however, the major independent firms are providing support for all of the more common equipment.

In situations of this kind, the user must out of necessity develop an arrangement involving both his preferred independent contractor and the appropriate manufacturer service organization or organizations.

CONCLUSION

Independent contractor maintenance and field support of computer and computer peripheral equipment has proven itself a viable and practical alternative for meeting the needs of data processing system users, particularly mixed-vendor system users. Today, roughly 12 percent of all such work is being performed by independent contractors on the simplest of single-vendor systems to the largest and most complex multi-vendor systems. Both government agency and commercial users have evaluated the alternatives and selected independent contractors for some or all of their maintenance and field support needs. In each year since 1971, independent contractors have increased their share of the U.S. market for these services, and this trend is projected to continue into the 1980's.

Independent contractor maintenance is encouraged as a matter of policy for certain government systems. It has proven effective and economical for public and private systems, large and small. It is now possible to say that there is now a mature alternative method of obtaining computer system maintenance and field service support services available to most computer users.