

IT Organizations: Balancing Centralized Efficiencies with Localized Needs

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Overview

Information technology (IT) services at many colleges and universities are delivered through a complex organizational structure combining one or more central IT groups with numerous local providers. In universities that have more than one physical location, this complexity is often multiplied across the campuses. The decentralized model for providing IT services is generally well liked by those who work outside the central administration, but it is often criticized for duplicating services, confusing constituents, and raising the overall cost of delivering IT services. During good financial times, the benefits of this type of organizational structure—such as high levels of service for local faculty and staff, responsiveness to unique local requirements, and availability of specialized skills to meet local needs—are generally considered to outweigh the costs. When belts need to be tightened, however, the senior leaders of such organizations are more willing to reconsider this model and push for greater efficiency.

This research bulletin outlines an approach for rethinking the structure for delivery of IT services in colleges and universities that have multiple IT groups. It examines where in the institution IT services can be delivered and how such delivery can be streamlined, while recognizing that there are unique local needs that are not likely to be effectively met by a single, centralized approach. It also describes steps to articulate a service model that is clearly understood and aligned with user and management expectations.

Highlights

In the commercial sector, many IT organizations are highly centralized, with clearly defined roles, responsibilities, and constituents. In the world of higher education, especially at larger institutions, this is often not the case. Most colleges and universities have a central IT organization, and most large institutions also have numerous distributed IT groups providing some degree of support to local constituents. In many cases, these groups grew organically over time, with little coordination between themselves and the central organization. With the importance of IT to academic, research, and business operations increasing and with budgets flat or shrinking, this distributed organization model is being reexamined and scrutinized at some institutions.

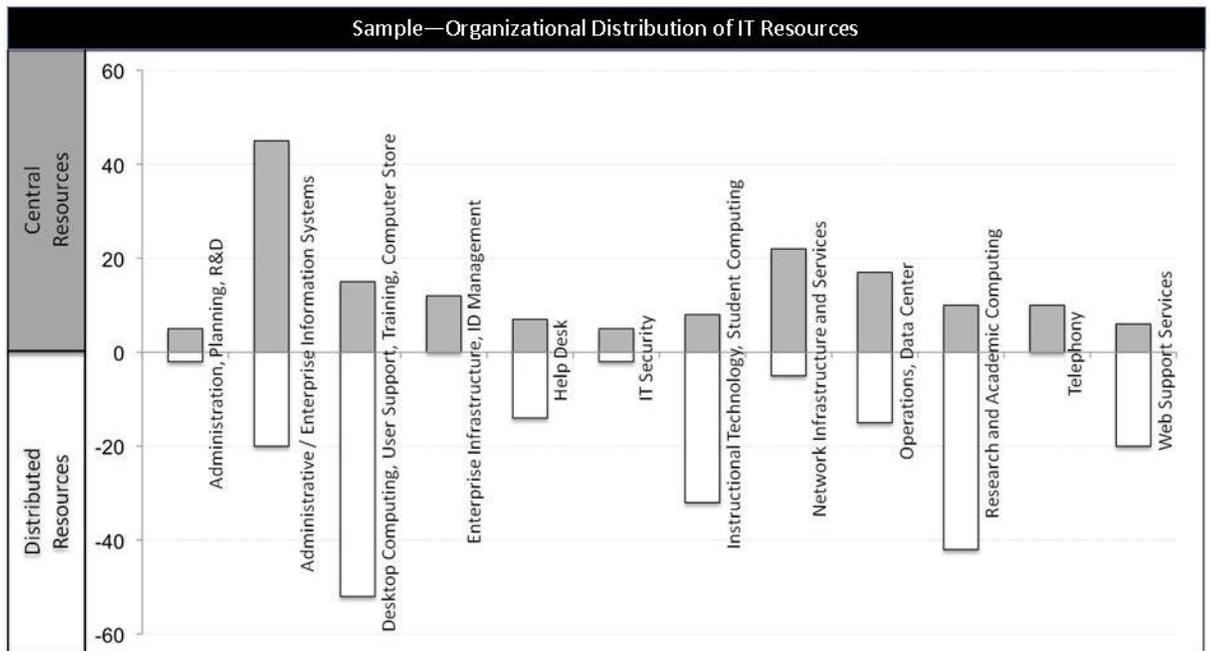
Examining the IT Organization

At the typical large university, delivery of IT services is complex, with a central IT organization and numerous distributed IT groups supporting schools, departments, research labs, and specialized functions such as admissions and development. While some tasks may clearly fall to central IT, such as providing enterprise administrative systems or institution-wide networking, many other services, such as desktop support, server operations, and academic computing, are often provided at varying levels of service by local (department-based) IT organizations that sometimes “compete” for resources and services offered by the central IT group. Along with this proliferation of service providers often comes a proliferation of services. For example, I recently worked on IT organizational reviews for campuses that have several production e-mail systems that are supported within different parts of the institution and made available to the same

users; multiple fundraising systems supporting different parts of the institution, including multiple independent deployments of the same software; and multiple “standards” for classroom technology that faculty must navigate when teaching in different buildings.

Figure 1 illustrates the breakdown of central and distributed resources supporting the IT functions, as defined in the 2008 EDUCAUSE Core Data Service,¹ of a hypothetical university. This model is useful because it shows at a glance the breakdown of central and distributed resources supporting each function. While it can sometimes be difficult to track down the percentage of IT services being delivered by local IT units, particularly when job titles don’t obviously convey employees’ IT responsibilities, even a hypothetical model can help illustrate some surprising findings. For example, I worked with a large university whose IT leadership thought all administrative systems support was provided centrally. When some digging was done, however, it turned out that the reporting functions of the systems were hard to use, and nearly every department had an embedded financial/human resources analyst whose job was to develop reports using data from the central administrative systems that met local users’ needs. At another institution, the central IT organization was proud of its small desktop support group, and it didn’t realize that there were more than 50 distributed IT resources around campus whose roles had evolved primarily into filling the gap in desktop support services that had developed over time.

Figure 1. Illustrative IT Resource Distribution



Source for IT service categories: EDUCAUSE Core Data Service Fiscal Year 2008 Summary Report, page 10, Table 1–3, <http://net.educause.edu/apps/coredata/reports/2008/>.

This view could also be taken a step further, showing the fragmentation of distributed services by incorporating data from individual service units into the graph (though this is not illustrated for clarity of presentation). In the above example, we might find that

desktop computing is provided in 12 different distributed units, with some likely redundancy as a result, while a distributed IT security function may only be present at the medical school. This can help quickly identify highly fragmented areas where some streamlining could be performed.

When senior leadership first sees this type of data on provisioning of IT services, a common response is “Why do we need all these IT groups?” The argument is often made that consolidating IT service delivery would lead to more efficient and effective services. This argument can be more prevalent when members of the senior leadership team (or their advisors) have recently come from other industries. A push toward centralization is suggested.

While central delivery is certainly the right approach for some types of services, the typical university is engaged in a wide variety of academic, research, administrative, and support activities, many of which require very focused knowledge that would be extremely difficult to support through a single centralized organization. For example, many research labs support specialized equipment or software that requires local, highly-trained support. Imagine a call to a general help desk from an astronomer having trouble downloading data from a satellite, or a computer scientist having trouble getting his code to execute on a 500-node cluster. Similarly, academic disciplines have different needs for instructional and research technologies because disciplines such as law and business are taught very differently from the hard sciences, and each may require IT resources with a knowledge of the subject to effectively support the faculty in their work.

Looking at the IT resource distribution shown in Figure 1, it is easy to see why senior leaders at many institutions are interested in reexamining the delivery of IT services in these economic times, as the potential for redundancy is apparent in this model. In addition, because there is often minimal coordination in service delivery between the central and distributed groups and between the distributed groups themselves, complaints about quality or inconsistency of service from faculty, students, and staff can also lead to an institutional focus on how IT services are delivered. I recently heard this comment from a university academic administrator: “I don’t think it’s an issue of not having enough people [to provide better support for users’ needs]. Our people are doing the wrong things.”

Managing IT Service Delivery

In many large institutions, the provision of IT services evolved organically over the years, with forward-thinking departments taking the lead in bringing in computers, networks, and software to help their disciplines move forward. Eventually, institutions realized that a central IT function was needed to deal with the enterprise nature of many IT systems, but the early movers in the schools and departments typically kept many of their responsibilities. If the central IT organization failed to deliver services that met their expectations, distributed units at many institutions filled the gap by introducing still more services at a local level. These organizational structures often continue to evolve today.

In many institutions, it is well known that a large part of IT spending happens outside the central IT organization. But when senior leaders look to invest in or reduce spending on

IT, the focus is usually in the central IT services, although the services provided at the local level are sometimes closer to the core teaching and research missions of the institution. What happens in the schools and departments is often ignored, or the argument is made that “we’re too decentralized” to have any input into how services are delivered at those levels. However, the issue is not one of decentralization but rather one of management. When service provision is managed, central and local service providers deliver services in a coordinated way. A decentralized organization, when used by design, can be very effective at delivering capabilities at the point of use while minimizing redundancies and overlap by coordinating services delivered in a defined, coherent manner. A central organization, when designed to provide flexible services at consistent service levels that can work with complementary local services in a coordinated way, can achieve economies of scale and improve customer satisfaction. A managed organization can also enhance customers’ perception of how well services are being provided by clearly defining the roles and responsibilities of each party, reducing ambiguity and potential gaps or overlaps in service. Table 1 illustrates possible permutations of managed and not-managed IT service delivery.

Table 1. Organizational Model for IT Service Delivery

	Service Delivery		
Service Coordination	Decentralized	Blended	Centralized
Not Managed	Organic	Redundant	One Size Fits All
Managed	Planned	Combined	Flexible

Table 1 depicts three categories for IT service delivery—decentralized, blended, and centralized. These represent the common ways we think about organizing IT services. In decentralized delivery, a service is provided at a local level for local constituents, while in centralized delivery, it is provided by a central organization for all constituents. In blended delivery, the service is provided by both central and local organizations. In terms of service coordination, service delivery can be managed or not. In an organization in which service delivery is not managed, the structures for IT services across the institution have been formed organically, evolving over time. There is little formal coordination of IT services. Services are generally not clearly defined, service levels are not formalized, roles and responsibilities are not formally delineated, and standards are not uniformly followed. In a managed organization, the structures for delivering IT services across the institution have been formed deliberately. There are clearly defined IT services, with service levels formally articulated. Roles and responsibilities for delivering services across the organization are clearly defined, and standards are in place to guide all service providers. In an organization in which service delivery is managed, IT strategy and governance encompass all IT services provided at the institution.

It is important to note that in this model, “decentralized,” “blended,” and “centralized” are not intended to be a strategy for the whole organization to follow but rather are options

to be considered when determining how best to deliver a particular type of service. As shown in Table 1, services viewed in this model fall into six general categories:

- **Organic:** This situation exists when a service is delivered in an unmanaged, decentralized environment, often arising when central IT organizations do not provide a new capability quickly enough and local IT groups introduce it to meet their users' needs. This has occurred in many institutions with technologies such as websites, course management systems, and wireless networks. Once services begin to be delivered in a way that is not managed, it can take significant time and effort to move these services to standards for use and delivery. This situation leads to proliferation of multiple standards to meet a common need, introducing inefficiencies in scale and making it difficult for users operating across organizational boundaries to use a common platform to meet their needs.
- **Redundant:** When a service is provided by both centralized and distributed organizations in an unmanaged way, local options that duplicate aspects of central services are the result. This often occurs when the central organization provides service levels that are not perceived to meet local needs, and it is commonly seen with infrastructure services such as e-mail or server management. In this case, one or more local organizations might build their own version of the service or contract with an external service provider to deliver it. They offer the service to their constituents and sometimes even compete with central IT to make it available to other users across the institution. This scenario leads to redundancy of infrastructure and personnel and multiple points of service for end users.
- **One Size Fits All:** A service provided centrally in an unmanaged environment can fall into the "if we build it, they will come" category, with the central organization building services it thinks users want. These services are often characterized by one-size-fits-all policies (e.g., 50MB e-mail boxes for all users), unclear service levels, and chargebacks that can drive unwanted behaviors. If such services are not responsive to users' needs, they can drive local organizations to the redundant option.
- **Planned:** In a managed, decentralized approach, a conscious decision is made that the best place for a particular service to be delivered is at the local level, generally due to the specialized nature of the constituents' needs. A good example of this might be in research computing, where the vastly different nature of research in different disciplines requires different IT services and professional support skills. There would be minimal economies of scale from consolidating such services into a central organization at many institutions.
- **Combined:** A managed, blended approach leads to providing services with both central and local components. In this approach, roles and responsibilities for delivering a service are split, with the central organization providing "commodity" aspects of the service and taking advantage of resulting economies of scale, while distributed organizations customize the service to the needs of their

constituents. An example of this would be using a common, centrally managed learning management system but having local instructional technology personnel with responsibility for training faculty and helping them incorporate learning objects into their courses.

- **Flexible:** In a managed, centralized service, the central IT organization is acting as a service provider to the entire community, delivering an agreed-upon service (such as e-mail) on a standard platform. For this to be effective and avoid causing local duplication, the services need to be flexible enough to accommodate varying needs of different constituencies (e.g., low disk quota for students, but much higher for faculty).

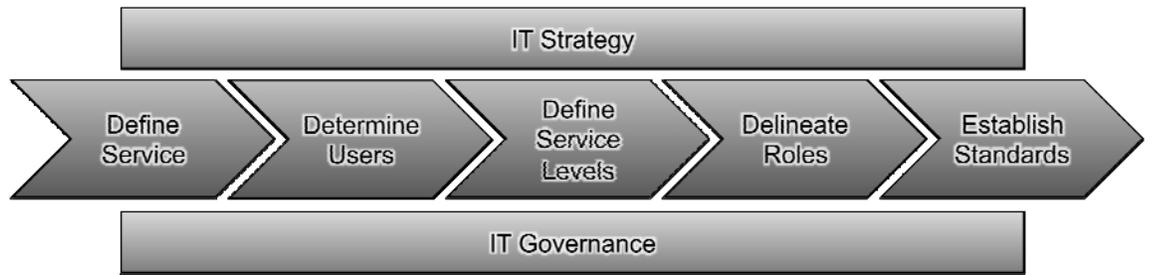
Making a transition from an unmanaged to a managed model does not need to entail a major reorganization. It can be approached one service at a time, either during the introduction of new services or as an effort to go back and streamline existing operations.

What It Means to Higher Education

While it might make intuitive sense to deliver IT services in the managed model described above, many institutions have found it difficult to align service delivery in this way. When I speak with central IT leaders, I often hear local IT groups characterized as “cowboys” with little regard for standards or process, and central IT often has limited knowledge of what local groups are doing. In conversations with local IT leaders, they often see central IT as restrictive, slow-moving, opaque, and isolated from day to day needs. Talking with business and academic leaders, they often see inconsistent service in different parts of the organization, confusion on where to go for certain needs, and uncertainty as to how business priorities are being addressed. However, given the current economic climate, many local IT leaders express a willingness to turn over redundant services to their central IT group, but only if they are confident that their constituents will get the services they need at the service levels they require. In short, the issue is often one of trust.

One of the factors that can cause mistrust is non-transparency of IT services at many institutions. Poorly defined services, unclear constituencies, unfulfilled expectations, unclear roles and responsibilities, and limited transparency in IT decision making often cause friction with users. A perception sometimes develops that an unlimited capacity of IT resources are available to meet any custom need that a faculty member or administrator might have. Without transparency, managing these unrealistic expectations is difficult, and local users turn to their local IT teams when central IT seems unable or unwilling. Figure 2 shows a model for developing a framework for managing IT service delivery.

Figure 2. A Framework for Managed IT Service Delivery



The model in Figure 2 shows a simple process for clearly articulating a service² in a way that fits into the managed approach discussed earlier. The steps in the process are bounded by the institution’s overall IT strategy and IT governance framework. This helps ensure that the services being offered fit the overall strategic needs of the institution, in a way that meets the needs of major constituents. These steps include:

- 1. Define Service:** While this sounds simple, coming up with a clear, concise definition of scope is critical to managing expectations and mitigating confusion. While stating “we provide e-mail accounts to all persons affiliated with the university” is simple, it isn’t clear. Does it include a mail client (e.g., Outlook)? Does it include mobile device connectivity? Is enterprise calendaring included?
- 2. Determine Users:** What is the definition of “all persons affiliated with the university”? Does this include contract workers? Collaborative researchers from outside the institution? Summer institute and conference attendees? Getting specific about who the users of a particular service are likely to be is important because it allows service levels to be tailored to fit the needs of multiple constituencies with a single solution. It also prompts questions such as whether “users” are individuals (e.g., e-mail account holders), business units (e.g., websites), or local IT groups, where central IT acts as a “wholesaler” of services to local groups who then tailor and “resell” them to their local constituents (e.g., blended server hosting).
- 3. Define Service Levels:** Establishing clear service levels is key to mitigating misunderstandings over the quality of service being provided. Ideally, service levels should be developed in conjunction with users and approved by the senior leaders who are paying for them to ensure that users’ expectations are aligned with their leaders’ reality. Service levels should include any restrictions (e.g., system will be unavailable for maintenance from 3:00 a.m. to 6:00 a.m. daily), expectations (e.g., all desktop support requests will be responded to within one business hour), or parameters (e.g., e-mail attachments may not exceed 5MB). Strong consideration should be given, where appropriate, to allowing multiple service levels for different user communities because this can allow a single platform to more effectively meet the needs of a larger audience, reducing the likelihood that local organizations will seek to duplicate the service. Also, include any charges associated with the service, which might be tied to allowing users to select premium service levels.

Establishing a good understanding of the cost of delivering a service can go a long way toward establishing common-sense service levels. For example, at one school, each academic department had at least one local desktop support person, which was justified by local leaders' saying, "Our faculty can't wait for the slow response time [one hour, on average] from calls to the university-wide help desk." When the seven-figure cost of this service was calculated, it was quickly determined that the faculty could, in fact, live with a delay in desktop support in return for saving over a million dollars annually.

4. **Delineate Roles:** An important part of effectively delivering a service is clearly defining who within the organization is responsible for delivering the service. This becomes particularly critical when responsibility for a service is split across multiple parties. For example, the university help desk might be responsible for fielding all IT-related questions from the entire institution. However, providing field support could be the responsibility of local IT staff. Clearly defining the responsibilities of each group, articulating clear procedures for the handoff, and determining who has accountability for success will help users navigate the system and help employees effectively deliver the services without confusion.
5. **Establish Standards:** For any service—but particularly those where local groups are responsible for part or all of the delivery—it is important to establish standards to guide implementation. This helps ensure that despite multiple points of delivery, users are not forced to navigate wildly different solutions. It also helps mitigate risk by ensuring that enterprise-wide security, data handling, and other policies are incorporated into each service.

One of the more difficult aspects of developing a managed IT service delivery capability is determining where in the organizational services should be delivered. On one hand, the more a service can be homogenized, the greater the economies of scale that can generally be achieved. On the other hand, the closer a service can be delivered to the end users, the more likely that the service will meet their exact requirements. Figure 3 depicts this relationship and identifies some factors that commonly play into such decisions.

Figure 3. Balancing Economies of Scale and Local Needs

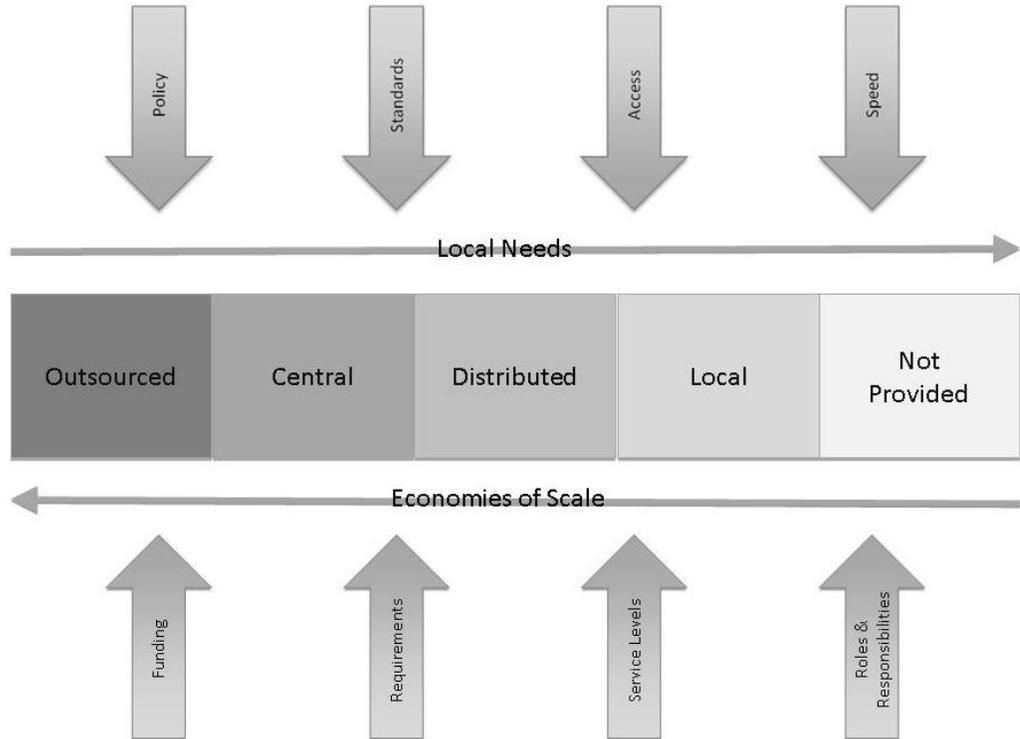


Figure 3 shows a spectrum of service delivery options, with the most centralized on the left and the most distributed on the right. The greatest economies of scale are available through an outsourced solution that can be leveraged across multiple clients (e.g., cloud computing). Next on the spectrum are central services, delivered by a single organization to all constituents. Next are distributed providers, typically found at a school level in a large university, followed by local providers, which might be found in a department, research lab, and so forth. Finally, the decision might be made not to provide some services at all, either because of limited demand or because the service has become so commoditized that there is little value in providing it in any form, leaving end users free to select any service they want from external providers (e.g., cell phones).

When looking at how to optimally deliver services, the general axiom is to move as far to the left as possible without compromising legitimate local requirements. The common factors shown by the arrows in the chart can help in moving the decision one way or the other. Some of these include:

- **Policy:** A common reason for duplication of services is that one-size-fits-all policies don't meet the needs of specialized groups such as researchers. Building policy flexibility into services can allow a more centralized unit to provide different levels of service to different users using a common infrastructure. In the other direction, setting common policies for security, backup, data storage, and so forth allows control of a service to be less centralized while ensuring that institutional risk is mitigated. There might be external policies that also influence the decision,

such as the need for personnel with access to classified research data to have security clearance. This would suggest a move toward a decentralized delivery option for services impacted by that policy, given that providing clearance for the entire IT staff would be impractical.

- **Access:** A driver of decentralization is often the argument that “we need access to our systems.” In some cases this might truly mean physical access, such as in a computer engineering lab or for a server that needs to be hardwired to a piece of lab equipment. In many cases, however, what the user or local IT staff really needs is virtual access to the system at an administrator level, allowing them to add and delete user accounts; load, modify, and remove software; and perform other functions without having to wait for a server management team to execute these tasks for them. They have little interest in applying operating system upgrades, performing backups, or monitoring the environment and physical security of the machines. Thinking about splitting a service into components and having different parts of the organization responsible for each piece can allow commodity services to be delivered in a more centralized fashion while enabling local units to maintain the level of control they need.

Another factor regarding access is proximity of IT staff to the users. A reason often cited for maintaining duplicate support services is so the staff are “right here when we need them.” This is especially true in branch campuses, evening programs, and other parts of the organization that aren’t easily accommodated by on-campus, 9-to-5 staffers. However, in this case, the issue isn’t so much where the staff members report as where they physically sit. It may be possible for a more central organization to manage the resources, allowing for vacation coverage, training, and access to the knowledge of a larger team, while still housing the staff at the users’ locations.

- **Speed:** How quickly users’ needs change can dictate where in the organization a service should be delivered. A central organization is generally good at creating stable solutions that serve large numbers of people. They generally are not able to meet dynamic requests for individual users. A good example of this can be found in reporting. Central IT can effectively create and maintain commonly used reports, such as departmental budget versus actuals, that don’t change often and apply to most groups in the institution. However, a department with a need to create a complex query to address a one-time question will probably not be able to get what they need from a central IT group in a timely manner. Such a service is better handled by local IT resources.
- **Funding:** A factor that often can derail efforts to consolidate services is funding. In many cases, local IT services are funded from local budgets outside the control of the central administration. Even if a local group is willing to move to a central service from one that they provided themselves, they might be unwilling to pay for it, particularly if it was something that was a part-time responsibility of their IT staff. Using chargebacks to compensate a central organization for taking on additional services is a possibility, but doing so can also create disincentives for local units to

participate, particularly if full cost recovery is sought (local units typically don't think about electricity costs, for example, whereas central data centers might monitor and bill for such expenses). The central administration might need to subsidize some or all of the expense in cases where they believe the benefit to the institution of moving to a more central solution outweighs the costs.

- **Requirements:** The uniqueness of user requirements for a service can impact where it should be delivered. As described above, some requirements, such as mailbox size, are not really unique—they can be easily addressed through a policy change. However, in many parts of the institution, faculty members, students, and administrators may use software and tools that are unique to their discipline (e.g., CAD software in engineering), or require discipline-specific knowledge (e.g., development of courseware). Once commodity aspects of these services are separated (e.g., the CAD software could be delivered to engineering students through a centrally run virtual computer lab, rather than having a local computer lab set up for them to work in), these unique requirements will likely need to be met by local staff.

In my experience, many institutions have trouble defining “blended” services, breaking out the commodity aspects of a solution from the truly unique local requirements. Figure 4 shows a visual framework that can be used to illustrate such decisions in a way that makes them easier to think about and convey to management and users.

Figure 4. Sample View of Split Responsibilities

Data Center



All servers must be hosted in a central data center and managed by central resources.

A central data center infrastructure will be available for all university constituents to use. This center can provide varying levels of management as appropriate for each user's needs, with the option for the user to continue to manage some aspects of hosted machines. A variable fee structure reflects the complexity of each of these options.

No central data center is available. Each operating unit is responsible for hosting its own server infrastructure as it sees fit.

In this model, a decision is laid out with two extreme views on either end of the spectrum. The end points of the spectrum (defined here as central and distributed) can be changed as needed to fit the problem at hand. Setting these extreme points of view makes them sound somewhat absurd, helping people let go of their preconceived notions that the decision should go entirely one way or the other. Based on factors such as those described in Figure 3, a determination is made as to where on the spectrum the decision should fall, and a statement is produced that succinctly describes the characteristics of the chosen solution.

In an operating environment characterized by a demand for IT services that exceeds the available supply, and an economic environment that has curtailed funding for IT services, large institutions need to find ways to more effectively deliver IT services that are well aligned with their users' needs. Thinking about delivery of services in a managed way, and determining an optimal split of responsibilities across central and distributed IT units, can help rein in costs, improve satisfaction with services, and even introduce new capabilities. Starting small, successfully delivering a few services in this manner will build confidence and trust and help encourage senior leaders to support such an effort on a wider scale.

Key Questions to Ask

- How many IT service provider organizations does my institution have? If more than one, are they operating in a coordinated, managed way?
- Where and how well has my institution defined the services that its IT organizations provide? How do our IT service descriptions make it clear to both IT staff and end users who is responsible for providing these services?
- With respect to the level of IT services, how are our service levels defined and communicated to users? How can we ensure that service levels are flexible enough to allow common services to meet a range of needs?
- What opportunities exist at my institution to realign delivery of services to reduce redundancies and enhance efficiency and effectiveness?

Where to Learn More

- The most common reference for IT service management is the ITIL framework, managed by the UK Office of Government Commerce (OGC). Their official website is <http://www.itil-officialsite.com/home/home.asp>. Numerous books and websites are dedicated to this topic.
- Sheehan, Mark C. *Service on the Front Line: The IT Help Desk in Higher Education* (Research Study 8, 2007). Boulder, CO: EDUCAUSE Center for Applied Research, 2007, available from <http://www.educause.edu/ecar>.

- Yanosky, Ronald, with Jack McCredie. *Process and Politics: IT Governance in Higher Education* (Research Study 5, 2008). Boulder, CO: EDUCAUSE Center for Applied Research, 2008, available from <http://www.educause.edu/ecar>.

Endnotes

1. *EDUCAUSE Core Data Service Fiscal Year 2008 Summary Report*. Boulder, CO: EDUCAUSE, 2008, <http://net.educause.edu/apps/coredata/reports/2008/>.
2. A discussion of developing an enterprise service catalog is beyond the scope of this bulletin.

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