

Voluntary Centralization of User Support in a De-centralized Organization

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ABSTRACT

At the University of Maryland, budget constraints, questions of duplication of effort, and a call to raise operational efficiency have encouraged a number of relatively autonomous units to turn to the central Office of Information Technology (OIT) for assistance in providing IT services targeted to their specific needs. The required services have varied widely, from classroom and desktop support to the provision of server infrastructure. In this panel, the presenters will discuss the approaches taken to provide services to this diverse range of customers. On-site support models for desktop computing, classrooms, and labs include full-time service desks as well as part-time or on-call support. Back-end infrastructure has generally been centralized, as has the creation of software images for labs and classrooms. Included in the discussion will be a highlight of lessons learned as more units have requested increased OIT support.

Categories and Subject Descriptors

K.6.4 [Management of Computing and Information Systems]: System Management – *centralization/decentralization*.

General Terms

Management.

Keywords

Centralization, outsourcing, desktop support, classroom support, file and print server support, application server support, help desk, lab support, AV support.

1. INTRODUCTION

Located in College Park, Maryland, the University of Maryland (Maryland) is the flagship campus of the University System of

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Maryland. It is a Carnegie Doctoral/Research University – Extensive with 25,500 undergraduate students, 9800 graduate students, and 3600 faculty. In its 13 schools, 111 Undergraduate and 96 Graduate degrees are offered. During the academic year there are on average 3000 undergraduate and 1000 graduate courses offered.

Support for IT services at Maryland is provided both centrally through the Office of Information Technology (OIT) and distributed through relatively autonomous IT units in some of the larger colleges. These college IT units provide user support for their constituents at the computer hardware and application level and rely on OIT to provide the network infrastructure.

OIT also has a college liaison program, the Academic Technology Coordinators (ATC) program. This program was designed to promote academic use of technology and to improve communication among the various parties in the University's distributed computing environment. ATCs have primary responsibility for assisting and promoting the use of effective information technologies in the college in which they serve. The ATCs form a link between the campus-wide services of OIT and the faculty and computing organization in the colleges. Through improved communication, OIT receives feedback on its existing programs and suggestions of new campus activities that may benefit faculty in multiple colleges. At the same time, the ATCs help carry the word of OIT capabilities and services to faculty who may not be aware.

Due to budget constraints, questions of duplication of effort, and a call to raise operational efficiency, departments and often colleges have turned to OIT for assistance in providing IT services. The following paper will discuss the services that are provided centrally through OIT, describe the centralization process and highlight lessons learned.

2. DESCRIPTION OF SERVICES

The following sections describe the areas of service provided by OIT and offered to colleges to support their specific needs.

2.1 Desktop Support

The desktop support service can consist of a range of different functions, including recommending and specifying desktop computing equipment, developing standard images for deployment to office PC's, installing additional software and peripherals, maintaining current security patches, troubleshooting

hardware and software issues, arranging for repairs, and reclaiming systems no longer in use.

Technicians may be dispatched by a Help Desk, through user-submitted tickets, or by direct calls to the technician's office. Some departments have regularly scheduled support hours, which could range from a few hours a week to a full-time commitment, while others receive service on an as-needed basis.

2.2 File and Print Server Support

File and print servers are widely used by university departments, providing opportunities for file sharing, centralized backups of important data, and standardized access to printer resources. Novell NetWare is the most popular operating system for these servers, though some departments do use Microsoft Windows server operating systems.

2.3 Application Server Support

When departments require special application services that are not normally provided by OIT in a centralized manner, we will sometimes take on complete responsibility for an application server, from the hardware and operating system through the installation and maintenance of the application.

This may be necessary because the centralized solution does not meet the needs of a particular department, or because no similar service is provided. However, when OIT already provides a similar service, it would be unlikely that we would take on a departmental application server.

2.4 Help Desk

Help Desk service is the provision of a telephone and/or walk-up service desk, where customers ask questions about their computing environment and report issues. A Help Desk is staffed during the entirety of its business hours, providing a reliable point of contact for customer requests. During service outages, the Help Desk serves as a centralized point of information flow, providing the latest updates both to customers and to the back-end support staff. When desktop support service is also provided, technicians may be dispatched by the Help Desk agent to work with the customer's computer directly.

OIT provides a centralized Help Desk for all customers, but some customer groups also desire a local service desk within their department. The staff at such a localized office are able to provide support customized to the particular environment, and it is particularly important for some customer groups to feel that they have a personal relationship with the support staff.

2.5 Classroom Support

Classroom support service consists of software image support and student support for classrooms with technology installed in them. Computers in the classrooms require certain basic software to be available for the instructor. This software image is maintained by OIT and deployed to the classroom computers. Software images are updated twice annually.

Students provide level 1 support both for the computer and AV technology in the classrooms. Students are trained to provide first level diagnostics when a problem occurs with either the AV equipment or computer equipment. In addition, students provide user support in helping faculty on how to use the equipment.

They also help to hook up external equipment, such as a laptop, when required.

Some classrooms do not have permanent equipment installed and are supported by a cart equipped with the appropriate computer and basic AV equipment. Student support handles the delivery and setup of those carts to the assigned room.

2.6 Lab Support

Lab support service consists of software image support and hardware support. Computers in a lab require certain basic software to be available for the students. This software image is maintained by OIT and deployed to the lab computers. Software images are updated twice annually.

Basic hardware diagnosis is provided by OIT staff on the computers in the labs. The client, a department or college, is responsible for any costs for replacing equipment. When it is necessary to upgrade the equipment in a lab, OIT will provide recommendations on models and configurations. In addition, OIT provides recommendations on security equipment for the computers in the labs.

2.7 AV Support

AV support service consists of technical support for the AV equipment installed in rooms. This includes AV technicians who are responsible for checking equipment to make sure they are in working order before a class or event, providing level 2 support for AV problems, and conducting normal maintenance activities such as replacing projector lamps.

2.8 Networking and Telecommunications

OIT is responsible for all networking at the University of Maryland, from the wall jack or wireless access point to the Internet. Networking is provided on a cost-recovery basis, and departments are charged standard fees for data jacks, IP addresses, and special services such as gigabit ethernet.

The campus telephone system is also provided by OIT on a cost-recovery basis. Departments are charged based on a standard fee structure, and a wide range of services are available, including standard telephone service, call center functionality, and 800 number service.

3. Centralization Process

The centralization process began with support for departments through our Campus LAN Support (CLS) group within OIT. Support offerings then broadened to offer services beyond file and print and desktop support to departments such as Main Administration to colleges and schools and even remote sites such as the University System of Maryland Shady Grove Center. This section describes the support provided to these various units.

3.1 Departmental Support

In early 1995, the central academic computer support organization, then called the Computer Science Center (CSC), decided to create a for-fee service aimed at assisting departments with their local area networking needs. The term "local area network" was used at that time to refer to departmental file servers running NetWare 3.x, PCs that connected to those servers, and one or more network-accessible printers whose use was restricted to departmental personnel with server accounts. Prior to 1995,

the CSC provided ad-hoc support when possible to NetWare administrators, whose backgrounds ran the gamut from IT professional to faculty member with an interest in technology to departmental administrative staff to part-time undergraduate students.

When formed in March of 1995, CLS consisted of a single, full time employee with NetWare expertise and an undergraduate student majoring in Computer Science. Their charge was to design an appropriate set of for-fee services at a rate that would recover the cost of the initial computer infrastructure required as well as any additional human resources needed in the future. The following support was offered on day one:

- **departmental support** of existing server environments
- **centralized support** aimed at small departments without their own technical infrastructure hosted on a single fileserver
- support for department-owned **computing labs**

In addition to the above services, CLS also maintained a centralized fileserver environment for use by CSC staff and was instructed to recover costs internally at the same rate structure applied to outside customers.

Departmental support consisted of account management, as well as monitoring and troubleshooting existing departmental servers, guaranteeing desktop connectivity to those servers, keeping the network client software at the current release, installing antivirus software keeping it updated, and, later, ensuring that operating system updates were applied in a timely manner. Private workspaces were allocated to individual account holders and a shared area was also set up per departmental requirements. Other forms of desktop support, such as application-related issues, hardware diagnosis and repairs, and operating system troubleshooting, were not included in the support contract, but were available at a published hourly rate. CLS also installed and configured backup software on the server as part of the initial setup (centralized backups were a prerequisite for server support), but the cost of server backups was not included in the contract price and was billed separately to another unit within CSC. Departments were responsible for the purchase of their server and their NetWare licenses.

Centralized support provided nearly identical services to those described above, but on a server owned by CSC. The only real difference was in the allocation of disk space. On their own servers, departments decided how to allocate space based on the amount of disk available. On CSC's server, a default quota was set for all account holders, and additional space was available as needed for an additional cost. CLS contracted internally for server backups, the cost of which was rolled into the service pricing model. To recoup the costs of the shared server, backups, and NetWare licenses, centralized support was priced approximately 25% higher than departmental support.

Computer lab support was a different service entirely. In its original Windows 3.1 incarnation, a PC lab consisted of 10 or more PCs with boot ROMs installed on their network cards. These devices allowed lab machines to load their operating system (DOS) from a networked server and then run Microsoft Windows and Windows applications hosted on that same server. A one-time fee which varied depending on the number and complexity of applications installed was charged for initial setup (and also

included installation and configuration of a dedicated, cost-recovered networked printer). Follow-on contract support included two to three major updates per year, as well as adhoc troubleshooting as needed. With the advent of Windows NT, network authentication and support for a common back-end filestore was added, as was support for all hardware under manufacturer's warranty.

3.2 Main Administration Building

Several years ago, OIT was approached by the user community at the Main Administration building with the request that we assist them by hiring and training a computer support person who would work in their building to meet their support needs. They agreed to fund the individual's salary, provide reasonable expenses for training and equipment, and provide an office.

Initially, provision of desktop support was the main goal for the position. The Main Administration building did not have consistent IT planning, and no one was overseeing the overall state of the computing environment. Early successes included completing an inventory of the equipment in the building, making upgrade recommendations, and ensuring that backups of critical data were taking place.

OIT also took on the support of a file and print server for the MAB user base during the initial phase of the agreement. As needs were identified, application servers have also been added to the list of items supported, including a FileMaker Pro database server and a MeetingMaker calendaring server.

Over time, a second person was added to the agreement, primarily to provide business process improvements through the development of databases and web infrastructure. The second staff member also provides backup desktop support services, allowing for better service during crisis periods and staff outages.

No true Help Desk is provided; the user community has the office and mobile telephone numbers of the staff, as well as their e-mail addresses, and makes direct contact with them when needed.

Both of the staff members involved report to one person within OIT's Academic and User Support (AUS) unit; back-end server support is provided by OIT's Technical Services and Support (TSS) unit.

3.3 Robert H. Smith School of Business

OIT entered into a partnership with the Smith School in the summer of 2001. The Smith School had a relatively large IT staff, and was interested in outsourcing commodity services to OIT, allowing their staff to refocus their efforts on new initiatives. Desktop computing, AV support, Labs, Classrooms, File & Print Servers, the Lotus Notes application server, and Help Desk were all included in the items to be outsourced; networking was already being provided by OIT.

The existing help desk, desktop support, lotus notes, and classroom/lab support staff were transferred to OIT, with the help desk, desktop support, and classroom support staff reporting to AUS, and the lotus notes and lab support staff reporting to TSS. AV staff were hired within the AUS group and assigned to work in the Smith School, and file/print server support was taken over by the TSS group.

This model met with varying success, depending on the quality of the transferred staff, as well as management decisions and methods on both the OIT and Smith sides of the agreement. Over time, changes were made to the arrangement as lessons were learned on both sides. OIT's role has increased in some areas, such as AV and Classroom support, has remained the same in others, such as Help Desk and Desktop support, and been eliminated in the Lotus Notes area. OIT has also re-allocated work internally in order to better meet customer needs.

3.4 Shady Grove Center

In 2001, the University of Maryland, College Park took over the management of the University System of Maryland's Shady Grove Center. As a result, various departments at the university took on management responsibility for aspects of Shady Grove's operations. OIT took on responsibility for management of the IT infrastructure and services.

The existing desktop, lab, classroom, server, and networking support staff were transferred to OIT; this staff consisted of three people and a group of student lab assistants. Two staff members, plus the student staff, reported to OIT's AUS group, while the third, specializing in networking and voice communications, reported to OIT's Networking and Telecommunications (NTS) group. Additionally, Shady Grove also contracted with OIT's Administrative and Enterprise Applications (AEA) group for the provision of a student information system. There was no meaningful AV support staff, though services in this area were certainly needed; the on-site AUS staff took on portions of this responsibility, and rely on other AUS staff and on vendor support for the remainder.

Initially, server support was confined to file and print servers, but later an application server was added to provide scheduling and conference management services. Both are handled by AUS, with some assistance from TSS. Because the Shady Grove Center is located 20 miles from the College Park campus, the networking and telecommunications infrastructure is entirely separate; although support is provided by NTS, the fee structure and support methods are quite different.

For the most part, this relationship has been going well. However, the lack of a common reporting structure for the staff caused some concern that planning might not be taking place with a sufficiently broad perspective. Additionally, it has been a challenge to integrate staff 20 miles from the main campus with the existing OIT units, especially since that staff was inherited from previous management.

3.5 College Relationships

Based on the success of the Smith School partnership, several other colleges approached OIT for support of their IT needs. In tight budget times, each Dean was looking at ways to gain cost savings in the area of IT support. Each college required a different level of support and not all of them required the same high level of services that the Smith School required. Those relationships are described below.

3.5.1 College of Information Studies

OIT entered into discussions with the College of Information Studies (CIS) in the summer of 2003. CIS is a relatively small college looking for support for their facilities and their faculty.

An SLA was completed to provide desktop support, file & print server support, classroom support and lab support. Because of the size of the college, a separate on-site help desk was not needed – the college would use the services of the existing OIT Help Desk.

In discussing the needs of the college, it was determined that having an OIT staff person on-site full-time was not required to provide desktop support. After some investigation, it was decided to try having an OIT staff person on-site for 8 hours per week. A dedicated telephone number was provided by the college for faculty and staff to leave voicemail messages on during the times when someone was not on-site. OIT staff handled requests in a first-come first-serve basis when on-site during scheduled support time. For issues that could not wait until the next scheduled on-site time, faculty and staff called the main OIT Help Desk. If the Help Desk staff could not resolve the problem, an OIT staff person was dispatched to the location to resolve the issue. Any unscheduled time was logged and tracked to determine if the contract would need to be renegotiated for more than 8 hours/week for on-site support.

The college was already paying for file & print server support and lab support from CLS. These agreements were folded into the SLA with the other services being provided.

The college utilized several classrooms in the building – some were department classrooms with some equipment already installed and others were general purpose classrooms where the college had carts with equipment available to use. OIT provided the classroom support via student staff that were part of the overall classroom support staff in OIT. Oversight did not require an additional manager. The computers being used the classrooms used the existing software image for classrooms and, therefore, did not require specialized development or support.

If the college required upgrades of equipment, the cost of the equipment would be the responsibility of the college, but OIT would help to identify the model and configurations required and would install the machines upon their arrival.

3.5.2 College of Health and Human Performance

OIT entered into discussions with the College of Health and Human Performance (HLHP) in the fall of 2003. HLHP is another relatively small college, but larger than CIS. Similar to CIS, HLHP was looking for support of their faculty and their facilities. An SLA was completed to provide desktop support, file & print server support, classroom support and lab support. HLHP also did not require a separate on-site help desk.

Because the number of faculty was larger and their technology needs were higher, the college requested having an OIT staff person on-site 24 hours per week. HLHP has faculty in two buildings so an OIT staff person was on-site 20 hours per week in one building and 4 hours per week in another. A dedicated office and phone was provided by the college for the OIT staff person. A procedure was put in place for department representatives to collect requests for work related to IT (forms had already been developed for the departments to use). All requests were prioritized by the department representatives and then submitted to the Deans office. The Deans office then prioritized all requests and that prioritized list was given to the OIT staff to process and resolve. As with CIS, for issues that could not wait until the next scheduled on-site time, faculty and staff called the main OIT Help

Desk. If the Help Desk staff could not resolve the problem, an OIT staff person was dispatched to the location to resolve the issue. Any unscheduled time was logged and tracked to determine if the contract would need to be renegotiated for more than 24 hours/week for on-site support.

The college was already paying for file & print server support from CLS. This agreement was folded into the SLA with the other services being provided.

The college had a computer lab that OIT took on support for. The lab did not have security equipment for the computers so it was recommended that the appropriate equipment be purchased. In addition, the existing software image for lab computers (plus some additional software) were installed onto the computer labs.

The college was having several of its classrooms upgraded with technology and therefore required classroom support. In addition, the college had acquired 3 laptop carts that would be used in classrooms in the building. In taking on the support of the carts, OIT viewed them as additional “classrooms” that had to be scheduled and have student support available. As was done with CIS, student staff were hired into the same classroom support group in OIT and scheduled to be onsite in HLHP.

3.5.3 College of Education

OIT entered into discussions with the College of Education (EDUC) in the summer of 2003. EDUC is another relatively small college looking for support for their facilities and their faculty. An SLA was completed to provide desktop support, file & print server support and lab support. As with CIS and HLHP, a separate on-site help desk was not needed.

EDUC did a lot of their own work in determining what their needs would be and how requests would be handled. EDUC requested having an OIT staff person on-site 8 hours per week. A dedicated office and phone was provided by the college for the OIT staff person. A procedure was put in place for department representatives to collect requests for work related to IT and a website was developed by EDUC for submitting those requests. As with CIS and HLHP, for issues that could not wait until the next scheduled on-site time, faculty and staff called the main OIT Help Desk. Unlike CIS and HLHP, if an OIT staff person had to be dispatched outside of on-site hours, departments would have to pay for that visit (the Deans office funded the SLA work).

Server support was provided for one critical server in the college. In addition, support for their PC labs were provided. The existing software image for lab computers (plus some additional software) were installed onto the computer labs.

4. Lessons Learned

One of the major objectives departments have in contracting for IT services is to obtain those services both less expensively and with higher quality than what they would be able to achieve on their own.

In the case of departmental and centralized file and print server support, both of these objectives have been successfully achieved. A small centralized department can maintain a relatively large number of similar servers much more effectively and inexpensively than individuals scattered throughout the campus could maintain their own servers. Computer lab support is another area where centralization has led to both an improved product and a reduced cost to the department, since very similar software images and deployment processes can be used throughout the university. Application servers are a bit more problematic, because these are generally being supported precisely because OIT does not provide the particular application or service centrally. Therefore, OIT lacks expertise in the specific application in question, making the centralized support less effective than in the case of the file and print servers. However, OIT’s expertise on the operating system and hardware angle is still sufficient to lead to an improvement in the quality of support, and efficiency is generally increased over maintaining distinct staff throughout the university.

The relationships with Shady Grove, Main Administration, and R.H. Smith have provided fewer opportunities for cost savings, because so many of the services required are either unique to the particular environment, or require the constant presence of on-site staff. In the cases where existing staff was moved into OIT, there were some growing pains as we got to know their capabilities and they adjusted to the new situation. An ongoing struggle in all areas where staff are located on-site is keeping the staff involved in OIT as a whole, without detracting from the support provided to the specific location. In order to achieve genuine cost savings in areas such as help desk services and desktop support, the departments must be willing to accept changes in the support structure, such as allowing help desk calls to be handled by a centralized office that may be less familiar with the specific environment in the department than dedicated staff would be. Since cost reduction is not a major motivating factor for any of these departments, these methods have not been employed. OIT has been able to bring additional expertise to these relationships, thus providing increased quality over what would be available with local IT personnel working on their own.

The College Relationships have built on the lessons learned in earlier stages, and cost reduction is a major motivating factor for the colleges. Therefore, the central Help Desk is used to field support calls, and desktop support visits are confined to particular days and times unless an additional fee is paid.

In examining the process of creating the SLAs, we found that in most cases a relatively simple memorandum of understanding is adequate to define the roles and responsibilities within the relationship. However, some of our customers desire a more detailed service level agreement, and while this has been successful, it is important to take the amount of time required to maintain such documentation into account when making new agreements.