To Corral Support, a Proper Set of Tools are Needed

John A. Underwood
NDSU/ITS
IACC 206
Fargo, ND 58105
(701) 231-6109
john.underwood@ndsu.nodak.edu

Deb Hegdahl
NDSU/ITS
IACC 206
Fargo, ND 58105
(701) 231-7037
deb.hegdahl@ndsu.nodak.edu

Jeff Gimbel
NDSU/ITS
IACC 206
Fargo, ND 58105
(701) 231-6730
jeff.gimbel@ndsu.nodak.edu

Abstract

The Information Technology Services Department is responsible for providing centralized computing services for the 11,000+ students and the 2,000+ staff/faculty at North Dakota State University (NDSU) and other enterprise computing services for the North Dakota University System (NDUS). To provide efficient and effective support, the NDSU ITS Help Desk uses a wide variety of tools.

Our tool set includes:

- Call management to route and track the incoming and outgoing calls
- System monitoring to know what servers or network devices are up or down
- Problem tracking system to track problems and their resolutions
- Remote assistance to see an end user's computer
- Documentation for consistent support
- Training to ensure the staff is providing quality assistance

Categories and Subject Descriptors

K.6.1 **[Management of Computing and Information Systems]**: Project and People Management – *Strategic information system planning*

General Terms

Management, Documentation, Standardization, Theory

Keywords

North Dakota State University, North Dakota University System, Help Desk, call management, ACD, automatic call distribution, problem tracking system, Remedy, system monitoring, network monitoring, SiteScope, remote assistance, Proxy, Funk Software, WebEx, documentation, training, communication

1. BACKGROUND INFORMATION

North Dakota State University is a land grant university, established in 1890, located in Fargo, ND. NDSU is one of 11 campuses that make up the North Dakota University System. The Information Technology Services department at NDSU provides services to the NDSU campus, as well as to other campuses within the NDUS. These services include, e-mail, calendaring, consulting, training and Help Desk.

NDSU has a student enrollment of over 11,000 students and over 2,000 staff and faculty. The NDUS has 40,000 students and about 10,000 staff and faculty.

ITS provides centralized computing services for the students, staff and faculty. Beyond the services that ITS provides, the two largest colleges on campus provide additional services to their students, staff and faculty.

The ITS Help Desk provides walkup, telephone and e-mail support for NDSU; and as half of the NDUS Help Desk, we provide telephone and e-mail support for NDUS. The Help Desk has one full-time manager, two full-time consultants, four part-time students and two additional full-time staff whose primary duty is to work on special projects, but help out as needed.

The NDUS Help Desk is a virtual help desk that provides services to the NDUS. All of the full-time ITS Help Desk staff are also NDUS Help Desk staff.

Typically hours of operations are M-F, 7:30 am to 9 pm, with some hours on Saturday and Sunday during the school year. The ITS Help Desk, alone, averages about 400 phone calls a week, with about 1,800 the first week of class.

2. HELP DESK TOOLS

2.1 Call Management

An Automatic Call Distribution (ACD) ring is a call management system that allows the Help Desk to control the flow of telephone calls and track the volume.

With an ACD system, Help Desk technicians "log into" the system to become available to take a call. We can use any phone on campus, which works well with our "Business Continuity" or "Disaster Recovery" Plan.

When an end user calls, they are presented with a welcome message and a menu to further clarify the support needed. If all of the Help Desk technicians are busy, the end user is then presented with an option to leave a message for later call back or to wait for the next available technician. It is commonly felt that users will not wait. We have found that once the end users learn that they will "talk to someone live" if they wait, they are willing to wait a few minutes. While waiting, users are presented with music. After a minute, and every minute after that, the user is again given the option to leave a message for later call back. If there are no Help Desk technicians logged into the ACD ring, then the call is directed to voice mail.

In those cases where there is a major outage or problem, we "force" a short status message before the initial welcome message. This message would include: date, time, problem, and the estimated time for repairs.

Sample message:

> *"This is an ITS Help Desk Alert: Today is <day>, <month> <date>, <year> at <time>. <Problem>, we are working on this problem and hope to have <system> operational by <repair time>. All other systems are up and operational. If you have any questions or wish to report additional problems, please stay on the line."*

If it is a prolonged outage, the message is updated on an hourly basis. We use a simple kitchen timer set for one hour to remind us to either update the message or to remove it.

For most users, the status message provides the information they needed – a system was down and when it would be available – without having to talking to anyone live. The first time we used this, it was a bit "freaky". Our e-mail system was down, but the phones were not ringing. Note: Since users hang up before connecting to a consultant, these calls may show up as "abandoned" calls.

An ACD will also keep historical data about the calls coming in and going out of the Help Desk. This data includes: total incoming and outgoing calls, calls answered, abandoned calls, average talk time and much more. We post this data on our web page.

When preparing Help Desk call statistics, be sure to include outgoing calls. These contacts are just as important as incoming calls.

Some of the historical data from the ACD can be misleading, in particular the abandoned calls. There are two types of abandoned calls, significant and insignificant. Significant abandons are those where the length of time of the abandonment exceeds a specified amount of time, i.e. 30 seconds or the length of the welcome message. Insignificant abandons would be those that do not exceed this amount of time. Examples of insignificant abandons are those where a user dialed the wrong number and hung up quickly or the user heard a status message that provided the information needed.

2.2 Problem Tracking System

The Help Desk deals with a large flow of information on a daily basis, and most of the time the amount of information is overwhelming. To help ensure consistent and quality support, we use a problem tracking systems to track the information and problems that come into the Help Desk, assign or forward the problems to the appropriate workgroup and follow-up to make sure the problems were corrected. The system we use is part of the NDUS Help Desk Project, which provides tools and services to the campuses of the NDUS. It is an "in house" application created using Remedy's Action Request (www.remedy.com).

The system allows us to track problems by assigned person, assigned group, for a specific user and many other ways. We can generate "ad hoc" reports to analyze problems that have occurred over a set period of time or by department as needed. The only way to generate accurate reports is to make sure that all problems and contacts are entered into the system. This is important and difficult to do.

For a problem tracking system to be most effective, it needs to be used by all support providers on campus. This allows tickets or problems to be transferred between the groups seamlessly. Our system is used by all of the support providers on campus and by support providers at all of the campuses within the NDUS.

2.3 Server/Network Monitoring

With the Help Desk being the first call users make when there is a problem, the Help Desk needs to know the status of key servers and network connections. Server/network monitoring software allows server/network administrators and the Help Desk to monitor these key servers and network connections.

The NDUS Help Desk Project has purchased SiteScope from Mercury Interactive (www.sitescope.com) to monitor servers and network devices within the NDUS. Sitescope, like most monitoring software, allows for monitors or probes to be set up to monitor a large number of events. For each event, we can configure: notification method, whether by e-mail or page; escalation for multiple or prolonged events; multiple levels of indicator or severity level, and much more. An example of one type of monitor might be drive space. A "warning" would be configured to e-mail a system administrator when there was only 20% drive space free. An "error" would be configured to page a system administrator and e-mail the Help Desk when 10% drive space was free.

Monitoring software can also be used as a tool by the Help Desk to do some initial debugging and to gather more information for a server/network administrator. Many times when an administrator is paged, they are not near a computer to investigate what is going on. A simple call to the Help Desk can help them diagnose the severity and determine if any "quick fixes" or "work arounds" are available.

A "high level" overview of key systems will also be published on a web page for end users to see if there is a problem. Care and thought should be put into the information published on a web page, so that too much information is not provided to people who may use it for the wrong purpose. You do not want to provide detailed bandwidth information to an "attacker" so an "attacker" can see how effective a "denial of services" or other type of attack is.

2.4 Remote Assistance

"If I could see their screen, I could fix this in 30 seconds."

For the last six years, NDSU has been using Proxy from Funk Software (www.funk.com) to allow the Help Desk and other support technicians to see an end user's screen. By fixing the problem over the phone the end user is happy and it has saved time for on site support technicians. Proxy is licensed and does require a client to be installed on the computer. Security is always a concern when dealing with remote computers. What ever tool the Help Desk uses, there are students on campus with the same tool. The end users should be in full control, so that access is not just automatically given. Proxy can be configured to allow access to the remote computer after the end user has "granted" permission or if the remote site is not staffed, a password can be configured. When Proxy was first introduced on campus, several departments would not allow it to be used, due to security concerns. After working with them and showing that they, the end user, had to "grant" permission first and they, the end user, could terminate the session, these departments have learned to love Proxy. It is not uncommon to answer the phone and hear the end user say "Proxy in please."

To get away from the client installation and provide more flexibility, the NDUS Help Desk Project has licensed WebEx Support Center (www.webex.com). This is totally web based. The first time an end user goes to the support web site, a small applet is installed. Like Proxy, the end user has to "grant" permission before a technician can view or control the remote computer. We are currently using this for supporting students or users that are not on campus. As long as the end user has Internet access, even over dialup, the Help Desk can remotely view or control an end user's computer.

2.5 Documentation

An on-going problem for a Help Desk is providing consistent and quality support, especially with student employees. Each student has a different knowledge level or area of expertise. After working a shift, they take most of the knowledge about that shift with them. Detailed information and documentation has helped with this.

For common and obscure problems, we create a Troubleshooting Guide (TSG) detailing suggested and proven solutions for the problem. A typical TSG would include: problem descriptions, suggested solution(s), priority level, ticket assignment and other information for completing the tickets. These guides are used to populate a shared knowledgebase as part of the NDUS Help Desk Project. The TSGs and knowledgebase ensure that the Help Desk staff has tried the appropriate solutions before passing the problem to 2nd tier support and that the ticket is filled out accurately.

As new services are offered, the Help Desk works with the group responsible for managing the service to create TSGs, tip sheets and other forms of documentation. These are then used to train the Help Desk staff and allow the Help Desk to provide the support needed. A weekly review of all tickets created by the Help Desk is done to review the accuracy and detailedness of information being entered into the ticket. This has helped to lessen any tension, animosity or finger pointing between the multiple tiers of support.

2.6 Training

Finding the time for training is always a difficult thing to do. We do most of our training at an ITS Student Employee Retreat the week before classes start. This helps get ready the student employees for the fall rush.

During the school year, we take every opportunity we can, which is not that often. We will have small or mini training session during weekly staff meeting and have bigger or day long training session on those days when there are no classes, but the University is open.

2.7 Communication

Being the "first point of contact" for the department, communication or the flow of information, is probably the most important function of a help desk. As the information comes in, the Help Desk is responsible for filtering, processing, documenting, disseminating and archiving the information as needed. As the "first point of contact", all outage notifications, alerts, warnings or other official services notifications should be sent from the Help Desk. By doing this, users will learn that the Help Desk is the place to go to get information.

When system and network administrator send e-mail messages to each other about problems, planned upgrades and other work related items, they CC the Help Desk so that we are kept informed as well. Several of our senior administrators stop by the Help Desk on a regular basis to see what is going on. After an outage or other major problem, they let us know what happened and check to make sure everything is working.

Another form of communication is the flow of information. As mentioned with documentation, regular meetings with other support groups can be an excellent tool. During these meetings, all the tickets for the previous week or so are reviewed. This is especially helpful with new or upgraded services. This time is not viewed as "what has the Help Desk done wrong now", but view as "How can we, ITS, provide better services."

Another tool for communication is instant messaging. IM is a tool that all of the Help Desk students have been using with each other for a long time, so we have started having everyone at the Help Desk using it. As long as we are on line, we can send simple messages to each other. We are currently in the process of implementing a new ERP system (PeopleSoft) and at an implementation meeting, I found that the development team was doing the same thing and have found it to be invaluable.

2.8 Other Tools

A few other tools that we use at the Help Desk are:

2.8.1 Data Recovery Software

We use "Lost&Found" by PowerQuest and "r-studio" by r-tools technology to recover data from corrupted or damaged floppy disks. Lost&Found is an old command prompt application that is no longer supported by PowerQuest, but still works OK. r-studio is Windows-based and in some cases does a better job. In most cases, we have been able to recover the lost data.

2.8.2 Services management and LDAP system

NDSU uses a services management and LDAP system to manage all of the services end users have access to. If a service is "locked", then the end user cannot use that service. Services are generally only "locked" if they are abused or for other disciplinary action. When an end user contacts the Help Desk about a service that they cannot access, we check the system to see if the service is locked. If it is, then we know the end user needs to talk to our Security Officer. For some services, like excessive bandwidth usage or abuse of dialup, we take care of it at the Help Desk, inform the Security Officer and ask the service be unlocked. If the abuse happens again, then the end user has to talk to the Security Officer.

2.8.3 Dialup Authentication and DHCP log check

We use a custom web page that will search our dialup authentication logs or DHCP logs. For dialup authentication, it allows us to see if the user is using the correct user name, if the password is being rejected or if they are showing up in the logs at all. For DHCP, we can look to see if a computer is requesting an IP address or if a subnet has run out of IP addresses. In both cases, the Help Desk is able to gather more information and make a more informed decision as to how the ticket should be assigned.

3.0 Conclusion

For a help desk to be effective and efficient, it needs to have a proper set of tools. These tools are used to manage the incoming calls, monitor servers and network connections, track problems as they enter the help desk and are transferred to other support units, being able to view the end users screen, documentation, training and many others.

The exploration of new tools and the creative use of an existing tool set will assist the help desk in meeting the end users needs in the rapidly changing academic environment.