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Keeping You Connected: NERDC's Network Services Group

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UF Information Technology

UFIT

2046 NE Waldo Rd, Suite 2100
Gainesville Florida 32609-8942
(352) 392.2061
<editor@cns.ufl.edu>
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Keeping You Connected: NERDC's Network Services Group

It happens every morning. You head into the living room or your office, sipping your coffee and rubbing the sleep out of your eyes, and turn on your computer. There's a familiar hum and beep, and your monitor flashes you a reassuring greeting. You're connected and all is well with the world. It's a peculiarly modern magic.

But someone—a living, breathing human—has to make that connection happen. As a matter of fact, there is a whole group of someones who make this particular magic happen for you at NERDC. They're called Network Services, and, along with Operational Services, they're headed by Assistant Director Dave Pokorney. Over the past year, this dedicated group of 39 people has made remarkable strides in the ongoing effort to make certain that when your computer hums, beeps, and flashes, it will have a smooth connection to the campus and the world.

The people of Network Services (NS), in a nutshell, are responsible for making sure that your computer can talk to all the other computers out there on-line. But who are these people? How does their work make your computer connect every morning?

Network Services is comprised of four separate groups of people: Network Software Support, Intranet and External Network Support, Enterprise Network Management, and Operational Services. Each contributes something special to the task of keeping you online.

Peter Mauro, NERDC engineer, and Nancy Watson, computer programmer. Kathy Bergsma, network security coordinator.

A Secure Future

Marcus Morgan is in charge of Network Software Support (NSS), which handles a number of
separate tasks. One of these is the DNS, or Domain Name Server, for all users in the "ufl.edu" domain. That's the computer that translates the words in Internet addresses to the numeric addresses that your computer can read. Morgan's group is responsible for making certain that every time you want to connect to a web site, that translation can take place.

Another major job NSS does involves using diagnostic tools to see how well the network is running and to make sure there are no vulnerabilities. As you might expect, there is much concern about protecting the network from outside "attack." In Morgan's words, "Exposure equals exploitation. Security is a real growth area."

One of NSS's most exciting tasks is making certain that the network is secure from just such unwelcome guests. Morgan says that a major step forward this year occurred when a position was created just for network security. Another coup: a security scanning product was also introduced, which can identify security "holes" in the network.

One additional highlight from this past year was the changeover on the UF Home Page from using Harvest as a search engine to using Infoseek. This is the same product that many use to search the entire web, set here to search only the ufl.edu domain. Many advances in computing over the last few years had left the Harvest program far behind, and it was time to update with the new product.

So what's in the cards for the upcoming year? It involves some crossover with other members of the Network Services staff, particularly in the Intranet and External Network Support area. With the explosion of traffic on the Internet and the Intranet, things can get bogged down. That's where QoS comes in.

Quality of Service (QoS) basically means prioritizing resources. Resource Reservation, as this is also known, consists of making decisions about what is most important for campus users and then making certain that the available resources go to that priority first, and so on down the line. For example, a video feed of a major State University System press conference would take priority over an MTV video feed, but if there was room for them both, then users would have both. Morgan will soon be hiring a new person who will have QoS as his or her primary responsibility.

The Communications Lifeline

_Intranet and External Network Support_ maintains the infrastructure that makes computer communications work. This includes support for the core network and for some sites outside of the core network—the Florida Center for Library Automation, UF Tissue Bank, and others. This group also has recently accepted responsibility for the routers that link the core to the various local area networks as well as for some of the LANs themselves. Dan Miller, who heads up this group, says that the goal is to be responsible for those connections up "to the wallplate"—that is, up to the point where your computer plugs into the wall.

One major focus for NS staffers is troubleshooting—finding out where the problems are and repairing them. An example of one such problem was ATM (Asynchronous Transfer Mode), a lower-level transfer protocol that was designed to ease the flow of incoming and outgoing information traffic on the network, but which proved problematic. A major goal for the upcoming year is a Gigabit Ethernet (GIGE for short, pronounced "gig-E"). This new generation of Ethernet should do well in allowing efficient use of available bandwidth for both incoming and outgoing packets, which will in turn make information available to users with fewer problems—and fewer headaches for Miller and his group.
There are challenges still to be met. Sometimes, it takes only a few users with the wrong kind of program to cause havoc. Recently, an application using packets designed to get through firewalls caused the heavily loaded main Internet router to crash repeatedly. Because the culprit was a combination of several sneakily-designed video streaming packets, finding all the pieces of the problem required some fast detective work. Problem identified, problem solved.

Ask Miller what's changed about his job, and he'll tell you that he's doing the same thing he was doing eleven years ago; just trying to stay ahead of the technology. This means supporting what people are using today and preparing for the next generation that's just over the horizon.

**A New Enterprise**

*Enterprise Network Management* is a section of Network Services that seeks to bind together all the pieces of network computing into an easily accessible whole. It's an outgrowth of network management. Its goal is to connect all the various components of the network - the servers, the routers, the core, the software and hardware, etc. - to a framework (a base to which all the pieces can connect). A year-long project to choose the best framework for this job (a software program called TNG) has just been completed, and work has now begun on the design of the project. Jerry Wetherington, head of Enterprise Network Management, compares this design phase to putting together a jigsaw puzzle with pieces manufactured by different companies at different times. The long-term goal is to achieve proactive management—that is, to be able not only to look at the network as a whole and see what might need repair, but to have it repaired before the user knows anything is wrong.

The needs of the end user are the primary focus of this group. It is the business processes of that end user that drive the design of the project. Enterprise Network Management asks, "What is the job that our users need to do?" and puts together a package to make the job happen. As Wetherington put it, "A human has to be able to understand [the network]. ... Computers are tools to get a job done." And, he adds, "It never gets boring.”
system humming along 24/7.

A host of servers keeps UF connected to the Internet.

Bill Carr, NERDC computer operations manager, oversees staff who monitor UF’s connection to the Internet and work toward keeping it running smoothly.

Guardians of the Hardware

Operational Services, overseen by Manager Bill Carr, is a group that is separate from Network Services but plays an integral part in its mission. Operations makes sure that the hardware—the actual computers that do the work—is up and running, and that it stays that way.

The job of the Operational Services section has changed considerably over the years. In past years, their responsibilities were primarily running and printing jobs for users. Now that most people have PCs and printers on their desks, that job has become decentralized. There are still batch jobs to be run and printouts to be distributed, but the focus has changed from doing the work for campus users, with an emphasis on the mainframe computers, to assisting users with doing their own work via the network.

One outgrowth of this change in focus has been the addition of new responsibilities. This section has recently taken over as first-line troubleshooters for network users both on campus and at various other SUS sites. When someone calls NERDC with a network problem, Carr's section performs a sort of triage. Like an emergency room patient, the caller may know a lot about the problem he or she is having, or may only know that "The computer's not working." Instead of "Where does it hurt?", the Operations Services folks ask, "What program are you trying to use?" or "What does your screen say?" The problem is then either handled on the spot or referred to someone else in Network Services for more specialized "care." And like any hospital emergency room, they're on call 24/7.

Being on call 24/7 means during power failures, too. Penny Latta, computer operations supervisor, has recently taken over responsibility for the UPS (Uninterruptable Power Supply). This means she must maintain the batteries and diesel generator that ensure a continual source
of power for the hardware in case of disaster. The batteries are designed to keep the core running for up to 30 minutes, until the power comes back up or the generator can kick in. Operations keeps enough fuel on hand to run the generator for at least 24 hours, long enough for normal power to be restored or to refuel the tank.

Race for the Future

It's a race that this group runs every day. The goal of Network Services is to maintain solid support for the work that users must do while also providing support for the brand-new technologies that users want. The Quality of Service program, the new Gigabit Ethernet, the TNG framework, and the "triage" performed by Operations all are focused on the changes that are continually happening in the world of computing. Change, as any of these people will tell you, is the one constant they can count on.

Your Comments are Welcome

We welcome your comments and suggestions on this and all UFIT documentation. Please send your comments to:

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